

GEORGE MASON UNIVERSITY

2021 - 2022

University Catalog





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The 2021 - 2022 University Catalog

This catalog was prepared on the basis of the best information available at the time of publication in April 2021. All information, including statements of tuition and fees, course offerings, and admissions and graduation requirements are subject to change without notice or obligation.

The catalog is produced by the Office of the University Registrar in cooperation with the Office of the Provost and University administration.

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About the University

The Mason Vision

Our Motto

Freedom and Learning

Mission

A public, comprehensive, research university established by the Commonwealth of Virginia in the National Capital Region, we are an innovative and inclusive academic community committed to creating a more just, free, and prosperous world.

Our Values

Our students come first
Our top priority is to provide students with a transformational learning experience that helps them grow as individuals, scholars and professionals

Diversity is our strength
We include and embrace a multitude of people and ideas in everything we do and respect differences

Innovation is our tradition
We strive to find new and better ways to deliver on our mission while honoring time-tested academic values

We honor freedom of thought and expression
We protect the freedom of all members of our community to seek truth and express their views

We are careful stewards
We manage the economic and natural resources entrusted to us responsibly and sustainably

We act with integrity
We hold ourselves to the highest ethical standards as educators, scholars, students and professionals

We thrive together
We nurture a positive and collaborative community that contributes to the well-being and success of every member

The Mason Graduate is...

An engaged citizen:

- ethically oriented and committed to democratic ideals
- respectful of individual differences, rights and liberties
- knowledgeable of important issues affecting the world
- focused on the well-being of others, today and tomorrow
- committed to building a just society

A well-rounded scholar:

- thinks critically and creatively and demonstrates professional competence
- possesses an inquisitive nature
- appreciates science, humanities and the arts
- skilled as a communicator
- committed to lifelong learning

Prepared to act:

- innovative, resourceful and entrepreneurial; ready to do or create a job
- interested and practiced in working with individuals from other cultures, backgrounds and perspectives
- equipped to make positive and meaningful changes in society

George Mason, the Man

George Mason was the central genius of the American Revolution. He was the primary author of both the Virginia Declaration of Rights and Virginia's first Constitution, written in May and June of 1776, which served as examples for other states. He was highly regarded by contemporaries for his intellect and abilities. Thomas Jefferson described him as "a man of first order wisdom," and James Madison described him as "the soundest and clearest reasoner I have ever listened to."

Always a reluctant public servant, he has been referred to as the "forgotten" or "unknown" founder. Most content at Gunston Hall, his home in Fairfax County, he participated in politics only out of a sense of duty. Unconcerned with fame or his reputation in history, he preferred the happiness of "a private station" to "the vexations of public business."

In 1787, Mason attended the Constitutional Convention at Philadelphia. James Madison, although known as the "Father of the Constitution," attributed much of the final document to Mason. Mason refused, however, to sign the Constitution, as it did not guarantee the rights of the people. By his principled opposition, Mason ultimately assured the adoption of the federal Bill of Rights based on his Virginia Declaration of Rights.

As demonstrated in the language set forth in Mason's own documents, no other founder was more acutely aware of the moral depravity of slavery and the contradiction it created. He proposed an elimination of the slave trade as a first step toward eventual emancipation. The institution of slavery was so ingrained in a pre-industrial agricultural society that it was only ended by the American Civil War.

If patriotism is defined as selfless devotion to a country conceived in liberty, then George Mason is our purest Patriot. On April 12, 1996, a seven-foot statue of him presenting his handwritten draft of the Virginia Declaration of Rights was dedicated at the university. A replica of this statue has also been erected at the Mason Korea campus. This statue serves as a constant reminder of the ideals of freedom and learning most important to Mason the man and the university that bear his name.

University History

The idea for George Mason University was born in 1949 when the Northern Virginia University Center, essentially an adult-education extension of the University of Virginia at Charlottesville, opened under

the direction of John Norville Gibson Finley. In 1955 and again in 1956, the Board of Visitors of the University of Virginia and Virginia legislature authorized the establishment of a two-year branch college to serve Northern Virginia.

The university's formal history began in 1957 as University College, the Northern Virginia branch of the University of Virginia, offering courses in engineering and the liberal arts. It opened in a renovated elementary school in the Bailey's Crossroads area with an enrollment of 17 students.

Eager to support the fledgling institution, the Town (now City) of Fairfax purchased 150 acres in 1958 and donated the land to the University of Virginia for a permanent branch campus. The following year, the University of Virginia Board of Visitors selected the name George Mason College. Construction of the campus' first four buildings was completed in 1964. In September of that year, 356 students began their studies in the new classrooms.

In March 1966, the General Assembly authorized the expansion of George Mason College into a four-year, degree-granting institution and gave it the long-range mandate to expand into a major regional university. The first senior class received degrees in June 1968. Graduate programs began in September 1970, with the first master's degrees conferred in June 1971. The George Mason College Board of Control, supported by citizens of the cities of Alexandria and Falls Church, and Arlington and Fairfax counties, acquired an additional 422 acres. By the end of 1970, the college's Fairfax Campus reached 572 acres; it is now 677 acres.

In 1972, the Board of Visitors of the University of Virginia recommended that the college separate from its parent institution. On April 7 of that year, the governor signed the General Assembly legislation that established George Mason University as an independent member of Virginia's system of colleges and universities.

Since 1972, the university's development has been marked by rapid growth and innovative planning. In 40 years, enrollment has risen from 4,166 to more than 38,000 students. In 1979, Mason was given the authority to grant doctoral degrees and began offering programs at this level. In the same year, the university acquired what became George Mason University School of Law, located on the Arlington Campus, and now known as the Antonin Scalia Law School.

In 1985, Mason partnered with area businesses to develop an engineering program geared toward the emerging information technology field and started what is now the Volgenau School of Engineering. With the Volgenau School, Mason was the first institution in the country to offer a doctoral degree in information technology.

The establishment in 1990 of the Institute of the Arts, which became the College of Visual and Performing Arts in 2001, solidified the university's commitment to make the arts an integral part of students' lives. The Center for the Arts and the arts complex, which includes art galleries, studio and rehearsal space, and performing venues such as Harris Theatre and TheaterSpace, are all components of the college.

On the Fairfax Campus, the innovative George W. Johnson Center was dedicated in April 1996. By combining student life resources with educational support facilities such as an interactive library, Mason created the learning workspace of the future. Educational administrators from around the world have toured the center.

The university's facilities continue to grow. In 2006, the university opened its first facility dedicated to research, Research Hall, which contains an observatory and laboratories for a number of campus research centers.

In 2009, the university opened the Long and Kimmy Nguyen Engineering Building, the university's first LEED-certified building on the Fairfax Campus. Also opening in 2009 was the Art and Design Building, which is now home to the School of Art.

Masonvale, a townhome community on campus that provides short-term housing for faculty and staff, opened in late 2009. The Hylton Performing Arts Center on the Science and Technology Campus, celebrated its grand opening in May 2010 and the Institute for Advanced Biomedical Research opened in 2015. On the Arlington Campus, Founders Hall opened in 2011. In 2016, the Point of View International Retreat and Conference Center in Lorton, Virginia, was opened, in 2017, the Potomac Science Center opened in Woodbridge, Virginia and in 2018, the Peterson Family Health Sciences Hall opened on the Fairfax campus. Mason's newest building, Horizon Hall, opened in 2021. This six-floor, 218,000-square-foot building is the largest academic building and centerpiece of the Core Campus Project (https://construction.gmu.edu/core-campus-project/) that is transforming the center of the Fairfax Campus with a new and expanded Wilkins Plaza (including the memorial to the enslaved people of George Mason), a renovated Harris Theatre, new green space, and an upgrade to the university's utility infrastructure.

In February 2016, Mason entered the "Highest Research Activity" tier of the Carnegie Classification of Institutions of Higher Education. joining an elite group of 115 research universities.

The university's growing reputation as an innovative educational leader is rooted in Virginia's strong educational tradition. By emphasizing research and study in fields relevant to government and area economic centers, Mason has created a curriculum and mission to meet the needs of Northern Virginia's extraordinary cosmopolitan constituency. The university has also achieved national distinction in many areas. Its reputation continues to grow as Mason provides educational, cultural, and economic resources for the people of Virginia, the nation, and the world.

Faculty and Students

The university's more than 1,400 full-time instructional and research faculty members are experts in a broad range of fields. They have published widely, contributed to major research findings, and consulted with government and business officials. Drawing prominent scholars from all fields, Mason's outstanding faculty have received grants and awards from the Guggenheim Foundation, the Templeton Foundation, the National Science Foundation, the National Endowment for the Arts, and the National Endowment for the Humanities; they have won numerous awards such as Fulbright Scholar grants, Pulitzer Prizes, Mellon Fellowships, Institute of Electrical and Electronics Engineers Centennial Medals, and Nobel Prizes. More than 47 endowed chairs at the university have also brought many internationally renowned artists and scholars to campus.

Of particular interest to undergraduates are the Robinson Professors, outstanding scholars in the liberal arts and sciences who have come to Mason from prestigious positions elsewhere. They are concerned with broad and fundamental intellectual issues and are dedicated to undergraduate teaching and working with Honors College students. In 1984, the first Robinson Professors joined the faculty as the result of a generous bequest from the estate of Clarence J. Robinson.

The majority of the university's more than 38,000 students are from Virginia; however, all 50 states and Washington, D.C., as well as 130 countries, are represented in the student body. While full-time undergraduates make up the largest student group, part-time graduate

and undergraduate students account for nearly half of the student population. Mason welcomes qualified students with a wide range of interests and backgrounds.

Accreditation

George Mason University is accredited by the Southern Association of Colleges and Schools Commission on Colleges (SACSCOC) to award bachelor's, master's, and doctoral degrees. Questions about the accreditation of George Mason University may be directed in writing to the Southern Association of Colleges and Schools Commission on Colleges at 1866 Southern Lane, Decatur, GA 30033-4097, by calling (404) 679-4500, or by using information available on the SACSCOC website (http://www.sacscoc.org).

Individual programs or units may also be accredited by discipline-specific agencies. Additional information may be found on the accreditation page of the Provost's website (https://provost.gmu.edu/administration/academic-affairs/accreditation/).

George Mason University Foundation, Inc.

Mission

The George Mason University Foundation was established in 1966 to receive, manage, invest, and administer private gifts for the benefit of the University, including endowment and real property.

Administration

Board of Visitors

James W. Hazel, Rector, JD, George Mason University School of Law; Charlottesville, Va.

Horace Blackman, Vice Rector, BA, George Mason University; MBA, University of Virginia; Falls Church, Va.

Simmi Bhuller, Secretary, BA, George Mason University; Falls Church, Va.

Anjan Chimaladinne, MS, George Mason University; South Riding, Va.

Thomas M. Davis, BA, Amherst College; JD, University of Virginia Law School; Vienna, Va.

Juan Carlos Iturregui, JD, Catholic University; Bethesda, Md.

Mehmood S. Kazmi, MBA, Harvard University; Great Falls, Va.

Wendy Marquez, BA, University of Maryland; McLean, Va.

Ignacia S. Moreno, JD, New York University School of Law; McLean, Va.

Carolyn J. Moss, BA, Howard University; McLean, Va.

Jon M. Peterson, BA, Middlebury College; Fairfax Station, Va.

Nancy Gibson Prowitt, BA, DePauw University; Arlington, Va.

Paul J. Reagan, JD, George Mason University School of Law, Springfield, Va.

Edward H. Rice, MS, The American University, Vienna, Va.

Denise Turner Roth, BS, George Mason University; Greensboro, NC.

Bob Witeck, BA, University of Virginia; Arlington, Va.

Lauren Reuscher (staff liaison), MA, George Mason Uniersity; Fairfax, Va.

Shelby Adams (undergraduate student representative), working on BS in Criminology, Law, and Society with a minor in Legal Studies; Lorton, Va.

Lilianna Deveneau (graduate student representative), working on MA in Sociology; Alexandria, Va.

Faculty Senate Chair (to be determined)

Administration

University President: **Gregory Washington, PhD**
Provost and Executive Vice President for Academic Affairs: **Mark Ginsberg, PhD**
Senior Vice President for Administration and Finance: Carol Dillon Kissal, MBA

Chief of Staff and Vice President for Strategic Initiatives: Kenneth Walsh, PhD

Vice Presidents

Vice President and Chief Audit, Risk, and Compliance Officer: Edward Dittmeier, BS

Vice President for Strategic Communications and Marketing: **Paul Allvin, BS**
Vice President for Compliance, Diversity, and Ethics: Dietra Trent, PhD (interim)

Vice President for Enrollment Management: David Burge, MA

Vice President for Facilities: Frank Strike, MS

Vice President for Finance: Deb Dickenson, MBA

Vice President for Government and Community Relations: Paul J. Liberty, BA

Vice President for Human Resources and Payroll: Lester L. Arnold Sr., MBA

Vice President for Information Technology: Kevin Borek, MBA

Vice President for Research, Innovation & Economic Development: Andre Marshall, PhD

Vice President for University Advancement and Alumni Relations: Trishana Bowden, BS

Vice President for University Life: Rose Pascarell, MA

Assistant Vice President and Director of Intercollegiate Athletics: Brad Edwards, MBA

Deans and Directors

Dean, College of Education and Human Development: Robert Baker, Ed.D (interim)

Dean, College of Health and Human Services: Germaine Louis, PhD

Dean, College of Humanities and Social Sciences: Ann Ardis, PhD

Dean, College of Science: Fernando R. Miralles-Wilhelm, PhD

Dean, College of Visual and Performing Arts: Richard A. Davis, DFA

Dean, George Mason University Korea: Robert Matz, PhD

Dean, Honors College: Zofia Burr, PhD

Dean, School of Business: Maury Peiperl, PhD

Dean, Jimmy and Rosalynn Carter School for Peace and Resolution: Alpaslan Özerdem, PhD

Dean, Antonin Scalia Law School: Ken Randall, JD

Dean, Schar School of Policy and Government: Mark Rozell, PhD

Dean, Volgenau School of Engineering: Kenneth S. Ball, PhD

Office of the Provost - Academic Affairs

Associate Provost for Academic Administration: Renate Guilford, MA

Associate Provost for Academic Initiatives and Services: Janette Kenner Muir, PhD

Associate Provost for Faculty Affairs and Development: Kimberly Eby, PhD

Associate Provost for Graduate Education: Laurence C. Bray, PhD

Associate Provost for Institutional Research and Assessment: Gesele Durham, PhD

Associate Provost for Sustainable Earth: Cody Edwards, PhD

Associate Provost for Undergraduate Education: Bethany M. Usher, PhD

University Registrar: Doug McKenna, MA

University Libraries

University Librarian: John Zenelis, MLS, MA

Campuses and Instructional Sites

Mason is a distributed university, with regional campuses in Fairfax, Arlington, and Prince William counties, an international branch campus in Songdo, South Korea, and instructional sites in Loudoun County, Herndon, Lorton, Woodbridge, and Front Royal. Each Mason campus has a distinctive academic focus that plays a critical role in the economy of its surrounding region. At each campus, students and faculty have access to all the university's resources, while the duplication of programs and support services is minimized through the use of technology.

Fairfax Campus

Situated on 677 acres of wooded land, the Fairfax Campus offers a wealth of opportunities beyond the numerous academic programs and is the principal center for undergraduate residence and life. The resident student population of 6,023 is expected to grow to more than 7,000 during the next few years as new residential units are constructed.

The George W. Johnson Center, the first building of its kind in the country, fosters university-wide learning by integrating students' curricular and extracurricular activities and strengthening relationships among university communities.

The Center for the Arts and the EagleBank Arena (formerly the Patriot Center) offer numerous opportunities to experience the arts, as well as sports and other entertainment. Professional artistic events presented on campus include music and dance from around the world and regional, national, and international visual art exhibitions. Free tickets are available to these events for full-time Mason students.

The Aquatic and Fitness Center provides state-of-the-art exercise equipment and competitive and recreational swimming to the university community and outside teams. The 120,000 square foot Recreation and Athletic Complex (formerly the PE Building) boasts three gymnasiums, two racquetball courts, two squash courts, and a two-story fitness gallery. Additional equipment and exercise space is also available in Skyline Fitness, adjacent to the residence halls.

Arlington Campus

The Arlington Campus, established in 1979, is located near Washington, D.C., on 5.2 acres of land. Mason's most urban location, the Arlington Campus is situated conveniently in the Virginia Square neighborhood and offers easy access via Metro and key transportation routes.

The campus has a strong focus on professional and graduate education and is home to the Antonin Scalia Law School, the Schar School of Policy and Government (formerly SPGIA) and the School for Conflict Analysis and Resolution. The Arlington Campus is also home to graduate programs in nonprofit management and arts management. In addition, the School of Business now offers its Executive MBA, Accounting, MS and Real Estate Development, MS programs in Arlington. Continuing and Professional Education is redefining the way we offer executive and professional education. In addition to these executive, graduate and professional programs, some undergraduate courses are also available in Arlington.

The Arlington Campus is home to the Mercatus Center and the Institute for Humane Studies, independent initiatives affiliated with the university. The Law and Economics Center (LAW), Center for World Religions, Diplomacy, and Conflict Resolution (S-CAR), Center for Regional Analysis (SCHAR) and the Interdisciplinary Center for Economic Science (CHSS) are some of the many research centers located at the Arlington Campus.

The campus includes four buildings: Hazel Hall, Van Metre Hall (formerly Founders Hall), and Vernon Smith Hall. Van Metre Hall, which opened on the campus in 2011, provides 256,000 square feet of space for academic and student support services. In addition, the building features a 300-seat auditorium, a public plaza, and a large multipurpose room. These additional spaces enable the university to highlight and showcase much of the exciting work taking place at the Arlington Campus - as well as throughout the university - through the hosting of conferences, meetings and other events. During the next five years the campus will undergo a $250 million transformation. With it will be the creation of the Rosslyn-Ballston Innovation Corridor, an innovation district that will be the first of its kind in Virginia.

Science & Technology Campus

The Science & Technology Campus (SciTech), established in 1997, is the nucleus of the largest research business park in Northern Virginia, Innovation Park. The 134 acres campus in Manassas is surrounded by advanced technology companies and agencies. The campus serves all of Northern Virginia and offers convenient access to the university for citizens of Prince William, Fauquier, and western Fairfax counties; the cities of Manassas and Manassas Park; and adjoining areas to the west and south. A major focus of the campus is research and academic programs in the life sciences, including biodefense and infectious diseases, cancer proteomics, genomics, medical education and bioinformatics. Graduate studies in Advanced Biomedical Sciences are offered for students preparing for medical school or careers in health professions. Programs in nursing, teacher education, information technology, health and fitness, recreation, exercise science, health promotion, parks and outdoor recreation, sport management, therapeutic

recreation, tourism and events management, and athletic training also are offered on the campus.

Campus resources available to all university students, faculty, and staff include a full-service library, large drop-in computer lab, information center, University Police, university bookstore, dining services, student lounge, shuttle bus service between the Fairfax and SciTech Campuses, and full complement of student and academic services. In addition, there are numerous opportunities to get involved in campus life through a variety of co-curricular and extracurricular activities.

Many campus facilities and services are available to serve university and community needs. The 300-seat Verizon Auditorium located in Colgan Hall boasts innovative audiovisual technologies suitable for presentations, meetings, and ceremonies, along with lobby space for receptions and displays. The campus is also home to the Virginia Serious Game Institute, located in the Katherine G. Johnson Building, where students and faculty can pursue true multidisciplinary translational applied-research in Simulation, Modeling, and Game Design and Development. A new partnership on the SciTech Campus between Mason and the Uniformed Services University allows, Army, Air Force, Marine, and Navy service members to remain on active duty during two years of preparatory coursework for application to medical school.

The campus comprises eight buildings: three research facilities, two academic buildings, a student housing facility, a recreation and fitness center and a performing arts center. Graduate student housing with ground level retail space opened in fall 2012. Through mutually beneficial partnerships with local government and area businesses, the campus has positioned itself to tap into the unique assets of the surrounding community while providing access to university resources and programs for students and citizens. The university's Biomedical Research Laboratory (BRL) opened in 2010. This regional biocontainment facility, the largest of only 12 facilities of its kind in the nation, is funded in part by the National Institute of Allergy and Infectious Diseases and houses research on emerging infectious diseases and those caused by biological threat agents.

The 110,000-square-foot Freedom Aquatic & Fitness Center™ offers state-of-the-art exercise equipment, group fitness programs, a full gymnasium with elevated track, and recreational and instructional swimming in a 50-meter competition pool, classrooms, and other meeting spaces. It is also home to EDGE, Mason Center for Team and Organizational Learning's Challenge Course. The SMART Laboratory-Freedom Center is a 2,000 square foot facility that serves as the primary research facility for faculty and students in the Athletic Training and Sports Medicine degree programs.

Prince William County, the City of Manassas, and Mason have joined to create the region's first state-of-the-art performing arts center. The Hylton Performing Arts Center, opened in 2010, provides outstanding professional performances by artists from around the world in world-class venues. With resources for community arts groups; regional business, civic, and service organizations; county and city school students and teachers; Mason students and faculty, The Hylton Performing Arts Center educates, entertains, and enriches the community.

The Governor's School @ Innovation Park began conducting dual-enrollment classes for high school guest matriculates at the SciTech Campus in 2010.

George Mason University Korea

GMU Korea was established in 2014 as part of the Incheon Global Campus, aiming to become the best global education hub in Northeast Asia. George Mason University was invited by the Incheon Free Economic Zone Authority to come to Songdo and participate in an innovative initiative to educate the next generation of global leaders. GMU Korea now offers U.S. degrees in five undergraduate disciplines. Approved by the Korean Ministry of Education, the degree programs offered afford students the unique opportunity to spend three years at GMU Korea in Songdo and one year in the U.S. at Mason in Fairfax, Virginia. When these students graduate, they receive the same degree as all students from George Mason University.

Instructional Sites

Mason in Loudoun, conveniently located directly on Route 7 in Sterling, Virginia, connects students and businesses in one of the nation's fastest-growing areas to one of the Commonwealth's premier universities. Mason in Loudoun offers undergraduate and graduate level coursework in nursing, health science, education, information technology, leadership studies and management. Professional and executive education programs are also held at this site, as well as classes through the Osher Lifelong Learning Institute. Co-located with Northern Virginia Community College in leased space adjacent to their Loudoun Campus, Mason in Loudoun offers students the same privileges and access as those on Mason's Fairfax, Arlington, and SciTech Campuses.

Smithsonian Mason School of Conservation (https://smconservation.gmu.edu/) was established as a partnership between the Smithsonian Institution and George Mason University to provide experiential education for current and future generations of global conservation professionals, leaders, and practitioners. Located in in Front Royal, Virginia, the campus offers undergraduate, graduate and certificate programs for students and professionals.

Faculty

Instructional and Administrative Faculty 2021 - 22

The faculty list reflects appointments as of March 2021.

A

Abdelfattah, Belal, Assistant Professor of Information Systems and Operations Management. BBA 2004, MBA 2006, PhD 2013, University of Texas at El Paso.

Abramson, Alan J., Professor, Schar School of Policy and Government. BA 1976, Wesleyan University; MA 1977, MPhil 1979, PhD 1990, Yale University.

Abratt, Russell, Professor of Marketing. B. Comm 1974, University of the Witwatersrand; MBA 1977, DBA 1981, University of Pretoria.

Acs, Zoltan J., University Professor of Public Policy. Director, Center for Entrepreneurship and Public Policy. BA 1972, Cleveland State University; MA 1974, PhD 1980, The New School.

Adams, Leah, Assistant Professor, Psychology and Women & Gender Studies. BS 2008, University of Richmond; PhD 2014, George Mason University.

Adelman, Leonard, Professor, Systems Engineering and Operations Research, Volgenau School of Engineering.. BA 1971, Florida State University; MA 1973, PhD 1976, University of Colorado.

Agnarsson, Geir, Associate Professor, Mathematical Sciences. BS 1990, University of Iceland; PhD 1996, University of California, Berkeley.

Aguirre, A. Alonso, Professor and Chair, Environmental Science and Policy. PhD 1990, Colorado State University.

Ahmad, Afra, Term Assistant Professor of Psychology and Director of the MPS Program. BA 2008, MA 2012, PhD 2016, George Mason University.

Ahmadi, Pouyan, Assistant Professor, Information Sciences and Technology, Volgenau School of Engineering. BS 2006, Azad University; MS 2009, Iran University of Science and Technology; PhD 2015, George Mason University.

Ahn, Changwoo, Professor, Environmental Science and Policy. BS 1992, MS 1996, Seoul National University; PhD 2001, The Ohio State University.

Aidoo, Abena, Associate Professor, Tourism and Events Management, School of Sport, Recreation, and Tourism Management. BA 1997, University of Ghana; MHRD 2002, Clemson University; PhD 2010, University of Delaware.

Aier, Jagadison, K., Associate Professor of Accounting. B.Com 1990, Calcutta University; MBA 1995, International Management Institute; MAIS 2002, PhD 2008, Arizona State University.

Ainsworth, Melissa, Assistant Professor, School of Education in the College of Education and Human Development. BA 1986, West Virginia University; MA 1988, University of Wyoming; MEd 1999, PhD 2014, George Mason University.

Akerlof, Karen L., Assistant Professor, Environmental Science and Policy. BA 1991, University of Michigan, Ann Arbor; MS 2009, PhD 2012, George Mason University.

Albanese, Denise, Director, Cultural Studies PhD Program; Professor, English and Cultural Studies. BA 1978, New York University; PhD 1987, Stanford University.

Albanese, Massimiliano, Associate Professor, Information Sciences and Technology, Volgenau School of Engineering. BS, MS 2002, Laurea; PhD 2005, University of Naples "Federico II".

Aldatmaz, Serdar, Assistant Professor of Finance. BA 2008, Koc University; PhD 2013, University of North Carolina at Chapel Hill.

Alemi, Farrokh, Professor, Health Administration and Policy. BS 1976, MS 1978, PhD 1983, University of Wisconsin-Madison.

Aler, John, Associate Professor of Music, Reva and Sid Dewberry Family School of Music, College of Visual and Performing Arts. BM 1971, MM 1972, Catholic University of America.

Al-Seoudi, Nizar Jebril Ibrahim, Term Assistant Professor of Arabic. BA 2002, MA 2006, PhD 2011 University of Jordan, Amman, Jordan.

Allbeck, Jan M., Associate Dean, Honors College. Associate Professor, Computer Science. BS 1995, Bloomsburg University; MS 1997, PhD 2009, University of Pennsylvania.

Allen, Susan H., Associate Professor of Conflict Analysis and Resolution, Jimmy and Rosalynn Carter School for Peace and Conflict Resolution. BA 1992, University of Virginia; MS 1995, PhD 2000, George Mason University.

Altug, Mehmet, Associate Professor of Information Systems and Operations Management. BS 1996, Bogazici University; MS 1998, University of Florida; M.Phil 2006, PhD 2009, Columbia University.

Ambegaonkar, Jatin, Professor, Athletic Training, School of Kinesiology. BS 1998, T. N. Medical College, India; MS 2003, Springfield College; PhD 2006, University of North Carolina, Greensboro.

Amireh, Amal, Associate Professor, English. BA 1983, Birzeit University, Palestine; MA 1987, PhD 1997, Boston University.

Amiri, Mehdi, Assistant Professor. BS 2006, University of Tehran; 2011 PhD, Louisiana State University.

Ammann, Paul E., Associate Professor, Computer Science, Volgenau School of Engineering. AB 1983, Dartmouth College; MS 1985, PhD 1988, University of Virginia.

Anacker, Katrin B., Associate Professor, Schar School of Policy and Government. MA 1999, MCRP 1999, PhD 2006, Ohio State University.

Anand, Priyanka, Associate Professor of Health Administration and Policy. BA 2002, University of California, Berkeley; MA 2009, MPhil 2009, PhD 2012, Yale University.

Anastasopoulos, Antonios, Assistant Professor, Computer Science, Volgenau School of Engineering. MS 2014, National Technical University of Athens; PhD 2019, University of Notre Dame.

Anclien, Christopher, Director of Human Resources and Planning, Schar School of Policy and Government. BS 2004, American University; JD, 2008, George Mason University.

Andalibi, Ali, Professor and Senior Associate Dean for Faculty Affairs and Strategic Initiatives, College of Science. BS 1983, University of South Carolina; PhD 1990, University of California, Los Angeles.

Anderson, Daniel M., Professor, Mathematical Sciences. BA 1989, St. Olaf College; PhD 1993, Northwestern University.

Anderson, Eric G., Associate Professor, English. AB 1981, Rutgers College; MA 1983, PhD 1994, Rutgers University.

Anderson, Jacqueline, Director, Human Resources, College of Education and Human Development. BA 1988, Saint Leo University.

Andre, Matthew J., Assistant Professor, School of Kinesiology, College of Education and Human Development. BS 2008, MS 2010, George Mason University; PhD 2014, University of Kansas.

Andrea, Kevin, Instructor of Computer Science. BS 2012, MS 2014, George Mason University.

Antil, Harbir, Associate Professor, Mathematical Sciences. BS 2004, St. Stephen's College; MS 2006, PhD 2009, University of Houston.

Appel, Robert, Director, Marketing and Communications, School of Business. BS 1979, University of Maryland.

Archer, Graham, Senior Research Engineer, Rapid Prototyping Research Center, Volgenau School of Engineering

Ardis, Ann L., Professor and Dean, College of Humanities and Social Sciences. BA 1979, University of Kansas; MA 1982, PhD 1988, University of Virginia.

Ascoli, Giorgio A., University Professor, Bioengineering, Volgenau School of Engineering. Director, Center for Neural Informatics. BS 1991, Scuola Normale Superiore, Italy; MS 1993, Pisa University, Italy; PhD 1996, Scuola Normale Superiore.

Ashley, Jennifer, Term Assistant Professor of Global Affairs, BA 1999, Kenyon College; MA 2004, PhD 2011, Brown University.

Ashraf-Hassan, Saima, Term Instructor of French. DREA 1998, Institute des Langues et Civilisations Orientales, Paris, France; LLM 2008, Washington College of Law, American University.

Atkinson, Jennifer H., Professor, English. BA 1978, Wesleyan University; MFA 1984, MA 1985, University of Iowa.

Auerswald, Philip E., Associate Professor, Schar School of Policy and Government. BA 1988, Yale University; MA 1995, PhD 1999, University of Washington.

Auffret, Jean-Pierre, Director, Research Partnerships and Grant Initiatives and Assistant Professor, School of Business. BS 1979, Duke University; MBA 1982, University of Virginia; PhD 1999, American University.

Auld, Eric, Term Instructor of English. BA 2007, State University of New York at Plattsburgh; MA 2009, College of Saint Rose.

Austin, Leila, Assistant Professor of Business Foundations. BA 1989, Bryn Mawr College; MA 1993, Johns Hopkins University; PhD 2006, Columbia University.

Avila, Kimberly A. Assistant Professor, School of Education in the College of Education and Human Development. BS 1998, Colorado State University; MA 2000, University of Northern Colorado.

Avramovic, Ivan, Instructor of Computer Science. BS 1997, University of Illinois, Urbana-Champaign; MS 2012, George Mason University.

Avramovic, Sanja, Assistant Professor of Health Administration and Policy. MS, University of Belgrade; PhD 2015, George Mason University.

Axtell, Robert, Professor, Computational and Data Sciences. BS 1983, University of Detroit; PhD 1992, Carnegie Mellon University.

Aydin, Hakan, Professor, Computer Science, Volgenau School of Engineering. BS 1991, MS 1994, Istanbul Technical University; PhD 2001, University of Pittsburgh.

Aylsworth, Julie Higgins. Assistant Professor, School of Sport, Recreation, and Tourism Management, College of Education and Human Development. BS 1998, MA 2003, PhD 2006, The Ohio State University.

Azam Salahuddin, Syed, Director of Fiscal Services, Schar School of Policy and Government. BS 1996, Indiana University; MBA 2003, Vanderbilt University.

Azar, Tawnya, Term Assistant Professor of English. BA 2007, Randolph College; MA 2009, PhD 2018, George Washington University.

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Randolph Lytton, BA, MA, PhD, *Associate Professor Emeritus of History*

James Eugene Maddux, BA, MA, PhD, *Professor Emeritus of Psychology*

Julianne Mahler, BA, MA, PhD, *Professor Emerita of Public and International Affairs*

Joyce L. Malcolm, BA, MA, PhD, *Professor Emerita*

Catherine Malloy, BSN, MPH, DrPH, *Professor Emerita of Health, Fitness, and Recreation Resources*

Bruce Manchester, BS, MA, PhD, *Professor Emeritus of Communication*

William R. Martin, BA, MA, PhD, *Professor Emeritus of Education*

Stephen Mastrofski, BA, PhD, *University Professor Emeritus*

Margo Mastropieri, BA, MEd, PhD, *University Professor Emeritus of Education*

Carol C. Mattusch, BA, PhD, *Professor Emerita of History and Art History*

Joseph Maxwell, BA, PhD, *Professor Emeritus of Education*

William J. McAuley, BA, PhD, *Professor Emeritus of Communication*

Kevin McCrohan, BS, MBA, PhD, *Professor Emeritus of Marketing*

Michael J. McDermott, AB, PhL, *Associate Professor Emeritus of Philosophy and Religious Studies* and *Registrar Emeritus*

Hazel M. McFerson, BA, MA, PhD, *Professor Emerita of International Affairs*

Gustavo Mellander, AB, MA, PhD, DHL, *Dean Emeritus of the Graduate School of Education*

Barbara Melosh, BA, MA, PhD, *Professor Emerita of English*

Henry P. Meyer, BA, MA, PhD, *Associate Professor Emeritus of French*

Margaret Miklanice, LPN, ADN, BSN, MSN, PhD, *Associate Professor Emerita of Nursing*

John Miller, BA, MS, PhD, *Associate Professor Emeritus of Statistics*

Christopher Mitchell, BSc, PhD, *Professor Emeritus of Conflict Analysis and Resolution*

Mary S. Montebello, BS, MS, PhD, *Professor Emeritus of Conflict Analysis and Resolution*

Jean Burley Moore, BSN, MSN, PhD, *Professor Emerita of Nursing*

Winston Moore, JD, *Associate Dean Emeritus of the School of Law*

Margaret Moss, Dip, BSN, MSN, PhD, *Professor Emerita of Nursing*

Robert L. Nadeau, BA, MA, PhD, *Associate Professor Emeritus of English*

Stephen Nash, BS, PhD, *Professor Emeritus of Systems Engineering and Operations Research*

Hung M. Nguyen, LLB, MA, PhD, *Associate Professor Emeritus of Government and Politics*

Len Nichols, BA, MA, MS, PhD, *Professor Emeritus*

Loretta A. Normile, BSN, MN, PhD, *Associate Professor Emerita of Nursing*

Priscilla Norton, BS, MS, EdD, *Professor Emerita of Education*

Sarah Nutter, BS, MBA, PhD, *Professor Emerita of Accounting*

John S. O'Connor, BA, MA, PhD, *Professor Emeritus*

John Paden, BA, MA, PhD, *Clarence J. Robinson Professor Emeritus of International Studies*

Roger Paden, AB, AM, PhD, *Associate Professor Emeritus of Philosophy*

Ann Palkovich, AB, MA, PhD, *Professor Emerita of Anthropology*

James D. Palmer, BS, MSEE, PhD, *Professor Emeritus of Information Technology and Engineering*

Anthony F. Palmieri, BA, MA, PhD, *Associate Professor Emeritus of English*

Dimitrios Papaconstantopoulos, BS, DIC, MS, PhD, *Professor Emeritus of Computational and Data Sciences*

Wayne D. Perry, BS, MS, PhD, *Professor Emeritus of Public Policy*

Paula Petrik, AB, MFA, MA, PhD, *Professor Emerita of History and Art History*

James P. Pfiffner, BA, MA, PhD, *University Professor Emeritus*

Samuel H. Phillips Jr., BA, MA, PhD, *Professor Emeritus of Economics*

Daniel D. Polsby, BA, JD, *Dean and Professor Emeritus*

Roman Polyak, PhD, *Professor Emeritus*

Serguei Popov, MS, PhD, ScD, *Professor Emeritus*

J. Mark Pullen, BS, MS, DSc, *Professor Emeritus of Computer Science*

Miriam Raskin, BA, MSW, EdD, *Professor Emerita of Social Work*

Georgine Redmond, BSN, MN, EdD, *Associate Professor Emerita of Nursing*

Janine Ricouart, PhD, *Professor Emerita of Modern and Classical Languages*

Linda G. Rikard, BS, MEd, EdD, *Associate Professor Emerita of Education*

David Rine, BS, MS, PhD, *Professor Emeritus of Computer Science*

Dennis Ritchie, BA, MSW, PhD, *Professor Emeritus*

Larry L. Rockwood, BS, PhD, *Professor Emeritus*

Johannes Rojahn, PhD, Professor Emeritus of Psychology

Karen Rosenblum, BA, PhD, *Professor Emerita of Sociology*

Katherine Rowan, BA, MA, PhD, *Professor Emerita of Communication*

Paulette Royt, BS, MD, PhD, *Professor Emerita of Biology*

Catherine E. Rudder, BA, MA, PhD, *Professor Emerita of Public Policy*

Robert Rugel, BA, PhD, *Associate Professor Emeritus of Psychology*

Robert O. Ruhling, BS, MA, PhD, FACSM, *Professor Emeritus of Physical Education*

Amelia A. Rutledge, BA, MPHIL, PhD, *Associate Professor Emerita of English*

John F. Sacco, BA, MPA, PhD, *Associate Professor Emeritus of Government and Politics*

Mian M. Saeed, BA, MA, PhD, *Professor Emeritus of History*

Victoria Salmon, BA, MA, DA, *Associate Dean Emeritus of Graduate Studies*

Linda Bartman Samuels, BA, MPA, JD, *Professor Emerita of Business Legal Studies*

Sylvia Y. Sanchez, BS, MS, EdD, *Associate Professor Emerita of Education*

Ben F. Sands Jr., MBA, DBA, *Associate Professor Emeritus of Management*

James Francis Sanford III, BA, MS, PhD, *Professor Emeritus of Psychology*

Stephen H. Saperstone, BEP, MA, PhD, *Professor Emeritus of Mathematics*

David H. Schaefer, BS, *Associate Professor Emeritus of Electrical and Computer Engineering*

Edwin Schneider, AB, MS, PhD, *Professor Emeritus of Atmospheric, Oceanic, and Earth Sciences*

Paul S. Schopf, ScB, ScM, PhD, *Professor Emeritus of Atmospheric, Oceanic and Earth Sciences*

Betty J. Schuchman, BS, MS, EdD, *Associate Professor Emerita of Education*

Linda Schwartzstein, AB, JD, LLM, PhD, *Vice Provost and Professor Emerita of Higher Education*

Thomas Scruggs, BA, MEd, PhD, *University Professor Emeritus of Education*

Carol J. Sears, BS, MS, PhD, *Associate Professor Emerita of Education*

Linda Seligmann, BA, MA, PhD, *Professor Emerita*

Jay Shaffer, BS, PhD, *Professor Emeritus of Biology*

Jay Shapiro, BS, PhD, *Professor Emeritus of Mathematical Sciences*

Mary Silva, BS, MS, PhD, *Professor Emerita of Nursing*

David Singman, BS, MS, PhD, *Professor Emeritus*

Judith Skog, BS, MS, PhD, *Professor Emerita of Environmental Science and Policy*

Shannon Skousgaard, BA, MA, PhD, *Associate Professor Emerita of Philosophy*

Carlos Sluzki, MD, *Professor Emeritus of Global and Community Health*

James G. Smith, BM, MM, DMA, *Professor Emeritus of Music*

Robert F. Smith, BA, MA, PhD, *Professor Emeritus of Psychology*

Robert G. Smith, BA, MA, PhD, *Associate Professor Emeritus of Education*

Vernon L. Smith, BSEE, MA, PhD, *University Professor Emeritus*

Hugh Sockett, BA, MA, MA, MA, PhD, *Professor Emeritus of Policy and Government*

John P. Soder, BA, MA, PhD, *Associate Professor Emeritus of History*

Arun K. Sood, BTech, MS, PHD, *Professor Emeritus of Computer Science*

Jeanne Sorrell, PhD, RN, FAAN, *Professor Emerita of Nursing*

Valery Soyfer, BA, MA, PhD, *Distinguished University Professor Emeritus*

Melissa Stanley, BS, MA, PhD, *Professor Emerita of Biology*

Peter N. Stearns, AB, AM, PhD, *Provost Emeritus of George Mason University*

Patrick Story, *Associate Professor Emeritus of English*

William Sutton, BS, MS, PhD, *Associate Professor Emeritus of Electrical and Computer Engineering*

Eileen Sypher, AB, PhD, *Professor Emeritus of English*

Daniel Tabak, BSEE, MS, PhD, *Professor Emeritus of Information Technology and Electrical Engineering*

Stephen R. Taub, AB, PhD, *Professor Emeritus of Biology*

Anita Taylor, BS, MS, PhD, *Professor Emerita of Communication*

Wayne Thomas, BA, MEd, PhD, *Professor Emeritus of Education*

Eva K. Thorp, BA, MA, EdD, *Associate Professor Emerita of Education*

Susan E. Tichy, BA, MA, *Professor Emerita of English*

Ellen Todd, BA, MA, PhD, *Associate Professor Emerita of History and Art History*

Albert Torzilli, BA, PhD, *Associate Professor Emeritus of Environmental Science and Policy*

Toni-Michelle C. Travis, BA, MA PhD, *Professor Emeritus of Policy and Government*

C. Alan Turner, BS, MA, MPA, PhD, *Professor Emeritus of Criminology, Law and Society*

Zita Tyer, PhD, *Professor Emerita of Psychology*

James D. Vail, BSN, MSN, PhD, *Associate Professor Emeritus of Nursing*

Harry Van Trees, BSc, MS, ScD, *University Professor Emeritus of Electrical Engineering*

Karen Vaughn, BA, MA, PhD, *Professor Emerita of Economics*

Jenice View, BA, BA, MA, MPA, PhD, *Professor Emerita of Education*

Rex A. Wade, BA, MA, PhD, *University Professor Emeritus of History and Art History*

Irmgard Wagner, MA, PhD, *Professor Emerita of German*

Dorothy J. Walker, BSNE, MSNE, PhD, JD, *Professor Emerita of Nursing*

Gerald Wallace, BS, MEd, EdD, *Professor Emeritus of Education*

Pearl Wang, BA, MA, PhD, *Associate Professor Emerita of Computer Science*

Patricia Wanschura, BA, MA, PhD, *Associate Professor Emerita of Psychology*

Keith Q. Warner, D.de l'U *Professor Emeritus of French*

Harry Wechsler, BS, MS, PhD, *Professor Emeritus of Computer Science*

Lenore J. Weitzman, BS, PhD, *Clarence J. Robinson Professor of Sociology and Law Emerita*

Inge Wekerle, BA, AM, PhD, *Assistant Professor Emerita of German*

C. Stephen White, BA, MA, PhD, *Professor Emeritus of Education*

Louise White, PhD, *Professor Emerita of Public and International Affairs*

Frank Whittington, BA, MA, PhD, *Professor Emeritus of Gerontology*

Philip Wiest, BA, MS, PhD, *Associate Professor Emeritus of Economics*

David K. Wiggins, AB, MA, PhD, *Professor Emeritus of Sports Studies*

James Willett, AB, PhD, *Professor Emeritus of Systems Biology*

Chien-Yun Wu, MSN, DNSC, PhD, *Associate Professor Emerita of Nursing*

Norman A. Yance, BS, BD, ThM, MA, PhD, *Associate Professor Emeritus of Religious Studies*

Margaret R. Yocum, BA, MA, PhD, *Emerita of English*

Terry Zawacki, BA, MA, DA, *Associate Professor Emerita of English*

ADMISSIONS

- Undergraduate Admission Policies
- Graduate Admission Policies
- Admission of International Students
- Non-degree Enrollment
- Academic Testing

Undergraduate Admission Policies

Office of Admissions

4400 University Drive, MS 3A4
Fairfax, VA 22030

Phone: 703-993-2000
Email: admissions@gmu.edu
Website: www2.gmu.edu/admissions-aid

Admission to George Mason University is competitive, and based on a variety of factors. Each applicant who applies for admission must present sufficient qualifications in order to be reviewed within the context of other qualified applicants. An offer of admission is valid only for the semester for which the student applied. Programs with limited space or special requirements may use a second review process for admission.

Applying for Admission

Application for undergraduate admission should be made to the Office of Admissions. Applications are available at www2.gmu.edu/admissions-aid/apply-now (http://www2.gmu.edu/admissions-aid/apply-now/). A non-refundable and non-transferable application fee must accompany the application.

Application Deadlines for Freshmen and Transfer Students

There are several different application deadlines for freshmen and transfer students.

Freshmen Applicants

Freshman Non-Binding Early Action Deadline*	November 1
Freshman Honors College Consideration*	November 1
Freshman University Scholars Consideration*	November 1
Freshman Merit-Based Scholarship Consideration*	November 1
Freshman Regular Decision Deadline	February 1
Freshman Priority Application Deadline (for Spring Semester)	October 1

*All freshman applicants who apply to Mason by 11:59 pm eastern time on November 1 will automatically be considered for merit-based scholarships and our non-binding, Early Action decision.

Freshmen applications received after published deadlines will be considered on a space-available basis only. The university reserves the right to close applications before published deadlines if conditions warrant. Admission is contingent on satisfactory completion of in-progress course work and graduation from high school or community college, if relevant.

Transfer Applicants

Fall Priority Deadline/ GAA Application*	March 1
Spring Priority Deadline/ GAA Application*	October 1

* Please note that the transfer deadlines listed above are the Priority/ GAA Application deadlines. Mason continues to accept applications for general transfer admission after the priority deadlines on a rolling and space-available basis. Late applications are not considered for GAA consideration.

Transfer applications received after published deadlines will be considered on a space-available basis only. The university reserves the right to close applications before published deadlines if conditions warrant. Admission is contingent on satisfactory completion of in-progress course work and graduation from high school or community college, if relevant.

Early Admission

High school juniors who have completed high school graduation requirements except for senior English and government courses may, with the approval of their high school counselor or principal (demonstrated through a letter of recommendation), apply for admission and thereby enter the university as degree-seeking students one year early. Applicants should present exceptional grades, SAT or ACT scores, and a high school course of study demonstrating rigorous academic preparation for university-level work. Competitive candidates will have pursued the most rigorous curriculum available at their school (i.e. AP/ IB/Honors level coursework). Candidates must also submit first semester junior year grades.

Application for a Second Bachelor's Degree

Those holding one or more bachelor's degrees may earn an additional bachelor's degree at Mason in another discipline. Second bachelor's degree applicants must have a conferred degree accredited by a Mason-recognized U.S. accrediting agency, or from a country where the institution is recognized by the Ministry of Education. After admission, students work with the appropriate academic program to develop an approved contract or course of study of at least 30 credits beyond the first degree, taken after admission to the second degree, to meet university residency requirements. Some academic programs will have more stringent requirements. This contract will detail college-level and major requirements that must be met to satisfy graduation requirements.

Re-enrollment after Previous Attendance

Students in good academic standing who have missed one or more consecutive semesters of enrollment (excluding summer term) at Mason, and who do not meet any of the excluded categories listed below under Readmission after Previous Attendance (below), may re-enter by completing a re-enrollment form available through the Office of the

University Registrar (http://registrar.gmu.edu/forms/). Undergraduate students do not need to submit a re-enrollment form if an approved Leave of Absence is on file. Upon re-enrollment, undergraduate students who do not have an approved Leave of Absence on file will be required to meet new catalog year requirements. Some academic programs require departmental approval prior to re-enrollment.

Readmission after Previous Attendance

Undergraduate students who have missed one or more consecutive semesters of enrollment (excluding summer term) at Mason must apply for readmission through the Office of Admissions if any of the following conditions are true:

- The student has not been enrolled at Mason for more than 2 years, and an approved Leave of Absence form is not on file.
- The student is an undergraduate returning after any absence during which he or she studied at another institution without prior written permission of his or her school or college. Such students must reapply as transfer students.
- The student was suspended or dismissed from any college or university for nonacademic reasons.
- The student was academically dismissed from Mason.
- The student was ever convicted of a felony.

Right to Rescind Admission

Mason reserves the right to rescind offers of admission if applicants fail to (1) successfully complete their current academic program, (2) maintain grades that meet the requirements for admission to George Mason, and (3) exhibit exemplary personal conduct prior to enrollment. Additionally, Mason may rescind an offer of admission based on cancellation or change of any test score required for admission or if it is determined that admission was obtained through the use of incomplete, falsified, altered, or embellished information. Mason also reserves the right to impose restrictions or requirements on the admission of a student (e.g., housing or educational restrictions or additional conditions or requirements prior to enrollment) as a result of any of the foregoing. Admitted students are required to timely update the Office of Admissions of any new information that may affect their admission, including, but not limited to, any changes in their participation in their current academic program or their grades, or any conduct related issues (e.g., criminal matters and school discipline matters).

Upon learning of any relevant changes to a student's record, either directly from the student or from a third-party, the Dean of Admissions shall refer the case to the appropriate committee for review. The student shall have an opportunity to provide a written statement to the Dean of Admissions for consideration by the committee. The committee shall make a recommendation to the Dean of Admissions regarding whether the offer of admission should be rescinded or whether any restrictions or additional requirements should be placed on the student. In the case of withdrawal of admission from a matriculated student credit earned at Mason may be withheld.

Records Maintenance and Disposal

All admissions documents, including academic records sent from other institutions, become part of the official university file. Admission credentials are retained for only 12 months. They are subsequently destroyed if any of the following conditions are true:

- The applicant does not register for courses within the period for which the offer of admission is valid.
- The applicant was denied admission.
- The applicant does not respond to requests for additional information.
- The applicant fails to submit a complete application, including all official transcripts and test results.

Freshman

Freshman Requirements

Freshmen applicants to George Mason University are encouraged to apply online by using the Common Application (for those applying to more than one school) or Mason's Online Application (for those applying only to Mason) by visiting www2.gmu.edu/admissions-aid/apply-now (http://www2.gmu.edu/admissions-aid/apply-now/). The following factors are considered when reviewing freshmen applications for admission:

- Cumulative high school grade point average (GPA) for course work completed in grades 9 through 12
- Level of difficulty of course work elected throughout the high school years, particularly in English, mathematics, laboratory science, social science, and foreign language
- Self-reported SAT I or ACT scores*
- For all non-native English speakers, applicants must submit test scores from an English proficiency exam. Test options and score minimums can be found here (https://www2.gmu.edu/admissions-aid/apply-now/how-apply/international/english-proficiency-requirements/).
- Essay(s)
- List of extracurricular activities
- Teacher and/or counselor recommendations

**George Mason University provides the option to either apply Score Optional (see below for more information), or use self-reported SAT I and/or ACT test scores throughout the initial admissions process. If you decide to apply with ACT or SAT scores, George Mason University will use the self-reported SAT and/or ACT test scores as part of our holistic admissions process. However, an admission decision will then be contingent upon receipt of official test scores, sent directly from the testing agency, prior to the first day of classes for the semester in which the student intends to enroll. The Office of Admissions reserves the right to reevaluate an applicant's admissions or scholarship decision upon receipt of official test scores. This reevaluation may result in a change of admissions or scholarship status.*

Please note that some majors have additional requirements beyond those listed in this catalog. For more information please review the 'Majors with Selective Admission' section of the website (https://www2.gmu.edu/admissions-aid/how-apply/freshman/).

Early-action applicants who meet the November 1 deadline will be notified of their non-binding admissions decision in mid-December. Regular decision applicants who meet the February 1 deadline are notified of decisions on a rolling-basis, starting in February. All other applicants are notified on a space-available basis.

The following table specifies the minimum units of college preparatory work required for admission, as well as the minimum units

recommended. The recommended units reflect the typical high school program of students who have been admitted to Mason in recent years.

Note that one unit equals one academic year of study.

Required Minimum

Subject	Bachelor of Arts[1]	Bachelor of Science[2]	Applicants with Specific Majors[3]
English	4	4	4
Social Sciences	3	3	3
Mathematics[4]	3	3	4
Laboratory Science[5]	2	2	3
Foreign Language	2	2	0
Other Academic Electives	3	3	3
Total	**17**	**17**	**17**

1. Refers to students applying for a bachelor of arts, excluding those in the "Applicants with Specific Majors" column
2. Refers to students applying to a bachelor of science degree program, excluding those in the "Applicants with Specific Majors" column
3. Refers to applicants who intend to major in pre-business, chemistry, computer science, engineering, geology, mathematics, or physics
4. Selected from algebra I, algebra II, geometry, trigonometry, analytic geometry, functions, math analysis, pre-calculus or calculus
5. Selected from biology, chemistry, physics, or other advanced lab science

Recommended Minimum

Subject	Bachelor of Arts[1]	Bachelor of Science[2]	Applicants with Specific Majors[3]
English	4	4	4
Social Studies	4	4	4
Mathematics[4]	4	4	5
Laboratory Science[5]	3	3	4
Foreign Language	3	3	3
Other Academic Electives	5	4	3
Total	**23**	**22**	**23**

1. Refers to students applying for a bachelor of arts, excluding those in the "Applicants with Specific Majors" column
2. Refers to students applying for a bachelor of science degree program, excluding those in the "Applicants with Specific Majors" column
3. Refers to applicants who intend to major in pre-business, chemistry, computer science, engineering, geology, mathematics, or physics
4. Selected from algebra I, algebra II, geometry, trigonometry, analytic geometry, functions, math analysis, pre-calculus or calculus
5. Selected from biology, chemistry, physics, or other advanced lab science

Freshman Score Optional Consideration

Score optional review provides an opportunity for applicants to be considered for admission without submitting, or in disregard of, standardized test scores. Admission to Mason remains a competitive process, and score optional candidates are considered on their own merits. Qualifying for score optional review does not guarantee admission to Mason. Qualifications for score optional consideration can be found at www2.gmu.edu/admissions-aid/how-apply/freshman (https://www2.gmu.edu/admissions-aid/how-apply/freshman/).

Dual-Enrollment Policy

The term **dual-enrollment** refers to students being enrolled concurrently in two distinct academic programs or educational institutions. The term is most commonly used in reference to high school students taking college courses while they are still enrolled in a secondary school (i.e., a dual-*enrollment student*), or to the programs that allow high school students to take college-level courses (i.e., a *dual-enrollment program*). If you have enrolled in, or will have completed dual-enrollment college coursework prior to high school graduation, be certain to indicate this on the admission application. Dual-enrollment students are responsible for notifying the Office of Admissions of all dual-enrollment coursework at the time of application, and providing official transcripts of all course work attempted at other colleges/universities at the completion of those courses.

All dual-enrollment students are considered freshman applicants regardless of the number of college-credits earned while in dual-enrollment status. Students taking dual enrollment courses will be evaluated using our transfer credit policy (https://www2.gmu.edu/admissions-aid/how-apply/transfer/transfer-credit-policy/), and will receive a formal evaluation of credit from the Office of Admissions upon receipt of the final official transcript following admission and receipt of enrollment deposit. Please click here (https://admissions.gmu.edu/transfer/transferCreditSearch.asp?_ga=1.161425407.398027023.1483996478) to search for courses using our Transfer Credit Matrix.

Coursework from institutions not included in the admission application will not be eligible for credit. George Mason University reserves the right to revoke admission, withhold the award of credit, or disenroll students who fail to indicate all previous institutions attended on the admission application.

Acceptance of Freshman Admission Offer

Mason complies with the national freshman candidate reply date of May 1. Students must confirm their intent to enroll by completing the enrollment confirmation online. The deposit is non-refundable after May 1.

Deferral of Freshman Admissions Offer

Under certain circumstances, students unable to enroll may defer their freshman admission to the next semester (e.g.: Fall to Spring) or next year (e.g.: Fall to Fall) after submission of the enrollment deposit. Requests to defer must be made through the online admissions portal no later than the first day of the semester for which you were initially admitted if you wish to request a deferral. Submitting a request to defer admissions does not guarantee that your deferral request will be approved. If a deferral is granted, students may not take courses at any other college or university during the period of the deferral.

Transfer

Transfer Requirements

Students who have graduated from high school and subsequently attempted course work at a college or university are considered transfer applicants. The Admissions Committee considers each transfer application individually and reviews all grades received in courses attempted, as well as the rigor of the applicant's academic program. Transfer applicants are generally expected to present 24 transferable credit hours, including courses to fulfill the Mason Core requirements in English Composition and mathematics, with a 2.75 minimum cumulative grade point average (a 2.85 is required for GAA applicants). Transfer admission is competitive and the number of applications received annually exceeds the available spaces in the transfer class. **Meeting minimum standards does not assure transfer admission.**

Transfer applicants who have earned less than 24 transferable credit hours are evaluated for admission on the basis of their secondary school record, as well as any post-secondary coursework attempted. Such applicants must provide an official high school transcript or secondary school leaving certificate (final transcript) and official transcripts from all colleges and universities attended. In concordance with Mason's Score Optional Consideration Guidelines, students may decide if they would like to submit SAT and/or ACT scores as a part of their application. If the ACT and/or SAT test scores are required, George Mason University will use the self-reported SAT and/or ACT test scores as part of our holistic admissions process. However, an admission decision will then be contingent upon receipt of official test scores, sent directly from the testing agency, prior to the first day of classes for the semester in which the student intends to enroll. Transfer applicants who have earned more than 24 transferable credit hours upon application, or who have graduated from high school more than 5 years prior to the term for which they are applying, may be exempted from providing the secondary school record and official SAT I or ACT results at the discretion of the Admissions Committee. All transfer applicants are required to declare a specific major on the application to benefit from academic advising within their intended program.

All non-native English speakers are required to meet the University's English language proficiency requirement. Applicants can find additional information about this requirement, test options and test minimums here (https://www2.gmu.edu/admissions-aid/apply-now/how-apply/international/english-proficiency-requirements/). Undergraduate applicants may present six credits of English Composition from a U.S. college or university holding Mason recognized accreditation (https://www2.gmu.edu/admissions-aid/apply-now/how-apply/transfer/transfer-credit-accredited-universities/). Each course must be completed with grades of C or better and be approved by the Department of English and the Admission Committee. ESL and remedial courses will not be considered..

Virginia Community College System and Richard Bland College graduates transferring with Associate of Arts, Associate of Arts and Sciences, or Associate of Science transfer degrees may be considered for GAA admission via the Guaranteed Admission Agreement (https://www2.gmu.edu/admissions-aid/how-apply/transfer/virginia-guaranteed-admission-agreements/). Virginia Community College students without transfer degrees and those transferring from other institutions will be considered for regular transfer admission. GAA or regular admission status is specifically noted in the transfer admission letter. Decisions concerning GAA eligibility are made based on the Guaranteed Admissions Agreement (https://www2.gmu.edu/admissions-aid/how-apply/transfer/virginia-guaranteed-admission-agreements/), and are not subject to appeal.

Students on active academic or non-academic suspension or dismissal are not eligible for admission. The Office of Admissions reserves the right to admit students who are on active academic or non-academic suspense or dismissal on a case-by-case basis, especially if the infraction occurred more than 5 year prior to the term for which the applicant is applying.

Transfer Credit

Transfer students receive a formal evaluation of transfer credit from the Office of Admissions shortly after admission. Students are responsible for providing the Office of Admissions official final transcripts of all course work attempted at other colleges/universities by the first day of the semester in which they enroll. The University will award a maximum of 90 transfer credits. No more than 75 credits may transfer from a community college.

Transfer credit is accepted from Mason-recognized U.S. institutional accrediting agencies (https://www2.gmu.edu/admissions-aid/apply-now/how-apply/transfer/transfer-credit-accredited-universities/) provided that a grade of C or better has been earned in the course, and the course content is equal to that offered at Mason. Note that only credits, not grades, are transferred; grades for transferred courses will not become part of a student's GPA at Mason. Transfer credit is not granted for courses completed at institutions that do not hold Mason recognized accreditation (https://www2.gmu.edu/admissions-aid/apply-now/how-apply/transfer/transfer-credit-accredited-universities/). An exception may apply for students enrolled in the Bachelor of Individualized Study major (B.I.S.). B.I.S. students may request a review of non-traditional credit from institutions not recognized by Mason, credit-by-exam, employer, or military training, or other credit for prior learning. Specific credit limits apply. This exception is subject to approval by the BIS/BAS program directors, and is only available to students in those specific programs. **Applicants to the University who have attempted college courses at other institutions are required to disclose their complete academic enrollment history in the admission application. George Mason University reserves the right to revoke admission, withhold the award of credit, or disenroll students who fail to indicate all previous institutions attended on the admission application. Course work from institutions not included in the admission application will not be eligible for transfer credit.**

A minimum of 30 credits must be completed in residence at Mason, and 45 credits of upper-level course work must be completed to qualify for graduation. While lower-level courses taken at previously attended institutions may meet the content requirement of some upper-level courses, they do not reduce the 45-credit upper-level requirement, and courses from other institutions do not reduce the 30-credit residency requirement.

George Mason University honors the service of military personnel by awarding up to six (6) credits of undistributed undergraduate elective credit to honorably discharged military students upon receipt of a DD-214 or Joint Services Transcript (JST) showing completion of training equivalent to six semester hours, as per the American Council on Education (ACE) Guide to the Evaluation of Educational Experiences in the Armed Services. Undistributed or elective credit cannot fulfill specific degree program requirements, but counts toward the overall number of credits that a student must fulfill for the baccalaureate degree. These credits effectively recognize learning through basic training and the service member's Military Occupational Specialty.

Acceptance of Transfer Admission Offer

Admitted transfer students are required to confirm their enrollment by submitting an enrollment deposit by June 15 for fall entrance, or December 1 for spring entrance. Transfer students admitted after June 15 or December 1 are required to submit their enrollment deposit as soon as possible after receiving their offer of admission. Enrollment deposits are non-refundable after these deadlines. Admitted students who do not accept the offer of admission by the published deadline may forfeit their space in the transfer class.

Deferral of Transfer Admission Offer

Under certain circumstances, students unable to enroll may defer their transfer admission to the next semester (e.g.: Fall to Spring) after submission of the enrollment deposit. Requests to defer must be made through the online admissions portal no later than the first day of the semester for which you were initially admitted if you wish to request a deferral. Submitting a request to defer admissions does not guarantee that your deferral request will be approved. If a deferral is granted, students may not take courses at any other college or university during the period of the deferral.

Graduate Admission Policies

Graduate Admission Policies

In addition to the general admission requirements below, international students and students having earned international degrees should also refer to Admission of International Students (https://catalog.gmu.edu/admissions/international-students/) for additional requirements.

General Admission Requirements

The general university graduate admission eligibility requirements are as follows:

- **An earned baccalaureate and/or graduate degree from an institution of higher education accredited by a** Mason-recognized U.S. institutional accrediting agency **(**https://www2.gmu.edu/admissions-aid/apply-now/how-apply/graduate/application-deadlines-and-requirements/accreditation/**), or international equivalent, verified from official transcripts**.
  - Enrollment beyond the first semester in any graduate program requires official transcripts showing degree conferral from all previously earned degrees, including undergraduate bachelor's degrees and higher, as well as any graduate coursework that you wish to be applied to your Mason degree program.
- **A minimum 3.00 GPA on a 4.00 scale in baccalaureate study**.
  - The GPA requirement may be higher for some graduate programs.
  - The university, at its discretion, may, in evaluating the meeting of this requirement, additionally consider the difficulty of the baccalaureate degree, relevant work experience, any/ or other evidence of ability to succeed in graduate study.
  - For students with post-baccalaureate credits, a separate GPA is calculated for each institution.
  - For applicants whose initial post-secondary degree is a master's degree or higher (no baccalaureate degree earned), the university, at its discretion, will evaluate those applicants based on that initial degree.
  - All Mason graduate applicants must meet the University's English proficiency standard (https://www2.gmu.edu/admissions-aid/apply-now/how-apply/international/english-proficiency-requirements/).

Note: Specific program admission requirements for degree-seeking students are listed HERE (https://www2.gmu.edu/admissions-aid/apply-now/how-apply/graduate/application-deadlines-and-requirements/).

Provisional Admission

Provisional Admission is intended for those applicants who have provided evidence that suggests they are able to pursue graduate coursework, but have not taken foundational or pre-requisite coursework requirements, or do not meet GPA minimum requirements. Students provisionally admitted into George Mason University are in degree-seeking status and may enroll in courses while meeting the following university provisional graduate admission requirements:

- As a first priority when starting the graduate program, a provisionally admitted student must satisfy the provisions of admission.
- A degree-seeking graduate applicant with a baccalaureate degree from an institution of higher education accredited by a Mason-recognized U.S. institutional accrediting agency (https://www2.gmu.edu/admissions-aid/apply-now/how-apply/graduate/application-deadlines-and-requirements/accreditation/), or international equivalent, with a GPA below the minimum for the graduate program, or applicants who are missing specific foundational or pre-requisite coursework requirements, may, at the discretion of the academic unit or program, be offered provisional admission if sufficient evidence is presented to suggest the applicant has the ability to pursue graduate work. Once the student has satisfied the provisions specified in the offer of admission and submitted all admission credentials, the provisional qualifier will be removed from the student's record. Written confirmation indicating the removal will be sent to the student from the academic unit, institute dean, or director.
- Provisionally required courses must be completed successfully, earning a grade of B or better, on the student's first attempt within the first 12 credits of enrollment (or a more restricted time frame specified by the department in the offer of provisional admission). Provisionally required courses may not be repeated. Students who do not complete these courses successfully will be terminated from the program. Students in provisional status may not take courses in the consortium or elsewhere, or transfer graduate course work into their program until the provisions of admission have been met.
- Due to federal requirements, students on F1/J1 visas are not eligible for Provisional Admission to George Mason University.
- While the provision is in effect, graduate students whose registration includes undergraduate courses are considered full time if they meet the undergraduate standard by being registered in at least 12 credit hours per semester. For more information on full-time status, see the Student Classification sections in AP.5 Undergraduate Policies and AP.6 Graduate Policies of this catalog.

Conditional Admission

A graduate applicant who does not meet the minimum admission standards may, at the discretion of the academic unit or program, be offered conditional admission if sufficient evidence is presented to suggest that the applicant has the ability to pursue graduate coursework. Conditional admission may be offered to an applicant who must first satisfy set of conditions prior to being admitted into the graduate

program and allowed to enroll in graduate courses at George Mason University.

- Once the student has satisfied the conditions specified in the conditional offer of admission and submitted all admission credentials, including test scores, the conditional offer of admission will be updated to full or provisional admission. Notification of full or provisional admission will be provided to the student in the form of an updated letter of admission from the Office of Graduate Admissions, which will be published to the student's Online Application Portal.
- Conditional admission cannot be offered to applicants who have not met minimum English language proficiency requirements as outlined in the English Proficiency Standards (https://www2.gmu.edu/admissions-aid/apply-now/how-apply/international/english-proficiency-requirements/) under the Admission of International Students (https://catalog.gmu.edu/admissions/international-students/#text) section. It also may not be offered to applicants who do not have, or will not earn, a baccalaureate degree from an institution of higher education accredited by a Mason-recognized U.S. institutional accrediting agency (https://www2.gmu.edu/admissions-aid/apply-now/how-apply/graduate/application-deadlines-and-requirements/accreditation/), or international equivalent.
- Due to federal requirements, students on F1/J1 visas are not eligible for Conditional Admission to George Mason University.
- The conditional offer of admission will be withdrawn if the student does not meet the conditions within one academic year from the first day of classes for the semester to which they applied (or a more restricted time frame specified by the program in the offer of admission).

Deferral or Reconsideration of Admitted Students

The Office of Graduate Admissions, in coordination with the academic programs, will consider requests from admitted students to either defer their enrollment, or reconsider their application for a future term. These requests are initiated by the applicant through the Intent to Enroll form, which is found on the Online Application Portal. Depending on the program of admission, the applicant will either be granted a deferral, a reconsideration, or the request will be denied.

A deferral is an automatic admission that does not require an applicant to go back through admissions review. A reconsideration is not an automatic admission and an applicant must go through admissions review again, regardless of previous admit decision.

Offers of funding are not guaranteed for deferrals or reconsiderations, and are at the discretion of the academic program.

All requests for deferral or reconsideration must be submitted using the directions on the Online Application Portal by the enrollment deadline listed in the student's offer of admission. Deferral or Reconsideration is granted only for a period of one full academic year (Ex. Fall to Fall) or less, with some programs having specific term restrictions for delaying enrollment. These restrictions vary by program and, as such, applicants should check with their respective academic unit or program.

Please note: Requests to defer enrollment, or reconsider an application for a future term, may be made only once per application.

Right to Rescind Admission

Mason reserves the right to rescind offers of admission if applicants fail to (1) successfully complete their current academic program, (2) maintain grades that meet the requirements for admission to George Mason University, and/ or (3) exhibit exemplary personal conduct prior to enrollment. Additionally, Mason may rescind an offer of admission based on cancellation or change of any test score required for admission or if it is determined that admission was obtained through the use of incomplete, falsified, altered, or embellished information. Mason also reserves the right to impose restrictions or requirements on the admission of a student (e.g., housing or educational restrictions or additional conditions or requirements prior to enrollment) as a result of any of the foregoing. Admitted students are required to update the Office of Admissions in a timely fashion of any new information that may affect their admission, including, but not limited to, any changes in their participation in their current academic program or their grades, or any conduct related issues (e.g., criminal matters and school discipline matters).

Upon learning of any relevant changes to a student's record, either directly from the student or from a third-party, the Dean of Admissions shall refer the case to the appropriate committee for review. The student shall have an opportunity to provide a written statement to the Dean of Admissions for consideration by the committee. The committee shall make a recommendation to the Dean of Admissions regarding whether the offer of admission should be rescinded or whether any restrictions or additional requirements should be placed on the student. In the case of withdrawal of admission from a matriculated student, credit earned at Mason may be withheld.

Records Maintenance and Disposal

All admissions documents, including academic records sent from other institutions and graduate admission exams, become the property of the Office of Admissions and part of the applicant's official university file. These documents **will not be returned** to the applicant. Admission credentials are retained for only 12 months. They are subsequently destroyed if applicants do not register for courses within the period for which the offer of admission is valid, have been denied admission, do not respond to requests for additional information, or fail to submit complete applications.

Admission of International Students

Office of Admissions

Undergraduate Admissions
4400 University Drive, MS 3A4
Fairfax, VA 22030

Graduate Admissions
4400 University Drive, MS: 4C8
Fairfax, VA 22030

Phone: 703-993-2000
Website: admissions.gmu.edu

General Requirements

Application for admission by international students should be made directly to the Office of Admissions via the online application (https://www2.gmu.edu/admissions-aid/apply-now/).

Priority application deadlines are as follows:

Freshman Fall	June 1
Transfer Fall	March 1
Freshman Spring	October 1
Transfer Spring	October 1
Graduate	Varies by academic program. Please check http://admissions.gmu.edu/grad (http://admissions.gmu.edu/grad/) for specific program details.

These deadlines ensure adequate time to process applications and prepare immigration documents. All international applications must be accompanied by the nonrefundable application fee. Items that must be submitted with the application form and fee are official transcripts and degree certificates (in original language and, if applicable, certified English translation); evidence of English proficiency (please see the English proficiency website (https://www2.gmu.edu/admissions-aid/how-apply/international/english-proficiency-requirements/) for more details); the Certificate of Financial Responsibility (https://admissions.gmu.edu/documents/internationalFinancialResponsibilityCertificate.pdf) (CFR); financial support documents; copy of passport identification page; and for those present in the United States, copies of immigration documents verifying current nonimmigrant status. Other documentation such as recommendation letters, essays, portfolios, etc., may be required by the academic program. Please visit the Admission website (https://www2.gmu.edu/admissions-aid/apply-now/how-apply/graduate/) for full details on items required and deadlines.

Applications from international students are reviewed with all other applications. Admission to the university is competitive; therefore, while minimum standards ensure that an application will be considered, they do not guarantee admission. The number of applicants, qualifications of the applicant pool, and the amount of available space determine the number of admission offers that Mason can make. In addition to overall admission requirements, some schools and colleges have individual requirements for acceptance into the major. For more information on selective majors, please visit "Majors with Selective Admission (https://www2.gmu.edu/admissions-aid/how-apply/freshman/)" section for freshmen, and "Selective Admission Majors (https://www2.gmu.edu/admissions-aid/how-apply/transfer/)" section for transfers.

Applicants who are accepted to a program will receive an online admission decision via their online application portal. Most students come to the United States on an F-1 visa, but students who are sponsored by the U.S. Government, their home government, or another organization may be required to enter the United States on a J-1 Exchange Visitor's Visa. To be issued an immigration document (Form I-20 for F-1 status or Form DS2019 for J-1 status), students must prove they have sufficient financial support to cover their expenses while at Mason. If the documentation submitted is satisfactory, the university will issue Form I-20 for F-1 status or Form DS2019 for J-1 status and mail it to the address indicated on the Certificate of Financial Responsibility. For students who are already in the United States, Form I-20 or Form DS2019 may be picked-up in person, if requested.

International students outside the United States may use their immigration documentation to schedule a visa interview with the U.S. embassy or consulate nearest their place of residence and apply for an F-1 or J-1 student visa. For more information about the visa application process, check with the nearest U.S. embassy or consulate, or go to the Department of State's website (https://www.state.gov).

Students in a nonimmigrant visa category other than F-1 or J-1 may submit the CFR and copies of immigration documents indicating their immigration status. They do not need to submit financial support documents unless they plan to change to a student visa. For more information pertaining to immigration status, contact the Office of International Programs and Services (OIPS) at 703-993-2970. Additional information is available on the OIPS website (https://oips.gmu.edu).

Freshman and Transfer Requirements

A freshman student is a first time university student who has never before enrolled in a college or university after graduating from secondary school. A transfer student is one who has completed course work at another college or university after graduating from secondary school. In addition to the requirements defined for all applicants, international students must meet the following standards:

- Freshman applicants must submit certified official copies of all secondary or high school transcripts in the original language along with an English translation, if applicable. Official results of any leaving certificates or university entrance exams also must be submitted.
- Transfer applicants must submit official transcripts from each post-secondary institution attended, sent directly to Mason from the institution.
- International students may be considered for admission without an SAT or ACT score through our score optional admission program. Qualifications for score optional consideration can be found at https://www2.gmu.edu/admissions-aid/apply-now/how-apply/freshman (https://www2.gmu.edu/admissions-aid/apply-now/how-apply/freshman/).
- Non-native English-speaking applicants are required to meet the University's English Proficiency requirement. Please visit the English Proficiency requirements page (https://www2.gmu.edu/admissions-aid/apply-now/how-apply/international/english-proficiency-requirements/) for more detailed information.
- Applicants with English proficiency exam results below the minimum qualifying score for direct entry may be referred to an INTO Mason Pathway or Academic English program (https://www2.gmu.edu/academics/mason/).
- All transcripts from colleges or universities outside the United States must be translated into English and evaluated with a course-by-course evaluation by a NACES (https://www.naces.org/members/) (National Association of Credential Evaluation Services) recognized U.S. evaluation agency before an admission decision can be made. Applicants are responsible for the timely translation and evaluation of documents and all costs and fees associated with these services. A list of accepted evaluation agencies is available here (https://www.naces.org/members/). Please note all transcripts and documents submitted to the university will become part of the applicant's permanent record and will not be returned.
- International students already in the United States with F-1 status must complete immigration transfer procedures within 15 days of the program start date. For processing of immigration transfers, contact OIPS at 703-993-2970 or visit their website (https://oips.gmu.edu).

Admissions Policies for Graduate International Students

In addition to the general admission requirements (https://catalog.gmu.edu/admissions/graduate-policies/), all international students must be familiar with international application procedures (https://www2.gmu.edu/admissions-aid/apply-now/how-apply/international/) and must follow the following additional requirements when applicable.

Graduate Students with International Degrees

Mason requires the equivalent of a four-year U.S. bachelor's degree from an appropriately accredited international institution of higher education for direct admission to a graduate degree program. All applicants who were educated outside the United States are required to submit an official credential evaluation, written either by an approved evaluation company (https://www.naces.org/members/), or by Mason evaluators. Please review the International Transcript Submission Guidelines (https://admissions.gmu.edu/documents/internationalTranscriptGuidelines.pdf) for further details. Complete information on this and all international admissions requirements can be found at Admissions (https://www2.gmu.edu/admissions-aid/how-apply/international/). Mason Admissions, in collaboration with the Office of the Provost, has final authority on equivalency of degrees.

- All transcripts from colleges or universities outside the United States must be translated into English, if applicable, and submitted to the Office of Admissions for evaluation.
- Graduate students' documents should show the award for either a bachelor's degree or equivalent, and/or a graduate degree, as applicable. See (https://www2.gmu.edu/admissions-aid/apply-now/how-apply/graduate/application-deadlines-and-requirements).

Special Conditions for All International Applicants

A complete list of application requirements at all levels can be found online (https://www2.gmu.edu/admissions-aid/how-apply/international/).

Note the following:

- Federal regulations prohibit students on visitor visas (B-1 and B-2) from enrolling in school. Students who entered the United States on a visitor visa should not plan to study. For more information, contact OIPS.
- Federal regulations prohibit F-2 spouses of F-1 students from engaging in full-time study, and F-2 children may engage in full-time study only from kindergarten through 12th grade. F-2 dependents may engage in study that is vocational or recreational in nature. F-2 dependents seeking to pursue full-time or degree study in the United States must change their status to F-1. For more information, contact OIPS.
- Students enrolled at the university in F-1 or J-1 nonimmigrant status must maintain full-time enrollment each fall and spring semester. For undergraduate students, this means 12 credit hours each semester. Full-time status for graduate students is defined by the Office of the University Registrar, and information can be found in the AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/) section of this catalog. Because of this requirement, F-1 or J-1 international students do not qualify for part-time programs.
- Students in F-1 and J-1 status may enroll in online courses, but F-1 students may count only one online course toward full-time status. J-1 students may not count online courses toward full-time status. For the purpose of this regulation, an online course is one that the University Registrar defines as online, for which no significant requirements (such as attendance, examinations, etc.) must be fulfilled in person.
- Admission for international students is offered for fall (August) and spring (January) terms.
- Prospective students who seek to enter the United States in F-1 or J-1 immigration status, or who seek to attend Mason following attendance at another US school, must complete the Certificate of Financial Responsibility (CFR), which can be downloaded online (https://admissions.gmu.edu/documents/internationalFinancialResponsibilityCertificate.pdf). The form and financial support documents must be submitted to the Admissions Office with the application.
- Students already in the United States should submit copies of immigration documents verifying current nonimmigrant status. This documentation should be submitted with the application for admission.
- Prior to issuing an I-20 or DS-2019 form, the University is required to verify that a student has sufficient financial support to pay for both educational and living expenses. If source is a sponsor, confirmed funding must be documented for the first year of study, typically with a sponsor letter and current bank statement or a scholarship award letter or an assistantship offer. The source of funds for subsequent years must be shown, although for sponsored students a bank statement is required only for the first year. Students who are self-funded must show funds on deposit for the full term of their program. The CFR gives an estimate of annual expenses, including tuition, living expenses, and health insurance; and it also explains what type of documentation is accepted.
- All new students admitted to the university must submit an Immunization Record Form signed by a health care provider. Requirements, information and forms are available online (https://shs.gmu.edu/immunizations/).
- Financial sponsors who wish to be billed directly must provide a U.S. billing address. Mason does not bill third parties overseas. It is the student's responsibility to make sure tuition and fees are paid on time.

International Student Health Insurance

University policy requires all F-1 and J-1 visa students to have health insurance. Federal law requires all students on a J-1 visa to have health insurance that includes coverage for medical evacuation and repatriation. Medical evacuation coverage pays for returning a seriously ill student to his or her home country. Repatriation coverage pays for returning a student's remains to his or her home country.

Mason offers health insurance for students on J-1 and F-1 visas. When international students register for classes, the cost of this coverage is automatically billed to their account by the Office of Student Accounts. This fee is due by the tuition payment due date. Failure to pay this insurance fee, or successfully obtain an exemption, may result in the cancellation of class registration. Late fees may be assessed if charges are not paid by the deadline established by the Student Accounts Office.

International students are required to purchase insurance for fall and spring/summer semesters. For exemption from international student health insurance, refer to the University Policy 6002 (https://universitypolicy.gmu.edu/policies/health-insurance-requirement-for-international-f-1-and-j-1-visa-students/).

Non-degree Enrollment

Office of Admissions

4400 University Drive, MS 3A4
Fairfax, VA 22030

Phone: 703-993-2000
Website: admissions.gmu.edu

Non-Degree Status

Non-degree status enables visiting students from other institutions or community members seeking personal enrichment to enroll in courses for which they are qualified without seeking formal admission to a degree program. Enrollment in specific courses is based on eligibility criteria and availability of space in courses. Registration priority is given to **degree-seeking students**. Academic departments may restrict or prohibit non-degree enrollment in some courses. Admitted and enrolled non-degree students are responsible for the same policies and procedures that apply to degree-seeking students, including the University Honor Code and the Code of Student Conduct.

George Mason University enrolls non-degree students in three categories: **High-School Guest Matriculants, Undergraduate Non-degree students, and Graduate Non-degree students**. All Non-degree applicants must complete the online application for admission and supply all official supporting documentation as requested by the Office of Admissions.

Non-degree application information and deadlines are available online (https://www2.gmu.edu/admissions-aid/apply-now/how-apply/non-degree/).

Students are responsible for registering properly and paying applicable tuition and fees by the deadlines. Students should confirm the correctness of their enrollments (including drop and add) via Patriot Web. Incorrect enrollments may result in academic and financial penalties.

High School Guest Matriculants

Exceptionally talented high school juniors and seniors may be considered for dual enrollment in lower-level (100-299) undergraduate courses. These applicants will be evaluated based on their academic performance in high school. Only students who have excelled in high school and demonstrate the preparation and maturity indicative of the potential to succeed in Mason's competitive course work will be admitted. Mason cannot guarantee that courses will fulfill high school graduation requirements or that courses taken while the student is a high school guest will transfer to other institutions. High school dual enrollment students may enroll for one course (a maximum of 4 credit hours) each semester or in the last Summer term. An official high school transcript and written permission of the high school counselor is required for admission consideration. Non-native speakers of English are required to meet the University English language proficiency requirement. The Admissions Committee may ask for other supporting documentation such as test scores or transcripts from other dual enrollment credit.

Additional non-degree study for high school guest matriculants beyond the first semester requires a new application each semester and admissions review. High school guest matriculants are expected to maintain a 2.00 or better Mason GPA, and are subject to all academic policies outlined in this catalog.

High School Partnership Programs

Select high school students may be invited to participate in one of several partnership programs offered through George Mason University. Students enrolled in Guest Matriculant Partnership Programs have unique admissions and enrollment requirements set forth by the University. Only students that meet these requirements and agree to the University Honor Code will be admitted. Mason cannot guarantee that Non-Degree credit awarded will fulfill requirements at other institutions.

Undergraduate Non-Degree

Visiting undergraduate students from other colleges or universities, or community members who have completed some college-level course work at an institution accredited by a Mason-recognized U.S. institutional accrediting agency, may be considered for Undergraduate Non-Degree admission. The Office of Admissions renders all undergraduate non-degree admissions decisions.

To be considered for admission, Non-Degree Undergraduate applicants must present a minimum 2.00 cumulative grade point average and be eligible to return to all previous institutions attended. Non-native speakers of English are required to meet the University English language proficiency requirement. Students who are actively suspended or dismissed from another institution will not be offered admission. Admission is offered for one semester and students may enroll in a maximum of 10 undergraduate (100-499) credits. Students wishing to enroll in courses that require prerequisites must provide unofficial transcripts for review to the academic department offering the course. Admitted Non-Degree Undergraduate students are assessed undergraduate tuition rates, and non-degree students are ineligible for financial aid. Meeting the minimum standard for Undergraduate Non-Degree study neither guarantees admission nor implies future admission to a degree-seeking program. **Additional Non-Degree study beyond the first semester requires a new application and admission review, with exceptions existing for Senior Citizens and ROTC students.**

Non-Degree Undergraduate students are expected to maintain a 2.00 or better Mason GPA and are subject to the AP.5 Undergraduate Policies section of this catalog. Select undergraduate students may be invited to participate in one of several partnership programs offered through George Mason University. Students enrolled in Undergraduate Non-degree special programs have unique admission and enrollment requirements set forth by the University. Only students that meet these requirements and agree to the University Honor Code will be admitted.

More information about Undergraduate Non-Degree application requirements and policies can be found online (http://www2.gmu.edu/admissions-aid/how-apply/non-degree/).

Admission Policies for Graduate Non-Degree Students (https://www2.gmu.edu/admissions-aid/apply-now/how-apply/non-degree/)

Current graduate students visiting from other colleges or universities, or community members who hold a conferred baccalaureate and/or

graduate degree from an institution of higher education accredited by a Mason-recognized U.S. institutional accrediting agency (https://www2.gmu.edu/admissions-aid/apply-now/how-apply/graduate/application-deadlines-and-requirements/accreditation/), or international equivalent, may be considered for Graduate Non-degree admission. The minimum standard for Graduate Non-degree admission. The graduate admission eligibility requirements for non-degree students are as follows:

- **The minimum standard for Graduate Non-degree admission is a 3.00 cumulative grade point average on the baccalaureate record.** Non-native speakers of English are required to meet the University English language proficiency (https://www2.gmu.edu/admissions-aid/apply-now/how-apply/international/english-proficiency-requirements/) requirement. An unofficial transcript for all earned or currently in-progress undergraduate degrees, and, if applicable, an unofficial graduate transcript for any graduate coursework taken is required during the application process. See here (https://www2.gmu.edu/admissions-aid/apply-now/how-apply/non-degree/) for application requirements and procedures.
- Students may enroll in a maximum of 10 undergraduate or graduate (100-799) credits per semester. **Admitted Non-degree Graduate students are assessed graduate tuition rates for all (100-799) courses.** Non-degree Graduate students are ineligible for financial aid. Meeting the minimum standard for Graduate Non-degree study neither guarantees admission nor implies future admission to a degree-seeking program. Among the factors that may be considered in the admissions process are previous academic performance, professional experience, and academic fit.
- Non-degree Graduate students are expected to maintain a 3.00 or better Mason GPA and are subject to the AP.6 Graduate Policies section of this catalog. Unless otherwise specified, admitted and enrolled non-degree students are responsible for the same policies and procedures that apply to degree-seeking students, including the University Honor Code and the Code of Student Conduct.

More information about Graduate Non-Degree application requirements and policies, as well as a listing of restricted programs, can be found online (http://www2.gmu.edu/admissions-aid/how-apply/non-degree/).

Senior Citizen Enrollment

Mason welcomes applications from Virginia's senior citizens. Under the terms found in the Senior Citizens Higher Education Act of 1974 (https://vacode.org/2016/23.1/II/6/7/), eligible Virginia residents 60 years of age or older may apply to take university courses for credit in either degree or non-degree seeking status without paying tuition. Admitted senior citizens may register to audit courses regardless of income level. Mason provides all of Virginia's senior citizens with an application fee wavier, regardless of income level.

All application and admission requirements and deadlines apply to Senior Citizen Enrollment.

Upon admission and enrollment, the Senior Citizen Tuition Waiver form must be completed with the Office of the University Registrar if the applicant is seeking benefits under the *Senior Citizens Higher Education Act of 1974*.

Academic Advising

Non-Degree Undergraduate students may seek academic advising from the Mason Care Network (https://advising.gmu.edu/) (MCN). Graduate Non-Degree students may seek academic advising from the academic department offering their course(s) of interest. See Graduate Admissions Guidelines webpage (https://www2.gmu.edu/admissions-aid/apply-now/how-apply/non-degree/) for more information.

Grades earned through Non-Degree studies remain a part of the student's permanent Non-Degree record and are recorded on the student's transcript. They will not appear on the degree transcript unless the student is accepted to a degree program and permission is given by the dean to apply the Non-Degree credit to the degree program. A maximum of 30 undergraduate credits taken in Non-Degree status may apply to an undergraduate degree program if approved by the relevant program dean. A maximum of 12 credits taken in Non-Degree status can be applied to a Mason graduate degree program.

International Students

International students holding F or J visas are not admitted in Non-Degree status. Exceptions exist for specific situations, as determined by, and at the sole discretion of, the Office of Admissions in collaboration with the Office of the Provost. These exceptions include those students enrolled in either the Undergraduate International Year One Program, Graduate International Year One Program or Academic English Program, or those who wish attend George Mason University pursuant to the terms of an exchange agreement or memorandum of understanding (MOU) between Mason and their home university. Additionally, J-1 Au Pair applicants may be considered for Non-Degree status.

International applicants who have questions regarding their eligibility to apply as Non-Degree applicants should contact the Office of Admissions at nondegree@gmu.edu.

Academic Testing

Office of Admissions

4400 University Drive, MS 3A4
Fairfax, VA 22030

Phone: 703-993-2000
Fax: 703-993-4622

Website: admissions.gmu.edu

Credit by Exam

The Office of Admissions awards transfer credit for several advanced standing examinations based upon minimum score requirements established by Mason academic departments. Additional credit by exam information is available on the Office of Admissions homepage (https://www2.gmu.edu/admissions-aid/apply-now/how-apply/transfer/transfer-credit-policy/).

Mason Departmental Exams

Proficiency exams are offered in a number of courses usually taken during the first two years. Students may not earn credit by exam for courses in which they are currently enrolled beyond the time allotted to add courses in that semester, or for courses already audited or failed at

the university. Transfer students may not earn by exam any part of the 30 credits that must be completed at Mason to earn a degree.

English 101 and English 302 Proficiency Testing

The Department of English offers proficiency testing for ENGH 101 Composition (Mason Core) and ENGH 302 Advanced Composition (Mason Core). Requirements and testing dates are available on the department homepage (https://composition.gmu.edu/waivers/).

Foreign Language Placement

The Department of Modern and Classical Languages offers foreign language placement testing to determine the appropriate course level for students pursuing one of the many languages offered by the department. Additionally, the department offers foreign language waiver testing. Detailed testing information is available on the MCL homepage (https://mcl.gmu.edu/placement-testing/).

Math Placement Exam

The Department of Mathematical Sciences offers online placement testing for several math courses that satisfy the Mason Core Quantitative Reasoning requirement. Most new students complete placement testing during orientation. Testing requirements and resources are available on the department homepage. (https://science.gmu.edu/academics/departments-units/mathematical-sciences/mathematical-sciences-testing-center/)

POLICIES

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AP.1 Registration and Attendance

AP.1 Registration and Attendance

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Registration for the next semester or summer term begins after mid-semester of fall or spring semesters and is opened to various groups according to priority (graduate students, seniors, juniors, and so on). The Office of the University Registrar (http://registrar.gmu.edu) assigns each student a time ticket, which is a specific date and time after which a student may register. The time ticket is based on the number of credits earned. Thus, the time ticket will not be the same for all students within a particular priority group. Students should consult the Office of the University Registrar (http://registrar.gmu.edu) and Patriot Web (http://patriotweb.gmu.edu) for information about their registration date and time.

AP.1.1 Academic Calendar

The academic calendar may be accessed on the Office of the University Registrar (http://registrar.gmu.edu) website. Mason runs on a semester schedule, including an active summer term.

AP.1.2 Academic Load

The minimum full-time load for undergraduate students is 12 credits per semester. For graduate full-time classification, see AP.6 Graduate Policies. For planning purposes, applicants for admission are asked to indicate their preference for full- or part-time status, and day or evening classes; however, they may freely choose between evening and day sections of courses and may change their full- or part-time status.

Although many students must work to meet living expenses, **employment must not take priority over academic responsibilities**. Students employed more than 20 hours a week are strongly urged not to attempt a full-time academic load. Students employed more than 40 hours a week should attempt no more than 6 credits per semester. Students who fail to observe these guidelines may expect no special consideration for academic problems arising from the pressures of employment.

Although 12 credits per semester represent a minimum full-time undergraduate load, students planning to graduate in four years need to carry an average of at least 15 credits per semester. Written approval must be submitted to the Office of the University Registrar (http://registrar.gmu.edu) before students can register for more than the maximum allowable credits. Undergraduate and Non-Degree Undergraduate students should contact their Dean for permission. Graduate and Non-Degree Graduate students should contact their department for permission.

Student Status	Maximum Credit Limit
Undergraduate	18
Undergraduate on warning, probation or returning from suspension	13
Graduate	12
Nondegree	10

AP.1.2.1 Financial Good Standing; No Holds on Record

Financial good standing and a university record clear of holds are required for students to receive academic services. Services, including, but not limited to, transcript issuance, diploma release, and class registration (add, drop, withdrawal, etc.) will not be provided to students with a financial balance due or a hold of any kind on their record. Holds are based on outstanding obligations and may be financial. Examples include fines owed for traffic or parking violations, incomplete

immunization records, fines owed to the Mason or consortium libraries, and other administrative holds.

AP.1.3 Registration Procedures

Patriot Web (https://patriotweb.gmu.edu) will list specific course information before priority registration each semester. Courses listed may be canceled for insufficient enrollment. Mason reserves the right to change the class schedule and adjust the individual section enrollment as necessary.

Registration is usually accomplished using Patriot Web (https://patriotweb.gmu.edu); however, if a section is closed or registration into a selected section is controlled, permission to enroll must be obtained from the academic program offering the course. Various schools and departments have their own processes for granting this permission. For some courses, the student must submit a completed and signed course permit form in person to the Office of the University Registrar (http://registrar.gmu.edu). Students may not attend classes for which they are not registered.

Students must be present at the first meeting of every course (lecture and laboratory) to validate their registration. If students cannot attend the first meeting, they must notify the instructor beforehand if they intend to continue in that section. Otherwise, their name may be removed from the class roll in both lecture and lab.

Students are responsible for registering properly and paying by the deadline. Students should confirm the correctness of their enrollments (including drop and add) via Patriot Web **(**https://patriotweb.gmu.edu**). Incorrect enrollments may result in academic and financial penalties.**

Students are responsible for tuition payments and grades received for all courses in which they are registered unless registration is canceled administratively because of suspension, dismissal, or termination; the section is canceled; or the student drops the course before the tuition liability begins. See Office of the University Registrar (http://registrar.gmu.edu) for deadlines.

AP.1.3.1 Course Prerequisites, Corequisites

Course prerequisites or corequisites state requirements for student entry into courses and reflect necessary preparation for attempting the course. It is the student's responsibility to be aware of these as stated in the catalog and to have taken prerequisites recently enough to be of value. The administrator of the academic unit in which the course is taught or the instructor of the course may summarily drop students who have enrolled in a course for which they have not met the prerequisites (required or recommended). Graduate course prerequisites are normally met with a grade of B- or better; undergraduate course prerequisites are normally met with a grade of C or better. Individual programs may have higher standards. Questions should be addressed to the local academic unit or course instructor.

AP.1.3.2 Changing Registration

Registration changes must be completed within the schedule adjustment period defined below. Changes to registration are usually made via Patriot Web (https://patriotweb.gmu.edu).

The last day for adding a 15-week course is eight calendar days after and including the first day of classes. The last day for dropping a 15-week course is 22 days after and including the first day of classes. After the drop deadline, students may self-withdraw from courses until the start of the selective withdrawal period; a W will appear on the transcript and count toward attempted hours. The last day for selective withdrawal from a 15-week course is nine calendar weeks after the first day of classes (including the first day). Withdrawal after this time period is granted only for nonacademic reasons by the student's academic dean. This approval is typically given for all courses at once, constituting withdrawal from a semester. For courses that are shorter than 15 weeks, the add, drop, and withdrawal deadlines are set in proportion to the length of the session. These dates are published on the Office of the University Registrar (http://registrar.gmu.edu) web site each semester. Students who drop all courses during the drop period will have no entry on their transcript for that semester and will not be considered an enrolled student for that semester. If it is the student's first semester, the student will not have a Mason transcript and must contact Admissions (https://www2.gmu.edu/admissions-aid/)regarding enrollment in a future semester.

All students are expected to complete their initial enrollment before the first day of classes for the semester. Any additions to that enrollment must be processed by the end of the add period through official registration procedures. Students will not receive credit for courses unless their names are on the official class rosters and final grade sheets. **Retroactive credits will not be awarded to students who report that they attended classes but were not on the official rosters.** After the last day to add, students will not be added to courses except in unusual circumstances beyond the student's control; such actions require approval by the administrator of the local academic department offering the course.

All students are expected to drop (by the end of the drop period) those courses they do not intend to continue. Registration is not canceled for failure to drop courses properly. Furthermore, registration is not canceled for failure to attend classes unless stated otherwise on Patriot Web (https://patriotweb.gmu.edu). **All classes in which a student is enrolled past the drop deadline will remain part of the official academic record.** For more information, see AP.3.3 Additional Grade Notations. After the drop deadline, students may self-withdraw through the selective withdrawal period. Students who have exhausted their selective withdrawal options may self-withdraw up until the beginning of the selective withdrawal period. Withdrawal after this point requires approval, which typically is granted only for nonacademic reasons by the student's academic dean. This approval is typically given for all courses at once, constituting withdrawal from a semester. For more information see AP.1.5 Withdrawal.

No change of registration transaction is complete until it is submitted through Patriot Web (https://patriotweb.gmu.edu) or processed by the Office of Student Accounts (http://studentaccounts.gmu.edu/) and the Office of the University Registrar (http://registrar.gmu.edu) through in-person procedures.

Students will not receive written confirmation of schedule changes and are responsible for checking their schedules via Patriot Web **(**https://patriotweb.gmu.edu**) before the end of the add or drop period to verify that their schedules are correct and they are properly enrolled. Students will not be allowed to remain in classes unless they are properly enrolled. Students are responsible, both financially and academically, for all courses in which they remain officially enrolled.**

AP.1.3.3 Canceling Registration

Students who cannot attend classes during the semester for which they have registered should cancel registration using Patriot Web (https://patriotweb.gmu.edu) prior to the first day of classes for the semester.

Refunds of tuition on and after the first day of classes are made according to the tuition-liability dates published on the Student Accounts

website (https://studentaccounts.gmu.edu/calendars/) and the Office of the University Registrar (http://registrar.gmu.edu) website.

AP.1.3.4 Repeating a Course

Some courses are annotated in the catalog as "repeatable for credit." These are courses which students may repeat and receive additional credit for each time the course is taken. The maximum number of credits is specified in each course's description. Special topics and independent study courses are examples. All grades and credits earned are included in the calculation of the student's GPA up to the maximum allowable credits. In cases where the student has exceeded allowable credits in a repeatable class, the grade and credits of the earliest registration of the class for which credit was earned will not be included in the calculation of the GPA.

Undergraduate students (degree-seeking or non-degree) may repeat undergraduate courses that are not repeatable for credit. There is a limit of three graded attempts for all courses. Academic programs may have more restrictive limits. A W does not count as a graded attempt. This policy applies only to repeating the same course, or courses that are designated in the catalog as equivalent. Academic programs may restrict all students from repeating certain courses or restrict students from repeating high-demand courses for the purpose of improving a satisfactory grade. Academic programs may restrict repeats of certain courses by students in their major. Excessive repeats may result in termination from the major. (See AP 5.2.4 Termination from the Major.) Appeals to this policy begin with the student's academic advisor.

The grade received in a repeated course will replace the earlier grade in the calculation of the GPA, even if the more recent grade is lower. Duplicate credit is not earned. All courses taken and their grades remain part of the student's transcript. The exclusion of earlier grades and credits from the calculation of the GPA will not change the academic standing or dean's list notations for the earlier semester. A grade in a Mason course will not be excluded from the GPA based on taking an equivalent course at another university.

Graduate students who have earned a satisfactory grade in a course that is not repeatable for credit are not permitted to repeat the course for replacement credit. Grades of B- and higher are considered satisfactory unless the academic program specifies a higher minimum satisfactory grade. Students must obtain permission from their academic program to repeat a course in which they have earned an unsatisfactory grade. Each unit establishes procedures for granting such permission. Duplicate credit is not earned. When a course is repeated, all credits attempted are used to determine warning, termination, or dismissal; the transcript shows grades for all courses attempted; and only one grade per course may be presented on the degree application.

Effective July 1, 2011 Federal Regulations no longer allow federal student aid funds to apply to courses that a student has already taken twice with a passing grade. This limitation does not include courses that are "repeatable for credit," as described above. Students should contact the Office of Student Financial Aid (https://www2.gmu.edu/admissions-aid/financial-aid/) to determine how repeated coursework would affect their financial aid eligibility.

AP.1.3.5 Auditing a Course

Auditing a course requires the instructor's permission. Audit forms are available at Office of the University Registrar (http://registrar.gmu.edu). A previously-audited course may be taken again for credit in a later term. Students may also audit a course previously taken and passed; however, students may not change from credit to audit status or from audit to credit status after the end of the drop period, as defined above. **The usual tuition and fees apply to audit status**.

AP.1.4 Special Registration Procedures

AP.1.4.1 Advisor's Permission to Register

All newly-admitted students, undeclared undergraduates on academic warning or academic probation, and undergraduates returning from suspension, are required to obtain an advisor's approval for registration. All students are strongly encouraged to consult with their advisor concerning course registration each semester.

AP.1.4.2 Permission to Study Elsewhere

Currently enrolled Mason students who wish to take courses at another regionally accredited U.S. institution must obtain advance written approval. This process permits a student to enroll elsewhere in a suitable course unavailable at Mason or through the Consortium of Universities of the Washington Metropolitan Area. Students who wish to study abroad must contact the Mason Study Abroad (http://studyabroad.gmu.edu/). Students wanting to pursue study through the Consortium of Universities of the Washington Metropolitan Area should contact the Office of the University Registrar (http://registrar.gmu.edu).

- The Permission to Study at Another Regionally Accredited U.S. Institution form can be found at the Office of the University Registrar (http://registrar.gmu.edu). Submission of this form does not guarantee approval.
- Catalog numbers and descriptions of courses to be taken elsewhere must be submitted with the request for approval.
- A minimum course grade must be achieved; however, grades themselves do not compute into any Mason GPA. For undergraduate courses, a minimum grade of C (2.0 on a 4.0 scale) is required. For graduate courses, a minimum grade of B (3.0 on a 4.0 scale) is required.
- Graduate students must obtain advance written approval from the director of their graduate program and the graduate dean of their school/college. Undergraduate students must obtain advance written approval from their academic advisor and the academic dean of the school/college offering the course to be taken elsewhere.
- Upon course completion, students must submit to the Mason Office of the University Registrar (http://registrar.gmu.edu) an official transcript from the visited institution for all coursework taken elsewhere.
- Advance approval to study elsewhere is required. Undergraduate students who enroll elsewhere without advance written permission will not receive transfer credit for coursework taken at other institutions unless they re-apply for admission to Mason as a transfer applicant and meet all priority deadlines. Re-admission is not guaranteed and transfer credit is awarded based upon course equivalencies in effect at the time of re-admission.

Special instructions for undergraduates:

- Once enrolled in degree status at Mason, students may request permission to take a limited number of credits at another regionally accredited institution.
- Students must be in good standing with a minimum cumulative GPA of 2.00 in their Mason courses to request permission to study elsewhere.
- Individual colleges/schools/institutes determine restrictions on the number, type, mode of delivery, location and offering patterns of courses that can be taken at another institution.

- Freshmen and transfer students in their first semester at Mason are not permitted to study elsewhere.
- Courses previously attempted at Mason (including withdrawals) cannot be taken elsewhere.
- Students must meet the minimum 30-hour residency requirement at Mason.

AP.1.4.3 Permission to Register as Graduate Student

Registration for courses in a graduate program is permitted only after the student has been notified of admission. Students admitted to degree programs are given preference over non-degree students through the registration process. Dual registration (for example, as a graduate student and non-degree enrollee) is not permitted. The graduate student is responsible for being properly registered and aware of all regulations and procedures required by a program of study. Regulations and degree requirements are not waived nor are exceptions granted because of ignorance of any regulations. Registration in graduate-level courses is restricted to admitted graduate degree students and non-degree graduate students (unless excluded by program). Undergraduate degree students may register for graduate courses only with special approval (see section below). Non-degree undergraduate students may not enroll in courses numbered 500 or above. Courses numbered 800 and above are available only to admitted graduate degree students.

AP.1.4.4 Graduate Course Enrollment by Undergraduates

Courses numbered 700 and above are closed to undergraduates. Undergraduates in degree programs may enroll in graduate-level courses 500 to 699 only with written permission, which must be obtained before registration. Forms are available at Office of the University Registrar (http://registrar.gmu.edu). Written permission is waived for undergraduate students admitted to combined bachelor's/accelerated master's programs.

To enroll in graduate courses for credit applicable to an undergraduate degree, undergraduates must have completed all course prerequisites, have exhausted all upper-level undergraduate courses relevant to their educational objectives, and be able to demonstrate the level of maturity required for graduate courses.

Approval to register for reserve graduate credit (earned credit held in reserve to apply later toward a graduate degree) is given only to Mason seniors within 15 credits of completing undergraduate study who have successfully completed all course prerequisites. In addition, this privilege is normally extended only to seniors who have completed at least 12 credits at the university, have a cumulative GPA of 3.00 or better, and have a major in the department offering the course. Approval for reserve graduate credit is limited to 6 credits and does not imply approval for admission into a Mason graduate program or that credit earned will be accepted at another graduate school.

Undergraduates enrolled in graduate courses are eligible to receive only those letter grades applicable to graduate grading. For more information, AP.3 Grading. Credit for the same course may not be applied to both graduate and undergraduate degrees.

AP.1.4.5 Special Registration for Nonenrolled Students

Degree-seeking students not enrolled in a credit-bearing course but whose academic unit certifies that they are pursuing an activity related to their Mason enrolled program can retain active status by registering for Special Registration (ZREG 200) for a $45 fee. Written approval from the student's advisor and the local academic unit is required. Special registration allows students to retain library and computer privileges, receive a student ID, and buy a parking decal. Students must have active status to apply for or receive a degree, take an exam, or participate in cooperative education.

AP.1.4.6 Enrolling for Credit Without Grade Points (Satisfactory/No Credit)

Courses normally graded as satisfactory/no credit (S/NC) are annotated in the catalog, but students may elect to take credit without grade points. Undergraduates may take up to 6 credits to be graded S/NC; this option applies only to electives outside the field of the major, concentration, minor, general education requirement, or certificate program. Graduate students may elect the S/NC grade option only for courses that do not apply to the degree or certificate requirements. S/NC grading will also be used for courses numbered 998 and 999. For more information, see AP.3.3 Additional Grade Notations.

AP.1.4.7 Senior Citizen Waiver Program

Under terms of the Senior Citizen Higher Education Act of 1974, eligible Virginia residents 60 years of age or older, with a taxable income not exceeding $23,850 for Virginia income tax purposes for the year preceding the award year, are entitled to enroll in courses offered for academic credit *on a space available basis* without paying tuition and enrollment fees via the Senior Citizen Waiver Program. In order for this to occur, the applicant must meet all admission requirements. Senior citizens who meet all admission requirements, the income eligibility requirement, and have completed a minimum of 75 percent of degree requirements may enroll in a degree program as a full-time or part-time student, during normal registration periods without paying tuition and enrollment fees. They may register for and audit up to three courses offered for academic credit in any one academic term, quarter, or semester for an unlimited number of academic terms, quarters, or semesters. The admissions application fee cannot be waived, but students who qualify to have all tuition and fees waived will have the application fee reimbursed. For specific information about the program, please visit the Office of the University Registrar Senior Citizen Waiver Program (http://registrar.gmu.edu/topics/senior-citizen-waiver/).

Citizens who wish to take advantage of this act must complete the appropriate online non-degree or degree application found at Admissions (https://www2.gmu.edu/admissions-aid/) and submit all required transcripts and documents. If the application for admission is approved, qualified senior citizens can request a waiver of tuition and enrollment fees by completing the Senior Citizen Tuition Waiver Form, available from the Office of the University Registrar (https://registrar.gmu.edu/forms/). To facilitate processing, senior citizens should provide their Mason student identification number on the waiver form.

In addition, the act allows admissible senior citizens to enroll in up to three noncredit courses in any one academic term, quarter, or semester for an unlimited number of academic terms, quarters or semesters without paying tuition and enrollment fees. Students seeking to audit a class must notify the Office of the University Registrar (http://registrar.gmu.edu) when registering for classes. Fees for course materials may apply to senior citizen enrollees, and tuition may be charged for courses designed exclusively for senior citizen groups. Senior citizens must adhere to all admissions and registration policies and processes and follow normal procedures to add and drop courses within the deadline dates outlined in each semester's academic calendar.

AP.1.4.8 Summer Term

Phone: 703-993-2441
Web: registrar.gmu.edu/summer (https://registrar.gmu.edu/calendars/)

Summer enrollment provides an opportunity for eligible undergraduate, graduate, and non-degree students to begin or continue the pursuit of their academic goals. Courses are offered in intensive five to twelve-week sessions, as daytime and evening classes and as distance education courses.

Summer registration for current Mason students begins in mid-March while registration for non-degree students begins in late March to early April. Students who are new to Mason are required to apply and be evaluated for admission. Prospective students may contact the Office of the University Registrar (http://registrar.gmu.edu) at 703-993-2441.

AP.1.4.9 University Consortium

Mason is a member of the Consortium of Universities of the Washington Metropolitan Area, which includes American University, The Catholic University of America, Gallaudet University, The George Washington University, Georgetown University, Howard University, Marymount University, Montgomery College, National Defense Intelligence University, National Defense University, Northern Virginia Community College, Prince George's Community College, Trinity Washington University, Uniformed Services University of Health Sciences, University of the District of Columbia, and University of Maryland-College Park. Eligible Mason students may enroll in courses at any of the consortium institutions. The consortium's cross-registration arrangement permits students enrolled in eligible degree programs at one member institution to take a course at another member institution.

Participation in consortium cross registration is available to degree-seeking juniors, seniors, and graduate students in good standing and currently enrolled at Mason. Participation is limited to courses that are approved by the student's local academic unit and dean, apply to the student's program of study, are not offered during that semester at Mason, and have space available at the visited institution. Additional restrictions apply. Students may take one consortium course per semester, with a career maximum of 6 credits for undergraduates (9–12 if foreign language study is approved) and 6 credits for graduate students. Credit earned through the consortium is considered resident credit, so grades count in the Mason GPA.

Information and regulations, including restricted and excluded courses, for both outgoing and incoming Mason consortium students are available on the web (http://registrar.gmu.edu/topics/washington-consortium/). Information pertaining to all member institutions is available here (http://www.consortium.org). Questions may be directed to the consortium coordinator in the Office of the University Registrar (http://registrar.gmu.edu) at 703-993-2436.

AP.1.4.10 4-VA

4-VA began in 2010 as a collaborative of four universities: George Mason University, James Madison University, the University of Virginia, and Virginia Polytechnic Institute and State University. In 2015 and 2017, Old Dominion University and Virginia Commonwealth University, respectively, joined the collaborative. In 2019, the College of William and Mary and the Virginia Military Institute joined. The presidents of these universities organized 4-VA in order to meet the needs identified by the Governor's Higher Education Commission and his Commission on Economic Development & Job Creation.

4-VA's mission is to promote inter-university collaborations that leverage the strengths of each partner university in order to accomplish much more than any individual university could achieve alone. 4-VA strives to: define instructional models, including the clear definition of instructional costs; significantly expand access for all Virginians to programs preparing them for rewarding careers; increase research competitiveness, and enhance the success rate of students in Science, Technology, Engineering, and Mathematics (STEM) courses and programs. For more information, visit their website (https://4va.gmu.edu).

AP.1.5 Withdrawal

AP.1.5.1 Selective Withdrawal for Undergraduates

Degree-seeking and non-degree undergraduate students are eligible to withdraw from courses without the dean's approval and at the student's discretion during two withdrawal periods: unrestricted withdrawal during which students may withdraw from one or more courses (after the last day to drop a course until the end of the 5th week of the semester) and selective withdrawal during which students may withdraw from a maximum of three courses during their entire undergraduate career at Mason (from the 6th week to the end of the 9th week of the semester). For the purpose of selective withdrawal, the three courses may have any number of credits and lecture and laboratory sections in which a student is co-enrolled are not counted as separate courses. For courses that meet for fewer than 15 weeks, the drop and withdrawal periods will be set in proportion to the length of the course.

AP.1.5.2 Course Withdrawal with Dean Approval

For graduate and non-degree students, withdrawal after the last day to drop a course requires approval by the student's academic dean, and is permitted only for nonacademic reasons that prevent course completion. For undergraduate students, withdrawal after the open withdrawal period, for cause within the period, or after a student has used all three selective withdrawals, requires approval by the student's academic dean and is typically permitted only for nonacademic reasons that prevent course completion.

AP.1.5.3 Semester Withdrawal with Dean Approval

Undergraduates taking three or fewer classes may use the selective withdrawal for all courses for a semester; see the Selective Withdrawal for Undergraduates section. Otherwise, students who need to withdraw from a semester beginning the 6th week may do so only for nonacademic reasons with the approval of the academic dean. Withdrawal forms are available at the appropriate academic dean's office. Students who stop attending all classes without the dean's approval and without processing selective withdrawals, if eligible, will receive a grade of F in all courses.

AP.1.5.4 Effects of Course or Semester Withdrawal

All withdrawal results in a grade of W on the student's transcript for the withdrawn course(s). While a grade of W does not affect the GPA, undergraduate students should note that withdrawn courses are part of "attempted credit hours," which serve as the basis for the student's credit level. In the university's undergraduate retention system, GPA standards increase according to credit level. See AP.5.2.3 Student Retention Categories.

AP.1.6 Attendance Policies

Students are expected to attend the class periods of the courses for which they are registered. In-class participation is important not only to the individual student, but also to the class as a whole. Because class participation may be a factor in grading, instructors may use absence, tardiness, or early departure as de facto evidence of nonparticipation. Students who miss an exam with an acceptable excuse may be penalized according to the individual instructor's grading policy, as stated in the course syllabus.

AP.1.6.1 Absence for Religious Observances or Participation in University Activities

Mason encourages its faculty to make a reasonable effort to allow students to observe their religious holidays or to participate in university-sponsored activities (e.g., intercollegiate athletics, forensics team, dance company, etc.) without academic penalty. Absence from classes or exams for these reasons does not relieve students from responsibility for any part of the course work required during the absence. Students who miss classes, exams, or other assignments as a consequence of their religious observance or for participation in a university activity will be provided a reasonable alternative opportunity, consistent with class attendance policies stated in the syllabus, to make up the missed work. It is the obligation of students to provide faculty, within the first two weeks of the semester, with the dates of major religious holidays on which they will be absent, and the dates for which they are requesting an excused absence for participation in any university-sponsored activity scheduled prior to the start of the semester, and as soon as possible otherwise. Students requesting an excused absence for participation in a university- sponsored activity must provide their instructor with a letter from a university official stating the dates and times that participation in the activity would result in the student missing class. Faculty members are encouraged to take religious observances into consideration when constructing class schedules and syllabi.

AP.1.7 Re-enrollment After Previous Attendance

Undergraduate students who have missed one or more consecutive semesters must follow the requirements detailed in the Enrollment after Previous Attendance section in the Undergraduate Admission Policies section of the catalog. Graduate and Non-Degree students who have missed two or more consecutive semesters must re-enroll. All graduate students must receive departmental approval prior to re-enrollment. Students may find the re-enrollment form at the Office of the University Registrar (http://registrar.gmu.edu).

AP.1.8 Undergraduate Leave of Absence

All undergraduate students who are planning an absence from George Mason must submit a formal request for Leave of Absence (http://registrar.gmu.edu/forms/) to the Office of the University Registrar (http://registrar.gmu.edu).

Students do not need to complete the Leave of Absence form if they are participating in a George Mason University sponsored study abroad program or have received permission to study elsewhere.

Eligibility Requirements

A student must:

- Be eligible to register for classes
- Be a degree-seeking undergraduate student
- Be registered during the semester immediately prior to the beginning of the Leave of Absence
- Have no holds (e.g., disciplinary, financial, etc.) which would restrict registration
  - The maximum time allowed for a Leave of Absence is two years.
  - A new admission application will be required if a student is away for more than two academic years. Re-admission is not guaranteed.
  - Prior approval is required. Advisors approve one-semester requests. Advisor and Dean approval is required if the leave of absence requested is for more than one semester.
  - Students are not permitted to study elsewhere while on a Leave of Absence.
  - A student who was admitted as a new first semester freshman or transfer student but did not attend will not be eligible for a Leave of Absence. Instead, he or she must contact Undergraduate Admissions.
  - A student who was re-admitted but did not attend will not be eligible for a Leave of Absence. He or she must contact Undergraduate Admissions.
  - Requests for extensions on a previously submitted Leave of Absence require submission of a new Leave of Absence form.

AP.2 Course Information

AP.2 Course Information

- AP.2.1 General Information
- AP.2.2 Schedule Types
- AP.2.3 Credit Hours
- AP.2.4 Course Numbering
- AP.2.5 University Courses

AP.2.1 General Information

Each course indicates:

- the number of credits earned
- course equivalencies
- the repeat status (see AP.1.3.4 for policies regarding repeating a course)

Course Number	Classification
Not Repeatable for Credit	student may attempt the course unlimited times during academic career but will receive credit towards the degree only once
Repeatable within Term for Credit	student may register and receive credit for more than one section of the course within the same academic term
Repeatable within Degree for Credit	student may register and receive credit for more than one section of the course during academic career
Limited to 2 Attempts	similar to 'Not Repeatable' but student may only attempt the course twice during academic career
Limited to 3 Attempts	similar to 'Not Repeatable' but student may only attempt the course three times during academic career

- prerequisites
- corequisites
- registration restrictions
- schedule type

Individual instructors set hours for independent study, readings, topics, or similar courses. If a course is listed as having an equivalent course, students may not receive credit for both courses.

AP.2.2 Schedule Types

Course Number	Classification
Activity-Based (ACT)	Students receive instruction in a physical-discipline and then practice that discipline under instructor supervision. May include sports or drill formation exercises.
Dissertation (DIS)	Student is enrolled in a course working toward a doctoral dissertation supervised by a faculty member. Course must be numbered 998 or 999.
Fieldwork (FLW)	Coursework primarily consists of specialized fieldwork experiences, which may include professional licensure (in social work, nursing, legal, counseling, business) volunteering, service learning, science fieldwork, etc)
Independent Study (IND)	Refers to those situations where students work primarily on their own initiative on a project through reading and writing. Contact with an instructor may be one-on-one or in small groups and is generally only on a few arranged occasions throughout the semester to receive assignments, have progress checked, etc. Examples include: directed reading, problems and special projects.
Internship (INT)	Refers to those situations where the student applies previously-acquired knowledge and skills in a supervised situation which approximates the conditions under which those knowledge/skills will ultimately be used, usually off campus. Examples: practicums, on-the-job training, work experience programs, cooperative education programs, apprenticeships, externships, preceptorships, etc. Excludes Student Teaching PreK-12.
Laboratory (LAB)	Instructional activities in settings providing specialized facilities or equipment for students to master the subject matter either by performing experiments or practicing the skills being learned. The instructor generally supervises, assists, answers questions, etc., rather than making presentations.
Lecture (LEC)	Primary organization of class instruction. Instructors mainly present material by talking to the class about the subject matter.
Private Music Instruction (PMI)	Student receives one-on-one instruction from faculty member for a specific musical instrument.
Recitation (RCT)	Refers to a secondary organization of class instruction, typically smaller groups reviewing or discussing material previously presented in a lecture section.
Research (RSC)	Individualized research, creative, or scholarly projects that are not for graduate thesis or dissertation.
Seminar (SEM)	Course material is primarily delivered via small group discussion led by a faculty member.
Studio (STU)	Refers to situations where the student is engaged in the practice and use of techniques for productions in the areas of visual and performing arts. This instruction is used to further advance student's skills in the course-specific field. The instructor role varies from direct assistance to simple availability for questions and supervision.
Student Teaching (STC)	Practicum placement in schools PreK-12.
Thesis (THS)	Student is enrolled in a course working toward a master's thesis supervised by a faculty member. Course must be numbered 798 or 799.

AP.2.3 Credit Hours

A credit hour is the unit by which coursework is measured. One unit of credit normally represents one hour in the classroom and a minimum of two hours of out-of-class work; or one hour of recitation; or not fewer than two hours of laboratory work, per week throughout a 15-week semester. In the academic context, an hour is defined as 50 minutes. Depending on the course-delivery format, a credit hour may be measured by demonstrations of competency, proficiency, or fulfillment of learning outcomes that are equivalent to traditionally delivered courses.

AP.2.4 Course Numbering

Note: Course numbers which start with a U or L or end with a T are created for transfer credit purposes only.

Course Number	Classification
100-199	Lower-division undergraduate courses; primarily for freshman
200-299	Lower-division undergraduate courses; primarily for sophomores
300-399	Upper-division undergraduate courses; primarily for juniors
400-499	Upper-division undergraduate courses; primarily for seniors

500-699	Graduate-level courses; primarily for graduate, bachelor's/accelerated master's and non-degree graduate students. Advanced undergraduate students may request permission to register for these courses by using the Graduate Course for Undergraduate credit or the Reserve Graduate credit forms. Appropriate approval is required and is not guaranteed. Some restrictions may apply.
700-799	Graduate-level courses; primarily for graduate and non-degree graduate students. Some restrictions may apply.
800-999	Doctoral-level courses; primarily for doctoral students

Special Course Number Designations

Course Number	Classification
798	Master's research
799	Master's thesis
790, 890	Supervised practicum
794, 894	Internship
796, 896	Directed reading and research courses for master's and doctoral students
998	Doctoral dissertation proposal
999	Doctoral dissertation research

AP.2.5 University Courses

University (UNIV) courses are special undergraduate academic seminars that appeal to a wide range of majors. These courses fall into three general categories: transitional, interdisciplinary honors, and special topics. To encourage interaction among students and faculty, many of these courses have smaller class sizes. Some UNIV courses satisfy Mason Core requirements.

University Transitions Courses

This series of courses focuses on transition through the various stages of college. UNIV 100 – 199 courses help first-year college students adjust academically and socially, hone decision-making skills, learn about services and opportunities for involvement on campus, and solidify resources and techniques for assessing and improving their academic performance. UNIV 200 – 299 course topics focus on success in the second year of college and include choosing a major or career or participating in a Living Learning Community. UNIV 300 – 399 courses have three tracks: the first is for transfer students making the transition to a new university, the second focuses on career readiness for internships and research experiences, and the third is designed for specific groups of student leaders. UNIV 400 – 499 courses have a focus on research and scholarship, as well as life beyond college in the workplace or graduate school.

University Special Topics Courses

Upper-level University courses are open to all students unless specific prerequisites are indicated. They are usually repeated offerings.

AP.3 Grading

AP.3 Grading

- **AP.3.1 Undergraduate Grading**
  - AP.3.1.1 Undergraduate Grading Scales
- **AP.3.2 Graduate Grading**
  - AP.3.2.1 Graduate Grading Scales
- **AP.3.3 Additional Grade Notations**
- **AP.3.4 Midterm Reports**
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- **AP.3.7 GPA**
- **AP.3.8 Change of Grade**
- **AP.3.9 Grade Appeals**
  - AP.3.9.1 Pending Grade Appeal for Students in Academic Difficulty
- AP.3.10 Final Exams
  - AP.3.10.1 Absences from Final Exams

AP.3.1 Undergraduate Grading

The university-wide system for undergraduate grading is as follows:

Grade	Quality Points	Undergraduate Courses
A+	4.00	Passing
A	4.00	Passing
A-	3.67	Passing
B+	3.33	Passing
B	3.00	Passing
B-	2.67	Passing
C+	2.33	Passing
C	2.00	Passing
C-	1.67	Passing
D	1.00	Passing
F	0.00	Failing

No credit toward graduation accrues from a failing grade or a grade that is replaced by a retaken course.

AP.3.1.1 Undergraduate Grading Scales

Grading scales are indicated on each specific course. Scales are listed below and indicate possible grades which may be earned within each:

- Undergraduate Regular: allows for all grades listed above in AP.3.1 as well as IN, AB
- Undergraduate Special (ABC/NC): only allows for A+, A, A-, B+, B, B-, C +, C, NC, IP
- Undergraduate Special: allows for all grades listed above in AP.3.1 as well as AB, IN, IP
- Satisfactory/No Credit: allows for S, NC, AB, IN, IP

AP.3.2 Graduate Grading

The university-wide system for grading graduate courses is as follows:

Grade	Quality Points	Graduate Courses
A+	4.00	Satisfactory/Passing
A	4.00	Satisfactory/Passing
A-	3.67	Satisfactory/Passing
B+	3.33	Satisfactory/Passing
B	3.00	Satisfactory/Passing
B-	2.67	Satisfactory[1]/Passing
C	2.00	Unsatisfactory/Passing
F	0.00	Unsatisfactory/Failing

[1] Although a B- is a satisfactory grade for a course, students must maintain a 3.00 average in their degree program and present a 3.00 GPA on the courses listed on the graduation application.

AP.3.2.1 Graduate Grading Scales

Grading scales are indicated on each specific course. Scales are listed below and indicate possible grades which may be earned within each:

- Graduate Regular: allows for all grades listed above in AP.3.2 as well as IN, AB
- Graduate Special: allows for all grades listed above in AP.3.2 as well as IN, AB, S, NC, IP
- Satisfactory/No Credit: allows for S, NC, AB, IN, IP

AP.3.3 Additional Grade Notations

Satisfactory/No Credit (S/NC)

An S grade reflects satisfactory work (C or better for undergraduate students, B- or better for graduate students); otherwise, the student receives no credit (NC). S and NC have no effect on the student's GPA. Entire courses normally graded S/NC are annotated in the catalog, and include doctoral dissertation courses 998 and 999. Students may also individually elect to take credit without grade, with restriction. For more information, see AP.1.4.6 Enrolling for Credit Without Grade Points (Satisfactory/No Credit) .

Incomplete (IN)

This grade may be given to students who are passing a course but who may be unable to complete scheduled coursework for a cause beyond reasonable control. Unless the faculty member has specified an earlier deadline, the student must then complete all the requirements by the end of the ninth week of the next semester, not including summer term, and the instructor must turn in the final grade by the end of the 10th week. Faculty members who choose to require an earlier incomplete deadline will be required to file an *Incomplete Grade Contract* with the local academic unit's office, detailing the work that remains to be done, the general reason for the incomplete, and the student's grade at the point of receiving the incomplete. Unless an explicit written extension is filed with the Office of the University Registrar by the faculty deadline, the grade of IN is changed by the University Registrar's office to an F. The maximum IN extension is to the end of the same semester in which it was originally due. Students who have filed their intent to graduate have only six weeks from the date of degree conferral to resolve any incomplete grades and have the final grades recorded by the University Registrar's office.

While a grade of IN remains on the transcript, it is treated as an unsatisfactory grade in determining probation, suspension, termination, or dismissal. Removal of INs from the transcript may result in retroactive elimination of probation, suspension, termination, or dismissal.

Incomplete, extended (IX)

IX is given by the Office of the University Registrar after receiving an Incomplete Extension form signed by the instructor and the appropriate dean. The extension gives students additional time to complete work; the amount of time is specified by the instructor. The final grade must be submitted to the University Registrar's office before final exams for the semester in which the IN grade was originally due. A grade of IX affects the academic record in the same way as does a grade of IN.

In Progress (IP)

This grade may be given in selected courses, including graduate theses, dissertations, practicums, and internships. IP may also be used when the work of BIS 490 RS: Senior Project (Mason Core)(Mason Core), CS 112 Introduction to Computer Programming, CS 211 Object-Oriented Programming, ECON 495 RS: Honors Thesis in Economics (Mason Core), or if a course that is graded S/NC or A/B/C/NC is not completed within one semester. IP has no effect on the GPA. With the exception of the formerly-mentioned courses, IP remains on the record until the work is completed and a final grade is assigned. An IP in BIS 490 RS: Senior Project (Mason Core)(Mason Core), CS 112 Introduction to Computer Programming, CS 211 Object-Oriented Programming, or ECON 495 RS: Honors Thesis in Economics (Mason Core) not changed to a final grade by the last day of classes of the next semester, not including summer term, is changed by the Office of the University Registrar to an F. IP grades will also be awarded in courses numbered 799, 998 and 999 until successful completion, and then they will be changed to S/NC. Upon successful completion of 799, 998 or 999 and submission of the final grade, grades for all prior sections will be changed to S/NC.

Absent with permission (AB)

A student who has received permission from the academic dean or director to be absent from a final exam for cause beyond reasonable control may receive a temporary grade of AB. A rescheduled exam must be administered within 10 business days of the original exam date, or the AB will automatically become an F. Final determination of academic status is not complete while the AB remains on the transcript.

Special Provision (SP)

The grade of SP may be given by a dean to students who are unable to complete the course requirements because of extraordinary long-term circumstances, such as major illness or military deployment. SP has no effect on the GPA and remains on the transcript until the work is completed and a final grade is assigned.

AP.3.4 Midterm Reports

Midterm progress is reported for all full-semester 100- and 200-level classes, and for 300- and 400-level classes at the discretion of the professor. The reporting period extends from the fifth through the eighth week of the semester, allowing flexibility to individual faculty in providing reports for their classes. Students should check with their instructors as to when reports will be complete and available for viewing through Patriot Web. These progress reports, which appear in Patriot Web as "Midterm Grades," do not become part of the student's official record. They are not calculated in any GPA, and they do not appear on any official or unofficial transcript.

AP.3.5 Final Grades

Semester grade reports are available through Patriot Web. Students may print a grade report for their own records or to issue to a third party.

AP.3.6 Transcripts

Official transcripts include all credit coursework attempted at the university, including all courses taken as a graduate, undergraduate or non-degree student. Official transcripts will not be issued when unsatisfied financial obligations to the university exist. Unofficial transcripts may be printed by the student from Patriot Web. See the Office of the University Registrar (http://registrar.gmu.edu) for information and instructions on ordering official transcripts.

The Antonin Scalia Law School issues transcripts for courses taken as a law student. See Law School (http://law.gmu.edu) for information and instructions on ordering transcripts.

AP.3.6.1 Transcript Key

The transcript key, which appears on the reverse side of official transcript paper, summarizes policy information pertinent to understanding individual students' transcripts and may be updated as necessary.

AP.3.7 GPA

Quality point values are assigned to letter grades as indicated in the grading system table. A quality point score is computed by multiplying the value of a letter grade by the number of credits for the course. For example, a student receiving an A (4.00) in a 3-credit course earns 12 quality points. The GPA is computed by dividing the quality points earned by the number of credits graded A+ through F (GPA hours).

For undergraduates, the GPA computed for the current term gives the **current GPA**, which is the measure of academic performance in one semester and affects eligibility for the dean's list. The GPA computed for all institutional credit gives the **cumulative GPA**, which is the basis for the university's retention policies, including good standing, warning, probation, suspension, and dismissal. Cumulative GPA also determines students' eligibility to graduate and have university honors posted to their record at graduation.

Current GPA and cumulative GPA do not apply to graduate students. A notation of academic warning is entered on the transcript of a graduate student who receives a grade of C, or a grade of F in a graduate course or while a grade of IN or IX is in effect. A degree GPA is computed for graduate students based on graded courses completed at the university and applied toward the degree. For more information, see AP.6 Graduate Policies.

AP.3.8 Change of Grade

The conditions and time limits for changes from the temporary grades IN, IP, AB, and SP to final grades appear in Additional Grade Notations.

Once a final grade has been recorded by the Office of the University Registrar, it can be changed only in cases of computational or recording error, or pursuant to a successful appeal of the grade as described below. Additional work of any type submitted to improve a grade after the final grade has been assigned and sent to the Office of the University Registrar is never accepted.

All changes of final grades must be initiated, approved, and recorded by the last day of classes of the next regular semester (spring for fall grades, and fall for spring and summer term grades).

AP.3.9 Grade Appeals

Although faculty members are generally the best judges of student performance, there may be times when a student believes a grade is unfair. In such cases, the student should ask the faculty member to reconsider the grade. If the student is not satisfied, an appeal may be made to the local academic administrator of the unit offering the course. The administrator should ask the student to return to the faculty member who assigned the grade for further consultation.

If the faculty member is no longer associated with the university, the administrator will appoint a faculty surrogate, who will assume the authority of the instructor of record.

If a mutually satisfactory agreement is not reached, the student may request that the administrator form a review committee of three faculty peers of the faculty member who assigned the grade. If the administrator believes the student's appeal does not have merit, this reservation is reported to the collegiate dean. If the dean concludes the student's appeal does not have merit, no review is conducted.

The faculty member or the student may challenge and have replaced one of the three members of the committee without giving a reason for the challenge. The committee meets separately with the faculty member and the student to explore the full particulars of the case. A nonparticipating observer of the student's choice may attend the meeting. Every effort is made to avoid an adversarial relationship.

After the committee has reviewed the case thoroughly, it issues to the administrator (with a copy to the faculty member) a written recommendation that includes the reasons for its findings. At this time, the faculty member has an opportunity to take the recommended action, if any. If the matter is not resolved at this point, the administrator considers the committee recommendation and makes a recommendation to the dean. If the dean decides that the recommendation to change the grade is appropriate and the faculty member refuses to make the change, then the dean may direct the Office of the University Registrar to do so. The decision of the dean is not subject to further appeal.

Grade appeals are not accepted after the last day of classes of the following semester (spring for fall grades, fall for spring and summer grades).

The Provost's Office does not consider grade appeals, nor does the University Academic Appeals Committee.

AP.3.9.1 Pending Grade Appeal for Students in Academic Difficulty

A student may request a delay from the dean in imposing academic suspension because of a pending grade appeal that could change the student's status. An approved delay allows the student to register.

If the grade appeal is successful, the official transcript is corrected and the student continues in classes as a student in good academic standing, on probation or on warning. If the grade appeal is not successful, the student is required to stop attending all classes immediately. No record of registration for the academic period appears on a transcript and the student receives the appropriate refund as of the decision date.

AP.3.10 Final Exams

Undergraduate courses usually culminate with a final exam. Except in predominantly laboratory courses, final exams may not be given during the last week of classes. Exams may not exceed the scheduled length of two hours, 45 minutes. Changes in location or time of in-class final exams must be approved by the appropriate department chair and dean. A professor who is considering assigning a take-home exam or significant end-of-semester paper or project should inform the students at the beginning of the semester. Such assignments should be distributed by the beginning of the last week of classes so that students can coordinate them with preparation for other exams. Students must not be required to submit exams before the date of the regularly scheduled exam for a

course. Retaking final exams is not permitted. Students who have more than two examinations scheduled on the same day should consult their instructors to make other arrangements. If campus-wide disruptions to class meeting schedules occur during the semester (e.g., due to severe weather), a revised final exam schedule may be issued. In this event, students and faculty are expected to adhere to the revised schedule. The examination period may be prolonged and individual exams may be shifted to the last day of the revised exam period.

Students with permission to take deferred examinations may receive a temporary grade of AB (absent with permission). Rescheduled exams must be completed within the time deadline set by the university. See below for more information.

AP.3.10.1 Absences from Final Exams

Absences from final exams will not be excused by the instructor except for sickness on the day of the exam. Other causes must be approved by the student's academic dean or director. The effect of an unexcused absence from an undergraduate final exam shall be determined by the weighted value of the exam as stated in the course syllabus provided by the instructor. If absence from a graduate final exam is unexcused, the grade for the course is entered as F. See AP.3.3 Additional Grade Notations for information on being absent with permission.

AP.4 Degree Application, Conferral and Graduation

AP.4 Degree Application, Conferral and Graduation

- **AP.4.1 Application for Degree**
- **AP.4.2 Degree Conferral**
  - AP.4.2.1 Definitions of Degree Components
  - AP.4.2.2 Catalog Requirements for Degrees
- **AP.4.3 Graduation**
- **AP.4.4 Conferral of Posthumous Degree**

AP.4.1 Application for Degree

In the semester prior to the expected completion of degree requirements, students must confirm their intent to graduate through Patriot Web (https://patriotweb.gmu.edu). The deadline to apply to graduate is generally three to four months prior to the conferral date. Specific deadlines and complete instructions regarding graduation are published on the Office of the University Registrar's website (http://registrar.gmu.edu). Separate applications for each graduate degree or certificate are required.

For a degree to be conferred, all coursework must be completed, even if the coursework is not being applied to the degree. All students must complete the following degree requirements prior to the conferral (graduation) date: credit-by-exam, oral exams, theses, scholarly papers, and comprehensive exams. Students in doctoral programs must also complete internship/practicum requirements prior to the conferral date. Master's theses and doctoral dissertations are due in the library well before the conferral date. For more information visit the University Dissertation & Thesis Services web (http://library.gmu.edu/udts/)page (http://thesis.gmu.edu).

Students must have active registration status in the semester or summer term of graduation. Students not registered for coursework in the term of graduation must obtain a special registration. (For more information, see AP.1 Registration and Attendance.) Degree applications will not be automatically extended if graduation is postponed; students must reapply for each conferral date.

AP.4.2 Degree Conferral

Mason awards degrees and certificates in programs and at levels authorized by the State Council of Higher Education for Virginia (SCHEV). The university confers degrees at the bachelor's, master's, and doctoral levels. An academic program may include a degree program and additional majors, minors, or certificates. The university offers no certificate program below the bachelor level; some post baccalaureate certificates, however, may be awarded concurrently with the bachelor's degree. For more information, see listings in Find Your Program (http://catalog.gmu.edu/programs/).

AP.4.2.1 Definitions of Degree Components

- **Degree program, major, or field**: A program of study that normally requires at least 30 credits of coursework in the specified field. The primary program name (degree and major or field) appears on the diploma for bachelor's and master's degrees. Only the degree name appears for doctoral degrees. An undergraduate who desires to graduate with a BA or BS degree in two or more subjects must meet departmental requirements for the major in each field. For each major, at least 18 credits used to fulfill its requirements must be applied only to that major, i.e., cannot be used to fulfill the requirements of a concentration, minor, undergraduate certificate, or another major.
- **Concentration**: A second-order component of a degree program. A concentration consists of at least 12 hours that are not applied to any other concentration. Undergraduate concentrations are approved by the Undergraduate Council at the undergraduate level or by the Graduate Council at the graduate level.
- **Certificate**: A non-degree program complementary to a degree that requires at least 15 unique undergraduate or 12 graduate credits. For each undergraduate certificate, at least 15 credits used to fulfill its requirements cannot be used to fulfill the requirements of a major, concentration, minor, or another undergraduate certificate. The name of a completed certificate program appears on the transcript after the conferral of an undergraduate degree. Certificates are approved by Undergraduate or Graduate Council as appropriate. Credits from a maximum of one graduate certificate may also apply to a master's or doctoral degree program.
- **Minor**: A complement to a bachelor's degree program or major normally requiring at least 15 credits in a field other than the student's major. Of the courses presented for a minor, at least 8 credits must be applied only to that minor and may not be used to fulfill requirements of the student's major, concentration, an undergraduate certificate, or another minor. When coursework for a minor is used to fulfill a component of a major, only those credits in excess of the 30 required for a major may be applied to the requirement for unique credits.
- **Option**: The choice of a thesis or nonthesis path in graduate programs.

AP.4.2.2 Catalog Requirements for Degrees

Catalog year refers to the setting of course and non-course requirements within academic programs as stated in the school and college section of a specific catalog. Catalog year does not set academic policies other than program requirements in place, however. For more information, see the Knowledge of University Policies section of the Student Rights and Responsibilities page. Not all programs and degree components are available in all catalogs. For any one degree, all requirements must be

met as stated in a single catalog. The only exception is that Bachelor's degree students may select a minor from another catalog year for which they are eligible, as noted below.

Bachelor's degree candidates may choose to graduate under the terms of any catalog in effect during their enrollment in degree status. Students who have been inactive for two or more years or who have attended another institution without prior approval from their academic dean or director must graduate under a catalog in effect at or after their re-admission and during their enrollment in degree status.

Master's and doctoral degree candidates who have been continuously enrolled may choose to graduate under the terms of any catalog in effect during their enrollment in degree status. Students who have been inactive more than one year, however, may be required by their program to graduate under a catalog in effect after they have been granted permission to re-enroll. In no case may a student choose the requirements of a future catalog year that take effect after the student's degree is anticipated.

AP.4.3 Graduation

Graduation ceremonies provide opportunities for students and their families to share in the conferral of academic degrees. Students who wish to participate should check GMU Events (http://events.gmu.edu) for current information about all graduation details including tickets, regalia, and schedules. Note: there is one formal commencement ceremony per year, in May, that includes all schools and colleges; students are recognized in groups, by their degrees. Each college holds a separate convocation where individual student names are called. Bachelor's and master's degree candidates who declare their intent to graduate in August but who have not yet completed all degree requirements may participate in the graduation ceremonies in anticipation of degree completion. Their names are marked with an asterisk identifying them as candidates pending completion of all requirements. Doctoral students may participate only if they have successfully completed all degree requirements, including defending and submitting a signed, final copy of their dissertation by the deadline. A Winter Graduation ceremony is held for August and December graduates where each student is individually recognized.

AP.4.4 Conferral of Posthumous Degree

A posthumous degree is an official Mason degree that is awarded to a deceased student in recognition of the student's academic achievement. The criteria for the award are established in order to uphold academic and institutional integrity. If a student does not qualify for a posthumous degree, an "In Memoriam" degree may be awarded to a student in good academic standing. Either degree award is subject to final review by the Provost.

Criteria

A posthumous degree may be awarded if, at the time of the student's death, he or she was enrolled in George Mason University, was in good academic standing, and was nearing completion of the requirements in the major degree program.

- **Undergraduate**: The student must have completed 90 credit hours, with at least 30 credit hours completed at Mason.
- **Graduate – Masters**: The student must have been admitted into degree status; completed at least 80% of the credit hours required for the degree, with at least 18 hours completed at Mason; and have a minimum GPA of 3.00 which does not include more than 6 credits of C.

  If the degree requirements include a thesis, the student must have completed sufficient research or scholarship such that a thesis or one or more articles can be prepared. The student's thesis committee must approve the thesis or article(s) and recommend granting the degree.
- **Graduate – Doctoral**: The student must have advanced to candidacy; completed all coursework required for the degree with a minimum GPA of 3.00 which does not include more than 6 credits of C; and must have completed a full draft of the dissertation. The student's dissertation committee must determine that the dissertation could have been defended and recommend granting the degree.

AP.5 Undergraduate Policies

AP.5 Undergraduate Policies

- **AP.5.1 Student Classification**
- **AP.5.2 Academic Standing**
  - AP.5.2.1 Academic Period
  - AP.5.2.2 Good Academic Standing
  - AP.5.2.3 Student Retention Categories
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- **AP.5.3 Requirements for Undergraduate Programs**
  - AP.5.3.1 Declaration of Major
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  - AP.5.3.6 Change of Academic Program
  - AP.5.3.7 Credit for More than One Undergraduate Major
- **AP.5.4 University Honors**
- **AP.5.5 Dean's List**

AP.5.1 Student Classification

Admitted undergraduates are classified as follows:

- **Freshman**, 0–29 credits completed
- **Sophomore**, 30–59 credits completed
- **Junior**, 60–89 credits completed
- **Senior**, 90 or more credits completed

Full-time undergraduates are classified as those students enrolled in 12 or more credits per semester. Completed hours are defined as a combination of all credits earned at the university plus credits transferred from other institutions or obtained by testing. Please note that different criteria for full-time status may apply for tuition, verification, and financial aid purposes. For more information, contact the offices of Student Accounts (http://studentaccounts.gmu.edu/), University Registrar (http://registrar.gmu.edu), and Student Financial Aid (https://www2.gmu.edu/admissions-aid/financial-aid/), respectively.

AP.5.2 Academic Standing

The following system of academic progress became effective in fall 2004 and applies to all undergraduate degree and nondegree students at Mason.

Academic retention is based solely on the cumulative GPA. The cumulative GPA required for retention varies according to the credit level or attempted credit hours, which is a combination of all credits attempted at the university plus credits transferred from other institutions or obtained by testing.

AP.5.2.1 Academic Period

Academic period refers to fall semester, spring semester, or summer term. For determining the duration of academic warning, probation, and suspension, an academic period is defined as follows:

Each academic period begins on the 15th day following the last scheduled day of final exams for the previous period. Each academic period ends on the 14th day after the last scheduled day of final exams. For example, assume that the last scheduled day of final exams for a semester is Monday, December 23. That period then ends on Monday, January 6. The next period begins on Tuesday, January 7.

AP.5.2.2 Good Academic Standing

Students are in good academic standing unless they are academically dismissed, suspended, or on probation. Students on academic warning are still considered to be in good academic standing.

AP.5.2.3 Student Retention Categories

Students with at least 7 credits completed at Mason and a cumulative GPA of less than 2.00 fall into one of three categories: warning, probation, and suspension. All notations of academic standing are included in a student's permanent record. Students who plan to apply for financial aid should review the requirements for making Satisfactory Academic Progress (SAP), as found on the Financial Aid website (https://www2.gmu.edu/admissions-aid/financial-aid/), which differ from Academic Standing. The cumulative GPA range that defines each of the categories varies according to the credit level, as noted below:

Credit Level	Warning	Probation	Suspension
Attempted Credit Hours:	Cumulative GPA Range:	Cumulative GPA Range:	Cumulative GPA Range:
7-16	0.00-1.99	----	-----
17-29	1.75-1.99	1.00-1.74	0.00-0.99
30-59	1.85-1.99	1.25-1.84	0.00-1.24
60-89	1.95-1.99	1.55-1.94	0.00-1.54
90+	----	1.85-1.99	0.00-1.84

Exception for Freshmen and Transfer Students

Freshmen and transfer students in their first semester of study at Mason will receive probation as the strongest academic sanction. GPA retention levels, as stated above, will apply in all subsequent semesters. Students in this category should be on notice that they must improve their academic record to avoid suspension in future semesters; in particular they should consult their advisors and consider repeating courses to achieve academic good standing.

AP.5.2.4 Termination from the Major

Undergraduate students in any retention category may be reviewed for possible termination by their dean according to the published policy approved by the major program. Termination from a major—or from all majors in a college—may be imposed as a result of excessive repeating of required courses without achieving the minimum standard, and for other evidence of continued failure to make adequate progress toward completion of the major. Students must be informed a semester in advance and given a chance to meet the standard or appeal according to published college procedures. Once a termination decision has been made, a letter of termination is sent to the student by the dean and notification of termination from the major is affixed to the student's academic record. Students who are terminated are no longer eligible to pursue that major, but may declare a different major within the university to complete their undergraduate degree.

AP.5.2.5 Academic Suspension

Students in degree status who incur a first suspension following a spring semester or summer term serve a period of suspension through the next fall semester. Students who incur a first suspension following a fall semester serve a period of suspension through the next summer term. A second suspension is for one calendar year: two semesters and a summer term. Students returning from suspension are on probation for one academic period. Course credits earned at other colleges during the period of suspension from Mason (for academic or nonacademic reasons) are not accepted for the degree program.

Nondegree undergraduate students placed on suspension have no specified rights of return to the university. Nondegree students who have been suspended and wish to resume their studies after a period of absence must qualify for readmission through the Office of Admissions (https://www2.gmu.edu/admissions-aid/).

AP.5.2.6 Academic Dismissal

A third suspension results in academic dismissal, a status that is usually permanent. In exceptional cases, students who have been dismissed may apply for readmission after a minimum absence of three calendar years from the university, but only if they meet one or more of the following conditions after having been dismissed:

- Demonstrate academic success (2.50 GPA or better) in at least 18 credits of classes taken during the period of dismissal at an accredited two- or four-year college or university. Such credits may be considered for transfer back to Mason, but there is no guarantee of acceptance of the credit.
- Provide other evidence of a renewed ability to achieve academic success.
- Provide evidence that all degree requirements will be met once an additional 12 or fewer credits are complete.

Meeting the above requirements does not guarantee a return. The Office of Admissions and the appropriate school or college dean will make individual decisions in the best academic interests of the student and the university. For students seeking readmission to a new school or college, the new dean will make the decision in consultation with the former dean and the Office of Admissions (https://www2.gmu.edu/admissions-aid/). For more information, see AP.5.2.9 Academic Clemency.

AP.5.2.7 Academic Performance and Credit Limit

Undergraduate students on warning, probation, or returning from suspension are limited to a maximum of 13 credits for following semesters until they achieve good standing. Students registered for 14 or more credits are responsible for seeking academic advisement and adjusting their enrollment to a maximum of 13 credits.

AP.5.2.8 Academic Standing and Student Activities

Only students in good academic standing are eligible to hold or run for elective or appointive office in any organization or activity associated

with Mason, compete in any athletic or other activity representing Mason on either an intercollegiate or a club level, or serve as a working staff member of any student organization. Note that students on warning are considered to be in good standing. Some organizations and activities may impose stricter academic criteria for participation.

A student whose eligibility for an activity requires the completion of a semester will have fulfilled that requirement when the student's publicly scheduled exams are over, unless continued eligibility depends on the grades received. In the latter case, the student will not become eligible until the end of the semester as defined in AP.5.2.1 Academic Period.

AP.5.2.9 Academic Clemency

Undergraduate students returning to Mason after a separation of a minimum of three calendar years may petition their academic dean to have up to 16 previous credits earned at Mason removed from the calculation of their cumulative GPA. Courses and grades so removed will not count toward graduation requirements. Note that the courses, with their original grades and the notation "Academic Clemency," will remain listed on the student's transcript permanently. The petition for clemency must be filed within 12 months starting from the first day of the re-enrollment semester at Mason; approval may depend on successful completion of that semester. Approval of the request is neither automatic nor guaranteed.

AP.5.3 Requirements for Undergraduate Programs

AP.5.3.1 Declaration of Major

To plan a sound academic program, undergraduates should select a degree and major as soon as it is practical but no later than four weeks before the end of the sophomore year. To declare a major, students should confer with the appropriate advisor in the new major program. Students approaching the recommended point for declaring a major, but still uncertain of their choice, should consult:

Student Academic Affairs - Advising, Retention, and Transitions
Student Union Building I, Room 3600
advisor@gmu.edu

Note that all degree components including Mason Core, majors and concentrations must be contained in a single catalog year. See AP.4.2.2 Catalog Requirements for Degrees for exception regarding minors.

AP.5.3.2 Requirements for Bachelor's Degrees

- **Admission**. Candidates must have been officially admitted into degree-seeking status.
- **Residency**. At least one-fourth of the total credits applied to the degree must be completed at Mason and include at least 12 upper-level credits (courses numbered 300 or above) in the major program. A maximum of 30 credits earned in non-degree status at Mason can be applied toward a bachelor's degree.
- **Credit Hours**. Students must complete at least 120 credits that count toward graduation and fulfill all degree requirements. A few programs require more than the minimum 120 credits.
- **Quality**. Candidates must achieve a cumulative GPA of 2.00 or higher, and must meet all higher standards for grades allowable in majors, minors, or certificates. The Mason cumulative GPA does not include transfer courses.
- **Upper Level**. Students seeking a bachelor's degree must apply at least 45 credits of upper-level courses (numbered 300 or above) toward graduation requirements.
- Mason Core (formerly University General Education). Candidates must complete categories of general education courses and writing requirements as described for their catalog year. This includes satisfying the requirement of two semesters of English composition (ENGH 101 Composition (Mason Core)(Mason Core) and ENGH 302 Advanced Composition (Mason Core)(Mason Core)) with a grade of C or better. Additionally, as part of the university's commitment to student writers in all undergraduate programs, at least one upper-division course in each major has been designated as fulfilling the writing-intensive (WI) requirement.
- **College/Department General Education.** Students must satisfy additional general education requirements for specific degree programs, as described on each individual college page.
- **Major**. Students must satisfy all requirements for their major and degree program, as described on each individual college page, and as detailed in the degree evaluation for their catalog year.

AP.5.3.2.1 English Composition Requirement

Mason requires students to complete at least two semesters of English composition. Students who complete the Honors curriculum complete the English composition requirement through coursework in those programs. Equivalent credit may be granted through course transfer or external exam. Exemption (but not credit) may be granted through a proficiency exam administered by the English department. All other students must enroll in ENGH 101 Composition (Mason Core)(Mason Core) (or ENGH 100 Composition for Multilingual Writers (Mason Core)(Mason Core)) upon admission and, after meeting its prerequisites, ENGH 302 Advanced Composition (Mason Core)(Mason Core). Students must attain a minimum grade of C in composition courses to fulfill degree requirements.

AP.5.3.2.2 Writing-Intensive Course Requirement

As part of the university's commitment to student writers in all undergraduate programs, at least one upper-division course in each major has been designated as fulfilling the "writing-intensive" (WI) requirement. While other courses in the major may require written projects, teachers of the designated WI courses will devote class time to instruction on how to complete assignments successfully, assign and grade a minimum of 3500 words, provide constructive feedback on drafts, and allow revision of at least one graded assignment. See the description of each major for the specific course or courses that fulfill the WI requirement. For a complete list of approved courses, see Writing Intensive courses.

AP.5.3.3 Second Bachelor's Degree

A second bachelor's degree may be earned, either concurrently or sequentially. To graduate with two degrees, students must present at least 30 Mason credits beyond those required by either degree alone. For sequential awarding of degrees, students must be readmitted for the second degree through the Office of Admissions and complete a minimum of 30 credit hours after that point to have fulfilled the residency requirement for that degree.

Students who are concurrently pursuing two bachelor's degrees at Mason must present a detailed program of study for both degrees and obtain authorizing signatures from the chair or director of each degree program and the dean or director, if required by the college, school, or institute. Students may declare the second concurrent degree by completing the Declaration of Second Bachelor's Degree section of the Change/Declaration of Academic Program Form. Both degrees must be declared the semester before the student intends to graduate. Students pursuing concurrent degrees should apply to graduate when both degrees are complete, or be prepared to meet the requirements noted above for sequential awarding of degrees.

AP.5.3.4 Minors

Students may elect minor programs of study in addition to major fields. Minors usually require between 15 and 21 credits of study, at least 8 of which must be applied only to that minor and may not be used to fulfill requirements of the student's major, concentration, an undergraduate certificate, or another minor. Students must complete at least 6 credits in their minor at Mason and achieve a minimum 2.00 GPA in courses applied to the minor. Students interested in a minor should 1) consult the appropriate departmental sections in this catalog for the full details of the requirements, 2) meet with the appropriate minor advisor in order to obtain the required signature on the Minor Declaration form and, 3) submit a completed Minor Declaration form to the Office of the University Registrar. Note that these minor requirements are university minimum requirements; individual programs may have higher standards and/or more restrictive requirements which are listed in the appropriate departmental sections in this catalog.

AP.5.3.5 Undergraduate Certificates

There are two types of undergraduate certificates: certificates that are designed for students external to Mason, and those that require co-enrollment in a bachelor's program for current undergraduate students. All students pursuing undergraduate certificates must be admitted to Mason in degree-seeking status. Students external to Mason apply directly to the program through Undergraduate Admissions. Current students can elect to add an undergraduate certificate by submitting a completed Undergraduate Declaration of Certificate form to the Office of the University Registrar.

More than half of the credit hours for an undergraduate certificate must be taken at Mason, and more than half must be taken in degree-seeking status. Students must achieve at least a 2.00 GPA in courses applied to the certificate. Undergraduate certificate programs where the student is co-enrolled in a bachelor's program must have 15 unique credits that cannot also be used to fulfill the requirements of a major, a concentration, a minor, or another undergraduate certificate.

When the student is co-enrolled in a bachelor's degree program the completed undergraduate certificate may be posted to the transcript only after completion of a bachelor's degree. Note that these are university minimum requirements; individual programs may have higher standards and/or more restrictive requirements.

Students who are directly admitted to an undergraduate certificate program alone have eight semesters to complete certificate requirements. Such students who are given permission to re-enroll following an absence from Mason may not count the four-year time limit as beginning on the date of re-enrollment. International students attending in F-1 or J-1 status have a more restrictive time limit; contact the Office of International Programs and Services (https://oips.gmu.edu/) for information. Students who will not meet the published time limit because of circumstances beyond their control may petition their dean for an extension. Failure to meet the time limit or to secure approval of an extension request may result in termination from the program.

AP.5.3.6 Change of Academic Program

Students considering a change in their academic program (major or degree) are encouraged to see an advisor in the Academic Advising and Transfer Center or a faculty advisor in their prospective discipline. Departmental sections of this catalog describe requirements for acceptance. Students not meeting the requirements may appeal to the department chair for an exception.

Once a student has completed 60 credits, a change of major requires a meeting with an advisor in the new major before the change is complete. To file a change of major, signatures of advisor or designate in the new major program must be obtained on the Undergraduate Change/Declaration of Academic Program form (http://registrar.gmu.edu/forms/).

AP.5.3.7 Credit for More than One Undergraduate Major

Students seeking to graduate with a BA or BS degree in two or more subjects must meet departmental requirements for the major in each field. For each major, at least 18 credits used to fulfill its requirements cannot be used to fulfill the requirements of another major, a concentration, a minor, or an undergraduate certificate.

Students pursuing two or more concurrent majors must complete the Second Major section of the Undergraduate Change/Declaration of Academic Program form (http://registrar.gmu.edu/forms/). The applicant must present a detailed program of study for both majors and obtain the authorizing signature from the chair or director of the second program and from the dean or director, if required by the college, school, or institute. When required by a specific academic unit, department chairs and deans or directors must also approve all changes to the programs of study. Students may begin a program at any time that permits completion before the anticipated graduation date.

AP.5.4 University Honors

A student graduates with distinction from the University when at least 60 undergraduate institutional credits applied toward graduation are earned at Mason, and the student's cumulative GPA is at least equal to one of three values:

- 3.90, summa cum laude
- 3.70, magna cum laude
- 3.50, cum laude

A student graduates with recognition from the university when between 45 and 59 (inclusive) credits applied toward graduation are earned at Mason, and the student's cumulative GPA is at least 3.80.

In addition, high achieving students may qualify for membership in one of the many recognized university honor societies. In 2011, George Mason University was awarded a chapter in Phi Kappa Phi, the nation's oldest all-disciplinary honor society. In 2012, Mason was awarded a chapter of Phi Beta Kappa, the nation's oldest and most prestigious honor society dedicated to the liberal arts. Membership is by invitation only to both of these honor societies.

AP.5.5 Dean's List

Students in degree status who take at least 6 credits in a semester and earn a semester GPA of 3.50 or higher merit placement on the Dean's List. Courses subsequently repeated and excluded will not retroactively affect Dean's List status. This notation will be placed on the individual's permanent record.

AP.6 Graduate Policies

AP.6 Graduate Policies

- **AP.6.1 Student Classification**
  - AP.6.1.5 Institutional Credits
- **AP.6.2 Full-Time and Half-Time Status Classification**

- **AP.6.3 Academic Advising**
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- **AP.6.11 Graduate Council**
- **AP.6.12 Graduate Faculty**

At the graduate level, Mason offers certificate programs of study and master's and doctoral degree programs. There are also a number of combined bachelor's and accelerated master's degree programs for academically-strong undergraduates with a commitment to learning advanced skills in a specialized field of study.

AP.6.1 Student Classification

Students may access graduate classes and programs according to their status as non-degree or enrolled degree students. For more information, see Graduate Admissions.

AP.6.1.5 Institutional Credits

Graduate students at Mason are required to successfully complete more than half of the minimum required credits towards their degree program at Mason. See AP.6.5 for Credit by Exam, Reduction of Credit or Transfer of Credit opportunities.

AP.6.2 Full-Time and Half-Time Status Classification

Graduate students are considered full-time if they are enrolled in at least 9 graduate credits per semester or hold a full-time assistantship (total 20 hours a week) and are enrolled in at least 6 graduate credits per semester. Graduate students are considered half-time if they are enrolled in at least 4.5 graduate credits per semester.

Master's students who are enrolled in thesis credits are considered full-time if they are enrolled in at least three credits of 799 per semester. Master's students may enroll in 1 credit of 799 and be considered in status (either full-time or half-time) only if they have completed 3 credits of 799 and the student along with their advisor and department chair certify each semester that the student is working full-time or half-time on the thesis. See AP.6.9.3 Master's Thesis for more information regarding 799.

Doctoral students who are enrolled in dissertation credits (either 998 or 999) are considered full-time if they are enrolled in at least 6 credits per semester, regardless of whether they hold an assistantship. Doctoral students who have advanced to candidacy and have completed the minimum number of credits required by the university and their degree program, including the minimum number of credits of 998 and 999, are considered in status (either full-time or half-time) if they are registered for at least 1 credit of 999 and the student along with their advisor and department chair certify and communicate to the Office of the University Registrar each semester that they are working full-time or half-time on the dissertation. See AP.6.10.6 Dissertation Registration for more information regarding 998 and 999.

To be considered as full-time under the aforementioned clauses, a student must complete and submit the appropriate forms (https://registrar.gmu.edu/forms/graduate/) to the Office of the University Registrar prior to the first day of classes for the semester. Different requirements for full-time and half-time status may apply for tuition, verification, loan deferral, and financial aid. Contact Student Accounts (http://studentaccounts.gmu.edu/), the Office of the University Registrar (http://registrar.gmu.edu), and Student Financial Aid (https://www2.gmu.edu/admissions-aid/financial-aid/), respectively, for more information. Note that the official designation of time status for all students is determined by the Office of the University Registrar.

AP.6.3 Academic Advising

When a student is admitted to graduate study, the student is assigned a faculty advisor by the academic program responsible for the student's program of study. Registration for newly admitted graduate students, as well as continuing students, begins with a visit to the student's academic advisor. There, the student can obtain information about specific courses and degree requirements and develop an individual program of study. Progress in an approved program of study is the shared responsibility of the student and the advisor. The graduate student is responsible for compliance with the policies and procedures of the college, school, or

institute, and all applicable departmental requirements that govern the individual program of study. Students should consult with their advisors before registration each semester.

AP.6.4 Student Status

AP.6.4.1 Non-degree Student Status

Students may pursue graduate study in non-degree status. Such students who wish to pursue a degree or certificate program are encouraged to apply for admission to a degree program as soon as possible. All program admission requirements must be met, including official transcripts, letters of recommendation and standardized test scores, if applicable. If the student intends to use credits earned in non-degree status toward a degree, the credits must be approved on the Graduate Transfer of Credit Request form (https://registrar.gmu.edu/forms/graduate/). The credits must have been earned within six years prior to first enrollment as an admitted student in the specific degree program, and a minimum grade of B (3.00) must have been earned in each course. A maximum of 12 credits can be transferred to a degree or certificate program.

AP.6.4.2 Removing Provisional Qualifier

For policies concerning students admitted provisionally, see Graduate Admission Policies.

AP.6.4.3 Permission to Re-Enroll

Permission to re-enroll in a program must be obtained by all graduate certificate, master's and doctoral degree students who have failed to enroll in at least 1 credit of coursework for two or more consecutive semesters at Mason. A program may allow a student to petition to graduate under any catalog in effect while the student was enrolled. All program components, including concentrations, must appear in the catalog for the year selected. The final decision as to catalog year rests with the unit dean or director. The Graduate Re-enrollment form is available here (http://registrar.gmu.edu/forms/).

AP.6.4.4 Voluntary Resignation from Graduate Academic Program

Degree-seeking students may officially resign from an academic program with the approval of their department chair or program director and the dean or director of the school, college, or institute. The Voluntary Resignation form (https://registrar.gmu.edu/forms/graduate/) must then be approved by the Office of Student Accounts and submitted to the Office of the University Registrar for transcript notation. Students who resign after the drop period may either complete the courses they are currently enrolled in or immediately withdraw, which will result in grades of W on the student's transcript for that semester. All students that have resigned will be removed from any future registered courses. Program resignation is final.

AP.6.4.5 Graduate Student Parental Leave of Absence

All degree-seeking graduate students actively enrolled for at least one academic year or four consecutive 8-week sessions, as appropriate to the student's academic program calendar, who intend to become parents via birth, adoption, foster or custodial care placement shall have the option, after notice to the Associate Provost for Graduate Education (APGE), of taking a Parental Leave of Absence (PLoA).

Purpose:
The PLoA period of time shall not count towards the student's time limit to degree completion as applicable under AP.6.9 (https://catalog.gmu.edu/policies/academic/graduate-policies/), and AP.6.10 (https://catalog.gmu.edu/policies/academic/graduate-policies/). The student's time limit will be extended to include one semester or two consecutive 8-week sessions, as appropriate to the student's academic program calendar, for an approved PLoA. The PLoA can be taken in either the fall or spring semester or for two consecutive 8-week sessions, as appropriate to the student's academic program calendar. Once the student's approved PLoA expires, the student's time limit to degree completion will resume.

Scope:
This policy applies to all graduate students regardless of gender identity, marital status, and whether or not the student is the birth parent or non-birth parent. The approved PLoA time period must be taken in its entirety as one event. The student may schedule the approved PLoA to begin up to six months after the anticipated birth/adoption/placement of the child. A PLoA can only be used once per child. Simultaneous births or placements are treated as one event. The use of this policy does not impact the availability of a non-academic withdrawal outside of the PLoA period, and it may be considered in any future PLoA or time limit to degree completion policy exception requests and appeals.

Notification:
Students must request a PLoA at least six weeks prior to the start of the semester or session in which the PLoA will begin. See here (https://provost.gmu.edu/academics-and-research/graduate-education/graduate-student-academic-appeals/)for information on the procedures for completing a PLoA notification. Upon notification, the APGE shall confirm the upcoming PLoA to the student, University Registrar, the student's respective College/School and local academic unit. A copy of a birth or placement record or equivalent documentation will need to be presented by the student to the APGE once available.

Requirements:
Students shall not be responsible for new tuition or fees during the approved PLoA period. A student may not enroll in courses at Mason, nor at any other institution, while on a PLoA. Students are not required nor expected to conduct academic work or research towards degree requirements during the PLoA. Students shall maintain access to their Mason e-mail account and may, under certain circumstances, be eligible to maintain access to Mason student health insurance for up to one academic year. See Student Health Services (https://shs.gmu.edu/) for more information. Students are advised that some university services and resources may be limited to registered students and would not be accessible during their PLoA. As applicable, students are exempt from continuous registration requirements under AP.6.10.6 (https://catalog.gmu.edu/policies/academic/graduate-policies/) or AP.6.9.3 (https://catalog.gmu.edu/policies/academic/graduate-policies/) during the approved PLoA period. Upon the expiration of a PLoA, all academic responsibilities resume.

Return:
Faculty, student applicants, and staff are encouraged to work together in order to facilitate the PLoA process and ensure students return to their same time to degree completion status as before the PLoA. Any student on a PLoA may be required by the local academic unit or College/School to advise them of their return prior to their first semester or 8-week session back as an enrolled student. Any PLoA student who fails to return and register in a timely manner by the add/drop deadline in the semester or 8-week session after a PLoA shall still have their time limit to degree resume and will be required to re-enroll in their graduate program upon their return.

Exception Request:
The APGE may review and approve student requests for an exception to the requirements of this policy, including requests to extend such leave for one additional semester or a consecutive third and fourth 8-week session, as appropriate to the student's academic program calendar. The

maximum period allowed for a PLoA shall not exceed one academic year (fall, spring) or four consecutive 8-week sessions, as appropriate to the student's academic program. If an exception to this policy is desired, see here (https://provost.gmu.edu/academics-and-research/graduate-education/graduate-student-academic-appeals/) for further information. Should a student's PLoA policy exception request be denied, the student shall have one level of appeal to the Graduate Academic Appeals Committee (GAAC). See here (https://provost.gmu.edu/academics-and-research/graduate-education/graduate-student-academic-appeals/) for more information.

Other Provisions:
Students receiving financial aid should consult with the Office of Financial Aid (https://www2.gmu.edu/admissions-aid/financial-aid/)to determine any financial impact before a PLoA form is submitted. Per university policy, non-enrolled students, including those on a PLoA, may not continue to hold any existing university funded assistantships, fellowships, and/or scholarships. However, they may be rehired upon return at the discretion of the funding authority and in compliance with all applicable university policies and procedures. This policy does not address any employment, scholarships or fellowships that are funded by entities external to the university. Students should consult with relevant faculty, supervisors, and/or departments to address such issues before deciding whether to submit a PLoA.

Students who are neither United States citizens nor permanent residents must first consult with Office of International Programs and Services (https://oips.gmu.edu/) to discuss the impact of such a leave on the student's non-immigrant status in the United States.

AP.6.5 Credit by Exam, Reduction or Transfer

AP.6.5.1 Credit by External Exam
Degree credit for satisfactory completion of an external exam is limited to those exams and achievement levels specifically approved by the Graduate Council.

AP.6.5.2 Reduction of Credits
All students must meet the institutional credit requirement; however, the number of credits required by a doctoral, or master's program may be reduced on the basis of a relevant post-baccalaureate degree earned prior to admission. Reduction of credits requires the approval of the program director and the dean or director of the school, college, or institute. They determine whether the credits are applicable to the degree program and the number of credits to be reduced.

Doctoral Programs
The maximum reduction for doctoral programs derives from the total credits required by the program and the university requirements for institutional and unique credits. For a 72-credit program, the maximum reduction is 30 credits. Programs that require more than 72 credits may be reduced by more than 30 credits provided that the student meets the aforementioned university requirements. Doctoral students earning a secondary master's degree at Mason do not receive a reduction of credits and should indicate on their program of study which courses apply to the doctoral degree. Because individual doctoral programs may have more restrictive policies, make sure to consult with the program and/or academic unit to learn of their reduction of credit policies.

Students requesting a reduction of credits must supply official transcripts. For transcripts from outside the United States, students must supply an official transcript evaluation and an official translation for transcripts not in English if these documents were not supplied in the admission process. Reduction of credits requests from students who are admitted provisionally are not considered until the students have fulfilled the conditions of their admission and had the provisional qualifier removed from their records.

Credits used in reduction of credits are not subject to time limits, and the credits must have been applied to a previous degree. The credits used in the reduction may include transfer credit used for a previously earned degree but may not include credits that are applied to both an undergraduate and graduate degree in a joint bachelor's/master's program or in Mason's Bachelor's/Accelerated Master's Programs. Reduction of credits may not be requested for more credits than were applied to the previous degree. Excess thesis credits beyond those allowed by the previous degree may not be applied to a reduction of credits.

Coursework applied to a reduction must have received a minimum grade of B. Courses graded 'pass/fail' or 'satisfactory/no credit' may be applied to a reduction of credits provided that is the standard grade mode for the course and that it can be reasonably interpreted as a B or better according to the home institution's grading system. Graduate degrees that follow a non-standard format will be evaluated on a case-by-case basis.

Masters Programs
The maximum reduction for master's programs derives from the total credits required by the program and the university requirements for institutional credits. Because individual master's programs may have more restrictive policies, make sure to consult with the program and/or academic unit to learn of their reduction of credit policies.

Students requesting a reduction of credits must supply official transcripts. For transcripts from outside the United States, students must supply an official transcript evaluation and an official translation for transcripts not in English if these documents were not supplied in the admission process. Reduction of credits requests from students who are admitted provisionally are not considered until the students have fulfilled the conditions of their admission and had the provisional qualifier removed from their records.

Credits used in reduction of credits are not subject to time limits, and the credits must have been applied to a previous degree. The credits used in the reduction may include transfer credit used for a previously earned degree but may not include credits that are applied to both an undergraduate and graduate degree in a joint bachelor's/master's program or in Mason's Bachelor's/Accelerated Master's Programs. Reduction of credits may not be requested for more credits than were applied to the previous degree. Excess thesis credits beyond those allowed by the previous degree may not be applied to a reduction of credits.

Coursework applied to a reduction must have received a minimum grade of B. Courses graded 'pass/fail' or 'satisfactory/no credit' may be applied to a reduction of credits provided that is the standard grade mode for the course and that it can be reasonably interpreted as a B or better according to the home institution's grading system. Graduate degrees that follow a non-standard format will be evaluated on a case-by-case basis.

AP.6.5.3 Transfer of Credit
Graduate credit earned prior to admission to a certificate, master's, or doctoral program may be eligible to be transferred into the program and applied to the certificate or degree. Transfer of credit requires the approval of the program director and dean or director of the school, college, or institute. They will determine whether the credit is eligible for

transfer and applicable to the specific certificate or degree program. Note that credits accepted for transfer do not compute into any Mason GPA. Limits on the number of credits that can be transferred derive from the degree requirements given below.

Credit is usually considered for transfer at the student's request at the time of initial registration as a degree-seeking student. Students must supply official transcripts. For transcripts from outside the United States, students must supply an official transcript evaluation and an official translation for transcripts not in English if these documents were not supplied in the admission process. Credit transfer requests from students who are admitted provisionally are not considered until they have fulfilled the conditions of their admission and the provisional qualifier has been removed from their records.

To be eligible for transfer credit, the credit must be graduate credit earned at another accredited university, earned at another institution and recommended for graduate credit in the American Council on Education guidebook, or earned at Mason while in a non-degree status. The credit must have been earned within six years prior to first enrollment as an admitted student in the specific certificate or degree program, and a minimum grade of B (3.00) must have been earned. The course must be applicable toward a degree at the institution offering the course. Extension and in-service courses that are not intended by the institution offering the courses to be applied to a degree program are not eligible for transfer credit to Mason. The credits cannot have been previously applied toward a degree at another institution or Mason; however, up to 3 credits previously applied to a degree program at another institution may be transferred into a certificate program at Mason.

AP.6.5.4 Permission to Study Elsewhere

Students enrolled in a degree program may take graduate courses at another accredited institution and apply these credits to a master's or doctoral degree with prior approval. Approval must be secured in writing from the director of the graduate program and the dean or director of the school, college, or institute, and submitted to Mason's Office of the University Registrar before registering at the other institution. Upon completion of the course, students must arrange for an official transcript to be submitted to Mason so that the credits may be transferred into their Mason degree program. These credits are subject to all the other conditions given above for transfer credit, including limits on numbers of credits that can be taken elsewhere. Note that credits accepted for transfer do not compute into any Mason GPA. Permission to take a course elsewhere does not exempt a graduate student from satisfying the degree requirements given below.

Enrolled, degree-seeking graduate students may be eligible to take a limited number of courses through the Consortium of Universities of the Washington Metropolitan Area. See AP.1.4.2 Permission to Study Elsewhere for more information. Credits earned through the consortium are considered resident, not transfer, credits, and are therefore not subject to transfer of credit conditions or limitations.

AP.6.6 Graduate Academic Standing

AP.6.6.1 Academic Warning

A notation of academic warning is entered on the transcript of a graduate student who receives a grade of C or F in a graduate course or while a grade of IN is in effect.

AP.6.6.2 Academic Termination

A degree-seeking graduate student will be terminated for the reasons listed below unless an academic policy exception is obtained. Non-degree graduate students will be terminated for unsatisfactory performance as described below. These are minimum standards of performance; some programs have higher standards. Note that the university reserves the right to terminate any student based on cancellation (by the testing administrator) of any test score required for admission. Once a student has met the criteria for termination, they may only avoid termination by obtaining an academic policy exception, as described below, through the process provided for by their academic unit in conjunction with the Associate Provost for Graduate Education.

Students May be Terminated for Any One of the Following Reasons
Fully-Admitted Graduate Students Enrolled in a Degree and/or Certificate Program

- Fail to make satisfactory progress toward degree as determined by the academic unit and/or Associate Provost for Graduate Education.
- Accumulate grades of F in two graduate courses or 9 credits of unsatisfactory grades in graduate courses.

Provisionally-Admitted Degree Seeking Graduate Students

- Fail to meet provisions of admission within time limits.
- Fail to make satisfactory progress toward the degree, as determined by the academic unit and/or Associate Provost for Graduate Education.
- Accumulate 12 credits of unsatisfactory grades in undergraduate courses.
- Accumulate grades of F in two graduate courses or 9 credits of unsatisfactory grades in graduate courses.

Note: Undergraduate and graduate course grades are not combined to reach the termination threshold; they are considered separately.

Non-Degree Graduate Students

- Accumulate 12 credits of unsatisfactory grades in undergraduate courses.
- Accumulate grades of F in two graduate courses, or 9 credits of unsatisfactory grades in graduate courses.

Note: Undergraduate and graduate course grades are not combined to reach the termination threshold; they are considered separately.

The student is responsible for knowing both the termination criteria (including, but not limited to, program time limits and grade requirements) and the process for initiating an academic policy exception request to the dean of their academic unit. In cases of program time limits and grade requirements, the University Registrar will notify the student within two weeks of termination eligibility that the student's performance has reached the threshold for termination, provide notice of the start of the request for exception period, and direct the student to their respective academic unit for information on submitting an academic policy exception request. For all other termination criteria, the academic unit will notify the student within two weeks of termination eligibility that the student's performance has reached the threshold for termination, provide notice of the start of the request for exception period, and direct the student to information on submitting an academic policy exception request.

Each academic unit, and the Associate Provost for Graduate Education as applicable, shall publish on their respective university web page the process for initiating an academic policy exception request and the criteria used in their respective reviews. Each academic unit and the Associate Provost for Graduate Education shall also publish on their respective university web pages the process for filing an appeal of an

academic policy exception denial. The Associate Provost for Graduate Education is responsible for publishing the criteria used by that office and by the Graduate Academic Appeals Committee during their respective appeal reviews. During the review of any request or appeal, the student may register and enroll in classes.

Once an academic policy exception request or appeal period has expired, or when the student's exception request has been denied by the academic unit, the Associate Provost for Graduate Education, or the Graduate Academic Appeals Committee with no further appeal option, a letter of termination signed on letterhead by the dean or director of the student's academic unit will be sent to the student by mail and email within one week, with an electronic copy provided to the University Registrar. A notification of academic termination will be affixed to the graduate student's official record and the student may then be administratively dropped or withdrawn from currently enrolled classes. See AP.1.3 for more information.

Should a student continue:

- in the enrolled degree and/or certificate program or non-degree program, **or**
- change programs within a single college without going through an admissions process

any grades of F or unsatisfactory grades shall count toward reaching the termination threshold as described above.

AP.6.6.3 Readmission to Graduate Study at Mason

Former graduate students who have been terminated, dismissed or have resigned from a Mason graduate program are not permitted to take any additional coursework at Mason unless a new graduate program application has been submitted and the applicant has been admitted to graduate study. Time limits for the degree begin with the date of admission to the new program. If the student applies and is readmitted to the same graduate program at Mason from which the student was terminated, dismissed, or resigned, any grades of F or unsatisfactory grades accumulated within six years prior to readmission shall count toward reaching the termination threshold.

Academic units and programs may have additional restrictions concerning readmission. If so, those restrictions apply. Any previously earned credit applied to the new graduate program must have been earned within six years prior to enrollment in the new graduate program. Upon full admission to an alternative graduate program at Mason, any grades of F or unsatisfactory grades accumulated in previous graduate programs at Mason will be excluded and shall not count towards reaching the termination threshold as described in AP.6.6.2 (https://catalog.gmu.edu/policies/academic/graduate-policies/).

AP.6.7 Bachelor's/Accelerated Master's Degrees

The university offers a number of combined bachelor's and accelerated master's degree programs for academically-strong undergraduates with a commitment to advance their education in a specialized field of study. Admitted students may obtain both a bachelor's and a master's degree after satisfactory completion of at least 138 credits (total number of required credits depends on the requirements of both the undergraduate and graduate programs). Once matriculated into the master's program, students are assessed graduate tuition and are subject to all graduate academic policies as detailed in the University Catalog.

AP.6.7.1 Application and Admission

Application to accelerated master's degree programs should be made once the student has earned at least 60 credits. The graduate application fee is waived. Admission is competitive and must be approved by the designed administrator(s) or equivalent within both the student's undergraduate and graduate degree programs.

AP.6.7.2 Coursework Requirements

After admission and successful completion of 75 undergraduate credits, accelerated master's students shall complete 3 to 12 credits of approved advanced standing graduate courses in their field of study. Students must earn a minimum grade of B in each of the approved graduate courses. These approved advanced standing credits apply to both the undergraduate and graduate degrees. All required graduate course prerequisites must be completed prior to enrollment. Moreover, accelerated master's students, may earn up to 6 additional reserve credits of graduate coursework, while still in undergraduate status. These reserve credits apply to the master's degree program, but do not apply to the undergraduate degree program.

Accelerated pathways totaling less than 150 credits must cover all competencies in both the undergraduate and graduate degrees. In cases where pathways allow for the substitution of undergraduate elective credits by graduate level elective credits, the graduate level elective credits must align with the requirements of the graduate level program while maintaining the breadth of knowledge imparted by the undergraduate degree program.

Each pathway must offer a curated list of courses that are consistent with these requirements and that maintain the integrity of both the undergraduate and graduate degree programs. Completion of the bachelor's accelerated master's degree requires that all university requirements for the master's degree are met, including the institutional credit requirement and graduate time limit to degree requirement. For more information on undergraduate students who want to enroll in graduate courses, see AP.1.4.4 Graduate Course Enrollment by Undergraduates.

AP.6.7.3 Timeline Requirements

Accelerated master's students must graduate from their undergraduate program in the semester specified on their transition form (https://registrar.gmu.edu/forms/) for the accelerated degree program. In addition to applying for graduation, students in the accelerated programs must submit a transition form to their undergraduate local academic unit by the last day to add classes of their final undergraduate semester. Transition forms must be approved by the student's intended graduate program. Students should enroll in the related master's program in the fall or spring semester that immediately follows the term of undergraduate degree conferral. If students elect to delay enrollment in the chosen master's program they can defer for up to one semester following the term of undergraduate degree conferral, subject to the constraints of their master's program. Deferrals and changes to the timeline must be approved by the graduate program director. Failure to enter the graduate program in accordance with specified timelines will result in forfeiture of graduate advanced standing courses earned under the undergraduate status.

AP.6.7.4 Instructions for International Students

F-1 and J-1 students must request a change of program level and an I-20/DS-2019 extension at the time they move from the undergraduate to graduate level of study. Funding for the additional time in F-1 or J-1 status also must be documented as required by federal immigration regulations.

AP.6.8 Requirements for Graduate Certificates

Candidates must satisfy all applicable university requirements and all requirements established by the graduate certificate program faculty. Individual departmental graduate certificate requirements are listed under their academic departments in this catalog. Note that the following are university minimum requirements; individual programs may have higher standards and/or more restrictive requirements.

- Graduate certificate programs require a minimum of 12 and a maximum of 24 graduate credits.
- Only graduate courses may apply toward the graduate certificate.
- A maximum of 3 graduate credits taken at another institution can be transferred into a graduate certificate program. See AP.6.5 Credit by Exam (https://catalog.gmu.edu/policies/academic/graduate-policies/).
- More than half of the minimum required credits applied to the certificate must be earned through direct instruction at Mason.
- In the case of a certificate offered through consortia arrangement, at least one-third of the credits applied to the certificate must be earned through direct instruction at Mason.
- Candidates must have a minimum GPA of 3.00 in coursework presented on the certificate application, which may include no more than 3 credits of C. The GPA calculation excludes transfer credits.
- Certificate students are subject to graduate termination policies.
- Certificate students who satisfy the degree requirements of more than one certificate at Mason may apply coursework from multiple certificates towards a Mason master's or doctoral degree program. No credits can be triple counted nor substituted for the degree program requirements. Program acceptance is subject to all applicable admissions requirements.

AP.6.8.1 Students in Master's or Doctoral Programs also Pursuing Graduate Certificates

Admission

Students must be admitted to the master's or doctoral program and enrolled in active degree-seeking status. All master's and doctoral admission requirements apply. In order for both the degree program and graduate certificate to be conferred at the same time, students must be admitted to the graduate certificate program prior to applying for graduation.

Time Limits

The time limits coincide with the six-year time limit for master's degrees or the six-year time limit for advancement to candidacy in a doctoral degree. Master's and doctoral time limit rules apply.

Multiple Programs

Students may be enrolled in one graduate certificate program at a time while they pursue a master's or doctoral degree. Students may share coursework between their primary degree program (master's or doctorate) and secondary graduate certificate. No credits can be triple counted.

AP.6.8.2 Students in Graduate Certificate Programs Only

Admission

Students pursuing graduate certificate programs must be admitted to Mason, in the same way as degree-seeking students. As such, failure to make satisfactory progress (as determined by the academic unit and/or Associate Provost for Graduate Education) toward certificate requirements may result in termination from the certificate program. Certificate students who earn one or more certificates at Mason may apply coursework from multiple certificates toward a Mason master's or doctoral degree program. No credits can be triple counted nor substituted for the degree program requirements. Program acceptance is subject to all applicable admissions requirements.

Coursework After Admission

More than half of the credits required for the graduate certificate program must be taken after admission to that program.

Time Limits

Certificate program students have six (6) years from the date of admission to the graduate certificate program. Individual certificate programs may have stricter time limits, which are published in this catalog. International students attending in F-1 or J-1 status have more restrictive time limits; contact the Office of International Programs and Services for information. Students who are given permission to re-enroll following an absence from Mason may not count the six-year time limit as beginning on the date of re-enrollment. Students who will not meet published time limits because of compelling circumstances beyond their control may request an exception to this policy by petitioning their dean for a single extension of time prior to the expiration of their time limit. If any extension is granted the total time limit for completion of the degree will not exceed seven (7) years. Failure to meet the time limit or to secure approval of an exception to this policy through the process described in AP.6.6.2 (https://catalog.gmu.edu/policies/academic/graduate-policies/) shall be considered a failure to make satisfactory academic progress and result in termination from the program. This policy does not supersede a student's university-approved disability services accommodations plan.

Multiple Programs

Students not admitted to any graduate degree program (master's or doctoral) may be admitted to two graduate certificate programs at the same time. The graduation application for each graduate certificate must include a minimum of 12 credits that apply only to that certificate and not to another.

AP.6.8.3 Financial Aid for Students in Certificate Programs Only

Not all certificate programs are eligible for Federal financial aid. A list of the eligible graduate certificates can be found in Financial Aid.

AP.6.9 Requirements for Master's Degrees

Candidates must satisfy all applicable university degree requirements and all requirements established by the master's program faculty. Individual departmental degree requirements are listed under the respective master's programs in this catalog. Programs may impose more stringent requirements.

- **Admission**. Candidates must have been officially admitted into degree status.
- **Credit Hours.** Candidates must earn a minimum of 30 graduate credits.
- **Credit Level.** Only graduate courses may apply toward the degree.
- **Institutional Credit.** More than half of the required minimum credits applied to the degree must be earned at Mason. Or, in the case of programs offered through joint, cooperative, or consortium arrangements, at the participating institutions, at least one-third of the credits applied to the master's degree must be earned through direct instruction at Mason.
- **Thesis/Project Limits.** A maximum of 6 credits of master's thesis research (799) or master's project may be applied to the degree.

- **Quality**. Candidates must have a minimum GPA of 3.00 in coursework presented on the degree application, which may include no more than 6 credits of C. (Grades of C+, C-, or D do not apply to graduate courses. The GPA calculation excludes all transfer courses and Mason non-degree studies credits not formally approved for the degree.)

AP.6.9.1 Thesis Options

Requirements regarding a thesis vary with the degree program. A number of master's programs offer both thesis and non-thesis options. The same quality of work is expected of students regardless of their chosen option. For more information, consult the section on degree requirements under each degree program.

AP.6.9.2 Time Limit

Master's degree students have six (6) years from the time of first enrollment as a degree-seeking student in the program to complete their degrees. Individual master's programs may have stricter time limits, which are published in this catalog. International students attending in F-1 or J-1 status also have more restrictive time limits; contact the Office of International Programs and Services for information. Students who are given permission to re-enroll following an absence from Mason may not count the six-year time limit as beginning on the date of re-enrollment. Students who will not meet published time limits because of compelling circumstances beyond their control may request an exception to this policy by petitioning their dean for a single extension of one calendar year prior to the expiration of their time limit. Students seeking an extension due to a parental leave of absence (PLoA) are referred to AP.6.4.5 (https://catalog.gmu.edu/policies/academic/graduate-policies/). If any extension is granted, the total time limit for completion of the degree will not exceed seven (7) years. Failure to meet the time limits or to secure approval of an exception to this policy through the process described in AP.6.6.2 (https://catalog.gmu.edu/policies/academic/graduate-policies/) shall be considered a failure to make satisfactory academic progress and result in termination from the program under AP.6.6.2 (https://catalog.gmu.edu/policies/academic/graduate-policies/). See detailed information (http://registrar.gmu.edu/forms/timelimit/) regarding how to determine the initial deadline. This policy does not supersede a student's university-approved disability services accommodations plan.

AP.6.9.3 Master's Thesis

When a thesis proposal has been approved by the appropriate department, the department chair sends the collegiate dean or director a copy of the thesis proposal, including the approval signatures of the master's thesis committee members. Students may enroll in thesis research (799) at the beginning of the next semester. Students must register for a minimum of three credit hours in their first semester of 799. After that semester, students must enroll for one credit of 799 per semester until the thesis is complete and has been successfully submitted to the library. Such students enrolled for one credit of 799 may be considered in status (either full-time or half-time), if the following requirement is met: the student, advisor and department chair must certify each semester that the student is working full-time or half-time on the thesis. See AP.6.2 (https://catalog.gmu.edu/policies/academic/graduate-policies/) Full-time and Half-time Status Classification for more information. **Please note: Master's students must maintain continuous enrollment in 799, excluding summers, each semester until the thesis is complete and has been successfully submitted to the library. Students who are completing their thesis in the summer must be registered for at least 1 credit of 799 in the summer. Graduation candidates who miss the library deadline for thesis submission but do submit successfully before the next semester begins do not have to register for 799 in the next semester. Such students must apply for graduation in order to have their degree conferred.** Students registered in 799 are graded IP until work is complete; at that time they are graded S/NC, and previous IP grades are updated by the Office of the University Registrar to reflect the final S or NC grade.

Students selecting the thesis option should obtain a copy of Mason's *Thesis, Dissertation, or Project Guide*. Students may register in 799 only after their thesis proposal has been submitted and approved as prescribed in the guide. **Any student not in attendance at Mason who is preparing a thesis under the active supervision of a member of the faculty or wishes to take an exam must maintain continuous registration in 799 for at least 1 credit per semester.**

The master's thesis committee is composed of at least three members of the graduate faculty, at least two of whom must be from the student's department or program. Faculty who are not members of the graduate faculty or other appropriate persons not affiliated with the university may serve as additional members. Committee members are appointed by the chair or director of the academic unit or program, or designee, after consultation with the student's adviser and the student. Only a member of the graduate faculty with a full-time appointment at George Mason University may serve as the thesis chair.

The thesis committee chair is primarily responsible for directing the candidate's research and writing activities. The student is responsible for keeping all committee members informed of the scope, plan, and progress of the research as well as the writing of the thesis.

AP.6.9.4 Thesis Submission

On or before the thesis submission deadline for any semester, each student will submit a CD with a complete electronic copy of his/her thesis (signed Signature Sheet through Curriculum Vitae) as a PDF to University Dissertation & Thesis Services (UDTS). The PDF will be uploaded into the Mason Archival Repository Service (MARS). At the time of final submission, the student will also turn in completed versions of the Transmittal Sheet, ETD Submission Form, and MARS Agreement.

For degree conferral in a particular semester, the above materials must be submitted to the library by 5:00 p.m. on the Friday before the last day of class in that semester. (For specific deadlines and more information, please see The Office of the University Registrar (http://registrar.gmu.edu).)

Under circumstances determined by the student's school, college, and/or program, a student may petition to embargo all or part of his/her thesis, preventing online access to it for a period of time (2 years, 5 years, or 10 years). A student may choose to embargo his/her work in order to avoid potential contract disputes with future publishers or to protect intellectual property. Not all schools, colleges, and/or programs will permit a student to embargo his/her work, and the both the student's thesis chair and the graduate associate dean of the school/college must approve the student's petition. Upon approval of an embargo, the thesis chair, the graduate associate dean and the student must all sign the embargo approval form. The student must turn in this completed, signed embargo form to UDTS at the time of submission of his/her thesis and all other materials. The UDTS Coordinator will confirm with both the chair/director and the associate dean that they have signed the submitted form. A hard copy of the confirmation will be retained by the UDTS Coordinator. At the time the work is uploaded to MARS and/or ProQuest, the author will receive an email notification, with an official PDF attached, stating that the embargo will begin and end on a certain date, and advising the author that it is his/her responsibility to keep track of the embargo lift date. The author will further be advised that it is his/her

responsibility to notify the UDTS Coordinator via email (udts@gmu.edu) that he/she wants to lift the embargo prior to the termination date, or that he/she wants to renew the embargo (or institute a new limit). In the form, the author will also be advised that he/she should retain this form and place it in the care of his/her attorney, next of kin, or other appropriate designee. In case of death, incapacity, or other similar circumstance, it is up to the author's estate, power of attorney, or other appropriate designee to ensure that the embargo continues.

If the student wishes to extend the embargo past the thesis's release date, the student is required to secure the approval of the graduate associate dean of the student's college/school at the time of the extension request. Students can request a renewal period of 2 years, 5 years, or 10 years. If approved, the student must notify UDTS via email (udts@gmu.edu) of his/her intention to extend the embargo. The UDTS Coordinator will confirm with the associate dean that the embargo extension has been approved, and will retain copies of both the student's request and the associate dean's confirmation that the embargo can be extended.

Theses embargoed for any period will be accessible electronically on-campus in Special Collections UNLESS the student/author can provide evidence that the document should NOT be reviewed for a certain period. Permission to restrict access on-campus for such period or fully may be granted by the Associate Provost for Graduate Education. Only under extreme circumstances will a student's work be considered by the Associate Provost for Graduate Education for such an embargo. A student must have proof that publication of his/her work poses a danger to themselves, national security, or similar scenario.

Once a student has submitted the final (i.e. defended, formatted, and signed) version of his/her project, thesis, or dissertation to University Dissertation & Thesis Services (UDTS), subsequent edits WILL NOT BE ALLOWED EXCEPT under the following circumstances:

1. A formatting error has been introduced into the PDF document when converting from another document type that affects the meaning of the dissertation. For example: in the process of formatting the document into a PDF, all of the ampersands (&) have disappeared and the error is not discovered until after final submission to UDTS. Re-submission would not be allowed to revise margins, fonts, or other non-substantive items.
2. Incidence of fraud or plagiarism. The relevant college/school must conduct a review of the thesis or dissertation and determine an appropriate course of action in accordance with the university catalog and approved by the Dean. If the approved course of action includes allowing the student to resubmit a corrected version of a thesis or dissertation, the UDTS Coordinator must be informed in writing by an appropriate college/school or LAU official.

UDTS will not allow corrections of theses and dissertations for the following:

- Rewording the Dedication, Acknowledgments, Abstract, or Biography.
- Correction of citations or quotations.
- Addition of new text, or deletion of existing text, in the body.
- Correction of misspellings or grammar issues.
- Replacing, adding, or deleting Tables, Figures, or Equations.
- Correction of any other minor errors or omissions.

AP.6.9.5 Doctoral Students Also Pursuing a First Master's Degree

Requirements for master's degrees apply with the following exceptions. Residency derives from the doctoral degree requirements. Time limit may derive from the doctoral requirements, although programs may reject coursework that is not sufficiently current. Students must be officially admitted to degree status in the master's program a full semester before the one in which they will complete master's degree requirements, i.e. admitted in fall for graduation the following spring.

AP.6.9.6 Individualized Dual Master's Degree Programs

George Mason students have the option to pursue two master's degrees simultaneously. For purposes of administration, if a different rate of tuition is assessed for each program, the student will be assessed at the higher rate. The program with the higher rate will be considered the primary program. The six year time limit for completion of each program component of the dual master's programs derives from the admission date for that program component. A degree for each program component shall be conferred upon completion based upon student application for graduation. Students shall have a degree GPA for each program component.

Students in dual master's degree programs are not eligible for reduction of credit based on a previously earned relevant post-baccalaureate degree earned prior to admission. Any Reduction of Credits that was granted upon admission to the initial program will be removed from the student's record upon matriculation into the second program.

Students are not eligible to pursue two master's degrees until they have completed one semester in their initial master's program. Interested students should know:

- A full admissions application must be submitted for both programs.
- Students must apply and be accepted to the second master's degree within one year of matriculation in the initial program. The application must include a written statement explaining the intellectual or pedagogical purpose behind the degree program, and the academic symmetries that exist between the underlying fields of study.
- A restricted number of credits may be shared across dual degree programs. See University Policy 3007 (http://universitypolicy.gmu.edu/policies/dual-degree-program-arrangements/) to determine the maximum number of credits that may be shared across component degree programs.
- Credit may be shared across two programs only. Credit may never be applied to three or more programs. See University Policy 3007 for more information on credit-sharing limitations.
- An Individualized Dual Master's Degree Program of Study form (http://registrar.gmu.edu/wp-content/uploads/DMPS.pdf), approved by directors of both programs, must be submitted to the Office of the University Registrar (http://registrar.gmu.edu) upon matriculation in the second program. This will determine the maximum number of credits and specific courses that may be shared across programs. Credits that are shared between programs may need an approved Substitution/Waiver form signed by the appropriate Academic Affairs Office.

AP.6.10 Requirements for Doctoral Degrees

Candidates must satisfy all applicable university degree requirements and all requirements established by the doctoral program faculty. Departmental degree requirements are listed under the respective doctoral programs in this catalog. Programs may impose more stringent requirements.

- **Admission.** Students must have been fully admitted into degree status.

- **Credit Level.** Only graduate courses may apply toward the degree.
- **Credit Hours.** Candidates must earn a minimum of 72 graduate credits, which may be reduced on the basis of a completed master's degree or other suitable, approved transfer work. (See AP.6.5 Credit by Exam, Reduction or Transfer)
- **Unique Credit.** A minimum of 42 credits must apply only to the doctoral degree.
- **Institutional Credit.** More than half of the required minimum credits for the doctoral degree must be earned at Mason. Or, in the case of programs offered through joint, cooperative, or consortium arrangements, at the participating institutions, at least one-third of the credits applied to the doctoral degree must be earned through direct instruction at Mason.
- **Advancement to Candidacy.** Candidates must meet the written and/or oral doctoral candidacy requirements set by the candidate's degree program.
- **Dissertation.** Candidates must complete a minimum of 12 credits of doctoral proposal (998) and doctoral dissertation research (999), including at least three credits of 999. A maximum of 24 credits of 998 and 999 may be applied to the degree.
- **Defense.** Candidates must pass a final public defense of the doctoral dissertation.
- **Quality.** Candidates must have a minimum GPA of 3.00 in coursework presented on the degree application, which may include no more than 6 credits of C. (Grades of C+, C-, or D do not apply to graduate courses.) The GPA calculation excludes all transfer courses and Mason extended studies or non-degree credits not formally approved for the degree.

AP.6.10.1 Time Limit

For both full-time and part-time students enrolled in doctoral programs, whether entry is post-baccalaureate or post-master's, the total time to degree will not exceed nine (9) calendar years from the time of first enrollment in the program as a doctoral student. Doctoral students are expected to progress steadily toward their degree and to advance to candidacy within no more than six (6) years, although colleges may set a shorter time limit.

Students who do not meet published time limits because of compelling circumstances beyond their control may request an exception to this policy by petitioning their dean for a single extension of one calendar year prior to the expiration of the time limit. Students seeking an extension due to parental leave of absence (PLoA) are referred to AP.6.4.5 (https://catalog.gmu.edu/policies/academic/graduate-policies/). If any extension is granted, the total time limit for completion of the degree will not exceed ten (10) years. Any extension of the time limit to advance to candidacy that is granted does not automatically alter the total time limit for degree completion. Re-enrollment following an absence from Mason does not change the student's time limit, which is based on the date of initial admission. Failure to meet the time limits or to secure approval of an exception to this policy through the process described in AP.6.6.2 (https://catalog.gmu.edu/policies/academic/graduate-policies/) shall be considered a failure to make satisfactory academic progress and result in termination from the program under AP.6.6.2 (https://catalog.gmu.edu/policies/academic/graduate-policies/). See detailed information (https://registrar.gmu.edu/forms/timelimit/) regarding how to determine the initial deadline. This policy does not supersede a student's university-approved disability services accommodations plan.

Non-immigrant students in F-1 or J-1 status are further limited by the regulations governing their stay in the United States. The University issues visa documents (forms I-20 and DS-2019) that indicate the estimated length of the student's academic program. Students who need extensions beyond the initial period of stay must request them through the Office of International Programs and Services (OIPS). Documentation of the compelling circumstances necessitating the extension request is required by federal regulations. For further information, please consult with an advisor in OIPS.

AP.6.10.2 Doctoral Research Skill Requirements

Some doctoral degree programs require demonstration of proficiency in a research skill, including knowledge of the research literature in a foreign language, computer language, statistical methods, or a research tool specific to the discipline. Research skill requirements are included with the degree requirements for the specific doctoral degree. Where demonstration of research skills is required, certification that this requirement has been met must be completed for advancement to candidacy.

AP.6.10.3 Program of Study

Usually before the end of the second year of graduate study but no later than consideration for advancement to candidacy, doctoral students must submit a program of study for approval by the dean or director of the college, school, or institute. The program of study must include major courses and supporting courses to be completed, research skills required, subject areas to be covered by the candidacy exam, and a proposed date for the candidacy exam. Program of Study Forms are available from each program's doctoral coordinator. Any changes in the programs of study must be documented with an amended Program of Study Form.

AP.6.10.4 Advancement to Candidacy

Advancement to candidacy implies that a doctoral student has demonstrated both a breadth and a depth of knowledge in the field of study and is capable of exploring problems on the boundaries of knowledge, and has identified a research area that is likely to lead to a successful dissertation. Advancement to candidacy requires successful completion of a written and/or oral requirement as set by the candidate's degree program. Doctoral students should consult the degree requirements for each doctoral program to determine whether an oral portion is required, whether it is judged separately or with the written portion, the number of times a failed candidacy exam may be repeated and any associated time limits, and any time limits for attempting the candidacy exam.

Before doctoral students may be advanced to candidacy by the unit dean or director, they must have completed all coursework as indicated on the approved program of study, been certified in all doctoral research skills required, passed the candidacy exam, and been recommended by the doctoral supervisory committee or program coordinator. Students advanced to candidacy after the add period for a given semester must wait until the following semester to register for 999 Dissertation Research.

AP.6.10.5 Dissertation Committee

The Dissertation Committee provides guidance and oversight of the student's dissertation research and writing. In some units this committee may also function as the program committee, facilitating the design and approval of the student's program of study, conducting required examinations, and regularly assessing the student's progress and accomplishments.

Committee Size and Composition

Committee Size: Doctoral candidates must have a Dissertation Committee made up of a Chair and at least two other members (Member #1, Member #2).

Committee Chairs: Full-time faculty members at George Mason University may serve as Dissertation Committee Chairs as long as they are members of the Graduate Faculty, they are members of the core faculty for the student's degree program, and they are relevant to the student's field of study.

If the Chair of a Dissertation Committee leaves the university or retires during the student's degree, the program director may request that Graduate Faculty status be granted to allow the continuation of the member's service as Co-chair.

Committee Co-chairs: In some cases it may be appropriate to designate additional faculty as Co-chair. Graduate faculty who are from any George Mason University LAU or who are external to the university may serve as Co-chair. Non-tenure/tenure-track faculty and individuals from outside the university must be approved as members of the graduate faculty for purposes of having Co-chair privileges (see section below, Committee Service by Personnel other than Tenure or Tenure-Track Faculty at George Mason University). If the Co-chair designee meets all requirements then the Co-chair may count as Member #1 or Member #2.

Committee Members on Dissertation Committees: Each Dissertation Committee must have at least two members in addition to the Chair. The Chair, Member #1, and Member #2 must have graduate faculty status and be relevant to the student's field of study. In addition, Member #1 must be full-time faculty at George Mason University. Member #2 may be from George Mason University or external to the University.

Additional committee participants may be added. Committee service by other qualified individuals inside or outside the university may be requested by the student's LAU/program (see section below, Committee Service by Personnel other than Tenure or Tenure-Track Faculty at George Mason University).

Students should refer to the policies and procedures for their degree program for any specific guidelines for graduate Dissertation Committee service within the LAU/program.

Committee Service by Personnel other than Tenured or Tenure-Track Faculty at George Mason University: Personnel with suitable academic training and research experience who are not George Mason University full time, tenured, or tenure track faculty may be recommended for inclusion on a graduate student Dissertation Committee. This category includes personnel from outside George Mason University as well as Research Faculty, Administrative/Professional Faculty, Instructors, Affiliate Faculty, Adjunct Faculty, Retired or Emeritus Faculty, and Term Faculty at George Mason University. Such personnel must have an appropriate terminal degree. Inclusion of personnel with comparable experience in place of a terminal degree is requested by the student's Dissertation Committee Chair and the Dean/Dean's designee and approved by the Associate Provost for Graduate Education.

Full-time term or administrative/professional faculty members at George Mason University may serve as Dissertation Committee Chairs as long as they are members of the graduate faculty. Other personnel may be added to the committee as Co-chair, Member #2, or an additional member. Additional members need only be approved by the Graduate Program/LAU. Inclusion of committee members in the other categories is requested by the student's Dissertation Committee Chair and Graduate Program Director and approved by the Dean/Dean's designee; all such personnel must be appointed to graduate faculty by the Office of the Provost. If such members are on a temporary appointment there should be assurance that they will be available throughout the student's degree. They may share dissertation supervision responsibilities, and enjoy voting rights and privileges. A curriculum vitae for the proposed committee member must be included with the request for graduate faculty status and the particular advantages of including this person on the committee should be cited. Once approved for graduate faculty status, a new request is not required for service on additional committees. Faculty, staff, and students are urged to check the online list of approved graduate faculty members.

Individual programs may have more restrictive policies. If so, those restrictions apply.

Refer to the policies and procedures of the degree program for information on how to change membership of previously established dissertation committees.

Committee Structure

Membership	Minimum Required Attributes
Chair (required member)	• Full-time Mason Faculty
	• Graduate Faculty
	• Member of the program's core faculty
	• Faculty relevant to student's field of Study
Member #1 (required member)	• Full-time Mason Faculty
	• Graduate Faculty
	• Faculty in any Mason LAU
	• Faculty relevant to student's field of study
Member #2 (required member)	• Graduate Faculty; and,
	• Faculty relevant to student's field of study; and EITHER:
	• Faculty in any Mason LAU OR
	• External to Mason
Member #3 (if required by program)	• Graduate Faculty; and,
	• Faculty relevant to student's field of study: and EITHER:
	• Faculty in any Mason LAU or
	• External to Mason
Co-chair (if present)	• Graduate faculty; and, EITHER
	• Faculty in any Mason LAU OR
	• External to Mason

Additional members (if present)	• Approval by Dissertation Committee Chair, Graduate Program Director

AP.6.10.6 Dissertation Registration (998, 999)

Students working on dissertation research (999) must register for a minimum of 3 credits of 999 per semester (excluding summers) until they have completed the minimum number of credits of 998 and 999 required by the university and their degree program. Then, they must register for 1 credit of 999 until the dissertation is complete and has been successfully submitted to the library. See AP.6.2 Full-time and Half-time Classification (https://catalog.gmu.edu/policies/academic/graduate-policies/) for more information. Students registered in 998 or 999 are graded IP until work in 998 or 999, respectively, is complete; at that time they are graded S/NC, and previous IP grades are updated by the Office of the University Registrar to reflect the final S or NC grade.

All registration for doctoral dissertation research (999) must be planned with the dissertation director and approved by the dean or director of the school, college, or institute. Dissertation research (999) is open only to doctoral students who have advanced to candidacy. Once enrolled in 999, students must maintain continuous registration in 999 each semester until the dissertation is complete and has been successfully submitted to the library, excluding summers. Students who defend in the summer must be registered for at least 1 credit of 999 in the summer. Individual doctoral programs may require continuous registration beginning with 998. Graduation candidates who miss the library deadline for dissertation submission, but do submit successfully before the next semester begins, do not have to register for 999 in that next semester, but must apply for graduation in order to have their degree conferred.

It is the student's responsibility to complete registration for dissertation proposal (998) or research (999) prior to the first day of classes for the semester. If this date is missed, students must still enroll in these courses via Add or Late Schedule Adjustment procedures and are subject to Late Registration fees. Failing to register on time in a particular semester does not alter the requirement for continuous registration in 999.

AP.6.10.7 Doctoral Dissertation

A dissertation is required for the doctor of philosophy degree and most professional doctoral degrees. The dissertation is a written piece of original thinking that demonstrates doctoral candidates' mastery of subject matter, methodologies, and conceptual foundations in their chosen field of study. This is generally achieved through consideration of a problem on the boundaries of knowledge in the discipline.

The director of the dissertation committee is primarily responsible for directing the doctoral candidate's research and guiding the preparation of the written dissertation. After the dissertation committee is appointed, the student should begin discussions with the director to define a suitable problem for the dissertation. Before the student may enroll in doctoral dissertation research (999), the dissertation proposal must be approved by the dissertation committee and evidence of approval sent to the unit dean or director for approval. Before that time, the student may enroll in proposal research (998).

Guidelines for the content and general format of doctoral dissertations are in the *Thesis, Dissertation, or Project Guide*. Consult a doctoral coordinator to determine which additional reference manuals are suitable.

AP.6.10.8 Doctoral Defense

As soon as all degree requirements have been satisfied, including completion of the doctoral dissertation, the doctoral candidate may request a doctoral defense. Approval to hold a defense is given by the doctoral dissertation committee, coordinating with the program director/chair. Notice of a defense must be circulated to the university community two weeks before the defense date. The public defense should demonstrate the candidate's maturity of judgment and intellectual command of the chosen branches of the field of study.

At the close of the final defense, the dissertation committee makes final judgments for approving the dissertation. The doctoral candidate is responsible for making all required changes promptly, submitting the original and required copies, and obtaining signatures. Final approval for the dissertation is given by the doctoral dissertation committee and program director/chair.

For a dissertation to be approved, all members of the committee must sign. If a committee member refuses to do so, the student or any member of the committee may petition the unit dean or director for a review and ruling. The dean or director may seek the advice of outside reviewers to provide an assessment of the work. The final decision is that of the dean or director and is not subject to appeal.

AP.6.10.9 Dissertation Submission and Fees

On or before the dissertation submission deadline for any semester, each student will submit a CD with a complete electronic copy of his/her dissertation (signed Signature Sheet through Curriculum Vitae) as a PDF to University Dissertation & Thesis Services (UDTS). The PDF will be uploaded into the Mason Archival Repository Service (MARS). At the time of final submission, the student will also turn in completed versions of the Transmittal Sheet, ETD Submission Form, and MARS Agreement.

For degree conferral in a particular semester, the above materials must be submitted to the library by 5:00 p.m. on the Friday before the last day of class in that semester. (For specific deadlines and more information, please see the University Registrar's website (http://registrar.gmu.edu).)

Under circumstances determined by the student's school, college, and/or program, a student may petition to delay embargo all or part of his/her dissertation, preventing online access to it for a period of time (2 years, 5 years, or 10 years). A student may choose to embargo his/her work in order to avoid potential contract disputes with future publishers or to protect intellectual property. Not all schools, colleges, and/or programs will permit a student to embargo his/her work, and both the student's dissertation chair and the graduate associate dean of the school/college must approve the student's petition. Upon approval of an embargo, the dissertation chair, the graduate associate dean, and the student must all sign the embargo approval form. The student must turn in the signed embargo form to UDTS at the time of submission of his/her dissertation and all other materials. The UDTS Coordinator will confirm with both the dissertation chair and the graduate associate dean that they signed the submitted form. A hard copy of the confirmation will be retained by the UDTS Coordinator. At the time the work is uploaded to MARS and/or ProQuest, the author will receive an email notification, with an official PDF attached, stating that the embargo will begin and end on a certain date, and advising the author that it is his/her responsibility to keep track of the embargo lift date. The author will further be advised that it is his/her responsibility to notify the UDTS Coordinator via email (udts@gmu.edu) that he/she wants to lift the embargo prior to the termination date, or that he/she wants to renew the embargo (or institute a new limit). In the form, the author will also be advised that he/she should retain this form and place it in the care of his/her attorney, next of kin, or other appropriate

designee. In case of death, incapacity, or other similar circumstance, it is up to the author's estate, power of attorney, or other appropriate designee to ensure that the embargo continues.

If the student wishes to extend the embargo past the dissertation's release date, the student is required to secure the approval of the graduate associate dean of the student's college/school at the time of the extension request. Students can request a renewal period of 2 years, 5 years, or 10 years. If approved, the student must notify UDTS via email (udts@gmu.edu) of his/her intention to extend the embargo. The UDTS Coordinator will confirm with the associate dean that the embargo extension has been approved, and will retain copies of both the student's request and the associate dean's confirmation that the embargo can be extended.

Dissertations embargoed for any period will be accessible electronically on-campus in Special Collections UNLESS the student/author can provide evidence that the document should NOT be reviewed for a certain period. Permission to restrict access on-campus for such period or fully may be granted by the Associate Provost for Graduate Education. Only under extreme circumstances will a student's work be considered by the Associate Provost for Graduate Education for such an embargo. A student must have proof that publication of his/her work poses a danger to themselves, national security, or similar scenario.

Doctoral students are also required to submit their dissertations to ProQuest through University Microfilms International (UMI). Submission will take place through the UMI Administrator site (www.etdadmin.com/gmu (http://www.etdadmin.com/gmu/)). Traditional submission, in which the dissertation is available only through ProQuest's subscription service, costs nothing. Open Access submission, in which the dissertation is available through ProQuest's Open Access site, costs $95. Students can also opt to register their dissertations with the U.S. Copyright Office via the Administrator; doing so costs $44, payable to ProQuest. Students can also choose to purchase their own bound copies through the Administrator. The student is responsible for any aforementioned fees, which can be paid by credit or debit card. At the time of final submission, the UDTS Coordinator will confirm that the student has uploaded his/her dissertation through the Administrator.

Doctoral students also must complete a Survey of Earned Doctorates. This form must also be turned in to the UDTS Coordinator at the time of final submission.

Once a student has submitted the final (i.e. defended, formatted, and signed) version of his/her project, thesis, or dissertation to University Dissertation & Thesis Services (UDTS), subsequent edits WILL NOT BE ALLOWED EXCEPT under the following circumstances:

1. A formatting error has been introduced into the PDF document when converting from another document type that affects the meaning of the dissertation. For example: in the process of formatting the document into a PDF, all of the ampersands (&) have disappeared and the error is not discovered until after final submission to UDTS. Re-submission would not be allowed to revise margins, fonts, or other non-substantive items.
2. Incidence of fraud or plagiarism. The relevant college/school must conduct a review of the thesis or dissertation and determine an appropriate course of action in accordance with the university catalog and approved by the Dean. If the approved course of action includes allowing the student to resubmit a corrected version of a thesis or dissertation, the UDTS Coordinator must be informed in writing by an appropriate college/school or LAU official.

UDTS will not allow corrections of theses and dissertations for the following:

- Rewording the Dedication, Acknowledgments, Abstract, or Biography.
- Correction of citations or quotations.
- Addition of new text, or deletion of existing text, in the body.
- Correction of misspellings or grammar issues.
- Replacing, adding, or deleting Tables, Figures, or Equations.
- Correction of any other minor errors or omissions.

AP.6.10.10 University Dissertation and Thesis Services

University Dissertation and Thesis Services (UDTS) facilitates completion and submission of dissertations, theses, and graduate-level projects. The program assists Mason students in all stages of production. The UDTS website (http://thesis.gmu.edu), provides students with useful tools, including downloadable templates of necessary elements, forms required for the submission process, and links to related web sites. Students completing a thesis or dissertation are required to complete a format review. UDTS is located in Fenwick Library, Special Collections and Archives, Wing 2C. For more information, contact the university dissertation and thesis coordinator at 703-993-2222.

AP.6.11 Graduate Council

The Graduate Council is an advisory and legislative board on matters of graduate education whose purpose is to promote excellence in all graduate programs. The Council advises the Provost regarding academic policies governing graduate education; approval of new and revised graduate courses, programs and degrees; review and assessment of graduate programs; planning and attainment of graduate education strategic goals; and policies and resources for graduate student support. The Office of the Provost administers university graduate policies for the Graduate Council.

AP.6.12 Graduate Faculty

There are two types of graduate faculty at George Mason University, active and legacy, graduate faculty. Individuals attain active graduate status through their rank as tenured or tenure-track Mason faculty members or through a nomination process. Once active, graduate faculty status applies across the institution. A list of active graduate faculty will be maintained by the Office of the Provost.

Mason tenured and tenure-track faculty are automatically granted active graduate faculty status upon employment. They maintain that status throughout their employment as tenure-line faculty, unless explicitly designated otherwise. Administrative service does not affect the active graduate faculty status of tenured or tenure-track faculty.

Each local academic unit that administers graduate degrees may, at its discretion and at any time, nominate individuals that hold a terminal degree for active graduate faculty status. These individuals may be Mason employees or individuals external to the university. Through this process, active graduate faculty status will be granted for a term of three years unless explicitly designated shorter. The process to nominate individuals for active graduate faculty status is coordinated through the Office of the Provost. Individuals, who are within a year or less of their active graduate faculty status expiring, may be renewed through the same process. Local academic units, with approval of their Dean, may rescind graduate faculty status for individuals that they nominated.

If active graduate faculty status lapses due to retirement, separation, or expiration of a term of active graduate faculty status, the individual may move into legacy graduate faculty status. As a legacy graduate faculty member, the individual maintains their ability to serve on student committees on which they are already a member, but they may not be added to new committees (or re-added to existing committees if removed). In cases of separation of tenured and tenure- track faculty, the terms of the separation will indicate if the individual receives legacy graduate faculty status. In cases of individuals nominated for graduate faculty status, the nominating local academic unit determines their eligibility for legacy graduate faculty status at the time of nomination. Local academic units may impose additional restrictions on eligibility for legacy graduate faculty status.

Individuals may, at any time, resign from graduate faculty status, active or legacy, and such resignations are considered permanent. Individuals in legacy graduate faculty status are removed from status once the students whose committees they serve on have either (i) graduated, (ii) resigned, (iii) been terminated, (iv) become inactive, or (v) have reformed their committees without the individual in question.

AP.7 Research Policies

Research Development, Integrity and Assurance Office

Website: oria.gmu.edu

AP.7 Research Policies

ON THIS PAGE

- AP.7.1 Human Subjects Research (https://catalog.gmu.edu/policies/academic/research/#text)
- AP.7.2 Animal Use in Research (https://catalog.gmu.edu/policies/academic/research/#text)
- AP.7.3 Misconduct in Research and Scholarship (https://catalog.gmu.edu/policies/academic/research/#text)
- AP 7.4 Research Conflicts of Interest (https://universitypolicy.gmu.edu/policies/financial-conflicts-of-interest-in-university-contracts-with-businesses-under-virginia-law/)
- AP 7.5 Copyright in University Works (https://universitypolicy.gmu.edu/policies/copyright-in-university-works/)
- AP 7.6 Ownership and Maintenance of Research Records (https://universitypolicy.gmu.edu/policies/ownership-and-maintenance-of-research-records/)

Office of Research:

www2.gmu.edu/research (https://www2.gmu.edu/research/)

https://provost.gmu.edu/academics-and-research/research-and-scholarship (https://provost.gmu.edu/academics-and-research/research-and-scholarship/)

AP.7 Research Policies

AP.7.1 Human Subjects Research

All research activities involving human subjects or identifiable, private human subjects data conducted by faculty, staff, or students must be submitted to Mason's Institutional Review Board (https://oria.gmu.edu/topics/human-subjects/submit-an-application/) for review and approval before initiation of the activity. (See University Policy 4017 (https://universitypolicy.gmu.edu/policies/research-involving-human-subjects/#:~:text=This%20policy%20covers%20all%20faculty,as%20well%20as%20unfunded%20research).) All application forms are available in IRBNet and must be submitted through the Institutional Review Board via IRBnet (http://irbnet.org). IRB staff can be reached for consultations and assistance at IRB@gmu.edu. All student research must be supervised by a faculty member. The faculty member will serve as the Principal Investigator for the research and will assume responsibility for the legal and ethical conduct of the work. Additional approval by the Confidential Student Contact Information (https://oiep.gmu.edu/institutional-effectiveness/surveys/request/) committee is required if Mason students' contact information is needed to conduct the research.

For further information see the Office of Research Integrity and Assurance's website: https://oria.gmu.edu/.

AP.7.2 Animal Use in Research

All work with live vertebrate animals, and with selected higher-level invertebrate animals, whether for research, teaching, or testing, must be approved by the Institutional Animal Care and Use Committee (IACUC) prior to initiation of the work. All use of animals at Mason must be carried out under the supervision of a faculty member who is qualified and experienced in the work being conducted and assumes responsibility for legal and ethical conduct. As with applications to the IRB, applications to the IACUC are submitted through IRBNet. Further information concerning research with animal subjects is available at https://oria.gmu.edu/topics/animal-subjects/. The university has developed a comprehensive policy and procedures to govern research with animal subjects. (See University Policy 4004 (https://universitypolicy.gmu.edu/policies/occupational-health-and-safety-program-for-animal-care-and-use-personnel/).)

For further information see the Office of Research Integrity and Assurance's website: https://oria.gmu.edu/.

AP.7.3 Misconduct in Research and Scholarship

George Mason University is committed to the highest standards of ethical research and scholarship. All faculty, staff, and students are responsible for conducting research and scholarship in an ethical manner. The university has developed a comprehensive policy and procedures to address allegations of misconduct: University Policy 4007 (http://universitypolicy.gmu.edu/policies/misconduct-in-research-and-scholarship/).

For further information see the Office of Research Integrity and Assurance's website: https://oria.gmu.edu/.

AP.7.4 Research Conflicts of Interest

Those conducting sponsored research are subject to the requirements of University Policy 4001, which helps to ensure that the design, conduct, or reporting of research will not be biased by any conflicting financial interest of an Investigator.

For further information see the Office of Research Integrity and Assurance's website: https://oria.gmu.edu/.

AP.7.5 Patents and Copyright in University Works

An invention made by a student who is not engaged in fulfilling his or her responsibilities as a university employee is owned by the student, with few exceptions as described in University Policy 4003 (https://

universitypolicy.gmu.edu/policies/patenting-university-inventions/). Student rights to work done at the University in their capacity as a student, as a university employee, and in their individual capacity are described in University Policy 4002 (https://universitypolicy.gmu.edu/policies/copyright-in-university-works/): "Copyright in University Works."

For further information, contact the Office of Technology Transfer's website: ott.gmu.edu (https://ott.gmu.edu/).

AP.7.6 Ownership and Maintenance of Research Records

Records created by university employees and students as a result of scholarly inquiry and that are necessary to validate research findings are subject to Virginia and Federal law, as well as funding entities' policies and procedures. All research records are the property of the University; generally, researchers may retain a copy of any research record he or she creates. Proper research record maintenance is also a critical aspect of conducting ethical and responsible research and scholarship. Requirements related to these issues are set out in University Policy 4011 (https://universitypolicy.gmu.edu/policies/ownership-and-maintenance-of-research-records/): "Ownership and Maintenance of Research Records."

For further information, see the University Records Management Office's website: https://recordsmanagement.gmu.edu/ and the Office of Research Integrity and Assurance's website concerning responsible conduct of research and research misconduct: https://oria.gmu.edu/.

General Policies

Below is a list of policies which the University community most commonly refers to.

All university policies are available online (http://universitypolicy.gmu.edu).

George Mason University is committed to providing equal opportunity and an educational and work environment free from any discrimination on the basis of race, color, religion, national origin, sex, disability, veteran status, sexual orientation, gender identity, gender expression, age, marital status, pregnancy status or genetic information. It is the policy of the university to provide an academic and work environment free from sexual harassment. Please see the following policies for more information.

- 1201 - Non-Discrimination Policy (http://universitypolicy.gmu.edu/policies/non-discrimination-policy/)
- 1202 - Sexual Harassment Policy (http://universitypolicy.gmu.edu/policies/sexual-harassment-policy/)
- 1203 - Non-Discrimination and Reasonable Accommodation on the Basis of Disability (http://universitypolicy.gmu.edu/policies/non-discrimination-and-reasonable-accommodation-on-the-basis-of-disability/)

The Responsible Use of Computing (RUC) Policy applies to all academic and operational departments and offices at all university locations owned or leased. The policies and procedures provided herein apply to all Mason faculty, staff, students, visitors and contractors.

- 1301 - Responsible Use of Computing (http://universitypolicy.gmu.edu/policies/responsible-use-of-computing/)

All faculty, staff, and students who park on property owned or operated by the university must display a valid permit or park in a parking deck and pay an hourly or daily rate.

- 1108 - Motor Vehicle Parking (http://universitypolicy.gmu.edu/policies/motor-vehicle-parking/)

Academic Policies

- 3002 - Cross-level Listing of Undergraduate/Graduate Courses (https://universitypolicy.gmu.edu/policies/cross-level-listing-of-undergraduategraduate-courses/)
- 3003 - Reporting and Approval of Academic Actions Constituting Substantive Change (https://universitypolicy.gmu.edu/policies/reporting-and-approval-of-academic-actions-constituting-substantive-change/)
- 3004 - Verification of Student Identity in Distance Education (https://universitypolicy.gmu.edu/policies/verification-of-student-identity-in-distance-education/)
- 3005 - Faculty Credential Evaluation and Documentation (https://universitypolicy.gmu.edu/policies/faculty-credential-evaluation-and-documentation/)
- 3011 - Credit Hours (https://universitypolicy.gmu.edu/policies/credit-hours/)

Other Regulations

Other policies pertaining to safety and security:

- 1120 - Weapons on Campus (http://universitypolicy.gmu.edu/policies/weapons-on-campus/)
- 2208 - Workplace Violence (http://universitypolicy.gmu.edu/policies/workplace-violence/)

Annual Security Report

Mason's 2020 Annual Security and Fire Safety Report is a combined report that includes, but is not limited to: campus safety and security policy disclosures; statistics for Clery Act crimes for University property, adjacent property, and non-university property owned or controlled by the University for the previous three years; and fire statistics for on-campus student housing facilities for the previous three years. To view a copy of the report, go to the website (https://police.gmu.edu/central-records/annual-security-report/). Paper copies of this report are available at any police facility.

Student Rights and Responsibilities

Policies and Procedures Affecting All Students

Knowledge of University Policies

Each student is responsible for knowing Mason's rules, regulations, requirements, administrative policies and Academic Policies. This catalog is the normal repository of academic policy statements, but corrections, changes, or interpretations can be promulgated by other means, including electronic publication.

When the university or one of its academic units changes course requirements, grading procedures, or criteria for acceptance into particular programs, academic standing, or graduation, the changes apply

to all students enrolled at the time of implementation of the change and thereafter.

Students have certain choices regarding the set of degree requirements under which they graduate, as detailed in the Catalog Requirements for Degrees in AP.4 Degree Application, Conferral and Graduation. PDFs of all previous catalogs may be found online (http://catalog.gmu.edu/archives/). Additionally, the Special Collections and Archives section of the Fenwick Library has copies of all previous catalogs. They may not be checked out, but may be photocopied. Any student in doubt about an academic matter should consult a faculty advisor or dean.

Students are subject to the university's stated policies regarding patents and copyrights. These policies are available online *(*http://osp.gmu.edu*).*

Catalog Requirements for Degrees

Catalog year refers to the setting of course and non-course requirements within academic programs as stated in the school and college section of a specific catalog. However, catalog year does not set academic policies other than program requirements in place. Not all programs and degree components are available in all catalogs. For any one degree, all requirements must be met as stated in a single catalog. The only exception is that Bachelor's degree students may select a minor from another catalog year for which they are eligible, as noted below.

Bachelor's degree candidates may choose to graduate under the terms of any catalog in effect during their enrollment in degree status. Students who have been inactive for two or more years or who have attended another institution without prior approval from their academic dean or director must graduate under a catalog in effect at or after their re-admission and during their enrollment in degree status.

Master's and doctoral degree candidates who have been continuously enrolled may choose to graduate under the terms of any catalog in effect during their enrollment in degree status. Students who have been inactive more than one year, however, may be required by their program to graduate under a catalog in effect after they have been granted permission to re-enroll. In no case may a student choose the requirements of a future catalog year that take effect after the student's degree is anticipated.

Mason ID Card

Fairfax Campus: Student Union I, 1203
Phone: 703-993-1004

Science and Technology Campus: Beacon Hall, Room BE 1034
Phone: 703-993-7040

Arlington Campus: Van Metre Hall, 220
Phone: 703-993-9095

Loudoun Campus: 21335 Signal Hill Plaza, Suite 130
Phone: 703-993-4350

Web: masonid.gmu.edu (http://masonid.gmu.edu)

Email: masonid@gmu.edu

After registering, each student should obtain a Mason ID card. It must be presented to use library services and is required for admission to university events and when using facilities after normal operating hours. It is not transferable and is valid as long as the student has active status.

Official Communication with Students

Web: masonlive.gmu.edu (http://masonlive.gmu.edu)

Mason uses electronic mail to provide official information to students. Examples include notices from the library, notices about academic standing, financial aid information, class materials, assignments, questions, and instructor feedback. Students are responsible for the content of university communication sent to their Mason e-mail account and are required to activate that account and check it regularly. Students are also expected to maintain an active and accurate mailing address in order to receive communications sent through the United States Postal Service.

Chosen Name and Pronouns Policy

Web: University Policy 1143 (http://universitypolicy.gmu.edu/policies/preferred-name-policy/)

A student may designate and use a Chosen Name and Pronouns for University purposes, except when use of a legal name is required by the University or by law.

A student may designate a Chosen Name and Pronouns in University information systems only when such systems allow for such designation.

The University will ordinarily use a student's Chosen Name and Pronouns in university communications and reporting except when use of a legal name is required by the University or by law. By way of example but not limitation, Chosen Names will be reflected on class rosters, in Blackboard, in Patriot Web (including Degree Works), and in directory listings.

A student's legal name shall be used for billing, verification of enrollment, payroll (W-2s), official transcripts, communication with external authorities, or as otherwise required by the University or by law. The University may identify students by both Legal Name and Chosen name at any time.

A student may not use a Chosen Name for any kind of misrepresentation. A student may not use profanity in a Chosen Name.

Free Speech at Mason

At George Mason University we include and embrace a multitude of people and ideas in everything we do and protect the freedom of all members of our community to seek truth and express their views. Freedom of expression in an intellectually and culturally diverse environment provides all members of our community the opportunity to learn, grow, and contribute to our shared mission to create a more just, free, and prosperous world. George Mason University is committed to protecting free speech and free expression on its campus and in its education programs.

Being exposed to competing perspectives is essential for questioning our assumptions, testing our beliefs and refining our knowledge. Our goal as a community must be to create an environment where we can engage in difficult and challenging conversations with civility and mutual respect, where confronting opposing ideas and perspectives becomes an opportunity to learn from and with each other. For more information and access to specific policies, please visit our website (https://www2.gmu.edu/1stAmendment/) (https://www2.gmu.edu/1stAmendment) dedicated to free speech at Mason. If you believe your freedom of speech or expression has been disrupted,

you may report an incident of disruption of constitutionally protected speech by going to the website and clicking “Submit a report”.

Mason facilities are intended primarily for the use of its students, faculty, and employees in their efforts to advance the educational mission of the university. No use shall be permitted that is unlawful, threatens the safety of the Mason community, or is inconsistent with the mission of the university. In maintaining a safe campus, in which its students, faculty, and employees can advance the educational mission of Mason without disruption, the university may establish constitutionally permissible time, place and manner restrictions on the use of its facilities and property (e.g., registration requirements, times when use is permitted, limitations on amplified sound). These can be found in University Policies 1103 (https://universitypolicy.gmu.edu/policies/space-utilization-and-scheduling/), 1109 (https://universitypolicy.gmu.edu/policies/poster-posting/), 1140 (https://universitypolicy.gmu.edu/policies/utilization-of-facilities-by-the-general-public/), and other applicable policies and procedures. These policies and procedures ensure that Mason can focus on its educational mission, provide a safe environment for learning, and preserve the aesthetics of its campus.

Change of Status, Address

Each student is required to provide Mason with current contact and identifying information, including permanent and local addresses, telephone numbers, and legal name. Each student must also maintain the university e-mail account assigned at the time of admission. Students are responsible for official communications directed to Mason e-mail accounts. For more information, check the website (http://masonlive.gmu.edu).

Addresses should be updated over the Internet using Patriot Web. Name and Social Security number changes require official documentation and must be processed in person at the Office of the University Registrar or with the original copy of a notarized request.

Appeals of Academic Procedures

Students have the right to seek an exception to academic policy and appeal adverse decisions regarding those requests. The academic exception and appeals process begins in the academic unit. Each academic unit at Mason has a written statement of that unit's academic exception and appeal process on file in the dean or director's office. Undergraduate students initiate appeals of unit decisions with the Associate Provost for Undergraduate Education. Graduate students initiate appeals of adverse decisions with the Associate Provost for Graduate Education. *The Provost's Office does not consider, and this procedure does not apply to, grade appeals or appeals of Honor Committee decisions*.

Undergraduate Appeals

The Provost's Office may refer cases to the University Academic Appeals Committee. The committee consists of five faculty members, including at least one member of the Faculty Senate and the provost (or designee), who serves *ex officio*, in a nonvoting capacity. The committee hears only those cases where procedural irregularities or a questionable application of university policies is demonstrable, or when the provost or the committee deems the case relevant to the application of university-wide policies. The burden of proof rests with the student, who must provide clear and convincing documentation to support the contention that the decision was unfair based on the criteria stated above. The committee's decision is final. The University Academic Appeals Committee is not charged to hear grade appeals or appeals of Honor Committee decisions.

Graduate Appeals

Specific procedures regarding exceptions to graduate academic policies, including how to appeal an adverse decision, can be found here (https://provost.gmu.edu/academics-and-research/graduate-education/) on the Office of the Provost and Executive Vice President’s website under Graduate Education. All appeals must be in writing, and they must demonstrate that the student has exhausted all options within the academic unit.

Student Requests for Academic Actions

All requests for academic actions, such as special permissions or exceptions to published academic regulations, must be submitted to the head of the unit in which the student's program is housed, for example, the department chair, institute director, or school or college dean. Forms and instructions on how to initiate an academic action are available in the academic unit and on the unit's web site. For undergraduate exploratory/undeclared/undecided students, non-degree, guest matriculant or exchange student, your appeal is processed through the Mason Care Network, located in SUB I, Suite 3600. Students will be informed of the average wait time for decisions on academic actions undertaken within their units. Those who need assistance with the academic actions process may consult their academic advisor, department coordinator, or their school/college's academic affairs office.

Academic Assessment

The regular evaluation of student learning, perceptions, and achievements is fundamental to the continuous improvement of Mason’s academic programs. All academic programs at Mason, including Mason Core, have student learning outcomes that are assessed periodically. Student work in various courses may be used for such assessments. Student anonymity is assured and grades will not be affected. Student participation is an essential component of the improvement process, and students may be asked to engage in a variety of assessment activities including surveys and focus groups.

Students may contact the Office of Institutional Effectiveness and Planning (OIEP) at oiep@gmu.edu (oira@gmu.edu) with questions or concerns about assessment activities at Mason. Additional information can be found on the OIEP website (https://oiep.gmu.edu/).

Student Work, Intellectual Property

University Policies 4002 (https://universitypolicy.gmu.edu/policies/copyright-in-university-works/) and 4003 (http://universitypolicy.gmu.edu/policies/patenting-university-inventions/) control ownership of copyrightable works and patentable inventions made at Mason. Generally, Mason does not assert ownership of copyrightable works and patentable inventions made by students (who are not also Mason employees) to fulfill the requirements of a particular course. Mason generally owns copyrightable works and patentable inventions made by students who are not employees if they are made in the course of sponsored research or with substantial use of significant university resources. If a student (undergraduate or graduate) is also an employee (such as a research or teaching assistant), Mason generally owns copyrightable works and patentable inventions made as part of that student's employment responsibilities. Students with questions are encouraged to consult the policies and to contact the Office of Technology Transfer, ott@gmu.edu or 703.993.8933.

Student Conduct and the University Community

Office of Student Conduct
Student Union Building I, Room 4100
Phone: 703-993-6209
Fax: 703-993-2893
Web: studentconduct.gmu.edu (http://studentconduct.gmu.edu)

Students enrolling in the university assume an obligation to conduct themselves in a manner compatible with the university's function as an educational institution. The Code of Virginia (Section 23-9.2:3) confers on the university the responsibility for maintaining order within the university and the right to adjudicate referrals where students are alleged to have violated the Code of Student Conduct.

Students may learn more about the Code of Student Conduct by accessing it here (https://studentconduct.gmu.edu/university-policies/code-of-student-conduct/).

The Office of Student Conduct addresses referrals regarding the conduct of Mason students and their guests. Questions regarding student conduct policies should be directed to the Office of Student Conduct, SUB I, Room 4100, 703-993-6209; their website (https://studentconduct.gmu.edu); or via email at osc@gmu.edu.

Privacy of Student Records

Office of the University Registrar
Student Union I, Room 2101
Phone: 703-993-2441
Email: registrar@gmu.edu
Web: ferpa.gmu.edu (https://ferpa.gmu.edu)

Each year, Mason informs students of the Family Educational Rights and Privacy Act (FERPA) of 1974. The university intends to comply fully with this act, which protects the privacy of education records, establishes the right of students to inspect and review their education records, and provides guidelines for amending inaccurate or misleading data through informal and formal hearings. Students also have the right to file complaints with the Family Policy Compliance Office (U.S. Department of Education) concerning alleged failures by Mason to comply with the act.

The Notification of Rights under FERPA and the Public Notice Designating Directory Information detail students' rights and the procedures implemented by the university to comply with FERPA.

FERPA is a federal law that affords students certain rights with respect to their education records. Specifically, it affords students the right to:

1. inspect and review their education record;
2. request the amendment of inaccurate or misleading records;
3. consent to disclosure of personally identifiable information contained in their education record to a third party; and
4. file a complaint with the Family Policy Compliance Office of the U.S. Department of Education concerning alleged failures of the university to comply with the act.

George Mason University strives to fully comply with this law by protecting the privacy of student records and judiciously evaluating requests for release of information from those records. FERPA authorizes the release of "directory information" without the student's prior consent under certain conditions, which are set forth in the act. George Mason University has defined its "directory information" in accordance with the law. Please visit the FERPA website (https://ferpa.gmu.edu) for additional information about student privacy and FERPA.

Public Notice Designating Directory Information

Directory Information:

Directory Information may be disclosed by the university without the student's prior consent under the conditions set forth in the Family Educational Rights and Privacy Act of 1974 (FERPA). Directory information is information that Mason may disclose, but is not required to do so.

University Policy 1122 (https://universitypolicy.gmu.edu/policies/ferpa-compliance/): FERPA Compliance defines directory information at Mason:

- Student Name
- *Student ID (G Number)
- *Date of Birth
- Major Field of Study
- Dates of Attendance
- Enrollment Status
- Previous Institutions
- Class Level
- Degrees and Awards Received
- Photographs
- Participation in Officially Recognized Sports and Activities
- Weight and Height of Athletes

***Limited Directory Information:** Student ID number and Date of Birth are considered to be limited directory information, which may be used for verification purposes only, and not released as directory information.

As of July 1, 2018, the Code of Virginia Section 23.1-405(C) prohibits George Mason University from disclosing a student's email, address or telephone number under the exception in the Family Educational Rights and Privacy Act (FERPA) for directory information or the Virginia Freedom of Information Act (FOIA) unless the student has affirmatively consented in writing to the disclosure.

Beginning on July 1, 2019, HB2449 provides an amendment to 23.1-405(C). This amendment allows for the disclosure of a student's email, address or telephone number to other students enrolled in the institution for educational purposes or institution business and the student has not opted out of such disclosure.

George Mason does not disclose social security numbers, grades, grade point averages, class schedules, academic actions nor the number of credits enrolled in or earned unless the student has signed a consent form.

Preventing Disclosure of Student Information: Currently enrolled students may withhold disclosure of directory information under FERPA. To withhold disclosure, students must complete the Request to Prevent Disclosure of Directory Information Form. The form may be submitted at any time throughout the year and will immediately affect prospective disclosures. Mason assumes that failure on the part of any student to specifically request the withholding of a category of directory information indicates individual approval for disclosure.

Confidential (Private) Hold: Prevents disclosure of all student information. A student who elect this hold must conduct all university business in person with a photo ID or via their official Mason email

address. No student information will be released over the phone.
Students in this category may still use interactive web and other electronic systems, such as Patriot Web, for transactions (including registration) which are protected by a secured login. Confidential status does not convey a right to be anonymous in the classroom or to impede routine classroom communication and interactions. A student with a confidential status should expect to be identified in class by name, and to have their Mason email address used for class purposes. A student must remove this hold in order for their name to appear in the commencement or convocation program.

Honor Code and System

LaShonda Anthony, Director

Office of Academic Integrity
Student Union I, Suite 4100

Phone: 703-993-6209
Fax: 703-993-2893

Email: oai@gmu.edu
Website: oai.gmu.edu

Mason shares in the tradition of an honor system that has existed in Virginia since 1842. Mason's Honor System was inaugurated in 1963 when the college was a satellite of the University of Virginia. The code is an integral part of university life. On the application for admission, students sign a statement agreeing to conform to and uphold the Honor Code. Students are responsible, therefore, for understanding the code's provisions. In the spirit of the code, a student's word is a declaration of good faith acceptable as truth in all academic matters. Cheating and attempted cheating, plagiarism, lying, and stealing in academic matters constitute Honor Code violations. To maintain an academic community according to these standards, students and faculty members must report all alleged violations to the Honor Committee.

The Honor Committee has the primary duty of espousing the values of the Honor Code. Its secondary function is to sit as a hearing committee on all alleged violations of the code.

Honor Code

To promote a stronger sense of mutual responsibility, respect, trust, and fairness among all members of the George Mason University community and with the desire for greater academic and personal achievement, we, the student members of the university community, have set forth this honor code: **Student members of the George Mason University community pledge not to cheat, plagiarize, steal, or lie in matters related to academic work**.

A full reading of the Honor Code and the associated system can be found at our website (http://oai.gmu.edu).

Please note there is a separate process for individuals accused of research misconduct. As it states in policy 4007, "Allegations of academic misconduct against graduate students are governed solely by the university honor code, except for:

1. research activities as defined above regardless of sponsorship; and
2. master's theses and doctoral dissertations, both of which are governed by this policy.

Allegations of academic misconduct against undergraduate students are governed solely by the university honor code, except for sponsored research activities which are governed by this policy." Questions related to research misconduct that fall under this category should be directed to the Office of Research Integrity and Assurance at the following link: https://rdia.gmu.edu/topics-of-interest/research-misconduct/.

Honor Committee

The Honor Committee is selected to promote academic integrity as a core value for our university community. Members of the committee also serve on hearing panels established to investigate and resolve alleged violations of the code. The Antonin Scalia Law School has an Honor Committee that is independent from the rest of the university's Honor Committee. Information about the Scalia Law School honor system can be found by clicking this link (http://www.law.gmu.edu/academics/honor_code/) (http://www.law.gmu.edu/academics/honor_code).

Membership will be limited to 100 members who apply for membership. Undergraduate members must have no Honor Code violations, maintain a cumulative GPA of 2.66, be in good academic standing, and successfully complete the training and orientation program. Graduate members must meet all of the requirements above with the exception of maintaining a cumulative GPA of 3.00. Faculty and Administrative Faculty members must hold at least a master's degree. Information on how to apply can be found here (https://oai.gmu.edu/honor-committee-recruitment/) (https://oai.gmu.edu/honor-committee-recruitment/).

The committee is advised by the staff of the Office of Academic Integrity. The Office provides administrative oversight for the Honor Committee and the integrity process at Mason.

Student Responsibilities

Students are responsible for ensuring the work they are submitting is their own work. This includes checking to make sure that any information that was not their own creation is properly attributed to the original source, as well as working within the guidelines provided by the professor of the class regarding submitted work. Facilitating misconduct in the form of providing unauthorized resources, tests, or solutions for others is a violation of the honor code and will be dealt with as such. Additionally, students should request an explanation of any aspect of the professor's policies regarding the Honor Code that they do not fully understand. Students have an obligation to encourage respect among their fellow students for the provisions of the code. This includes an obligation to report violations by other students to the Honor Committee.

Faculty Responsibilities

At the beginning of each semester, faculty members have the responsibility of explaining to their classes their policy regarding the Honor code. They must also explain the extent to which aid, if any, is permitted in academic work. Faculty members are also responsible for including in their syllabus an academic integrity statement as outlined by the Provost's office at the start of each academic semester. Additional language should include what constitutes acceptable behavior for the course they are teaching.

Procedures for Reporting Violations and Record Keeping

All suspected violations must be reported to the Office of Academic Integrity in a timely manner. Instructions on how to submit a referral can be found on the office's website (http://oai.gmu.edu). The student

will be notified in writing that a referral has been made and meet with a staff member in the office to review the case materials and decide the next course of action. Findings of responsibility in Honor Code cases are maintained by the Office of Academic Integrity in accordance with the Library of Virginia Records Management schedule.

STUDENT SERVICES

- Academic Advising
- Continuing and Professional Education
- Green Leaf Programs and Courses
- Living Learning Communities
- Mason Impact
- Military Services
- Reserve Officer's Training Corps (ROTC)
- Student Health Services
- Success Coaching
- University Libraries
- University Scholars Program
- University Studies

Academic Advising

228 Johnson Center
MSN 1E2

Phone: 703-993-3794
Email: advisor@gmu.edu
Website: advising.gmu.edu

Administration

- Bethany M. Usher, Associate Provost for Undergraduate Education
- Quentin Alexander, Senior Director of Academic Advising, Undergraduate Education
- Sarah R. Squire, Advising Coordinator, Undergraduate Education

Academic advising and success coaching **at George Mason University are integral parts of the educational and developmental process that enhance student success. An exemplary Mason Graduate is an engaged, reflective citizen and well-rounded scholar who is prepared to act. Mason commits to supporting holistic success across the student experience, connecting students to campus resources, and helping students set and achieve academic, career, and personal goals.**

Academic Advising

Academic Advisors at Mason are assigned to students based on their declared major, and this relationship begins during Orientation. Students are recommended to meet with their Academic Advisorat least once#per#semester#to discuss questions or concerns.

Advisors assist students with:

- navigating undergraduate education at Mason;
- transitioning to college;
- setting academic goals and making connections to career goals;
- learning about available academic Mason resources;
- understanding Mason academic policies and procedures;
- accessing and using the degree audit tool, Degree Works;
- selecting courses for the student's class schedule;
- checking on progress towards degree completion, and much more.

Individual departments establish their own advising processes; students are encouraged to check with their departments for the appropriate procedures and to determine how to access academic advising. Students can use the Current Advising Services website (https://advising.gmu.edu/mason-advisors/keep-advising/) to locate their School or College advising website. In addition, the advisor locator is available online to assist students with finding their academic advisor and determining how to schedule a meeting with their advisor.

With their advisors, students plan and make informed decisions regarding their academic programs in order to meet the general university degree requirements and specific requirements within their major and minor fields. It is the student's responsibility to read this catalog and know and fulfill the requirements of a specific baccalaureate degree. To assist in the advising process, Mason provides a computerized degree evaluation, Degree Works. Students should access their individualized reports through Patriot Web. It remains the student's responsibility to seek approval for any program change so the computerized degree plan may be kept current.

Students changing majors are encouraged to meet with an advisor in the new major. Students considering changing majors can also meet with an Exploratory Success Coach in the Mason Care Network to explore their options. They may change majors by filing out a Change/Declaration of Academic Program Form available from the Office of the University Registrar. This form must first be signed by an advisor in the School or College offering the major before it is submitted to the Office of the University Registrar.

Students can explore majors and minors using the "Find Your Program" tool in this Catalog.

Exploratory and Undeclared Students

Students who have not declared a major (or who have been terminated from their major) are assigned an Exploratory Success Coach within the Mason Care Network. Students are encouraged to make appointments with their Exploratory Success Coach for information about general degree requirements, major exploration, policies, procedures, getting connected on campus, and other concerns. More information can be found on the Mason Care Network website.

Health Professions Advising

Web: prehealth.gmu.edu (http://prehealth.gmu.edu)

Health Professions Advising collaborates with campus colleagues to assist students in their pursuit of postgraduate work in a medical field (allopathic and osteopathic medicine, dentistry, optometry, physician assistant, pharmacy, physical therapy, occupational therapy, communication sciences, and veterinary medicine). The Health Professions Advising Coordinator provides information and tools which will help pre-health students achieve success in the application process to a professional school.

Patriot Pre-Law Advising

Web: scharprelaw.gmu.edu (https://scharprelaw.gmu.edu/)

The Patriot Pre-Law Program prepares students for the law-school application process and for success in law school.

The goals are to:

- bring law school admissions deans to campus so they can help students understand what it takes to be accepted
- help undergraduates select courses that will develop skills to succeed as pre-law students, law-school students, and practicing lawyers
- offer programming to prepare students for the Law School Admissions Test, a high-stakes exam that dictates where students can go to law school
- provide specialized attention to the law school personal statement, which most law schools use instead of a face-to-face interview.
- guide students toward resources that will help them select the best law school for their needs and determine how to fund it.

Interested students are encouraged to visit the pre-law program website or contact Professor Phillip Mink at pmink@gmu.edu.

Office of Fellowships

Web: fellowships.gmu.edu (https://honorscollege.gmu.edu/academics/fellowships/)

The Office of Fellowships helps highly motivated undergraduates and recent alumni of all majors to find, prepare for, and apply for nationally competitive scholarships and fellowships. Past winners have been active leaders in their fields and have been involved in research, community service, or creative projects. A team of program officers and graduate students will assist you in identifying and preparing applications for nationally competitive fellowships to support your academic, professional, and public service goals. Throughout the academic year, the office provides information sessions, workshops, individual advising, and other events to connect students to fellowship opportunities.

Continuing and Professional Education

3351 Fairfax Drive
Suite 448, Founders Hall
MS 2G2, Arlington, VA 22201

Phone: (703) 993-2109
Email: cpeinfo@gmu.edu
Website: cpe.gmu.edu

Administration

- Marc Austin, Executive Director, Continuing and Professional Education and Academic Ventures

Continuing and Professional Education seeks to support learning opportunities, certifications, credential attainment and training for the entry to mid-level staff and management professional.

Supported program activities include contracted academic credit programs, noncredit public programs and seminars, online courses, professional certificate programs, continuing education units (CEUs), on-site contract training programs, special professional development events and programs, special workforce development programs, and training center facilities. Continuing and Professional Education seeks to support learning opportunities, certifications, credential attainment and training for the entry to mid-level staff and management professional.

Continuing and Professional Education prepares students for a changing employment landscape and lifelong learning by helping them take advantage of Mason faculty and resources and create opportunities for upskilling and earning industry-backed certifications to help them advance careers, earning potential and knowledge of technical fields in rapidly changing industries and governmental agencies.

Additionally, Continuing and Professional Education supports the learning and development needs of corporations and agencies in their efforts to provide their staff with professional development and certification programs, tailored to attract and retain critical talent and workforce in cost-effective, high impact ways.

Learn more about Continuing and Professional Education's current program information, offerings and capabilities on their website (https://cpe.gmu.edu/). You can also reach Continuing and Professional Education by phone at 703-993-2109.

With over 30 years of experience providing workforce and professional development training, Mason Continuing and Professional Education is committed to growing and enhancing course offerings as we continue to offer quality programming that supports and engages the diverse interests and professional objectives of those we serve.

Green Leaf Programs and Courses

Website: sustainabilitystudies.gmu.edu

Green Leaf Programs and Courses

A "Green Leaf" course or academic program focuses on learning about sustainability, i.e., meeting our present needs without compromising the ability of future generations to meet their own needs.

See the Sustainability Studies website (http://sustainabilitystudies.gmu.edu/greenleaf/) for more information.

Programs

Green Leaf academic programs focus on sustainability, usually including a required set of Green Leaf courses in order to cover the social, economic and environmental dimensions of sustainability. Each is a vital contributor to Mason's sustainability across the curriculum.

Undergraduate Degrees

- Atmospheric Sciences, BS
- Civil and Infrastructure Engineering, BS
- Geology, BS
- Environmental and Sustainability Studies, BA (CHSS)
- Environmental Science, BS
- Geology, BA
- Global Affairs, BA
- Health, Fitness, and Recreation Resources, BS: Concentration in Parks and Outdoor Recreation
- Tourism and Events Management, BS

- Integrative Studies, BS: Concentration in Applied Global Conservation (AGCN)

Undergraduate Minors and Certificates

- Atmospheric Science Minor
- Conservation Studies Minor (CHSS)
- Earth Science Minor
- Environmental Policy Minor[1]
- Geology Minor
- Global Affairs Minor[1]
- Paleontology Minor
- Sustainable Enterprise Minor
- Sustainability Studies Minor

Bachelor's/Accelerated Master's Program

- Bachelor's Degree (Green Leaf)/Environmental Science and Policy, Accelerated MS
- Bachelor's Degree (any)/Interdisciplinary Studies, Accelerated MAIS (Energy and Sustainability Concentration)[1]
- Bachelor's Degree (any)/Global Affairs, Accelerated MA[1,2]

Graduate Degrees

- Climate Dynamics, PhD
- Environmental Science and Policy, MS
- Environmental Science and Public Policy, PhD
- Global Affairs, MA[1]
- Interdisciplinary Studies, MAIS: Concentration in Energy and Sustainability

[1] Meets Green Leaf criteria when options are selected to ensure coverage of "people, planet and prosperity" across the program's curriculum.

[2] Meets the Green Leaf criteria when the Master's degree is paired with a Green Leaf Bachelor's degree.

Courses

The Green Leaf designation recognizes offerings that contribute significantly to students' understanding and practice of sustainability. These offerings extend beyond environmental management, natural resources protection and conservation studies alone as Mason's Green Leaf curricula comprise both sustainability-*focused* and sustainability-*related* courses.

Sustainability- *Focused* Courses

Sustainability-*focused* courses provide valuable grounding in the concepts and principles of sustainability. These courses educate students about how different dimensions of sustainability relate to and support each other in theory and practice. In addition, these courses help equip students with the skills to weave together disparate components of sustainability in addressing complex issues.

Code	Title	Credits
ANTH 370	Environment and Culture	3
AVT 385	EcoArt (Mason Core)	3
BIOL 379	RS: Ecological Sustainability (Mason Core)	4
CEIE 401	Sustainable Land Development	3
CEIE 501	Sustainable Development	3
CEIE 540	Water Supply and Distribution	3
CEIE 892	Special Topics in Environmental and Water Resource Systems Engineering	3
COMM 660	Climate Change and Sustainability Communication Campaigns	3
CONF 702	Peace Studies	3
CONS 410	Human Dimensions in Conservation (Mason Core)	3
ECON 105	Environmental Economics for the Citizen (Mason Core)	3
ECON 335	Environmental Economics	3
EVPP 322	Business and Sustainability	3
EVPP 338	Economics of Environmental Policy	3
EVPP 355	Ecological Engineering and Ecosystem Restoration	4
EVPP 361	Introduction to Environmental Policy	3
EVPP 362	Intermediate Environmental Policy	3
EVPP 378	RS: Ecological Sustainability (Mason Core)	4
EVPP 421	Marine Conservation	3
EVPP 432	Energy Policy	3
EVPP 475	Global Biodiversity Governance	3
EVPP 480	Sustainability in Action (Mason Core)	4
EVPP 521	Marine Conservation	3
EVPP 525	Economics of Human/Environment Interactions	3
EVPP 533	Energy Policy	3
EVPP 575	Global Biodiversity Governance	3
EVPP 608	Introduction to Environmental Social Science	3
EVPP 620	Development of U.S. Environmental Policies	3
EVPP 622	Management of Wild Living Resources	3
EVPP 626	Environment and Development in Asia	3
EVPP 627	Environmental Policy in Latin America	3
EVPP 628	Environment and Development in Africa	3
EVPP 635	Environment and Society	3
EVPP 642	Environmental Policy	3
GEOL 321	Geology of Energy Resources	3
GEOL 420	Earth Science and Policy (Mason Core)	3
GGS 307	Geographic Approaches for Sustainable Development	3
GGS 525	Economics of Human/Environment Interactions	3
GOVT 361	Introduction to Environmental Policy	3
INTS 210	Sustainable World (Mason Core)	4
INTS 292	Leadership for Sustainability	0-1
INTS 334	Environmental Justice (Mason Core)	4
INTS 370	Sustainable Food Systems	6
INTS 402	Plants and People - Sustenance, Ceremony, and Sustainability	6
ITRN 760	International Environmental Politics	3
PRLS 250	Wilderness Travel and Sustainability	2

PRLS 300	People with Nature	3
PRLS 402	Human Behavior in Natural Environments	3
PRLS 531	Natural Resources Recreation Planning	3
PUAD 642	Environmental Policy	3
SOCI 320	Globalization and Social Change (Mason Core)	3
TOUR 340	Sustainable Tourism	3
TOUR 420	Tourism Planning/Policy	3

Sustainability- *Related* Courses

Sustainability-*related* courses help build knowledge about a component of sustainability or introduce students to sustainability concepts during part of the course. They may complement sustainability-focused courses by providing students with in-depth knowledge of a particular aspect or dimension of sustainability (such as the natural environment) or by providing a focus area (such as renewable energy) for a student's sustainability studies, or they may broaden students' understanding of sustainability from within different disciplines.

Code	Title	Credits
ANTH 580	Environmental Anthropology	3
BIOL 140	Plants and People (Mason Core)	3
BUS 200	Global Environment of Business (Mason Core)	3
CEIE 100	Environmental Engineering around the World (Mason Core)	3
CEIE 355	Environmental Engineering and Science	3
CEIE 450	Environmental Engineering Systems	3
CEIE 690	Topics in Civil Engineering	3
CHEM 155	Introduction to Environmental Chemistry I (Mason Core)	4
CHEM 156	Introduction to Environmental Chemistry II (Mason Core)	4
CHEM 458	Chemical Oceanography	3
CLIM 101	Global Warming: Weather, Climate, and Society (Mason Core)	3
CLIM 102	Introduction to Global Climate Change Science (Mason Core)	4
CLIM 111	Introduction to the Fundamentals of Atmospheric Science (Mason Core)	3
CLIM 112	Introduction to the Fundamentals of Atmospheric Science Lab (Mason Core)	1
CLIM 314	Severe and Extreme Weather	3
CLIM 319	Air Pollution	3
CLIM 412	Physical Oceanography	3
COMM 399	Special Topics in Communication	1-3
COMM 670	Social Marketing	3
COMM 690	Special Topics in Communication	3
CONF 651	Collaborative Community Action Participatory Governance	3
CONF 682	Principles of Environmental Conflict Resolution	3
CONF 683	Environmental Conflict Resolution: Situation Assessment, Process Design and Best Practices	3
CONS 401	Conservation Theory	3
CONS 402	Applied Conservation	4
CONS 404	Biodiversity Monitoring	4
CONS 490	RS: Integrated Conservation Strategies (Mason Core)	3
CONS 491	RS: Conservation Management Planning (Mason Core)	4
EDCI 573	Teaching Science in the Secondary School	3
EVPP 108	Ecosphere - Introduction to Environmental Science I-Lecture (Mason Core)	3
EVPP 109	Ecosphere- Introduction to Environmental Science I- Lab (Mason Core)	1
EVPP 112	Ecosphere: Introduction to Environmental Science II-Lecture (Mason Core)	3
EVPP 113	Ecosphere: Introduction to Environmental Science II–Lab (Mason Core)	1
EVPP 201	Environment and You: Issues for the Twenty-First Century (Mason Core)	3
EVPP 336	Human Dimensions of the Environment	3
EVPP 337	Environmental Policy Making in Developing Countries	3
GCH 560	Environmental Health	3
GEOL 101	Introductory Geology I (Mason Core)	4
GEOL 102	Historical Geology (Mason Core)	3
GEOL 134	Evolution and Extinction (Mason Core)	3
GEOL 303	Field Mapping Techniques	3
GEOL 305	Environmental Geology	3
GEOL 306	Soil Science	3
GEOL 313	Hydrogeology	3
GEOL 320	Geology of Earth Resources	3
GEOL 332	Paleoclimatology	3
GEOL 363	Coastal Morphology and Processes	4
GEOL 458	Chemical Oceanography	3
GGS 102	Physical Geography (Mason Core)	3
GGS 103	Human Geography (Mason Core)	3
GGS 121	Dynamic Atmosphere and Hydrosphere (Mason Core)	4
GGS 122	Dynamic Geosphere and Ecosphere	4
GGS 302	Global Environmental Hazards	3
GGS 303	Geography of Resource Conservation (Mason Core)	3
GGS 304	Population Geography (Mason Core)	3
GGS 312	Physical Climatology	3
GGS 314	Severe and Extreme Weather	3
GGS 319	Air Pollution	3
GGS 322	Issues in Global Change	3
HIST 615	Problems in American History	1-6
INTS 102	Global Networks and Communities (Mason Core)	6
INTS 103	Human Creativity: Science and Art (Mason Core)	6
INTS 211	Introduction to Conservation Studies (Mason Core)	3-6

INTS 311	The Mysteries of Migration: Consequences for Conservation (Mason Core)	6
INTS 371	Food Systems and Policy (Mason Core)	3
INTS 401	Conservation Biology (Mason Core)	6
INTS 403	Conservation Behavior (Mason Core)	6
INTS 470	Professional Pathways in Sustainable Food Systems	1
PHIL 243	Global Environmental Ethics (Mason Core)	3
PHIL 343	Topics in Environmental Philosophy (Mason Core)	3
PHYS 111	Introduction to the Fundamentals of Atmospheric Science (Mason Core)	3
PHYS 112	Introduction to the Fundamentals of Atmospheric Science Lab (Mason Core)	1
PHYS 331	Physics of Renewable Energy	3
PHYS 385	Materials Science with Applications to Renewable Energy	3
PRLS 501	Introduction to Natural Resources Law	3
USST 301	Urban Growth in a Shrinking World	3

Living Learning Communities

Office of Living Learning Community Development

Hanover Hall
Fairfax Campus

Phone: 703-993-6674
Email: LLC@gmu.edu
Website: http://llc.gmu.edu/

Living Learning Communities (LLCs) are collaborative partnerships between academic departments, individual Mason faculty, housing and residence life staff, and the division of University Life. Students who enroll in an LLC take one or more classes together and live on campus as a group in the same residence hall. In addition to their common coursework, groups of students in LLCs interact with each other and their faculty or staff coordinators through numerous out-of-class programs and activities. LLC options exist for both first-year and upper-division undergraduate students who choose to live on campus. For more information, please visit the website. (http://llc.gmu.edu)

Mason Impact

Bethany M. Usher, Associate Provost for Undergraduate Education

228 Johnson Center
Fairfax Campus

Phone: 703--993-3794
Email: MasonUE@gmu.edu
Website: UGE.gmu.edu

Mason Impact

Mason impacts students, and students impact the world!

Mason Impact (https://provost.gmu.edu/initiatives/mason-impact/) is George Mason University's commitment to offer every student transformative learning experiences. Mason Impact offers high-impact opportunities to all students, designed to develop problem-solving, critical thinking, and communication skills, and preparing them to make a real impact in the world. Mason Impact is grounded in a strong education that explores how knowledge is created and used, investigates local and global challenges from multiple perspectives, and helps students develop relevant questions. Mason Impact Projects allow students to use inquiry methods to answer their questions and learn to communicate their results. These experiences are transformative; students are introduced to a more complicated and interesting world in which they can have an impact. Mason Impact offers experiences and projects in Global Education (http://studyabroad.gmu.edu), Civic Engagement (https://provost.gmu.edu/initiatives/mason-impact/community-engagement-and-civic-learning-cecl/), Research (https://oscar.gmu.edu), and Entrepreneurship (https://provost.gmu.edu/initiatives/mason-impact/career-industry-and-entrepreneurship-entr/). (https://provost.gmu.edu/initiatives/mason-impact/entr/) Students who successfully complete Mason Impact projects and/or participate in study abroad earn special transcript notations highlighting their experiences.

Office of Community Engagement and Civic Learning (CECL)

The Office of Community Engagement and Civic Learning (https://provost.gmu.edu/initiatives/mason-impact/community-engagement-and-civic-learning-cecl/) facilitates
collaboration between Mason faculty, staff, students, alumni, and the community for the mutually beneficial exchange of knowledge, resources, and service in the context of partnership and reciprocity.
CECL offers several opportunities for engaging with civic and community learning including:

- Funding undergraduate community engaged research and service opportunities through the Summer Team Impact Opportunity and Undergraduate Research Scholars Program
- Supporting courses with a Civic Engagement component through Mason Impact
- Offering Federal Work Study community engaged research assistantships
- Facilitating campus wide programming around voter engagement and participatory democracy
- Connecting students with faculty mentors doing community engaged research and teaching

Office of Entrepreneurship and Innovation (ENTR)

Entrepreneurship and innovation is a featured part of the (https://provost.gmu.edu/initiatives/mason-impact/)Mason Impact experience and is vital to our economy and our communities. As a world-class research institution, Mason has an important role to play in educating the next generation of entrepreneurs and business leaders. Becoming an entrepreneur when you're still in school has some built-in advantages.

If you are thinking about starting a business or have a breakthrough invention, our personalized approach will connect you with the resources to move your business forward. Our team of experts will also help find and facilitate access to capital for promising initiatives.

You'll also have the opportunity to test your ideas, learn what works and what doesn't, and pivot early to avoid costly mistakes. Our programs will teach you to approach problems with a lean mindset.

We'll help you with:

- Concept definition.
- Intellectual property protection.
- Company formation.
- Business planning.

- Product-market fit.
- Go-to-market planning.
- Financial modeling.
- Co-founder/partner recruitment.
- Fundraising.

Office of Student Scholarship, Creative Activities, & Research (OSCAR)

The Office of Student Scholarship, Creative Activities, & Research (OSCAR) is home to Mason's award-winning undergraduate research program, connecting undergraduate students and faculty through course-based , co-curricular, and independent scholarly projects. Undergraduate research is a featured Mason Impact (https://uge.gmu.edu/mason-impact/https://provost.gmu.edu/initiatives/mason-impact/) experience.

OSCAR offers several programs that make scholarship central to the undergraduate experience at Mason, by:

- Helping undergraduates students find faculty mentors
- Funding undergraduate research and creative projects through the Undergraduate Research Scholars Program and Summer Team Impact Opportunities
- Providing funding for travel to conferences through the Undergraduate Student Travel Fund
- Supporting Research, Scholarship Intensive Courses and Mason Impact (https://masonoscar.knack.com/oscar-courses/#impact-courses-full-list/) Courses
- Hosting the annual Celebration of Student Scholarship and Impact
- Offering OSCAR Federal Work Study Research Assistantships

Please visit our website (http://oscar.gmu.edu/) for more information.

Military Services

Jennifer Connors, Director

1510 SUB I
Fairfax Campus

Phone: 703-993-1316
Fax: 703-993-2392

Website: military.gmu.edu

Office of Military Services

The mission of the Office of Military Services at Mason is to assist veterans, active duty service members, guardsmen, reservists, and dependents in making a successful transition into the Mason community. Our goal is to help these students in a number of capacities including counseling and advising on benefits, academic and admissions advising, and career transition. Few schools have a dedicated staff to help transition from a military environment to college life and we are proud to be able to assist our students in any way.

Located within the Office of Admissions, the Office of Military Services understands personally that the transition to student life can be challenging, yet rewarding. Along with the entire university community, we are grateful to you and your family members for your service to our country. We are dedicated to providing the services you need to successfully navigate this transition.

To schedule a time to meet with a Transition Coordinator, email military@gmu.edu or call 703-993-1316.

The Virginia State Approving Agency (SAA), is the approving authority of education and training programs for Virginia. Our office investigates complaints of GI Bill beneficiaries. While most complaints should initially follow the school grievance policy, if the situation cannot be resolved at the school, the beneficiary should contact our office via email saa@dvs.virginia.gov.

Veteran Student Resident Tuition Rates

George Mason University complies with veteran student regulations regarding tuition rates. The following individuals shall be charged the in-state rate, or otherwise considered a resident, for tuition purposes:

- A Veteran using educational assistance under either chapter 30 (Montgomery G.I. Bill — Active Duty Program) or chapter 33 (Post-9/11 G.I. Bill), of title 38, United States Code, who lives in the Commonwealth of Virginia while attending a school located in the Commonwealth of Virginia (regardless of his/her formal State of residence) and enrolls in the school within three years of discharge from a period of active duty service of 90 days or more.
- Anyone using transferred Post-9/11 GI Bill benefits (38 U.S.C. § 3319) who lives in the Commonwealth of Virginia while attending a school located in the Commonwealth of Virginia (regardless of his/her formal State of residence) and enrolls in the school within three years of the transferor's discharge from a period of active duty service of 90 days or more.
- A spouse or child using benefits under the Marine Gunnery Sergeant John David Fry Scholarship (38 U.S.C. § 3311(b)(9)) who lives in the Commonwealth of Virginia while attending a school located in the Commonwealth of Virginia (regardless of his/her formal State of residence) and enrolls in the school within three years of the Service member's death in the line of duty following a period of active duty service of 90 days or more.
- An individual using educational assistance under chapter 31, Vocational Rehabilitation and Employment (VR&E) who lives in the Commonwealth of Virginia while attending a school located in the Commonwealth of Virginia (regardless of his/her formal State of residence) effective for courses, semesters, or terms beginning after **March 1, 2020**.
- Anyone described above while he or she remains continuously enrolled (other than during regularly scheduled breaks between courses, semesters, or terms) at the same institution. The person so described must have enrolled in the institution prior to the expiration of the three-year period following discharge or release as described above and must be using educational benefits under either chapter 30, chapter 33, or chapter 31 of title 38, United States Code.

Veterans Benefits and Transition Act of 2018

Pursuant to the Veterans Benefits and Transition Act of 2018, section 3679 of title 38, United States Code, effective August 1, 2019 George

Mason University will not impose any penalty, including the assessment of late fees, the denial of access to classes, libraries, or other institutional facilities, or the requirement that a covered individual borrow additional funds, on any covered individual because of the individual's inability to meet his or her financial obligations to the institution, when the delay is due to the delayed disbursement funding from VA under chapter 31 or 33. Mason will permit any covered individual to attend or participate in their course of education during the period beginning on the date on which the individual provides to the educational institution a certificate of eligibility for entitlement to educational assistance under chapter 31 or 33 (a "certificate of eligibility" can also include a "Statement of Benefits" obtained from the Department of Veterans Affairs' (VA) website–eBenefits (https://www.ebenefits.va.gov/ebenefits/homepage), or a VAF 28-1905 form for chapter 31 authorization purposes) and ending on the earlier of the following dates:

1. The date on which payment from VA is made to the institution.
2. 90 days after the date Mason certifies tuition and fees following the receipt of the certificate of eligibility.

Mason requires covered individuals to take the following additional actions:

1. Submit a certificate of eligibility for entitlement to educational assistance no later than the first day of a course of education.
2. Submit a written request to use such entitlement.
3. Provide additional information necessary to the proper certification of enrollment by the educational institution.

Students are responsible for additional payment(s) or the payment of fees for the difference between the amount of the financial obligation and the amount of the VA education benefit disbursement in the following cases:

1. The covered individual will receive less than 100% tuition reimbursement based on the Certificate of Eligibility or written request of entitlement provided by the covered individual, or

A hold or late fee may be assessed if timely payment is not made in the following cases:

1. A covered individual fails to make timely payments for balances incurred for housing, meal plans, or other fees or charges that are not eligible for payment by the Veterans Administration

Military Activation Policy

In accordance with the "Virginia Tuition Relief, Refund, and Reinstatement Guidelines," Mason students in the uniformed services under call or order to active duty, after the beginning of a semester or summer session have two options they may consider with the dean's office of their school of enrollment and Office of the University Registrar in determining their enrollment status with the University:

1. Students may withdraw from courses in which they are enrolled as of the effective date of the call or order to report to active duty. When this option is selected, a credit of tuition and fees, and any pre-paid tuition, room, or board deposits, will be made to the student's account. Students will receive a pro-rated credit of dining service and housing contract charges. Financial aid awards that were credited to the student's account will be recovered by the University in the amount of tuition and fees, dining, or housing credit. Loans used to cover the remaining charges will be subject to normal repayment procedures. For students receiving Title IV funds, financial aid recovery will be subject to requirements for return of Title IV funds to the federal government.
2. Students may take a grade of incomplete in all courses. Students may request an incomplete grade for military deployment, mobilization, or duty changes occurring in the final three (3) weeks of the course if they have satisfactorily completed more than 50% of the course requirements. The conditions for completing course work and receiving a regular grade should be agreed to between the student, course instructors, and the appropriate dean's office of the school in which the student is enrolled. A copy of the military orders must be provided to the Office of the University Registrar as documentation. The deadline for removing an incomplete given on the basis of military service is the last day of the subsequent term, which includes the summer session. This option requires joint agreement of the student and faculty member(s). Faculty and departments are encouraged to take additional steps to accommodate short absences due to military obligations. If a joint agreement can't be reached, students may withdraw from the course and are eligible to receive a 100% reduction of tuition charges after withdrawal is approved for classes that have been discontinued.

Please coordinate requests under the Military Activation Policy with the Office of Military Services. The Office of Military Services will assist with the processes in accordance with current policies. Students will need to discuss their situation with the appropriate representative form their dean's office in consultation with Student Accounts and the Office of the University Registrar. A copy of the active duty orders are required.

Regardless of the option selected above, the following provisions govern reinstatement to the University upon release or return from service in the uniformed services. Students that have a leave of absence under the military activation policy are entitled to reinstatement, to their program of study (if available), without having to reapply for admission if (1) they return to the University after a cumulative absence of not more than five years, and (2) they provide notice of intent to return to the University not later than three years after the completion of the period of service. (Exceptions to these time periods may be found in the Higher Education Opportunity Act (HEOA) of 2008.) Throughout the entire process, former students/students will have access to counseling to determine the impact of absence from the program, to evaluate the ability to resume study, and to assess options when a program is no longer available or suitable.

Applicants to the University who have accepted an offer of admission but who have not yet registered in a degree program may defer admission for up to two consecutive semesters by making a request in writing to the Office of Military Services. To request a deferment for longer than two consecutive semesters, a copy of the military orders must be provided with the written request.

For further information, students should contact the Office of Military Services at (703) 993-8243.

Virginia Military Survivors and Dependents Education Program

The Virginia Military Survivors and Dependents Education Program provides education benefits to qualified children between the ages of 16 and 29, and spouses of military service members killed, missing in action, taken prisoner as a result of military service in an armed conflict, or veterans discharged or released under conditions other than dishonorable who served in the Armed Forces of the United States,

Reserves of the Armed Forces of the United States, or Virginia National Guard, and due to such service, became at least 90 percent disabled.

The military service member must have established domicile, or had a physical presence, in Virginia for at least five years immediately prior to the date on which the admission application was submitted by or on behalf of the applicant to a Virginia public college or university; or

In the case of a deceased military service member:

The military service member must have established domicile, or had a physical presence, in Virginia on the date of death and for at least five years immediately prior to date of death; or

The surviving spouse or surviving parent must have established domicile, or had a physical presence, in Virginia for five years immediately prior to the date on which the admission application was submitted by or on behalf of the applicant to a Virginia public college or university.

Education benefits include tuition and fee waivers, and a stipend for room and board charges, books and supplies, and other expenses. Program and application information may be found on the Virginia Department of Veterans Services website.

The Virginia State Approving Agency (SAA), is the approving authority of education and training programs for Virginia. Our office investigates complaints of GI Bill beneficiaries. While most complaints should initially follow the school grievance policy, if the situation cannot be resolved at the school, the beneficiary should contact our office via email saa@dvs.virginia.gov**.**

Reserve Officer's Training Corps (ROTC)

Army ROTC

2121 Recreation & Athletic Complex
Phone: 703-993-2706
Fax: 703-993-2708
Web: arotc.gmu.edu (http://arotc.gmu.edu)

Administration
Lieutenant Colonel Michael Nelson, U.S. Army
Professor of Military Science

The Army Reserve Officers' Training Corps (ROTC) is an elective program offering qualified students the opportunity to earn a commission as an officer in the U.S. Army, Army National Guard, or U.S. Army Reserve while pursuing a baccalaureate or graduate degree as a full-time student. The program emphasizes student learning and participation in applied leadership, leadership theory, decision making, management skills, time management, ethics and military law, logistics, military roles and national objectives, strategic and tactical planning and principles, and basic military knowledge and skills. The George Mason Army ROTC Patriot Battalion began in 1982, achieved independent status in 2000, and frequently conducts training with colleges and universities throughout Maryland, Virginia, and the District of Columbia.

Enrollment

Enrollment in Military Science (MLSC) courses is open to all students at the Basic Course Level. Freshmen (MLSC 100 Introduction to Army/ROTC and MLSC 102 Leadership Skills II), sophomore (MLSC 200 Self/Team Development and MLSC 202 Leadership Skills IV), and junior (MLSC 300 Applied Leadership I and MLSC 302 Applied Leadership II) classes are awarded 1 credit each. Senior classes (MLSC 400 Leadership and Management and MLSC 402 Leadership and Ethics) earn 3 credits each. No military service obligation is incurred by enrolling in the freshman and sophomore level Army ROTC courses. Courses can be dropped or added, as with any elective course at Mason.

The four-year program is organized into two successive phases: the Basic Course and the Advanced Course. For students seeking the opportunity to earn a commission as an officer, several entry methods and participation strategies can be used. A minimum of four semesters must remain in the student's academic curriculum to complete commissioning requirements; these semesters may be part of either a full-time undergraduate or graduate degree. Course descriptions appear under Military Science (MLSC) in the Courses section of this catalog. Cadets must meet established academic standards. A student must maintain an overall GPA of at least 2.00 to earn commissioning credit for ROTC.

Contracted and scholarship cadets of any level are required to pass the Army Physical Fitness Test (APFT) once each semester. Physical training (PT) is conducted three times each week (Monday/Wednesday/Friday from 6:30 to 8 a.m.). All contracted and scholarship cadets are required to attend physical training.

Basic Course Curriculum

The Basic Course curriculum is a four-course series (MLSC 100 Introduction to Army/ROTC, MLSC 102 Leadership Skills II, MLSC 200 Self/Team Development, and MLSC 202 Leadership Skills IV), usually taken in the freshman and sophomore years. Each class awards 1 academic credit. The Basic Course trains students map reading, land navigation, first aid, physical fitness, leadership, ethics, and communication skills. Each lecture class meets once a week for 75 minutes. Course materials and access to required publications are provided free of charge to all enrolled students. Uniforms and equipment are also issued to students at no cost, but students must return them when withdrawing from or completing the program. In addition students not participating in summer training are required to store their uniforms and equipment with ROTC Supply over the summer break.

Mason's Army ROTC program has numerous experiential aspects. The MLSC Leadership Laboratory section encompasses several different activities. Students enrolling in any ROTC lecture class must enroll in the required lab section. Only the Professor of Military Science can waive Laboratory enrollment in certain circumstances, such as scheduling conflicts.

All Laboratory sections meet as a combined unit on Thursdays from 1:30 to 4:15 p.m. During this time, Cadets train in a variety of hands-on, practical leadership skills and military tasks, ranging from drills and ceremonies to squad and platoon tactics.

Army ROTC also organizes numerous optional events, including field training exercises (FTXs), rappelling, orienteering, formal social events and military related field trips. The unit has an organized color guard, drill team and an intercollegiate Ranger Challenge competition team. Students also have the opportunity to attend official Army training courses such as basic airborne training and the air assault course. Enrolled students typically become progressively more involved to enhance their training, develop esprit de corps, and take part in social aspects of the program.

Advanced Course Curriculum

The Advanced Course consists of a four-course series (MLSC 300 Applied Leadership I, MLSC 302 Applied Leadership II, MLSC 400 Leadership and Management, and MLSC 402 Leadership and Ethics) taken during the junior and senior years. MLSC 300 Applied Leadership I and MLSC 302 Applied Leadership II earn 1 credit each, while MLSC 400 Leadership and Management and MLSC 402 Leadership and Ethics earn 3 credits each. Enrollment in the ROTC advanced course requires that students enter into a contract to serve as a commissioned officer in the active or reserve component of the U.S. Army upon graduation. Many graduates elect to apply for service on active duty although ROTC also offers the opportunity of service in either the Army Reserve or Army National Guard.

The 300-level courses emphasize squad and platoon leadership, tactics, and preparation for Advanced Camp. Advanced Camp is a five-week training and evaluation event conducted during the summer at Fort Knox, Kentucky. Successful completion is a prerequisite for commissioning. Cadets typically attend Advanced Camp in the summer between their junior and senior years; however, they may attend after their senior year if necessary. Salary, travel expenses, and room and board are all provided during the course.

Satisfactory completion of an approved military history course is also required. The department of History and Art History offers a number of 300-level survey courses on the American military experience that satisfy this requirement. Permission of the Professor of Military Science is required prior to substituting any other course.

Upper division ROTC students are also expected to participate in peer mentoring as part of their leadership development. The ROTC peer mentorship program helps students assimilate into the program and helps students prioritize their time to ensure they remain in good academic standing.

The 400-level courses are considered to be the transition phase to becoming an officer in the U.S. Army. These courses focus on leadership, staff operations, logistics, military law, and ethics. Seniors are expected to organize and attend an additional one-hour staff and training meeting per week as part of their leadership experience and duties. Planning and implementation of training becomes the primary focus for seniors in required laboratories.

Enrollment in the advance course ROTC classes requires that certain prerequisites be met. For more information, see the Courses section of this catalog.

Earning a Commission

There are several methods by which students may enter Army ROTC to earn a commission as a second lieutenant on graduation:

- Traditional students may complete the four-year program.
- Sophomores may dual-enroll in both years of MLSC freshman and sophomore level instruction to satisfy the lower-level division requirement in a single academic year. A member of the ROTC cadre must sign a time conflict approval form in order for students to enroll in both freshmen and sophomore lecture sections, as well as the leadership laboratory.
- Veterans with prior college credits may enter directly into the upper-division sequence (if academically aligned as a junior).
- Sophomores may apply to attend a four-week Basic Camp - between the sophomore and junior years to gain experience equivalent to the basic course. Medical, physical and academic standards must be met prior to attending Basic Camp. Students should contact the Recruiting Operations Office in the ROTC department to determine eligibility.
- Graduate students entering a two year program are also eligible to attend Basic Camp prior to start of their graduate studies. Students should contact the Recruiting Operations Officer in the ROTC department to

Education delays for graduate study also may be approved for Cadets seeking training as physicians, lawyers or ministers based on needs of the Army. Non-U.S. citizens may participate freely in the lower-division ROTC courses, but must earn U.S. citizenship prior to enrollment in courses requiring a contractual obligation to serve as a commissioned officer.

Scholarship Programs

Two-, three-, and four-year ROTC scholarships are available to freshmen, sophomores, and juniors in all majors on a competitive basis as well as to graduating seniors who wish to pursue a two-year master's degree. Students must have a minimum cumulative GPA of 2.50 to apply and be under age 31 when commissioned. Scholarships pay 100 percent of tuition, an annual book allowance of $1,200, and a stipend of $420 per month during the school year, all tax free.

A two or three year Guaranteed Reserve Forces Duty scholarship is available that guarantees reserve duty upon graduation and commissioning. Students should contact the Recruiting Operations Officer in the ROTC department to determine eligibility.

High school students interested in four-year scholarships should apply online (http://www.goarmy.com/rotc/)no later than December 15 of their senior year for a scholarship that would start in the fall semester of their freshman year at Mason. Contact the Recruiting Operations Officer for details.

Many students participate in ROTC as non-scholarship cadets. A non-scholarship cadet cannot enter into a contract to receive a commission until the sophomore year (to include completing MLSC 100 Introduction to Army/ROTC and MLSC 102 Leadership Skills II or equivalent credit.) For the sophomore, junior, and senior years, non-scholarship contracted students receive a monthly stipend.

Air Force ROTC

AFROTC Detachment 330
2125 Cole Student Activities Building
University of Maryland
College Park, MD 20742-1021
Phone: 301-314-3242

Enrollment

The Air Force Reserve Officers' Training Corps (AFROTC) provides two programs for college men and women to earn a commission as a second lieutenant in the U.S. Air Force while completing their university degree requirements. To enter the AFROTC program, students should contact 301-314-3242 or go online (http://www.afrotc.umd.edu). Mason students register for the appropriate courses through the Consortium Office located in SUB I, Room 2101. Attendance at courses, located at the University of Maryland, is mandatory. Carpools among Mason cadets are usually available.

Four-Year Program

This program is comprised of a General Military Course (GMC) and a Professional Officer Course (POC). The first two years (GMC), normally for freshmen and sophomores, give a general introduction to the Air Force and its various career fields. Students enrolled in the GMC program incur no obligation and may elect to discontinue the program at any time. The final two years, the POC concentrate on the development of leadership skills and the study of U.S. defense policy. Students must compete for acceptance into the POC. Students enrolled in the last two years of the program regardless of scholarship status will receive a monthly stipend. Juniors receive $450 a month and seniors receive $500 a month.

Three-Year Program

This program is normally offered to prospective sophomores but may be taken by seniors and graduate students. The academic requirements for this program are identical to the four-year program, and students receive the same benefits in their POC years. Student will take both the freshmen and sophomore class to make up the missed first year. Students must start the fall semester of their sophomore year to be eligible for the three-year program. Graduate students should contact the detachment 301-314-3242 for graduate student entrance requirements.

Scholarships

Scholarships are available in many fields and are based on merit. Those selected receive tuition, lab expenses, incidental fees, and a book allowance, plus a nontaxable monthly allowance. For the most up to date information about scholarships available contact the detachment or visit their website (http://afrotc.com/scholarships/).

AFROTC Awards

AFROTC cadets are eligible for numerous local, regional, and national awards. Many of these awards include monetary assistance for school.

Student Health Services

2300 SUB I
Fairfax Campus
703-993-2831

229 Senator Colgan Hall
Science and Technology Campus
703-993-8374

B102 Van Metre Hall
Arlington Campus
703-993-4863

Visit website for current clinic operation status

Website: shs.gmu.edu

Student Health Services provides easily accessible and affordable health care to all enrolled students in a caring and confidential environment. We offer a wide variety of services (https://shs.gmu.edu/) to keep Mason students healthy. Visit shs.gmu.edu (https://shs.gmu.edu) for up-to-date information about changes to clinic operations, services, or requirements due to the coronavirus pandemic.

Immunization Requirements

All newly admitted or newly readmitted students are required to submit the Mason Immunization Record Form. Students born after December 31, 1956, must provide documented proof that they have been immunized against certain communicable diseases. Students born before December 31, 1956 are only required to complete the Tuberculosis screening section on the Immunization Record Form.

Immunization Record Deadlines

Fall and Spring semesters each have set deadlines. Visit shs.gmu.edu/immunizations **(**http://shs.gmu.edu/immunizations/**) for dates.**

Students must complete pages 1-2 and a health care provider must complete the remaining sections of the Immunization Record Form. Residential students must complete page 6. Students must submit completed immunization records to the Immunization Office by the deadline. A late fee will be charged and a hold will be placed on the student's Patriot Web account if immunization records or documentation are incomplete. A completed Immunization Record Form is necessary for students to live on-campus.

Immunization requirements are mandated by the Commonwealth of Virginia and George Mason University policy #6004 (http://universitypolicy.gmu.edu/policies/immunization-policy/). Student Health Services is responsible for collecting and maintaining students' immunization records.

Required Immunizations

Tuberculosis: Tuberculosis (TB) screening is required for all students. If TB testing is needed it must be completed within 3 months of the first day of classes for the semester.

Tdap: Must submit proof of Tetanus/diphtheria/Acellular Pertussis (Tdap) vaccination after age 11. Must also show proof of Tetanus and diphtheria (TD)/Tdap within the last 10 years if Tdap vaccine was administered more than 10 years ago. A titer lab report is not accepted.

MMR: Two doses each of measles, mumps, rubella, after 1967 OR the combination MMR (after 1971), OR a laboratory report of a titer documenting positive immunity to each of the diseases.

Hepatitis B: Students are required to submit proof of vaccination or immunity against Hepatitis B disease OR they must sign a waiver. Student Health Services highly recommends this vaccination series.

Meningococcal: Meningococcal Conjugate vaccine administered between the ages of 16-21 OR submit a signed waiver. Student Health highly recommends students living on campus or participating in sports receive this vaccine.

The Mason Immunization Record Form can be found on the Student Health Services website (http://shs.gmu.edu/immunizations/). Immunization records must be in English.

Immunization Submission

Submit the immunization record form to the Immunization Office through the secure patient portal online or by mail. Submission details are on the form.

Students must complete pages 1-2 and a health care provider must complete the remaining sections of the Immunization Record Form. Residential students must complete page 6. Transcription service is available for a fee at Student Health.

If a student is not able to provide appropriate documentation, immunizations and/or titers are also available for a fee. Once records are submitted and a student has received a secure message in the patient portal indicating a missing immunization, students can call the

Immunization Office (http://shs.gmu.edu) at 703-993-2135 to schedule an appointment for needed immunizations. Contact the Immunization Office for questions about immunization requirements, submission, or vaccine prices.

Online submission:
https://gmu.medicatconnect.com

Office location:
SUB 1, Rooms 2347 - 2349

Mailing Address:
George Mason University Student Health Services
4400 University Drive, MS 2D3
Fairfax, Virginia 22030

Students are responsible for ensuring immunization records are submitted and complete by the deadline. Students will receive notification about incomplete or missing immunization requirements through their Mason email account. The notice will direct the student to log into the secure patient portal (https://gmu.medicatconnect.com) for more information.

Minor Consent

A parent/legal representative signature is required for a minor (a student under age 18 at the time classes begin). A minor consent must be on file at Student Health Services to receive most health services. This minor consent is on the immunization record form. If a minor student chooses to sign the hepatitis B or meningococcal waiver on the immunization record form, a parent/legal representative signature is also required.

Student Health Services

Student Health is staffed by dedicated doctors, nurse practitioners, and nurses who provide diagnosis and treatment of illness and minor injuries and health and wellness counseling for all enrolled students.

There is no charge to be seen by a healthcare provider. There are fees for supplies, immunizations, lab testing, medications and procedures. Call to schedule an appointment or speak with a nurse. If Student Health Services is closed, call 703-993-2831 to speak with the free nurse advice service.

Student Health Insurance Plan

George Mason University offers a student health insurance plan which is available to eligible undergraduate and graduate students who would like to purchase health insurance. F-1 and J-1 Visa students are automatically enrolled in the Mason health insurance plan under University Policy #6002 (https://universitypolicy.gmu.edu/policies/health-insurance-requirement-for-international-f-1-and-j-1-visa-students/). A dental insurance plan is available for purchase for all eligible students. Details about the plans are online (http://shs.gmu.edu/insurance/).

Success Coaching

3600 Student Union Building I
MSN 2C4

Phone: 703-993-2470
Email: masoncn@gmu.edu
Website: mcn.gmu.edu

Administration

- Adrienne White, Director, Mason Care Network

Success coaching and academic advising **at George Mason University are integral parts of the educational and developmental process that enhance student success. Mason is committed to supporting holistic success across the student experience, connecting students to campus resources, and helping students set and achieve academic, career, and personal goals.**

Success Coaching

Success Coaches discuss aspects of a student's life which impact their academic performance, including but not limited to the following:

- School community
- Effectiveness
- Commitment to graduation
- Career
- Managing commitments
- Finances
- Health & support
- Academics

Success Coaches will meet with students to discuss these eight focus areas and how they influence their student experience at Mason. Success Coaches work closely with campus resources, Academic Advisors, and the student to develop success plans to enhance and improve a student's performance and confidence in each area.

All incoming freshmen students have an assigned Success Coach; however, all Mason undergraduate students will have access to a Success Coach. Students can locate their coaches via the Coach Locator.

Students can make an appointment with their Success Coach through Navigate Mason or the MCN website, mcn.gmu.edu. Referrals to the MCN can be done via email at masoncn@gmu.edu or call 703-993-2470.

New, Exploratory, and Undeclared Students

In addition to coaching, the MCN unit also provides academic advising for exploratory, undeclared, and non-degree seeking students. Students who are unsure of their major or just not quite sure what field to pursue have an assigned Exploratory Academic Advisor, who also serves as their Success Coach.

Students new to Mason will be expected to meet with their assigned Success Coach during the first semester to develop a plan for success, including discussions about major fit, career paths, campus resources, Mason Impact activities, time management, physical and mental health, finances, and campus activities. Success coaches are located within the Mason Care Network central office in SUB1, or within an academic unit. Exploratory students who have not declared a major, as well as students who have been terminated from their major, will be assigned to a student success coach housed in the Mason Care Network unit. This success coach will serve as the student's academic advisor and

success coach. Students are encouraged to make appointments with coaches for information about general degree requirements, major exploration, policies, procedures, getting connected on campus, and other concerns. All academic actions and exceptions to policy for exploratory, undeclared, and non-degree students should be initiated by meeting with a success coach. More information can be found on the Mason Care Network website.

Referrals to MCN can be done via email at masoncn@gmu.edu or call 703-993-2470. Students can also make an appointment with their Success Coach through Navigate Mason or the MCN website, mcn.gmu.edu.

University Libraries

Office of the Dean of Libraries and University Librarian

4300 Fenwick Library
Fairfax Campus
MSN: 2FL

Phone: 703-993-2491
Website: library.gmu.edu

Administration

- John G. Zenelis, Dean of Libraries and University Librarian
- Bridget Euliano, Assistant University Librarian for Access and Resource Management
- Clyde W. Grotophorst, Associate University Librarian for Digital Strategies and Systems
- John C. Walsh, Associate University Librarian for Learning, Research and Engagement

Research Services and Instruction

Library faculty work with instructional and research faculty and students in specific academic programs and departments to promote and use new resources, consult with faculty about acquiring specific scholarly resources, assist graduate students with thesis or dissertation research, develop and maintain research guides, support online courses, collaborate in offering research programs and scholarly events, and conduct instructional and training sessions for all levels of library users—students, faculty and staff.

Instructional Services

The libraries provide a variety of onsite and online instructional services tailored to the curricular and academic programs of the university's schools and colleges. Library instruction ranges from workshops to classes, and is aligned with and embedded in the university's undergraduate and graduate curricula. Technology-rich instructional venues are available in all of the libraries.

Research & Consultation Services

Expert library faculty provide research and consultative assistance, both in-person and virtually, to students, faculty and staff at any stage of the research process. Research support ranges from class assignments to lengthier research projects, to capstone course and graduate degree requirements (i.e., thesis or dissertation), to digital humanities, data and GIS support, to research and scholarship leading to publication and related scholarly communications. For help in a specific discipline, consult the website (http://library.gmu.edu/ask/request/).

Scholarly Resources

Library research materials in various formats are housed on the Fairfax Campus at the Fenwick Library; on the Arlington Campus at the Arlington Campus Library (Van Metre Hall); and on the Science and Technology Campus at the Mercer Library (Colgan Hall). The Antonin Scalia Law School Library, on the Arlington Campus (Hazel Hall), is administered separately, but maintains close programmatic and service coordination with all of Mason's libraries. Combined resources, including the law library, total in the millions of holdings and accessible research materials and include: print books and bound journal volumes; e-books; online journals and proceedings; electronic databases; online audiovisual items; multimedia materials; microform units; print government documents (U.S., Virginia, and European Union); maps; and significant holdings of manuscripts, special collections, and archives.

Mason's integrated library information system and its discovery layer interface access an online catalog, circulation, and course-reserves information. The system can be used in any of the libraries from campus locations on the network or via the web. Electronic course reserves are provided through Blackboard (Bb), the university's learning management system. The Libraries' website (http://library.gmu.edu), (http://library.gmu.edu), offers access to a variety of networked digital resources and electronically mediated services, including a virtual reference service.

George Mason University libraries' resources are significantly supplemented by the following current affiliations:

- The Virtual Library of Virginia (VIVA) Program, a Virginia funded electronic and resource-sharing program for public higher-education institutions;
- The Washington Research Library Consortium (WRLC), whose other members include American, Catholic, Gallaudet, Georgetown, George Washington, Howard, Marymount, and District of Columbia universities, provides resource sharing services;
- The Association of Southeastern Research Libraries, which includes the 36 largest university libraries in a 10-state region;
- The Center for Research Libraries - Global Resources Network, a Chicago-based research library, along with its affiliate Linda Hall Library of Engineering and Technology (Kansas City, MO), whose multimillion volume holdings comprise specialized and uniquely held materials in North America;
- HathiTrust Digital Library, a partnership of academic and research institutions, offering a collection of millions of titles digitized from libraries around the world; and
- The international Online Computer Library Center (OCLC) extensive computerized system and network facilitate national and international library resource-sharing activities and shared cataloging of scholarly material worldwide.

An intercampus delivery service is available for students and faculty requesting materials held at any Mason campus library. Materials not held by Mason can be obtained by direct borrowing from WRLC institution libraries via the Consortium Loan Service, and other research libraries via interlibrary loan, or, when required, commercial delivery services.

Expanded academic support services also include the following:

Digital Scholarship Center

Web: dsc.gmu.edu (http://dsc.gmu.edu)

The Digital Scholarship Center (DiSC) is the library's most sophisticated response to the interdisciplinary research, teaching and learning needs of our digital researchers. The focus is on supporting scholarly or academic activities conducted or enhanced through the use of data and digital technologies. DiSC staff and affiliates deliver digital research services, and the center itself offers a technology-rich environment where discovery, exploration, collaboration and, ultimately, learning occur.

Data Services & GIS

An integrated service supporting faculty and students engaged in data-centric research (e.g., social science data sets, polling, census, geospatial data, and data archives). Services include consultations, training and assistance with finding and using data, conducting data collection and analysis, using statistical and qualitative software packages, and geographic information systems (GIS). Other assistance offered includes advice on creating funder-mandated data management plans, research data repository services (Dataverse) and access to government information, data, and maps.

Digital Humanities

The field of digital humanities is a broad one, encompassing multiple disciplines within the humanities. At a basic level, digital humanities simply refers to the use of digital tools and methods to further scholarship. At its more complex, digital humanities involves re-imagining the way we approach original textual sources, electronic texts and data, research, narrative, and the publication and interpretation of scholarship.

To support digital scholarship in the field of digital humanities, the Digital Scholarship Center (DiSC) provides a variety of services; offering workshops, providing one-on-one consultations and in-classroom instruction sessions on digital humanities platforms, software, and skills. DiSC provide support for Omeka users. The computer lab offers access to requisite hardware, such as scanners and a HoverCam, as well as software, including Gephi, Palladio, Voyant, and GIS. DiSC also has access to content from selected full text primary source databases in a form that can be used for text mining and analysis.

Digital Projects Lab

One of two labs in the Digital Scholarship Center, the Digital Projects Lab is designed, configured and equipped to support and encourage collaborative work on digital research projects. Lab support, in certain instances, is also provided virtually.

Virtual Reference

Web: library.gmu.edu/ask (http://library.gmu.edu/ask/)

This service provides a virtual, real-time, reference service which allows staff to provide reference service to students, faculty and staff remotely.

Mason Publishing

Phone: 703-993-3636

Web: library.gmu.edu/masonpublishing (http://library.gmu.edu/masonpublishing/)

The Mason Publishing Group provides support and resources to the George Mason University community for creating, curating, and disseminating scholarly, creative, and educational works. Mason Publishing includes a cluster of publishing-related activities such as the George Mason University Press, scholarly communication and copyright, Open Educational Resources, University Dissertation & Thesis Services, Mason's institutional repository (MARS), electronic journal hosting and publishing, and data publication.

George Mason University Press

Phone: 703-993-3636
Web: publishing.gmu.edu/press (https://publishing.gmu.edu/press/)

A component of Mason Publishing, the George Mason University Press publishes in a variety of disciplines ranging from literature to public policy. The Press seeks to promote access to scholarly works that concern the university, other area organizations, and the history, politics and culture of the region.

Scholarly Communications and Copyright Resources

Phone: 703-993-2544 or 2427
Web: publishing.gmu.edu/communication (https://publishing.gmu.edu/communication/)

Integrated within Mason Publishing, this service provides guidance, assistance, and education on copyright, open access, and scholarly communications issues. Specifically, this office provides assistance with the application of fair use of proprietary content used in teaching, electronic course reserves, and online education; student assignments; open access and university publishing and support; and promoting faculty scholarship and collaborations. Workshops and class instruction on these topics and others are available year-round, upon request.

Open Educational Resources (OER)

Phone: 703-993-2544
Web: oer.gmu.edu (https://oer.gmu.edu/)

Through the Mason Publishing program, the libraries provide a "one-stop-shop" for university faculty interested in understanding the purpose of OER, finding and using OER, and assistance finding resources to adapt or develop OER for teaching university classes on their own terms.

University Dissertation and Thesis Services

Phone: 703-993-2222
Web: thesis.gmu.edu (http://thesis.gmu.edu)

The University Dissertation and Thesis Service (UDTS) assists students and academic units in the dissertation, thesis, and graduate-level project process by helping students meet all university requirements and deadlines for submission of work. The UDTS web site provides useful tools such as the university's *Thesis, Dissertation, or Project Guide*, containing downloadable templates of necessary elements, forms required for the submission process, and links to related web sites. UDTS also assists graduate students through individual consultation and informational workshops.

Mason Archival Repository Service

Phone: 703-993-3742
Web: mars.gmu.edu (http://mars.gmu.edu)

Another facet of Mason Publishing, the Mason Archival Repository Service (MARS) serves as an institutional repository and provides a stable digital archive for scholarly and research materials of lasting value held by Special Collections Research Center or produced by Mason faculty, students, and staff. Staff provide expert advice on digital

archiving these materials, file formats, copyright issues, long-term management of archived materials, and issues pertaining to scholarly communication.

Special Collections Research Center

Web: scrc.gmu.edu (http://sca.gmu.edu)

Located within the Fenwick Library in a state-of-the-art space, this unit acquires, documents, preserves, and provides access to primary research collections and documents. Special Collections Research Center's (SCRC) services, collections and programs support the teaching and research activities of George Mason University and also serve the community at large. With unique print and digitized collections that offer outstanding opportunities for research with original sources, holdings focus on Mason's academic areas of strength, as well as the development of the Washington-Northern Virginia metro area. The collections – in large part, rare and exceptional materials – encompass broad areas such as: humanities and social sciences; Northern Virginia and regional history; oral histories; politics and government; prints and photographs; Reston, Virginia; science and technology; theater and performing arts; transportation and planning; university archives and history. SCRC houses the university's records management program and, through its oral history program, undertakes the creation of audiovisual documentary resources.

University Records Management

Phone: 703-993-2201

A part of the Special Collections Research Center, this service assists university academic and administrative departments with retention and disposition of institutional records, both print/physical and digital, in accordance with Virginia state laws, policies, and guidelines. University Records Management offers online guidance, as well as in-person workshops, instruction sessions, and records evaluations to assist faculty and staff. University Records Management maintains an on-site records center where inactive paper records may be stored and university records are properly disposed.

Faculty

Library Faculty

Professional Faculty

Beckman, Bell, Blinstrub, Bopp, Bowdoin, Bushallow, Butler, Calcagno, Carter, Clark, Coniglio, Darnell, Ding, Eaton, Edwards, Evans, Fahringer, Fehsenfeld, Grimm, Henson, Heilbrun, Hoffman, Hunter, Kermer, Kierig, Kim, Kirker, Lam, Landry, Leak, Lee, Lemmons, Lewis, Mackenzie, MacVaugh, Magee, Mann, Mattson, McManus, Melville, Oberle, O'Gara, Reichelt, Rondeau, Roszkowski, Rouner, Schubel, Spitler, Stevens, Suh, Sullivan, Thayer, Vay, Watkins, Westcott

Administrative Faculty

Kehoe, Osterman, Stockwell

Libraries

Library Locations

Fenwick Library

Phone: 703-993-2240

Designed to LEED silver standards, the Fenwick Library, George Mason University's main research library, provides services, learning spaces, digital technology and resources for the Mason community. The modern, bright facility accommodates individual study as well as group collaboration. The majority of the University Libraries' volumes are located in Fenwick Library. General circulating materials are available on floors three through five, with periodicals and government documents on the first floor. The state-of-the-art Special Collections Research Center is located on the second floor. Compact shelving on the first, third, and fourth floors allow for increased capacity of the Libraries' print collection, freeing up space for research, study, and collaboration.

Located on the first floor, the Information Desk is a unified full-service assistance desk, providing a single point of contact for research questions and access to collections in Fenwick Library. It is located in the Atrium as you enter the library. Laptops are available for checkout from a dispenser. The addition provides 30 group study rooms, each equipped with white boards and monitors. A handful of MediaScape collaboration study rooms allow up to 4 students to share their laptop screens simultaneously. Also, two "One Button Studio" presentation practice rooms are designed to allow students a space to practice and revise oral presentations.

Fenwick Library offers a number of both instructional and seminar spaces. The first floor rooms can be combined to accommodate up to 80 students, and the fourth floor instruction space is a sandbox for exploring innovative classroom technology. Two exhibition and gallery spaces showcase student and faculty art, as well as items from the Special Collections Research Center.

The second floor houses the Research Commons, a space designed to bring together much of the research activity in the Libraries in a collaborative and multi-disciplinary environment. The Research Commons includes a large open area for group study and collaboration, the Special Collections Research Center, the Digital Scholarship Center, the Music Library, University Dissertation and Thesis Services, tutoring space for the Writing Center, and the offices of most of the University Libraries' subject specialist librarians.

The fifth floor graduate study zone includes Graduate Study Carrels and the Dissertations Writers' reserved spaces; quiet spots designed to give graduate students a place to pursue their research and writing. A graduate student silent reading room is also available on the fifth floor.

Assistive technologies are available onsite (for individuals with disabilities).

Arlington Campus Library

Phone: 703-993-8188

This library, located on the second and third floors of Van Metre Hall, is a full-service research facility supporting the teaching and research needs of Mason faculty, students, and staff on the Arlington Campus. Consistent with this campus' distinct areas of academic specialization at the graduate level, the library's collection emphasizes

public policy, international commerce, economics, management of nonprofit organizations, conflict resolution and arts management. The library has significant research materials holding and is a depository of European Union documents. Intercampus delivery of circulating materials from other library sites is available. Library staff can provide research assistance and instruction for students, faculty, and staff in identifying and using research resources, which continue to grow in breadth and depth. Assistive technologies are available for people with disabilities.

Mercer Library

Phone: 703-993-8340

This library, located on the first floor of Colgan Hall, supports Mason faculty, students, and staff in the programs and courses offered on the Science and Technology Campus, including applied information technology; biotechnology, bioinformatics, and biodefense; education; environmental sciences and policy; Governor's School @ Innovation Park; health, fitness and recreation resources; molecular and microbiology; tourism; and visual and performing arts. This library also supports faculty and students in the Smithsonian Mason School of Conservation on the Front Royal Campus.

The library provides access to university-wide electronic resources, with an emphasis on instruction and assistance with information resources and research. The library fosters partnerships to provide information services to the rapidly expanding corporate and technology presence in Prince William County. Assistive technologies for people with disabilities are available.

Antonin Scalia Law School Library

Phone: 703-993-8120 (circulation desk)

Administration
Deborah M. Keene, Associate Dean, Library and Technology

The law library, located in Hazel Hall, supports the Antonin Scalia Law School and has a collection of over 476,000 print and microfiche volumes with an emphasis on law and economics, intellectual property, corporate and securities law, regulatory law, and Virginia law. The library also provides access to electronic law resources including *LexisNexis*, *Westlaw*, *HeinOnline*, *Index to Legal Periodicals*, *Bloomberg Law* and *BNA Premier* and is a selective depository for U.S. Government documents. The law library is open to all members of the university community. Most of the collection does not circulate, but many of the books in the treatise collection are available for checkout by all faculty, students, and staff.

University Scholars Program

Honors College

D205 Buchanan Hall

Phone: 703-993-1110
Website: honorscollege.gmu.edu/admissions/university-scholars

The University Scholars are selected from among the most outstanding students invited to the Honors College. This award is the highest academic distinction that Mason offers to undergraduate students and is given annually to top high school seniors admitted to the university. Each year the University Scholars Program enrolls approximately 20 new first-year students, each of whom receives a scholarship covering the full cost of tuition over four years. Students receiving this award have exemplary records of academic achievement, and they have demonstrated intellectual vision and creativity, the potential to solve problems and overcome obstacles, and a commitment to meaningfully contributing to their communities. Applications must be submitted by Mason's Early Action deadline to receive priority consideration for the scholarship.

The University Scholars reside in a common residence hall their first year and share the Dr. Noreen McGuire Prettyman University Scholars Lounge. Students enrolled in the University Scholars Program participate in a dynamic learning community that provides opportunities for intellectual, cultural, and social engagements.

University Studies

Jacquelyn L. Nash, Associate Director, UNIV Courses and Programs, Undergraduate Education

228 Johnson Center

Fairfax Campus

Phone: 703-993-3223
Email: jhilldru@gmu.edu

Web: transitions.gmu.edu (http://transitions.gmu.edu/)

University Studies (UNIV) Courses and Programs' mission is to assist and mobilize students to craft a successful college experience and prepare for their future. Our courses serve all undergraduate students as they transition into college, determine their major and solidify their career path, become strong scholars and student leaders, and prepare for life after college. The curriculum in the first year is supported by Peer Advisors who co-teach UNIV 100 Introduction to Mason.

Please see all UNIV course offerings (UNIV 100-496) in this catalog (https://catalog.gmu.edu/courses/univ/). In addition to first-year transition courses, topics include: career education, academic success, transfer student transition, undergraduate research, well-being, student leadership, and more.

RESEARCH

- Office of Student Scholarship, Creative Activities, & Research (OSCAR)
- Research and Scholarship Intensive Courses
- The Office of Research, Innovation, and Economic Impact

The Office of Research, Innovation, and Economic Impact

5200 Merten Hall
Fairfax Campus

Phone: 703-993-2268
Fax: 703-993-8871

Email: research@gmu.edu
Website: research.gmu.edu

Administration

- Aurali Dade, Interim Vice President for Research, Innovation, and Economic Impact

The Office of Research, Innovation, and Economic Impact (ORIEI) has overall responsibility for the university's research enterprise. Working in an atmosphere characterized by its commitment to generate new knowledge through research and scholarship and to seed and support entrepreneurship and innovation to benefit society, Mason's researchers and scholars conduct their work in an array of disciplines and subject areas. ORIEI works to promote and optimize the success and impact of these endeavors and to create an environment that sustains the highest standards of ethical research and scholarship.

Office of Student Scholarship, Creative Activities, & Research (OSCAR)

Bethany M. Usher, Associate Provost for Undergraduate Education

228 Johnson Center
Fairfax Campus

Phone: 703-993-3794
Email: oscar@gmu.edu
Website: oscar.gmu.edu/

Office of Student Scholarship, Creative Activities, & Research (OSCAR)

The Office of Student Scholarship, Creative Activities, and Research (http://oscar.gmu.edu) (OSCAR) is home to Mason's award-winning undergraduate research program, connecting undergraduate students and faculty through course-based, co-curricular, and independent scholarly projects. Undergraduate research is a featured Mason Impact (https://provost.gmu.edu/initiatives/mason-impact/) experience.

OSCAR offers several programs that make scholarship central to the undergraduate experience at Mason, by:

- Helping undergraduate students find faculty mentors
- Helping students find research opportunities
- Funding undergraduate research and creative projects through the Undergraduate Research Scholars Program and Summer Team Impact Program
- Providing funding for travel to conferences and other events through the Undergraduate Student Travel Fund
- Supporting Research, Scholarship Intensive courses and Mason Impact (https://provost.gmu.edu/initiatives/mason-impact/) courses
- Hosting the annual Celebration of Student Scholarship and Impact
- Offering OSCAR Federal Work Study Research Assistantships

Please visit our website (http://oscar.gmu.edu) for more information.

Research and Scholarship Intensive Courses

Office of Student Scholarship, Creative Activities, & Research (OSCAR)

246 Johnson Center
Fairfax Campus

Phone: 703-993-3794
Email: oscar@gmu.edu
Website: oscar.gmu.edu

These courses give students an authentic research or creative experience as part of the Mason Impact (https://masonimpact.gmu.edu). In Research and Scholarship (RS) Intensive courses, students and faculty have a unique opportunity to partner as they merge teaching with the creation of new knowledge. By participating in one of these classes, students are actively involved in a project that is the central focus of the class. Students help define the project, take responsibility for carrying it out, and present the results to a broader audience. These classes are identified on student transcripts with an RS designation.

RS Courses

The following courses have been designated Research and Scholarship intensive (RS)

Code	Title	Credits
ARTH 440	RS: Advanced Studies in Renaissance and Baroque Art	3
ARTH 460	RS: Advanced Studies in 20th-Century European Art	3
ARTH 472	RS: Advanced Studies in 20th-Century Latin American Art	3
ARTH 482	RS: Advanced Studies in Asian Art	3
ARTH 495	RS: Objects and Archives in Art History	3
ASTR 402	RS: Methods of Observational Astronomy (Mason Core)	4
AVT 483	RS: Art and Interactivity	3
BENG 395	RS: Mentored Research in Bioengineering	1-3

BENG 493	RS: Senior Advanced Design Project II	3
BIOL 379	RS: Ecological Sustainability (Mason Core)	4
BIOL 491	Selected Topics in Biology Laboratory Techniques	1-2
BIOL 499	RS: Research in Biology	6-9
BIS 490	RS: Senior Project (Mason Core)	4
CHEM 439	RS: Atmospheric Chemistry II: Air Analysis Techniques	3
COMM 491	RS: Honors Research Project in Communication	3
COMM 498	RS: Research Projects in Communication	3
CONF 490	RS: Integration (Mason Core)	3
CONS 490	RS: Integrated Conservation Strategies (Mason Core)	3
CONS 491	RS: Conservation Management Planning (Mason Core)	4
COS 401	RS: Discipline Based Education Research	2-3
CRIM 492	RS: Honors Seminar II	3
DANC 362	RS: Directed Choreography	1
ECE 493	RS: Senior Advanced Design Project II (Mason Core)	2
ECON 495	RS: Honors Thesis in Economics (Mason Core)	3-6
ENGH 401	RS: Honors Thesis Writing Seminar (Mason Core)	3
ENGH 417	RS: Topics in Folklore Research (Mason Core)	3
ENGH 458	RS: Topics in Literary Research (Mason Core)	3
ENGH 470	RS: Topics in Film/Media History (Mason Core)	3
ENGH 484	RS: Writing Ethnography (Mason Core)	3
ENGH 486	RS: Writing Nonfiction for Publication (Mason Core)	3
EVPP 378	RS: Ecological Sustainability (Mason Core)	4
FNAN 498	RS: Contemporary Topics in Finance	3
GAME 332	RS: Story Design for Computer Games	3
GGS 463	RS: GIS Analysis and Application	3
HHS 492	RS: Internship in Clinical Research	3
HIST 499	RS: Senior Seminar in History (Mason Core)	3
LING 480	RS: First Language Acquisition (Mason Core)	3
MATH 406	RS: Honors Thesis in Mathematics II	3
MKTG 481	RS: Marketing in the Nonprofit Sector	3
MUSI 489	Music Technology Capstone	3
NEUR 405	RS: Laboratory Methods in Behavioral Neuroscience	3
NEUR 406	Zebrafish Neurodevelopment Laboratory	3
PSYC 492	RS: Psychology Honors III	3
RHBS 490	RS: Clinical Research Internship	3
SOCI 481	RS: Honors Seminar in Sociology II	3
SOCI 485	RS: Sociological Analysis and Practice (Mason Core)	3
SOCW 472	RS: Integrative Methods in Social Action and Social Change (Mason Core)	3
UNIV 491	RS: Students as Scholars Individualized Scholarly Experience	0-9
UNIV 495	RS: Undergraduate Research Scholars Program Seminar	0-1
UNIV 496	RS: Undergraduate Research Scholars Program Continuation	0
WMST 411	RS: Feminist Research Practice	3

TUITION & FEES

Office of Student Accounts

4400 University Drive, MS 2E2
Fairfax, VA 22030

Phone: 703-993-2484
Fax: 703-993-2490

Website: studentaccounts.gmu.edu

General Guidelines

- Students are responsible for maintaining a current mailing address in their student record on Patriot Web (https://patriotweb.gmu.edu), and for activating and checking their George Mason University e-mail accounts to receive official university communications.
- All students are required to accept George Mason University's Student Financial Responsibility Agreement prior to registering for classes each semester. The agreement outlines financial terms and conditions associated with course registration. Students are responsible for withdrawing from all classes that they do not intend to complete by the deadlines listed in the Semester Calendar. Students must confirm withdrawals and class drops; full or partial liability may apply. George Mason University does not cancel classes for nonpayment or nonattendance.
- Refer to the Payment Schedule and the Semester Calendar on the Student Accounts Office (https://studentaccounts.gmu.edu/) web site for payment due dates and tuition penalties for dropping classes after the start of the semester. Classes that do not meet for the full semester have non-standard liability deadlines, which can be found on the part-of-term chart of the Semester Calendar.
- Payments are due in the Cashier's Office (https://cashiersoffice.gmu.edu/), Student Union Building I, Room 1501, on or before 4:30 p.m. on due dates, regardless of postmark if mailed. Check and credit card payments made through the Bill and Payment system must be completed by 10:30 p.m. to be considered in that day's business. Bills are provided electronically only, approximately thirty (30) days prior to the semester start, to students and authorized payers. Bills are not provided for individual class registration and schedule adjustments. Students must check Patriot Web for balance due, verify registration, and pay through the Bill and Payment system or at the Cashier's Office by the due date. Failure to receive a reminder bill confirming charges does not waive the requirement for payment when due.
- Students who have not completed the financial aid process must be prepared to pay for their courses by the tuition due date or a late payment fee will be charged. The amount of financial aid accepted and processed will be reflected in your account balance. If the amount of aid awarded is less than the charges, the difference must be paid by the tuition due date. Federal work-study awards cannot be deducted from your balance. Financial aid recipients must also notify their financial aid counselor if they drop courses below the minimum required credits for their financial aid award. Class registrations or schedule adjustments after financial aid has disbursed may result in a balance due. Students are responsible for checking their balance after all schedule adjustments.
- Out-of-state students with pending domicile requests are responsible for payment at the out-of-state rate. Students who are later determined to be in-state can request reimbursement for the difference in tuition rates.
- Non-returning students are responsible for withdrawing from their courses for the semester and ensuring they do not have an outstanding balance on their account. Any documentation or intent made to university departments that you are not returning does not withdraw you from the registered courses.
- Some Mason degree programs include academic credits that students must earn at other academic institutions. Students enrolling for such credits assume all financial responsibility with the other institutions.

Semester Tuition Charges and Related Fees

Approved tuition rates and fees are available June 1. For more information, call the Student Accounts Office at 703-993-2000 or go online (https://studentaccounts.gmu.edu). Students are charged tuition rates for registered courses according to their academic level and program; graduate rates vary by academic program.

Please Note: Many courses require additional course fees and/or lab fees. Refer to the Student Accounts Office website (https://studentaccounts.gmu.edu/tuition/) for up-to-date information on these fees.

New Student Fees

All new degree seeking students pay a New Student Fee. The fee is a mandatory, nonrefundable, one-time charge that is assessed when a new student registers for classes, regardless of orientation attendance or future enrollment status. The current fee amount is listed on the Student Accounts Office website: https://studentaccounts.gmu.edu/tuition-fees/.

Mandatory Student Fee

This is a mandatory fee based on credit enrollment. The Mandatory Student Fee supports the maintenance of facilities and buildings, auxiliary services, intercollegiate athletics, campus shuttle, academic services, student activities, and health services.

Payment Information

Payment Deadline

Payment is due the first day of the semester. Payments received at the Cashier's Office by 4:30 p.m. Monday to Friday will be considered in that day's business. Check and credit card payments made through the Bill and Payment system must be completed by 10:30 p.m. to be considered in that day's business. To confirm receipt of payment and balance due on account, go to Patriot Web (https://patriotweb.gmu.edu).

Methods of Payment

Cash

We do not accept cash payments.

Check

Online, mail or drop box. Make check payable to George Mason University, with student ID number written on front. Third-party checks are not accepted. Checks must be payable in U.S. dollars. A $50 return check fee will be charged for checks returned unpaid by the bank for any reason.

Credit Card
Online only. Visa, MasterCard, American Express or Discover Card. There is a 2.85 percent convenience fee for credit card payments, which is nonrefundable. A $50 returned item fee will be charged for credit or debit card reversals (charge-backs).

Delivery Methods
Online
Bill and Payment system, online checks or credit cards

Drop Box (no cash payments)
Adjacent to Cashier's Office, SUB I, hallway outside Room 1501

U.S. Mail
George Mason University, P.O. Box 76475, Baltimore, MD 21275-6475. Allow 10 business days for delivery by the due date, and postmarks are not considered a receipt of payment.

Overnight Delivery by Courier: Lockbox Services 76475, Wells Fargo Bank, Attn: George Mason University Lockbox 76475, 7175 Columbia Gateway Dr., Columbia, MD 21046

Semester Payment Plan
Mason payment plans are available online only for students who want to budget their accounts.

Payment plans have a $25 contract fee charged each semester. The contract fee is non-refundable and must be paid at the same time as the payment plan is agreed to within the Bill + Payment System. For more information, call the Student Accounts Office at 703-993-2000 or go to https://studentaccounts.gmu.edu/payment-plans/.

Failure to pay the deferred balance by the payment plan due date will result in a financial hold, a late fee of 10% (up to $125), collection activity, and may prevent future eligibility of the payment plan.

Third-Party Billing Authorizations
Students using a third-party billing authorization will be charged a $25 processing fee. Students must provide the third-party authorization or government training voucher to the Student Accounts Office, or fax it to 703-993-2460 before the payment due date (for payment schedule by semester, please see https://studentaccounts.gmu.edu/calendars/. Students are responsible for any payment default by the sponsoring agency. Call 703-993-2000 for a copy of third-party billing requirements, or check online (http://studentaccounts.gmu.edu/third-party-billing-office/).

Penalties
A late registration fee of $125 is automatically assessed to students who add their first class on the first day of the semester or after. It does not apply to students already enrolled prior to the start of the semester who make schedule adjustments. Wait-listed classes are not considered class registration. Late registration fees are nonrefundable and will not be removed, regardless of enrollment status.

Any class registration after the deadline to add classes, if approved by the academic department, is subject to a $125 late registration fee. Late class registrations require an account in good standing.

Past due balances are subject to a late payment fee that is 10 percent of the balance due, up to $125.

Registrations will not be canceled for nonpayment or nonattendance. Students must withdraw from all classes that they do not plan to complete by the payment due date to avoid the late payment fee on those classes.

Returned Checks
Per Commonwealth of Virginia statute, a $50 return item fee will be charged for each item (checks, debit/credit card reversals) returned by the bank unpaid. Repeat returned payments may result in the restriction of the online payment option for future semesters. Payments for past due balances and/or to release holds for registration that are later returned unpaid by a financial institution may result in the immediate suspension of services and the cancellation of classes. Returned checks that create a balance will be sent a written or electronic notice, and a financial hold will be placed on the account until the balance is paid in full. Certified fund payments by cashier's check are required for immediate hold release. Waiting periods will apply for other payment methods.

Financial Good Standing; No Holds on Record
Financial good standing and a university record clear of holds are required for students to receive services. Services, including but not limited to transcript issuance, diploma release, class registration (add, drop, withdrawal, etc.), and/or housing and meal plans, will not be provided to students with a financial balance due or a hold of any kind on their record. Holds are based on outstanding obligations and may be financial. Examples include unpaid Student Health charges, fines owed to the Mason libraries, parking and other administrative holds.

Students in noncompliance with payment deadlines as of the end of the semester will be required to submit a financial guarantee or prepayment prior to future registration. The return of the prepayment by a financial institution will result in the immediate suspension of services.

Collections
Per the Virginia Debt Collection Act (§2.2-4800 et seq.), all delinquent accounts with past due balances are assigned to authorized collection agencies each semester. Failure to meet financial obligations to the university will result in other collection procedures, which include account referral to credit reporting bureaus, private collection agencies, the Commonwealth of Virginia Department of Taxation, and the Office of the Attorney General. Past due accounts are subject to garnishments, liens, and judgments and the withholding of money from tax refunds. In addition to late fees and interest, delinquent accounts will be assessed additional collection costs up to thirty percent of the past due balance, reasonable attorney fees, and other administrative costs. Once an account is referred to a collection agency, payment must be made to the agency, not the University.

Course Withdrawals
Students are required to pay full or partial tuition for courses they withdraw from after the last day to drop with full tuition refund, including withdrawals to change from one section of a course to another section. For more information, see the tuition liability dates in the Semester Calendar.

Refund Policies
Direct Deposit Refunds
Students may sign up for direct deposit for expedited refunds by completing the direct deposit authorization form located on the Student Accounts Office website. Direct deposit refunds are sent electronically to the student's bank account. Direct deposit refunds are not available for Parent PLUS loans.

Refund for Credit Balances

In cases where tuition charges are less than the payments on the student's account, a refund of the overpayment may be requested. To initiate the refund process, a Refund Request form is completed and submitted to the Student Accounts Office. Credit balances are also reviewed and refunds processed throughout the semester, regardless of refund request forms. NOTE: Students should not overpay accounts with an expectation a credit balance will pay for future semester charges.

Refunds will be processed according to the last method of payment received:

- Flywire payments are sent via direct deposit or check.
- Payments made by check require a seven day waiting period. The waiting period may be waived if proof of check clearance is presented, such as a canceled check copy or bank statement showing that the check cleared the account.
- Credit card payments are credited back to the credit card that was most recently used for payment.

Note: Refund checks may take up to four weeks for processing and mail delivery, are made payable to the student, and are mailed to the address listed in the student record. In person check pick up is not available.

Financial Aid Refunds

Credit balances from financial aid awards will automatically generate a refund, which will be sent via direct deposit if authorized by the student. A refund request form is not needed for financial aid disbursement refunds, except in cases of schedule adjustments after aid has been posted. Students who do not opt for direct deposit will receive check refunds mailed to the address on file in their student record. Check refunds require more processing time than a direct deposit refund.

Special Registration

Students not enrolled in a credit-bearing course, but whose academic department certifies that they are pursuing an activity related to Mason matriculation, can retain active status by having the Office of the University Registrar process a registration for the Special Registration course (ZREG 200). A $45 fee is charged for this course, and students must pay this fee before the University Registrar's office will process the registration. Written approval of the student's academic department chair is required. This special registration allows students to retain their library and computer privileges, receive a student ID, and buy a parking decal. Students must have active status to apply for or receive a degree, take an exam, or participate in cooperative education. Students pursuing a master's or doctoral degree must maintain continuous enrollment. For more information, see AP.6 Graduate Policies.

International Student Health Insurance

Health insurance is required for all F-1 and J-1 visa holders, and nonpayment may result in class cancellation. For more information, refer to the Admission of International Students section.

Music Instruction

Private music instruction is arranged through the School of Music on a fee-paying basis. Refer to the Student Accounts Office web site for up to date fee information. This fee is non-refundable.

In-State Tuition

To be eligible for in-state tuition, a student must have been domiciled in Virginia for at least one full year before the semester for which in-state tuition is sought, or qualify through statutory exception. A person establishes domicile by demonstrating physical presence and the intention to remain indefinitely in accordance with the Code of Virginia and the domicile guidelines. Copies of the guidelines and other applicable state laws are available from the Office of the University Registrar (https://registrar.gmu.edu/students/domicile/).

Domicile Change

Domicile classification is determined at the time of a student's admission. To be considered for in-state status when applying to the university, students must file an application for in-state rates.

New and currently enrolled students classified as out-of-state who believe they qualify for in-state tuition after being admitted must file a domicile appeal form with the Office of the University Registrar no later than the first day of classes for the semester in which in-state rates are sought. Appeal forms are available from the Office of the University Registrar (https://registrar.gmu.edu/students/domicile/).

Students whose appeals are denied have the right to seek further review of their status by the Office of the University Registrar or the Domicile and Tuition Classification Appeals Committee. These requests must be filed in the manner articulated in denial letters. Forms are available from the Office of the University Registrar and the web site. In addition, students should be aware that university procedures for appealing domicile decisions have been established pursuant to state law and are subject to change. Out-of-state students with an appeal pending at the time of tuition billing are responsible for payment of tuition at that rate. Students subsequently determined to be in-state may request reimbursement of overpayment from the Office of Student Accounts. Also, any student who fraudulently or knowingly provides false information in an attempt to evade payment of out-of-state tuition will be charged out-of-state tuition for each term or semester attended and may be subject to dismissal from the institution.

For more information regarding in-state eligibility, contact the Domicile Appeals Administration in the Office of the University Registrar in Student Union Building I, Suite 2101; phone: 703-993-2464; e-mail: domicile@gmu.edu.

Tuition Surcharge: 125 Percent of Degree

Undergraduate students who have established Virginia domicile and eligibility for in-state tuition will be subject to a surcharge if they exceed 125 percent of the credits required to complete a degree. The surcharge will be determined by the State Council for Higher Education in Virginia.

The following courses and credit hours shall be excluded in calculating the 125 percent credit threshold: remedial courses; transfer credits from another college or university that do not meet degree requirements for Mason Core courses or the student's chosen program of study; advanced placement or international baccalaureate credits that were obtained while in high school or another secondary school program; and dual enrollment, college-level credits obtained by the student prior to receiving a high school diploma.

Expenses

Housing

Housing and Residence Life
Piedmont/Tidewater Hall Ground Floor
Phone: 703-993-2720 (Main Office Number)
Web: housing.gmu.edu (http://housing.gmu.edu)

The university offers a variety of housing options to meet the diverse needs of students living on campus. Upper-class students may choose from suites, suites with kitchens, and townhouses. Most freshmen live in traditional-style residence hall rooms that accommodate two, three, and four students. Room rates are subject to approval on an annual basis by the Board of Visitors. Rates for the 2021-2022 academic year should be available on or before May 1, 2021. Please refer to the Housing and Residence Life web site for rate information. All students in housing must provide a prepayment, which is credited back to the student in the fall. Housing assignments, including single rooms, are made on a priority and space-available basis. The web site provides extensive information about housing programs and services and includes floor plans for most student rooms.

Students living on campus are required to sign an academic year agreement. Releases from the agreement are generally granted only in cases of hardship and involve a financial penalty. For more information, contact Housing and Residence Life.

Living Learning Communities (LLCs) are collaborative partnerships between academic departments, individual Mason faculty, housing and residence life staff, and the division of University Life. For more information, please visit the housing website (https://housing.gmu.edu/learning-communities/).

Mason Dining

Mason Dining
Southside Dining Hall, First Floor
Phone: 703-993-3300
Web: dining.gmu.edu (http://dining.gmu.edu)

Mason Dining is proud to serve the Mason community with over 36 restaurants, kiosks and carts among the Arlington, Fairfax, and Science and Technology campuses. Southside and Ike's, located on the Fairfax campus, offers extensive menus with the highest quality ingredients and seasonal produce. Mason Dining is committed to nutrition, wellness, and sustainability.

Meal Plans and Mason Money

Meal Plan & Mason Money Office
Student Union I, Room 1203
Phone: 703-993-2870
Web: masondining.sodexomyway.com/meal-plans (https://masondining.sodexomyway.com/meal-plans/) or masonid.gmu.edu/about-mason-money/ (https://masonid.gmu.edu/about-mason-money/)

Both resident meal plans and optional Patriot meal plans are available for students to purchase. These plans allow for tax-exempt dining and are billed to the student account. Most students living on campus are required to participate in the resident meal plan program. Meal plan policies and prices are available on the website (http://mealplans.gmu.edu).

Mason Money can be accessed with the Mason ID. It's accepted at various venues on campus and also with participating merchants off campus. Funds can be deposited online (https://masonid.gmu.edu/about-mason-money/#mason-money-tabs-tab-2), at any of the four Mason Money Stations located among three campuses, or the Mason Money office.

Parking Services

Fairfax Campus, Sandy Creek Parking Office
Phone: 703-993-2710

Arlington Campus, 219 Van Metre Hall
Phone: 703-993-8146

Science and Technology Campus, 112 Colgan Hall

Phone: 703-993-4808

Web: transportation.gmu.edu (https://transportation.gmu.edu/)

Students who park their vehicles on university property must register them with Parking Services and pay a fee for a parking permit. Permits are available on an annual, semester, or summer basis. For permit sales, fine payments, special requests, or problems, go to any Parking Services Office. Most services are available on-line (http://parking.gmu.edu). The Fairfax Campus Sandy Creek Parking Office hours are 8:30 a.m. to 7 p.m. Monday through Thursday and 8:30 a.m. to 5 p.m. on Friday. See the website (http://parking.gmu.edu) for current information and rates.

Financial Aid

Office of Student Financial Aid

Student Union Building (SUB) I, First Floor

Phone: 703-993-2000
Fax: 703-993-2350

Email:
Website: https://www2.gmu.edu/financial-aid

The Office of Student Financial Aid provides a variety of services to help students finance their education; including, financial aid advising, exploring funding resources, and financial assistance. Student financial aid awards may consist of grants, scholarships, work-study, and loans. Awards are based primarily on financial need, although there are some alternative financial aid sources available for those who may not qualify for need-based financial assistance.

The Office has a comprehensive listing of various scholarship opportunities for students to research on the Office of Student Financial Aid's website. Students are encouraged to review the scholarship information often due to the listings being updated continuously and apply early in order to meet deadlines.

The Office is open 9:00 a.m. to 5:00 p.m., Monday through Friday. Financial Aid Counselors are available daily by phone, e-mail or personal appointment. Students can also receive financial aid services through the Mason Student Services Center (MSSC).

Each year, to apply for financial aid, both new and currently enrolled students must complete a Free Application for Federal Student Aid (FAFSA). **George Mason University's Federal Title IV school code for the FAFSA is 003749**. Priority consideration for all sources of financial aid is

given to those students whose financial aid applications and all required verification documents are on file with the Office of Student Financial Aid by **January 15**. To meet this priority filing date, students should file the FAFSA as soon as possible after October 1st of the previous year (e.g. October 2021 for the 22-23 academic year). The FAFSA is filed online (http://www.fafsa.gov).

Financial aid for summer is generally limited to students who have remaining Federal Loan eligibility for the year, or who are eligible for Federal Pell Grant. Summer is considered a "trailer" term at the university. Contact the Office of Student Financial Aid for specifics regarding eligibility and availability of aid.

Financial Aid Programs

The University administers the following federal, state, and other aid programs:

Federal Programs

These include the Federal Pell Grant, Federal Supplemental Educational Opportunity Grant (FSEOG), Federal Work-Study (FWS), Federal Subsidized Direct Loans, Federal Unsubsidized Direct Loans, Federal PLUS Loans for parents of dependent students (DPLUS) and Federal Grad PLUS Loans for Graduate students (DGPLUS). For more information, go to the Office of Student Financial Aid home page (http://financialaid.gmu.edu).

State Financial Aid Programs for Undergraduate Virginia Residents

Eligibility for all state programs is determined based on the student's FAFSA and financial need. State grant funds are limited, so adherence to the January 15 priority filing date is critical.

Virginia Commonwealth Award

This program is open to undergraduate students who have demonstrated financial need, are enrolled at least half-time, and are domiciliary residents of Virginia.

Virginia Guaranteed Assistance Program (VGAP)

This program is a component of the Virginia Commonwealth Award Program that is open to students who have demonstrated academic achievement in high school and have graduated from a Virginia high school. VGAP awards are renewable for up to four years. Students must advance a grade level before receiving a subsequent VGAP award. Students must be enrolled full-time to receive VGAP.

Graduate Student Assistance

Assistantships, fellowships, and scholarships exclusive of the federal financial aid programs identified earlier are administered by the individual graduate programs. Students interested in pursuing graduate assistantships, fellowships, or scholarships should contact their graduate program directly.

All financial aid recipients are responsible for becoming familiar and complying with applicable federal and state regulations, and university policies.

All students receiving financial aid must be enrolled in an eligible degree or certificate program; maintain satisfactory academic progress (SAP) as defined by the Office of Student Financial Aid in accordance with federal guidelines (see below); be a U.S. citizen or eligible non-citizen as defined by the U.S. Department of Education and all male students must be registered with Selective Service.

Satisfactory Academic Progress (SAP) Standards

Federal legislation governing the administration of federal programs requires colleges and universities to define and enforce standards of academic progress for students receiving or applying for financial aid. To comply with this legislation, the Office of Student Financial Aid has established a formal satisfactory academic progress policy. For detailed information, go to the Office of Student Financial Aid home page (http://financialaid.gmu.edu) or contact the Office of Student Financial Aid directly.

Return of Title IV Funds

The Office of Student Financial Aid is required by federal law to re-calculate federal financial aid eligibility for students who completely withdraw from all classes, drop out, are dismissed, or take a leave of absence prior to completing a payment period or term. According to the regulations, the amount of Federal Title IV awarded to a student must be re-calculated in these situations and any portion of the financial aid received that is considered to be "unearned" must be returned to the Title IV Program(s) from which it was received. Any student considering dropping or withdrawing from all courses, should contact their assigned Financial Aid Counselor immediately regarding possible adjustments to their financial aid.

Emergency Loan Programs

George Mason University has established an emergency loan account funded by the Gerson Trust.

This emergency loan is designed for enrolled students that encounter unexpected emergencies and is not meant to pay for tuition and fees. This is a short-term, interest free loan and students may borrow up to $1000. Repayment is due in 90 days. Applications may be obtained from the Office of Student Financial Aid.

Certificate Programs that Qualify for Financial Aid (Gainful Employment)

The qualifying undergraduate certificate programs include:

- Accounting Undergraduate Certificate
- Secondary Education - Biology Undergraduate Certificate
- Secondary Education - Chemistry Undergraduate Certificate
- Secondary Education - Computer Science Undergraduate Certificate
- Secondary Education - Earth Science Undergraduate Certificate
- Secondary Education - English Undergraduate Certificate
- Secondary Education - Mathematics Undergraduate Certificate
- Secondary Education - Physics Undergraduate Certificate

The qualifying graduate certificate programs include:

- Adapted Curriculum Concentration within the Special Education Graduate Certificate
- Advanced Biomedical Sciences Graduate Certificate
- Art Education Licensure Graduate Certificate
- Applied Behavior Analysis Graduate Certificate
- Autism Spectrum Disorders Graduate Certificate

- Business Analytics Graduate Certificate
- College Teaching Graduate Certificate
- Data Analytics Graduate Certificate
- Early Childhood Education PK-3 Graduate Certificate
- Early Childhood Special Education Graduate Certificate
- Education Leadership Graduate Certificate
- Foreign Language Licensure Graduate Certificate
- Forensics Graduate Certificate
- General Curriculum Concentration within the Special Education Graduate Certificate
- Geospatial Intelligence Graduate Certificate
- Health Informatics and Data Analytics Graduate Certificate
- Higher Education Administration Graduate Certificate
- Learning Technologies: E-Learning Graduate Certificate
- Music Education Licensure PK-12 Graduate Certificate
- Nutrition Graduate Certificate
- School Psychology Graduate Certificate
- Secondary Education Licensure Graduate Certificate
- Teaching English as a Second Language Graduate Certificate
- Teaching Theatre PK-12 Graduate Certificate

MASON ONLINE

Office of Digital Learning

Innovation 412
Fairfax Campus

Phone: 703-993-8978
Email: online@gmu.edu
Website: masononline.gmu.edu

Administration

- Charles R. Kreitzer, Executive Director, Online Operations

Distance Education

Distance or online education provides students with the opportunity to take the same classes offered on campus through different delivery methods such as fully online synchronous and asynchronous classes, or hybrid and blended classes (learn more). Currently enrolled Mason students can take online courses. There is no separate application process. Registration and financial aid work in the same way for online and face-to-face courses. Please note however that some online graduate programs require admission into the program to take classes, and others run on a modular calendar which restricts enrollment across calendars.

Many fully online courses may be completed at home, while stationed abroad, or when traveling. For students who work, intern, commute, or even live on campus, online courses offer an active and collaborative learning environment while allowing for greater scheduling flexibility.

Online Courses

Hundreds of undergraduate and graduate courses are offered online each semester, including summer. Course interactions can take place synchronously (same time, different locations) or asynchronously (different times, different locations).

Mason Core: For undergraduate students, Mason offers online course options for most Mason Core requirements [excluding ENGH 100 Composition for Multilingual Writers (Mason Core) and certain Synthesis/Capstone courses]. Offerings vary by semester. Contact your advisor each semester to plan your course schedule.

For a full list of online courses, see the website (http://masononline.gmu.edu/programs-courses/courses/).

Online Programs

Mason currently offers more than 70 fully online or hybrid programs, including bachelor's degrees, master's degrees, graduate certificates, and undergraduate certificates and minors.

For a full list of online programs, visit the website. (http://masononline.gmu.edu/programs-courses/all-programs/)

INTERNATIONAL PROGRAMS AND RESOURCES

Global Education Office

Johnson Center, Room 235
Phone: 703-993-2154
Fax: 703-993-2153
Web: http://www.gmu.edu/depts/cge/
E-mail: GoAbroad@gmu.edu

Administration
Brian Gibson, Director

The Global Education Office offers students the opportunity to develop critical and creative skills and challenge their assumptions about themselves and other cultures in an educational environment by offering study abroad programs of varying lengths, academic emphases, and locations. Through study abroad, students discover new cultures, sharpen language skills, and travel while earning credit. Study options include faculty-led, short-term courses and intensive language programs; semester and year-long Mason-sponsored programs; and international internship programs. Most programs are open to Mason undergraduate and graduate students and short-term programs are also open to faculty, staff, and the general public.

The Global Education Office also offers a wealth of resources to help students create a personalized international educational experience, including general advising sessions about study abroad and internship options; one-on-one student advising; transfer of approved international program credits; a resource library of travel books; international and diplomatic community programming, and advising to international students from partner schools.

George Mason University Korea

Mason Korea building, Incheon Global Campus
119-4 Songdomunhwa-ro Yeonsu-gu
Incheon Korea 21985
Phone: +82 032-626-5000
Fax: +82 32-626-5403
Web: masonkorea.gmu.edu (http://masonkorea.gmu.edu)
Email: gmukorea@gmu.edu

Administration
Dr. Robert Matz, Campus Dean
Kelley E. Chung, Associate Dean, Admissions and Enrollment
Dr. Shannon Davis, Associate Dean, Academic and Faculty Affairs
Yorgun Marcel, Associate Dean, Student Affairs

To enhance Mason's global presence and increase accessibility to a Mason education, the university o#ers academic programs in Songdo, South Korea on the Incheon Global Campus.

George Mason University Korea (Mason Korea) o#ers bachelor degree programs in business, economics, global affairs, computer game design, computational data sciences, and conflict analysis and resolution. Academic program requirements and standards are identical to those on the US campuses. Students based in Mason Korea travel to the Fairfax campus during their 6th and 7th or 7th and 8th semesters. In addition, US-based Mason students may pursue study for a semester or year at the Mason Korea campus.

Office of International Programs and Services

Student Union I, Suite 4300
Phone: 703-993-2970
Fax: 703-993-2966
Web: oips.gmu.edu (http://oips.gmu.edu)

Administration
Judith A. vanBever-Green, MEd, Executive Director

The Office of International Programs and Services (OIPS) provides services on both regulatory and cultural topics. Staff members provide regulatory information related to non-immigrant status and have been designated by the university to issue and sign immigration documents and paperwork on behalf of the institution. OIPS advisors are available at scheduled walk-in times and by appointment to discuss any concern and to provide practical assistance to students and scholars as they adjust to U.S. culture. OIPS conducts a comprehensive orientation program for new international students and offers social and cultural programming throughout the fall and spring semesters. Most notably, the staff and student volunteers work to internationalize campus life for all members of the Mason community through programs and outreach designed to connect people from different global cultures with one another for meaningful dialogue and cultural learning.

INTO George Mason University and the Mason Global Center

Ángel Cabrera Global Center
Phone: 703-993-4501
Fax: 703-993-4502
E-mail: INTOmason@gmu.edu (INTO@gmu.edu)

Website: https://intomason.gmu.edu

Building on a thirty-two year tradition of excellence in English language and language-supported education at Mason, the INTO George Mason University joint venture was established in 2014. This venture marks the fifth INTO University Partnership in the United States.

Located in the Ángel Cabrera Global Center, Mason offers academic International Year One, Pathways and English language development programs administered by the Academic Division of the INTO Mason joint venture. Personalized support tailored to international students' educational, social and cultural needs prepares them to progress with confidence as degree-seeking students. INTO Mason provides international students with learning experiences and services that promote academic, professional and personal success. International Year One and Pathways programs are available to students interested in studying in a wide range of degree programs at both the graduate and undergraduate levels. An Academic English program is available to students looking to develop their language proficiency on a short term basis or as they complete the application process for a pathway or direct admission. All of the innovative International Year One, Pathways and English language programs offered at INTO Mason are delivered by highly qualified university faculty.

INTO Mason

Phone: 703-993-4501
Fax: 703-993-4502

Email: INTOmason@gmu.edu
Website: https://intomason.gmu.edu/

Administration

- Todd Rose, Ph.D., Executive Director
- Karyn Kessler, Ph.D., Academic Director

INTO George Mason University and the Ángel Cabrera Global Center

Our Mission

As an integral member of the George Mason University community, INTO Mason creates vibrant experiences for international students through transformational learning opportunities tailored to meet specific linguistic, academic and cultural needs.

Overview

Located in the Ángel Cabrera Global Center, INTO Mason supports the outstanding academic programs offered by the university with

- a welcoming, interconnected community of students from across the U.S. and the world;
- strong student support programs; and
- state-of-the-art facilities with technology-assisted learning.

The innovative International Year One, Graduate Pathways and Academic English language programs offered at the Center are delivered by highly qualified Mason teaching faculty. INTO Mason also provides a breadth of academic preparation and support services designed specifically to meet the unique needs of its international students.

Academic Programs, Services & Administration

George Mason University offers academic International Year One and Pathways programs at the Fairfax, Arlington, Science and Technology, and Songdo campuses as well as English Language programs based in Fairfax. All programs are administered through the Academic Division of INTO Mason, which functions as the academic department for English Language studies and services university-wide—reporting directly to the University Provost through the Academic Innovations and New Ventures unit.

Academic Programs

There are three standing academic programs administered through the Academic Division of the INTO Mason joint venture:

- Undergraduate International Year One Program
- Graduate International Pathways Program
- Academic English Program

Each program has a specific curriculum and guidelines as indicated in the special sections for each program in the catalog.

Academic Advising and Services

Personalized support tailored to international students' educational, social, and cultural needs prepares them to progress with confidence as degree-seeking students. Programs operating through INTO Mason at the US-based campuses, also provide international students with learning experiences and services that promote academic, professional, and personal success.

Academic Administration

- Karyn E. Kessler, Ph.D., *Academic Director*
- Bonnie Sylwester, Ph.D., *Assistant Director, Academic Initiatives and Assessment*
- James Jones, *Assistant Director, Advising & Academic Services*
- Benjamin Elwood, *Program Manager, Academic English*
- Christina Brady, *Assistant Director, Undergraduate Education & Global Partnerships*
- Steven Harris-Scott, Ph.D*., Assistant Director, Graduate Education and Faculty Affairs*
- Kathy Rossell, *Learning Resource Center Coordinator*

Faculty

Highly qualified, full-time, George Mason University faculty regularly teach in the International Year One, Graduate Pathways and English Language Programs.

English Language Faculty

Term Assistant Professors: Kessler, Karyn and Sanchez, Deborah

Term Instructors: Brady, Christina; Driscoll, David; Elwood, Benjamin; Kim, Esther; Kirsch, Jane; Kozumplik, Thomas; Lilley, Timothy; Miller, Laura; Musfeldt, Scott; Namubiru, Esther; Paez, Bonny; Richardson, Mary; Rottenberg, Lori; Simmons, Noele; and Smith, Michael.

Humanities Faculty

Term Assistant Professors: Graham, Robert; Harris-Scott, Steven; Lewis, Amy; Rose, Todd and Weinstein, Aimee.

Term Instructors: Jones, James.

Affiliated Faculty: Coleson, Michael (Mathematics); Doestch-Kidder, Sharon (English); Habib, Anna (English); Mack, Marissa (English); Mills, Mallory (Business); Moteaabed, Shora (Business); Savage, James (English).

Center Facilities & Administration

Facilities: many Academic English students may live in the Ángel Cabrera Global Center (ACGC) their first year. The ACGC opened in August 2014 and is the primary home for INTO George Mason University. This community connects domestic and international students for academic, language, cultural, and social exchange. The building includes residential accommodations for up to 270 international and domestic students; 17 classrooms; 100+ computers; wireless Internet throughout the center; a learning resource center with study materials, books, DVDs, and periodicals; a dining facility; lounge areas for meetings and study groups; and open spaces for socializing.

Administration

- Todd Rose, Ph.D., *Executive Director*
- Julia Pfaff, *Operations Manager*
- Jessica Biddle, *Student Experience Director*

- Nana Bonsu, *Marketing & Recruitment Manager*
- Darshana Rogers, *Enrollment Manager*
- Nathan Dougan, *Senior Systems Integration Manager*
- Anne Owl, *Human Resource Manager*

Student Services & Orientation

Student Services

The INTO Mason Student Services provide a range of co-curricular programs and services promoting social and personal well-being. Upon arrival at Mason, the team helps students settle in to life in Fairfax and provides social opportunities and a variety of resources tailored to the specific needs of international students.

International Student Orientation

Orientation involves a variety of important events that prepare students to be successful at Mason, including information about maintaining visa status, registering for Mason classes, health requirements, and insurance coverage. All students must attend the INTO Mason Student Orientation in order to enroll in classes.

Undergraduate

Undergraduate International Year One Program

The Undergraduate International Year One (INYO) Program combines academic coursework, English language support, and academic skills development in a carefully constructed program designed to prepare students for rigorous Mason degree programs. For most students, participation in INYO will not add more time to the completion of their bachelor's degree.

Three types of Undergraduate International Year One programs are available:

- **One Term Program (Accelerated)**: This program is a single term of study. Upon completion of all progression requirements, students will move on to their degree-seeing program as second-semester freshmen (up to 16 credits).
- **Two Term Program (Standard)**: This program is designed to lead students through their first year of study. Upon completion of all progression requirements, students will move on to their degree-seeking program as second-year, freshman (up to 29 credits) or as sophomore students (30 or more credits).
- **Three Term Program (Comprehensive):** This program is designed especially for International students who want to start earning credits toward their bachelor's degree at a US university while improving their English skills. Upon completion of all progression requirements, students will move on to their degree-seeking program as second-year, freshman (up to 29 credits) or as sophomore students (30 or more credits).

The Undergraduate International Year One Program is designed for students who:

- Desire to study for an undergraduate degree in the U.S.
- Need to improve their English language skills
- May have slightly lower GPAs than required of direct-entry students
- Desire additional academic, language, and cultural support in order to succeed during their first year at a U.S. university
- Any or all of the above

Administered through INTO Mason in partnership with the academic units across the university, the courses in the various Undergraduate International Year One programs are taught by highly qualified Mason instructional faculty members and supported by International Year One academic advisors.

Students enrolled in any Undergraduate International Year One program should review the program's student guidebook for specific details related to program requirements and expectations.

Admission

Admission to the Undergraduate International Year One (INYO) Program is offered to international and multilingual students by two methods:

- Students may apply directly through the INTO Mason admissions process OR
- By referral from the University Admissions Office due to not having met the grade point average, English language proficiency, or other requirements for direct admission.

The Undergraduate International Year One Program entry requirements are as follows:

- High school diploma
- 2.5 minimum high school GPA equivalent based on the applicant's country/institutional scale
- Documentation demonstrating the minimum English language proficiency levels:
  - One Term (Accelerated) International Year One Program:
    - TOEFL iBT 80 (17 minimum subscores in reading and writing)
    - IELTS 6.5 (6.0 minimum subscores in reading and writing)
    - PTE Academic 53
    - Successful completion of or waiver from Academic English Level 5
  - Two Term (Standard) International Year One Program:
    - TOEFL iBT 60 (13 minimum subscores in reading and listening)
    - IELTS 5.5 (5.5 minimum subscores in reading and listening)
    - PTE Academic 45
    - Successful completion of or waiver from Academic English Level 4
  - Three Term (Comprehensive) International Year One Program:
    - TOEFL iBT 50 (10 subscores)
    - IELTS 5.0 (4.5 subscores)
    - PTE Academic 41
    - Successful completion of or waiver from Academic English Level 3

Students should review the specific requirements by International Year One Program online (http://www.intostudy.com/mason/) for details.

Progression into Degree Status

Each International Year One (INYO) program has specific progression requirements for completion. These typically include a minimum grade point average and minimum individual course grades (no grades of W, NC, or I are permitted). Students should refer to the website (http://

www.intostudy.com/en-gb/universities/george-mason-university/) for specific IYO program requirements. Students admitted to the university through an Undergraduate IYO program are required to complete all program requirements in order to maintain continuous enrollment.

Dismissal/Termination Appeals Process for INTO Mason Students

Students who do not meet all requirements for matriculation to their desired degree program at the end of their final term will be reviewed for termination from their Undergraduate International Year One program. Terminated students may initiate one of the following an academic action requests in writing:

1. request an exception to the program policy,
2. request to change to an alternate International Year One program, and/or
3. request an extension to continue studying as an Undergraduate International Year One Extender student for one additional term.

All terminated student academic action requests must be submitted in writing to the academic advising staff located in the Mason Global Center within 14 days of notification. Requests should provide an explanation and supplementary documentation. Students who earn two unsatisfactory grades of C or lower will be ineligible to continue as an Extender. Students who fail to meet the program requirements after an extension will be reviewed for dismissal from the university.

Decisions on these requests are reviewed and approved at the discretion of the Academic Director. In some cases, additional reviews by the Associate Provost for Undergraduate Education or Academic Initiatives and Services may be required.

Reenrollment and Readmission

Due to the nature of the Undergraduate International Year One Program as both English language development and academic coursework, students are subject to a limited reenrollment policy. Students who do not enroll after the first term or withdraw for reasons other than poor academic performance may request to reenroll in an International Year One program the following term (e.g., spring) to continue making progress toward meeting program requirements, with advance permission from the Academic Director. Students who do not enroll for two consecutive terms (e.g., spring and fall) must apply for readmission to the program and be re-assessed for language proficiency. Summer terms are counted for students whose initial enrollment begins in Spring semester.

Available Year One Programs & Majors

There are five Undergraduate International Year One programs available:

- Business, leading to 5 undergraduate concentrations in the School of Business
- Engineering, Computing & Statistics, leading to 10 undergraduate majors in the Volgenau School of Engineering
- Humanities and Social Sciences, leading to 21 undergraduate majors in the College of Humanities and Social Sciences and the College of Visual and Performing Art's School of Music
- Human and Social Development, leading to 7 undergraduate majors in the College Health and Human Services, the College of Education and Human Development's School of Recreation and Tourism, and the School of Conflict Analysis and Resolution
- Science, leading to 13 undergraduate majors in the College of Science

Each program allows students to progress to preapproved undergraduate degree programs. For a full listing of specific academic programs associated with a specific International Year One Program, students should refer to the website (http://www.intostudy.com/mason/)for specific requirements.

Business

One Term Program Curriculum (Accelerated): Required Courses

Code	Title	Credits
ENGH 100	Composition for Multilingual Writers (Mason Core)	4
MATH 108	Introductory Calculus with Business Applications (Mason Core)	3
ECON 103	Contemporary Microeconomic Principles (Mason Core)	3
UNIV 100	Introduction to Mason	1
BUS 100	Business and Society (Mason Core)	3
EAP 108	Language Support for Business and Society	1
Total Credits		15

Two Term Program Curriculum (Standard): Required Courses

Code	Title	Credits
ENGH 121	Enhanced Composition For Multilingual Writers of English I	3
ENGH 122	Enhanced Composition For Multilingual Writers of English II	3
MATH 108	Introductory Calculus with Business Applications (Mason Core)	3
BUS 100	Business and Society (Mason Core)	3
BUS 210	Business Analytics I	3
INYO 105	American Cultures (Mason Core)	3
INYO 100	Transition INTO Mason I	1
INYO 101	Transition INTO Mason II	1
ECON 103	Contemporary Microeconomic Principles (Mason Core)	3
COMM 101	Fundamentals of Communication (Mason Core)	3
EAP 102	Language Support for American Cultures	1
EAP 108	Language Support for Business and Society	1
EAP 120	Linguistics Capstone	0
EAP 101	Language Support for Fundamentals of Communication	1
Total Credits		29

Three Term Program Curriculum (Comprehensive): Required Courses

Code	Title	Credits
AE 040	Level 4 Core	
AE 041	Level 4 Oral Comm Skills	
ENGH 121	Enhanced Composition For Multilingual Writers of English I	3
ENGH 122	Enhanced Composition For Multilingual Writers of English II	3

MATH 108	Introductory Calculus with Business Applications (Mason Core)	3
BUS 100	Business and Society (Mason Core)	3
BUS 210	Business Analytics I	3
INYO 105	American Cultures (Mason Core)	3
ECON 103	Contemporary Microeconomic Principles (Mason Core)	3
COMM 101	Fundamentals of Communication (Mason Core)	3
EAP 102	Language Support for American Cultures	1
EAP 108	Language Support for Business and Society	1
INYO 100	Transition INTO Mason I	1
INYO 101	Transition INTO Mason II	1
EAP 101	Language Support for Fundamentals of Communication	1
Total Credits		29

Engineering, Computer Science, and Statistics

Two Term Program Curriculum (Standard): Required and Major Courses

Code	Title	Credits
Required Courses for All Majors		
ENGH 121	Enhanced Composition For Multilingual Writers of English I	3
ENGH 122	Enhanced Composition For Multilingual Writers of English II	3
INYO 105	American Cultures (Mason Core)	3
COMM 100	Public Speaking (Mason Core)	3
UNIV 140	INTO Mason Pathway Transition	1
UNIV 141	INTO Mason Pathway Extended Transition	1
EAP 103	Language Support for Public Speaking	1
EAP 120	Linguistics Capstone	0
EAP 102	Language Support for American Cultures	1
Select one of the following:		3-4
MATH 108	Introductory Calculus with Business Applications (Mason Core) [1]	
MATH 113	Analytic Geometry and Calculus I (Mason Core)	
Select one of the following:		3-4
MATH 114	Analytic Geometry and Calculus II	
IT 102	Discrete Structures	
Major Specific Courses		**6-7**
Engineering Majors		
PHYS 160	University Physics I (Mason Core)	
PHYS 161	University Physics I Laboratory (Mason Core)	
EAP 113	Language Support for University Physics	
ENGR 107	Introduction to Engineering (Mason Core)	
Information Technology Majors		
IT 105	IT Architecture Fundamentals	
EAP 111	Language Support for Introduction to Information Technology	
IT 104	Introduction to Computing	
Computer Science and Statistics Majors		
CS 112	Introduction to Computer Programming	
EAP 112	Language Support for Introduction to Computer Programming	
CS 105	Computer Ethics and Society (Mason Core)	
Total Credits		28-31

[1] Students pursuing IT degrees should take MATH 108 Introductory Calculus with Business Applications (Mason Core) for 3 credits instead of MATH 113 Analytic Geometry and Calculus I (Mason Core).

Three Term Program Curriculum (Comprehensive): Required and Major Courses

Code	Title	Credits
AE 040	Level 4 Core	
AE 041	Level 4 Oral Comm Skills	
Required Courses for All Majors		
ENGH 121	Enhanced Composition For Multilingual Writers of English I	3
ENGH 122	Enhanced Composition For Multilingual Writers of English II	3
INYO 105	American Cultures (Mason Core)	3
COMM 100	Public Speaking (Mason Core)	3
UNIV 140	INTO Mason Pathway Transition	1
UNIV 141	INTO Mason Pathway Extended Transition	1
EAP 103	Language Support for Public Speaking	1
EAP 120	Linguistics Capstone	0
EAP 102	Language Support for American Cultures	1
Select one of the following:		3-4
MATH 108	Introductory Calculus with Business Applications (Mason Core) [1]	
MATH 113	Analytic Geometry and Calculus I (Mason Core)	
Select one of the following:		3-4
MATH 114	Analytic Geometry and Calculus II	
IT 102	Discrete Structures	
Major Specific Courses		**6-7**
Engineering Majors		
PHYS 160	University Physics I (Mason Core)	
PHYS 161	University Physics I Laboratory (Mason Core)	
EAP 113	Language Support for University Physics	
ENGR 107	Introduction to Engineering (Mason Core)	
Information Technology Majors		
IT 105	IT Architecture Fundamentals	
EAP 111	Language Support for Introduction to Information Technology	
IT 104	Introduction to Computing	
Computer Science and Statistics Majors		
CS 112	Introduction to Computer Programming	
EAP 112	Language Support for Introduction to Computer Programming	

CS 105	Computer Ethics and Society (Mason Core)	
Total Credits		28-31

Humanities and Social Sciences

One Term Program Curriculum (Accelerated): Required Courses

Code	Title	Credits
Required Courses		
ENGH 100	Composition for Multilingual Writers (Mason Core)	4
EAP 102	Language Support for American Cultures	1
INYO 105	American Cultures (Mason Core)	3
MATH 111	Linear Mathematical Modeling (Mason Core) [1]	3
UNIV 100	Introduction to Mason	1
General Education Course [2]		3
Music majors must take the following:		0-1
MUSI 221	Applied Music I	
Total Credits		15-16

1. Depending on intended major and math placement, students may take a more advanced math class.
2. Course to be selected with advisor approval.

Two Term Program Curriculum (Standard): Required Courses

Code	Title	Credits
ENGH 121	Enhanced Composition For Multilingual Writers of English I	3
ENGH 122	Enhanced Composition For Multilingual Writers of English II	3
MATH 111	Linear Mathematical Modeling (Mason Core) [1]	3
INYO 105	American Cultures (Mason Core)	3
HIST 125	Introduction to World History (Mason Core)	3
COMM 101	Fundamentals of Communication (Mason Core)	3
General Education Course [2]		3
EAP 102	Language Support for American Cultures	1
EAP 104	Language Support World History	1
EAP 101	Language Support for Fundamentals of Communication	1
INYO 100	Transition INTO Mason I	1
INYO 101	Transition INTO Mason II	1
Music majors must take the following:		1
MUSI 221	Applied Music I	
Total Credits		27

1. Depending on intended major and math placement, students may take a more advanced math class.
2. These course options are offered to students beginning in the Fall term only.

Three Term Program Curriculum (Comprehensive): Required Courses

Code	Title	Credits
AE 041	Level 4 Oral Comm Skills	
AE 040	Level 4 Core	
ENGH 121	Enhanced Composition For Multilingual Writers of English I	3
ENGH 122	Enhanced Composition For Multilingual Writers of English II	3
MATH 111	Linear Mathematical Modeling (Mason Core) [1]	3
INYO 105	American Cultures (Mason Core)	3
HIST 125	Introduction to World History (Mason Core)	3
COMM 101	Fundamentals of Communication (Mason Core)	3
General Education Course [2]		3
EAP 102	Language Support for American Cultures	1
EAP 104	Language Support World History	1
Music majors must take the following:		1
EAP 101	Language Support for Fundamentals of Communication	1
INYO 100	Transition INTO Mason I	1
INYO 101	Transition INTO Mason II	1
MUSI 221	Applied Music I	
Total Credits		27

Human and Social Development

One Term Program Curriculum (Accelerated): Required Courses

Code	Title	Credits
ENGH 100	Composition for Multilingual Writers (Mason Core)	4
EAP 102	Language Support for American Cultures	1
INYO 105	American Cultures (Mason Core)	3
UNIV 100	Introduction to Mason	1
Select one of the following courses:		3
PSYC 100	Basic Concepts in Psychology (Mason Core)	
CONF 101	Conflict and Our World (Mason Core)	
HEAL 230	Introduction to Health Behavior (Mason Core)	
MATH 111	Linear Mathematical Modeling (Mason Core) [1]	3
or STAT 250	Introductory Statistics I (Mason Core)	
Total Credits		15

1. Programs in the areas of community health, health administration, health, fitness and recreation resources and tourism and events management require STAT 250.

Two Term Program Curriculum (Comprehensive): Required Courses

Code	Title	Credits
ENGH 121	Enhanced Composition For Multilingual Writers of English I	3
ENGH 122	Enhanced Composition For Multilingual Writers of English II	3

MATH 111	Linear Mathematical Modeling (Mason Core) [1]	3
or STAT 250	Introductory Statistics I (Mason Core)	
INYO 105	American Cultures (Mason Core)	3
COMM 101	Fundamentals of Communication (Mason Core)	3
HIST 125	Introduction to World History (Mason Core)	3
UNIV 140	INTO Mason Pathway Transition	1
UNIV 141	INTO Mason Pathway Extended Transition	1
Select one of the following courses:		3
PSYC 100	Basic Concepts in Psychology (Mason Core) (or CONF 101 or HEAL 230)	
CONF 101	Conflict and Our World (Mason Core)	
HEAL 230	Introduction to Health Behavior (Mason Core)	
IT 104	Introduction to Computing	3
EAP 102	Language Support for American Cultures	1
EAP 103	Language Support for Public Speaking	1
EAP 104	Language Support World History	1
EAP 120	Linguistics Capstone	0
Total Credits		29

Three Term Program Curriculum (Comprehensive): Required Courses

Code	Title	Credits
AE 040	Level 4 Core	
AE 041	Level 4 Oral Comm Skills	
ENGH 121	Enhanced Composition For Multilingual Writers of English I	3
ENGH 122	Enhanced Composition For Multilingual Writers of English II	3
MATH 111	Linear Mathematical Modeling (Mason Core) [1]	3
or STAT 250	Introductory Statistics I (Mason Core)	
INYO 105	American Cultures (Mason Core)	3
COMM 101	Fundamentals of Communication (Mason Core)	3
HIST 125	Introduction to World History (Mason Core)	3
UNIV 140	INTO Mason Pathway Transition	1
UNIV 141	INTO Mason Pathway Extended Transition	1
Select one of the following courses:		3
PSYC 100	Basic Concepts in Psychology (Mason Core) (or CONF 101 or HEAL 230)	
CONF 101	Conflict and Our World (Mason Core)	
HEAL 230	Introduction to Health Behavior (Mason Core)	
IT 104	Introduction to Computing	3
EAP 102	Language Support for American Cultures	1
EAP 103	Language Support for Public Speaking	1
EAP 104	Language Support World History	1
EAP 120	Linguistics Capstone	0
Total Credits		29

[1] Programs in the areas of community health; health administration; health, fitness and recreation resources; and tourism and events management require STAT 250.

Science

One Term Program Curriculum (Accelerated): Required Courses

Code	Title	Credits
ENGH 100	Composition for Multilingual Writers (Mason Core)	4
CHEM 211	General Chemistry I (Mason Core)	3
CHEM 213	General Chemistry Laboratory I (Mason Core)	1
EAP 102	Language Support for American Cultures	1
INYO 105	American Cultures (Mason Core)	3
EAP 114	Language Support for General Chemistry I	1
MATH 113	Analytic Geometry and Calculus I (Mason Core)	4
UNIV 100	Introduction to Mason	1
Total Credits		18

Two Term Program Curriculum (Standard): Required and Major Courses

Code	Title	Credits
ENGH 121	Enhanced Composition For Multilingual Writers of English I	3
ENGH 122	Enhanced Composition For Multilingual Writers of English II	3
MATH 113	Analytic Geometry and Calculus I (Mason Core)	4
MATH 114	Analytic Geometry and Calculus II	4
INYO 105	American Cultures (Mason Core)	3
COMM 101	Fundamentals of Communication (Mason Core)	3
CHEM 211	General Chemistry I (Mason Core)	3
CHEM 213	General Chemistry Laboratory I (Mason Core)	1
PHYS 160	University Physics I (Mason Core)	3
PHYS 161	University Physics I Laboratory (Mason Core)	1
EAP 102	Language Support for American Cultures	1
EAP 103	Language Support for Public Speaking	1
EAP 113	Language Support for University Physics	1
EAP 114	Language Support for General Chemistry I	1
EAP 120	Linguistics Capstone	0
UNIV 140	INTO Mason Pathway Transition	1
UNIV 141	INTO Mason Pathway Extended Transition	1
Select the following to replace Physics courses if majoring in Geology or Earth Science:		
GEOL 101	Introductory Geology I (Mason Core)	
EAP 115	Language Support for Introductory Geology I	
Select the following to replace Chemistry courses if majoring in Environmental and Sustainability Studies.		
EVPP 110	(Mason Core)	
Total Credits		34

Three Term Program Curriculum (Comprehensive): Required Courses

Code	Title	Credits
AE 040	Level 4 Core	
AE 041	Level 4 Oral Comm Skills	
ENGH 121	Enhanced Composition For Multilingual Writers of English I	3
ENGH 122	Enhanced Composition For Multilingual Writers of English II	3
MATH 113	Analytic Geometry and Calculus I (Mason Core)	4
MATH 114	Analytic Geometry and Calculus II	4
INYO 105	American Cultures (Mason Core)	3
COMM 101	Fundamentals of Communication (Mason Core)	3
CHEM 211	General Chemistry I (Mason Core)	3
CHEM 213	General Chemistry Laboratory I (Mason Core)	1
PHYS 160	University Physics I (Mason Core)	3
PHYS 161	University Physics I Laboratory (Mason Core)	1
EAP 102	Language Support for American Cultures	1
EAP 103	Language Support for Public Speaking	1
EAP 113	Language Support for University Physics	1
EAP 114	Language Support for General Chemistry I	1
EAP 120	Linguistics Capstone	0
UNIV 140	INTO Mason Pathway Transition	1
UNIV 141	INTO Mason Pathway Extended Transition	1
Select the following to replace Physics courses if majoring in Geology or Earth Science:		
GEOL 101	Introductory Geology I (Mason Core)	
EAP 115	Language Support for Introductory Geology I	
Select the following to replace Chemistry courses if majoring in Environmental and Sustainability Studies.		
EVPP 110	(Mason Core)	
Total Credits		34

Graduate

Graduate International Pathways

The Graduate International Pathways are pre-master's programs that provide international students paths to various graduate degrees at George Mason University. The pathways give students the academic foundation, essential language skills, and cultural knowledge to successfully move on to their master's degree programs. There are one and two term options available for most pathways along with "Bridge" options for students with certain 3-year bachelor's degrees for many of the pathways. For most students, enrolling in a Graduate International Pathway will add one or two additional semesters to their overall master's degree program.

There are currently 46 Graduate International Pathways available to graduate students. Each pathway allows students to progress to pre-approved graduate degree programs at GMU. The pathways are administered in partnership with the following nine Schools and Colleges at George Mason University. For more information on the specific pathways to degrees in each School or College, click on the links below:

- INTO Mason: Engineering Graduate Pathways
- INTO Mason: Humanities and Social Sciences Graduate Pathways
- INTO Mason: Education and Human Development Graduate Pathways
- INTO Mason: Health and Human Services Graduate Pathways
- INTO Mason: College of Science Graduate Pathways
- INTO Mason: Visual and Performing Arts Graduate Pathways
- INTO Mason: School of Business Graduate Pathways
- INTO Mason: Conflict Analysis and Resolution Graduate Pathways
- INTO Mason: Policy and Government Graduate Pathways

Graduate International Pathways are designed for international students who:

- Need further English language development
- Require a fourth year of undergraduate study
- Fall short of meeting the minimum GPA or admission test score requirements
- Need to improve study skills for success in their chosen field of study
- Any or all of the above

Administered through INTO Mason in partnership with the academic units across the university, the courses in each Graduate International Pathway are taught by highly qualified Mason instructional faculty members and supported by International Pathways academic advisors.

Admission

Admission to Graduate International Pathways are offered to international and multilingual students by two methods:

- Students may apply directly through the INTO Mason admissions process OR
- By referral from graduate admissions due to not having met the grade point average, English language proficiency, or other requirements for direct admission (cascade).

The minimum documentation required for admission include: application, mark sheets/transcripts (in English and the original language), degree certificates (in English and the original language) and other required items as stated in the program catalog supplement.

Graduate International Pathway entry requirements are usually as follows:

- An undergraduate degree equivalent to a U.S. bachelor's degree in a relevant field as specified by the particular International Pathways program;
- 2.75 minimum high school GPA equivalent based on the applicant's country/institutional scale; and
- Documentation demonstrating the minimum English proficiency levels as specified by the particular pathway. The general minimum scores are as follows:
  - One Term (Accelerated) and Bridge International Pathways:
    - TOEFL iBT: 80 – 85 overall (variable minimum subscores required)
    - IELTS: 6.5 overall (variable minimum subscores required)
    - IELA: 175 overall (variable minimum subscores required)
    - Duolingo: 110 overall

- Successful completion of or waiver from Academic English Level 6
- Two Term (Standard) International Pathways:
  - TOEFL iBT: 70 - 75 overall (variable minimum subscores required)
  - IELTS: 6.0 - 6.5 overall (variable minimum subscores required)
  - IELA: 165 - 175 overall (variable minimum subscores required)
  - Duolingo: 100 overall
  - Successful completion of or waiver from Academic English Level 5
- Three Term (Comprehensive) International Pathway in Accounting:
  - TOEFL iBT: 60 overall (13 minimum subscores required)
  - IELTS: 5.5 overall (5.5 minimum subscores required)
  - IELA: 155 overall (155 minimum subscores required)
  - Duolingo: 90 overall
  - Successful completion of or waiver from Academic English Level 4

Students who hold three year baccalaureate degrees may be eligible for select Graduate International Pathways Bridge programs. Students should review the specific requirements for each pathway at the INTO Study website (http://www.intostudy.com/en-gb/universities/george-mason-university/).

Curriculum

Prescribed courses for the Graduate International Pathways programs include approximately 10 - 14 credits for One-Term pathways and 20 - 25 credits for Two-Term pathways. The intent of these courses is to prepare students for the demands of the Mason graduate curriculum. Further, the prescribed courses may include up to 12 credits of coursework toward the student's graduate degree during their International Pathways term(s) of study.

One Term (Accelerated) pathways include the following courses:

Code	Title	Credits
EAP 508	Graduate Communication in the Disciplines III	4
INYO 504	Accelerated Graduate Transitions for International Students	3
EAP 405	Special Topics in Advanced English for Academic Purposes	1-6

In addition to the core coursework listed above, students will also take:

Code	Title	Credits
Appropriate coursework toward graduate program		3-6

Students whose graduate degree program requires the GRE prior to completing their pathway will also be required to take:

Code	Title	Credits
Preparation for the Graduate Record Examination (specified by International Pathway degree program)		
Students will take one of the following:		
INYO 095	Quantitative Preparation for the Graduate Record Examination	
INYO 096	Verbal and Quantitative Preparation for the Graduate Record Examination	
INYO 097	Verbal, Quantitative, and Academic Writing Preparation for the Graduate Record Examination	

Two Term (Standard) pathways include the following courses:

Code	Title	Credits
INYO 501	Graduate Transitions for International Students I	2
INYO 502	Graduate Transitions for International Students II	2
EAP 405	Special Topics in Advanced English for Academic Purposes	2-4
EAP 506	Graduate Communication in the Disciplines I	4
EAP 507	Graduate Communication in the Disciplines II	4
EAP 098	Individualized Language Instruction	0

In addition to the coursework listed above, students will also take:

Code	Title	Credits
Appropriate coursework toward graduate program		6-12

Students whose graduate degree program requires the GRE prior to completing the International Pathways program will also be required to take:

Code	Title	Credits
Preparation for the Graduate Record Examination (specified by International Pathway degree program)		
Students will take one of the following:		0
INYO 095	Quantitative Preparation for the Graduate Record Examination	
INYO 096	Verbal and Quantitative Preparation for the Graduate Record Examination	
INYO 097	Verbal, Quantitative, and Academic Writing Preparation for the Graduate Record Examination	

Three Term (Comprehensive) Accounting pathway includes the following courses:

Code	Title	Credits
Initial term of study:		
AE 050	Level 5 Core	
AE 051	Level 5 Oral Comm Skills	
ACCT 330	Financial Accounting I	3
Total Credits		3

Code	Title	Credits
Upon successful completion of the first term, students will follow the Two Term (Standard) Accounting pathway curriculum during their second and third terms of study.		

Progression into Degree Status

Each Graduate International Pathway has specific progression requirements for completion. These typically include a minimum grade point average and minimum individual course grades (no grades of NC or I are permitted). Students should refer to the INTO Study website (http://www.intostudy.com/en-gb/universities/george-mason-university/) for

specific requirements. Students admitted to the university through a Graduate International Pathway program are required to complete all program requirements in order to maintain continuous enrollment.

Dismissal/Termination Appeals Process for INTO Mason Students

Students who do not meet all requirements for matriculation to their desired degree program at the end of their final term will be reviewed for termination from their Graduate International Pathway. Terminated students may initiate one of the following an academic action requests in writing:

1. request an exception to the program policy,
2. request to change to an alternate Graduate International Pathway, and/or
3. request an extension to continue studying as a Graduate International Pathways Extender student for one additional term.

All terminated student academic action requests must be submitted in writing to the academic advising staff located in the Mason Global Center within 14 days of notification. Requests should provide an explanation and supplementary documentation. Students who earn two unsatisfactory grades of C or lower will be ineligible to continue as an Extender. Students who fail to meet the program requirements after an extension will be reviewed for dismissal from the university.

Decisions on these requests are reviewed and approved at the discretion of the Academic Director. In some cases, additional reviews by the Associate Provost for Graduate Education or from a College Dean may also be required.

Re-enrollment and Re-admission

Due to the nature of the Graduate International Pathways as both English language development and academic coursework, students are subject to a limited re-enrollment policy. Students who do not enroll after the first term or withdraw for reasons other than poor academic performance may request to re-enroll in a Graduate International Pathway program the following term (e.g., spring) to continue making progress toward meeting program requirements, with advance permission from the Academic Director. Students who do not enroll for two consecutive terms (e.g., spring and fall) must apply for readmission to the program and be re-assessed for language proficiency. Summer terms are counted for students whose initial enrollment begins in Spring semester.

Academic English

Academic English Program

Administered by INTO George Mason University's English Language Programs, the Academic English (AE) Program prepares international students for university study in the United States. AE is a non-credit program designed to develop the English skills needed for successful communication, cultural integration, and participation in the academic environment of the university.

Admission

Students who apply to the AE Program must submit an application, application fee, and required documents through INTO Mason. In order to qualify for admission to the AE Program, students must demonstrate that they have earned at least a high school diploma.

Students have the option to apply for the AE or an International Year One (IYO) Program. Students who apply to an International Year One Program but do not demonstrate entry language requirements are given an individual pre-arrival study plan that provides an estimate of the number of Academic English terms to complete in order to fulfill International Year One entry requirements (AE + IYO). This pre-arrival study plan is only an estimate; an updated post-arrival study plan with a minimum of one term of AE will be provided to AE + IYO students after taking the INTO Mason Placement Test.

For more information about International Year One admission requirements, see Undergraduate International Year One Program or Graduate International Year One Program.

Program Outcomes

After successfully completing the upper levels of the Academic English program, students will be able to do the following:

- Interact comfortably in the U.S. classroom with professors and fellow students
- Understand U.S. values in an academic setting
- Present their spoken and written ideas accurately and effectively in English
- Write research papers with proper use of citations and references
- Use the Internet and Mason library databases to conduct academic research
- Read, understand, and critically evaluate academic texts
- Understand and use vocabulary common to academic disciplines
- Take useful and accurate notes in academic lectures and presentations
- Develop and deliver oral presentations

Program Structure

The Academic English Program is offered three terms per year: Fall (15 weeks of instruction), Spring (15 weeks of instruction), and Summer (10 weeks of instruction). Upon arrival, all Academic English students are given a language proficiency assessment to determine their AE level placement. In order to be eligible for full-time status, students must be enrolled in a minimum of 18 hours of non-credit AE coursework per week. AE courses are offered at eight levels of proficiency regularly throughout the year.

AE faculty are highly qualified with significant teaching experience and master's and doctoral degrees in TESOL or related fields. The program is also supported by academic advisors experienced in working with multilingual speakers of English and the Student Experience staff, who help students utilize university resources and engage in the Mason experience through opportunities to participate in campus and local community groups/programs.

Curriculum

In keeping with the current literature on second language acquisition and pedagogy, the Academic English curriculum is aligned with the Common European Framework of Reference scales (CEFR), American Council on The Teaching of Foreign Languages (ACTFL) Proficiency Guidelines 2012, and the Pearson Global Scale of English (GSE) Learning Objectives for Academic English. Curricular objectives and learning outcomes for each of the eight AE levels are geared toward an exit goal that is one level higher than the entrance level.

AE Level	CEFR Entrance	CEFR Exit	ACTFL Entrance	ACTFL Exit	GSE Academic Entrance	GSE Academic Exit
7	B2+	C1	Advanced High	Superior	68-75	76-84
6	B2	B2+	Advanced Mid	Advanced High	59-67	68-75
5	B1+	B2	Advanced Low	Advanced Mid	51-58	59-67
4	B1	B1+	Intermediate High	Advanced Low	43-50	51-58
3	A2+	B1	Intermediate Mid	Intermediate High	37-42	43-50
2	A2	A2+	Intermediate Low	Intermediate Mid	30-36	37-42
1	A1+	A2	Novice High	Intermediate Low	22-29	30-36
Foundat	A1	A1+	Novice Mid	Novice High	16-21	22-29

All students, regardless of level, take one Core, one Oral Communication Skills (OCS), and one or two Elective courses for a minimum of 18 classroom hours per week. Core courses focus on reading and writing with additional attention to written grammar and vocabulary. OCS courses focus on listening and speaking with additional attention to pronunciation and oral grammar and vocabulary. Elective courses offer students a variety of content-based and skills-based instruction and can be selected by students enrolled in co-requisite Core or OCS courses.

Grading System for Academic English

Throughout the semester, students are assessed on how well they have met curricular learning outcomes. Midterm and final grades for all Academic English courses are submitted to the University as letter grades.

Letter Grade	Percent Grade	Quality Points	Type
A+	97-100	4.00	Passing
A	93-96	4.00	Passing
A-	90-92	3.67	Passing
B+	87-89	3.33	Passing
B	83-86	3.00	Passing
B-	80-82	2.67	Passing
C+	77-79	2.33	Failing
C	73-76	2.00	Failing
C-	70-72	1.67	Failing
D	60-69	1.00	Failing
F	0-59	0.00	Failing

Grade point average (GPA) is an important factor in determining program-to-program progression and evaluating academic standing.

In-Program Level Progression

In Core and OCS courses, students must receive a final grade of at least 80% in order to advance to the next level of Core/OCS. If a student has performed exceptionally well in Core/OCS, the instructor may submit an AE Level Skip Form requesting that the student skip a Core/OCS level in the subsequent semester.

Program-to-Program Progression

In order for an AE + Year One student to progress to his/her planned Year One program, the student must earn for the most current AE semester a 2.5 or higher term GPA and a final passing grade (A+, A, A-, B+, B, or B-) of specified levels of Core and OCS. AE-only students must meet the same language requirements for progression and submit other documentation as required by the prospective Year One program.

AE students applying for direct admission to George Mason University must earn a passing final grade (A+, A, A-, B+, B, or B-) in specified levels of Core and OCS to meet entry language proficiency requirements.

AE Language Requirements for INTO Mason International Year One programs and Mason Direct Admission

Program	Language Requirement 1	Language Requirement 2	Language Requirement
Undergraduate International Year One (Three Term/ Comprehensive)	Passing Grade in AE 030: Level 3 Core	Passing Grade in AE 031: Level 3 OCS	AE Term GPA ≥ 2.5
Undergraduate International Year One (Two Term/ Standard)	Passing grade in AE 040: Level 4 Core	Passing grade in AE 041: Level 4 OCS	AE Term GPA ≥ 2.5
Undergraduate International Year One (One Term/ Accelerated)	Passing grade in AE 050: Level 5 Core	Passing grade in AE 051: Level 5 OCS	AE Term GPA ≥ 2.5
Direct Undergraduate Admission	Passing grade in AE 060: Level 6 Core	Passing grade in AE 061: Level 6 OCS	
Graduate International Year One (Three Term/ Comprehensive)	Passing grade in AE 040: Level 4 Core	Passing grade in AE 041: Level 4 OCS	AE Term GPA ≥ 2.5
Graduate International Year One (Two Term/ Standard)	Passing grade in AE 050: Level 5 Core	Passing grade in AE 051: Level 5 OCS	AE Term GPA ≥ 2.5
Graduate International Year One (One Term/ Accelerated)	Passing grade in AE 060: Level 6 Core	Passing grade in AE 061: Level 6 OCS	AE Term GPA ≥ 2.5
Direct Graduate Admission	Passing grade in AE 070: Level 7 Core	Passing grade in AE 071: Level 7 OCS	

* Information in the chart above only shows program eligibility based on language proficiency requirements met.

Academic English students may not level skip directly into an International Year One (IYO) program or direct admission the following semester. Even if a student is approved to skip into an Academic English level beyond what is required for the desired IYO program or direct admission, the student must complete the subsequent semester in the AE Program first. Students also have the option of submitting official TOEFL/IELTS/PTE Academic scores to George Mason University in lieu of meeting the AE program-to-program progression requirements, but must still maintain good standing in the AE Program.

Attendance and Academic Probation

In order to make progress in developing academic language skills, students are expected to attend classes regularly and remain in good academic standing.

Attendance

An AE student who exceeds 15% absences in any course will be placed on attendance probation. If the student exceeds 15% absences in any course the following semester, the student is subject to termination for non-attendance from the AE program and George Mason University. Subsequently, the student will be terminated in the Student and Exchange Information System (SEVIS) and will no longer have valid F-1 visa status.

Academic Progress

Students are expected to make satisfactory progress in developing their language skills and may not attempt the same Core or OCS course more than three times. Academic progress is determined primarily through term GPA. Students whose GPAs fall below 2.5 will be given a warning, placed on probation, and/or terminated from the AE Program and George Mason University:

A student earns a term GPA below 2.5.	INTO Mason Academic Services e-mails the student that s/he is on Academic Warning for the next semester.
A student on Academic Warning earns a term GPA below 2.5.	The student receives an e-mail and hand-delivered letter from INTO Mason Advising & Academic Services stating that s/he is on Academic Probation for the next semester. Before being permitted to register for AE classes, the student must meet with their assigned academic advisor and sign an Academic Probation contract. Students who refuse the contract or who violate the conditions of the contract will be dismissed immediately. Students who follow the terms of the contract and complete a successful semester will be removed from Academic Probation and considered in good standing.
A student on Academic Probation earns a term GPA below 2.5.	The student is terminated from the AE Program and George Mason University.

Termination Appeals Process for INTO Mason Students

All termination appeals must be submitted in writing to the INTO Mason Academic Services office located in the Mason Global Center within 14 days of notification. Requests should provide an explanation and supplementary documentation. Students who fail to meet the program requirements after an additional semester will be reviewed for termination from the university.

Decisions on these requests are reviewed and approved at the discretion of the Academic Director. In some cases, additional reviews by the Associate Provost for Academic Initiatives and Services may also be required.

Reenrollment and Readmission

Academic English students who do not enroll after the first term or withdraw for reasons other than poor academic performance (e.g., spring and fall) must apply for readmission to the program and be reassessed for language proficiency upon return.

INTO Mason: Business Graduate Pathways

Requirements

Graduate International Pathways to master's degrees in the School of Business

INTO Mason provides four Graduate International Pathways for international students to enter various graduate degrees in the School of Business at George Mason University. The pathways give students the academic foundation, essential language skills, and cultural knowledge to successfully move on to their master's degree programs. For most students, enrolling in a Graduate International Pathway will add one or two additional semesters to their overall master's degree program.

The following are the available Graduate International Pathways at INTO Mason to degrees in the School of Business at GMU:

- Accounting
- Business Administration (MBA)
- (Business) Management
- Real Estate Development

The following are the types of pathways available:

- **One Term pathways (Accelerated)**: These pathways lead students through their first semester of graduate school. Upon completion of all matriculation requirements, students will move on to their degree-seeking program often with several graduate credits completed as determined by the graduate degree program. Three of the four Business pathways have one-term options available (all except Accounting).
- **Two Term pathways (Standard)**: These pathways lead students through their first year of graduate school. Upon completion of all matriculation requirements, students will move on to their degree-seeking program often with several graduate credits completed as determined by the graduate degree program. All four Business pathways have two-term options available.
- **Three Term pathway (Comprehensive):** This pathway is currently only available to students enrolling in the Accounting pathway and is designed to start students a semester earlier than the standard two-term pathway. In their first semester, students take Academic English classes along with one Accounting pre-requisite class and a language support class. Their second and third semesters then follow the standard two-term pathway in Accounting.
- **Bridge pathways**: These pathways provide foundational coursework designed to substitute for an additional year of undergraduate academic coursework, to render students with three-year baccalaureate degrees eligible to move on to their graduate degree program. Students will often move on to those degree-seeking programs with several graduate credits completed as determined by the graduate degree program. All four Business pathways have Bridge options available.

Graduate International Pathways are designed for international students who:

- Need further English language development. Students who require a moderate amount of English language support can enter all available International Pathways to strengthen their language proficiency and ensure their long-term academic success
- Require a fourth year of undergraduate study. Students who hold three-year baccalaureate degrees that are not formally evaluated as equivalent to a four-year U.S. bachelor's degree may enter many Graduate International Pathways. For these students, their pathway acts as a "bridge" enhancing their international educational background with academic coursework to meet the eligibility for admission to a GMU graduate degree program
- Fall short of meeting the minimum GPA or admission test score requirements
- Need to improve study skills for success in their chosen field of study
- Any or all of the above

Administered through INTO Mason in partnership with the academic units across the university, the courses in each Graduate International Pathway are taught by highly qualified Mason instructional faculty members and supported by International Pathways academic advisors.

Students enrolled in any Graduate International Pathway should review the program's student guidebook for specific details related to program requirements and expectations.

INTO Mason: Conflict Analysis and Resolution Graduate Pathways

Requirements

Graduate International Pathway to master's degree in the School of Conflict Analysis and Resolution

INTO Mason provides one Graduate International Pathway for international students to enter the Jimmy and Rosalynn Carter School for Peace and Conflict Resolution at George Mason University. The pathway gives students the academic foundation, essential language skills, and cultural knowledge to successfully move on to their master's degree program. For most students, enrolling in a Graduate International Pathway will add one or two additional semesters to their overall master's degree program.

The following is the available Graduate International Pathway at INTO Mason to the School of Conflict Analysis and Resolution at GMU:

- Conflict Analysis and Resolution

The following are the types of pathways available:

- **One Term pathway (Accelerated)**: This pathway leads students through their first semester of graduate school. Upon completion of all matriculation requirements, students will move on to their degree-seeking program often with several graduate credits completed as determined by the graduate degree program.
- **Two Term pathway (Standard)**: This pathway leads students through their first semester of graduate school. Upon completion of all matriculation requirements, students will move on to their degree-seeking program often with several graduate credits completed as determined by the graduate degree program.
- **Bridge pathway**: This pathway provides foundational coursework designed to substitute for an additional year of undergraduate academic coursework, to render students with three-year baccalaureate degrees eligible to move on to their graduate degree program. Students will often move on to their degree-seeking program with several graduate credits completed as determined by the graduate degree program.

Graduate International Pathways are generally designed for international students who:

- Need further English language development. Students who require a moderate amount of English language support can enter all available International Pathways to strengthen their language proficiency and ensure their long-term academic success
- Require a fourth year of undergraduate study. Students who hold three-year baccalaureate degrees that are not formally evaluated as equivalent to a four-year U.S. bachelor's degree may enter many Graduate International Pathways. For these students, their pathway acts as a "bridge" enhancing their international educational background with academic coursework to meet the eligibility for admission to a GMU graduate degree program
- Fall short of meeting the minimum GPA or admission test score requirements
- Need to improve study skills for success in their chosen field of study
- Any or all of the above

Administered through INTO Mason in partnership with the academic units across the university, the courses in each Graduate International Pathway are taught by highly qualified Mason instructional faculty members and supported by International Pathways academic advisors.

Students enrolled in any Graduate International Pathway should review the program's student guidebook for specific details related to program requirements and expectations.

INTO Mason: Education and Human Development Graduate Pathways

Requirements

Graduate International Pathways to master's degrees in Education and Human Development

INTO Mason provides five Graduate International Pathways for international students to enter various graduate degrees in the College of Education and Human Development (CEHD) at George Mason University. The pathways give students the academic foundation, essential language skills, and cultural knowledge to successfully move on to their master's degree programs. For most students, enrolling in a Graduate International Pathway will add one or two additional semesters to their overall master's degree program.

The following are the available Graduate International Pathways at INTO Mason to degrees in the College of Education and Human Development at GMU:

- Curriculum and Instruction with concentration in Early Childhood and Elementary Education

- Educational Psychology
- Special Education with concentration in Early Childhood and Elementary Education
- Special Education without concentration
- Sport and Recreation Studies

The following are the types of pathways available:

- **One Term pathways (Accelerated)**: These pathways lead students through their first semester of graduate school. Upon completion of all matriculation requirements, students will move on to their degree-seeking program often with several graduate credits completed as determined by the graduate degree program. All five CEHD pathways have one-term options available.
- **Two Term pathways (Standard)**: These pathways lead students through their first year of graduate school. Upon completion of all matriculation requirements, students will move on to their degree-seeking program often with several graduate credits completed as determined by the graduate degree program. All five CEHD pathways have two-term options available.
- **Bridge pathways**: These pathways provide foundational coursework designed to substitute for an additional year of undergraduate academic coursework, to render students with three-year baccalaureate degrees eligible to move on to their graduate degree program. Students will often move on to those degree-seeking programs with several graduate credits completed as determined by the graduate degree program. All five CEHD pathways have Bridge options available.

Graduate International Pathways are designed for international students who:

- Need further English language development. Students who require a moderate amount of English language support can enter all available International Pathways to strengthen their language proficiency and ensure their long-term academic success
- Require a fourth year of undergraduate study. Students who hold three-year baccalaureate degrees that are not formally evaluated as equivalent to a four-year U.S. bachelor's degree may enter many Graduate International Pathways. For these students, their pathway acts as a "bridge" enhancing their international educational background with academic coursework to meet the eligibility for admission to a GMU graduate degree program
- Fall short of meeting the minimum GPA or admission test score requirements
- Need to improve study skills for success in their chosen field of study
- Any or all of the above

Administered through INTO Mason in partnership with the academic units across the university, the courses in each Graduate International Pathway are taught by highly qualified Mason instructional faculty members and supported by International Pathways academic advisors.

Students enrolled in any Graduate International Pathway should review the program's student guidebook for specific details related to program requirements and expectations.

INTO Mason: Engineering Graduate Pathways

Banner Code: IN-MS-P012

Requirements

Graduate International Pathways to master's degrees in the Volgenau School of Engineering

INTO Mason provides sixteen Graduate International Pathways for international students to enter various graduate degrees in the Volgenau School of Engineering (VSE) at George Mason University. The pathways give students the academic foundation, essential language skills, and cultural knowledge to successfully move on to their master's degree programs. For most students, enrolling in a Graduate International Pathway will add one or two additional semesters to their overall master's degree program.

The following are the available Graduate International Pathways at INTO Mason to degrees in the Volgenau School of Engineering at GMU:

- Applied Information Technology
- Bioengineering
- Biostatistics
- Civil and Infrastructure Engineering
- Computer Engineering
- Computer Science
- Data Analytics Engineering
- Digital Forensics
- Electrical Engineering
- Information Security and Assurance
- Information Systems
- Operations Research
- Software Engineering
- Statistical Science
- Systems Engineering
- Telecommunications

The following are the types of pathways available:

- **One Term pathways (Accelerated)**: These pathways lead students through their first semester of graduate school. Upon completion of all matriculation requirements, students will move on to their degree-seeking program often with several graduate credits completed as determined by the graduate degree program. All VSE pathways have one-term pathway options available.
- **Two Term pathways (Standard)**: These pathways lead students through their first year of graduate school. Upon completion of all matriculation requirements, students will move on to their degree-seeking program often with several graduate credits completed as determined by the graduate degree program. All VSE pathways have two-term pathway options available.
- **Bridge pathways**: These pathways provide foundational coursework designed to substitute for an additional year of undergraduate academic coursework, to render students with three-year

baccalaureate degrees eligible to move on to their graduate degree programs. Students will often move on to those degree-seeking programs with several graduate credits completed as determined by the graduate degree program. Almost all (14) of the sixteen (16) VSE pathways have Bridge pathway options available (all except Operations Research and Systems Engineering).

Graduate International Pathways are designed for international students who:

- Need further English language development. Students who require a moderate amount of English language support can enter all available Graduate International Pathways to strengthen their language proficiency and ensure their long-term academic success
- Require a fourth year of undergraduate study. Students who hold three-year baccalaureate degrees that are not formally evaluated as equivalent to a four-year U.S. bachelor's degree may enter many Graduate International Pathways. For these students, their pathway acts as a "bridge" enhancing their international educational background with academic coursework to meet the eligibility for admission
- Fall short of meeting the minimum GPA or admission test score requirements
- Need to improve study skills for success in their chosen field of study
- Any or all of the above

Administered through INTO Mason in partnership with the academic units across the university, the courses in the Graduate International Pathways are taught by highly qualified Mason instructional faculty members and supported by International Pathways academic advisors.

Students enrolled in any Graduate International Pathway should review the program's student guidebook for specific details related to program requirements and expectations.

Program Requirements

The following Graduate International Pathways are offered by INTO Mason in collaboration with the Volgenau School of Engineering:

Applied Information Technology Graduate Pathway

The following grid is for the first semester of the standard, 2-semester pathway into the Master's of Science in Applied Information Technology degree:

Code	Title	Credits
Standard semester 1 of 2		
EAP 506	Graduate Communication in the Disciplines I	4
INYO 501	Graduate Transitions for International Students I	2
Language Support Course [1]		0-2
Required Major Course(s): [2]		3-6
AIT 502	Programming Essentials	
AIT 512	Algorithms and Data Structures Essentials	
AIT 524	Database Management Systems	
AIT 542	Fundamentals of Computing Platforms	
Total Credits		9-14

1. Students will be assigned a second major course by the program on the basis of English language placement results upon arrival. The second major course will be assigned if student places into the equivalent of AE Level 6 (or higher) and the type of language support course will be adjusted accordingly.
2. AIT 512, 524, and 542 can be taken in any order so it will depend on which ones are offered in a given semester and if the student has the requisite knowledge to take them. AIT 502 will be required in addition to these courses if the student does not have all of the necessary skills in programming languages such as Java to take the higher-level AIT courses. These courses are sometimes delivered online and may be restricted when students are in the Pathway program.

The following grid is for the second semester of the standard, 2-semester pathway into the Master's of Science in Applied Information Technology degree:

Code	Title	Credits
Standard semester 2 of 2		
EAP 507	Graduate Communication in the Disciplines II	4
INYO 502	Graduate Transitions for International Students II	2
Language Support Course [1]		0
Required Major Courses [2]		6
AIT 502	Programming Essentials	
AIT 512	Algorithms and Data Structures Essentials	
AIT 524	Database Management Systems	
AIT 542	Fundamentals of Computing Platforms	
Total Credits		12

1. Continuing students may be required to take an additional language support course.
2. AIT 512, 524, and 542 can be taken in any order so it will depend on which ones are offered in a given semester and if the student has the requisite knowledge to take them. AIT 502 will be required in addition to these courses if the student does not have all of the necessary skills in programming languages such as Java to take the higher-level AIT courses. These courses are sometimes delivered online and may be restricted when students are in the Pathway program.

The following grid is for the single semester of the accelerated, 1-semester pathway into the Master's of Science in Applied Information Technology degree:

Code	Title	Credits
Accelerated semester 1 of 1		
EAP 508	Graduate Communication in the Disciplines III	4
INYO 504	Accelerated Graduate Transitions for International Students	3
Language Support Course [1]		0
Required Major Courses: [2]		6
AIT 502	Programming Essentials	
AIT 512	Algorithms and Data Structures Essentials	
AIT 524	Database Management Systems	

AIT 542	Fundamentals of Computing Platforms	
Total Credits		13

1 One-semester (Accelerated) students will be placed into language support courses depending on their entrance test scores when they arrive.

2 AIT 512, 524, and 542 can be taken in any order so it will depend on which ones are offered in a given semester and if the student has the requisite knowledge to take them. AIT 502 will be required in addition to these course if the student does not have all of the necessary skills in programming languages such as Java to take the higher-level AIT courses. These courses are sometimes delivered online and may be restricted when students are in the Pathway program.

The following grid is for the first semester of the Bridge, 2-semester pathway into the Master's of Science in Applied Information Technology degree for students with certain 3-year degrees:

Code	Title	Credits
Bridge semester 1 of 2		
EAP 506	Graduate Communication in the Disciplines I	4
INYO 501	Graduate Transitions for International Students I	2
Upper-level Undergraduate Mason Core Course [1]		3
Required Major Courses [2]		3
AIT 502	Programming Essentials	
AIT 512	Algorithms and Data Structures Essentials	
AIT 524	Database Management Systems	
AIT 542	Fundamentals of Computing Platforms	
Total Credits		12

1 Bridge students will take two upper-level undergraduate Mason Core courses instead of or in addition to select Pathway and/or major courses, one in each semester of the pathway. These two courses substitute for a "fourth year" of undergraduate study as is required by American colleges and universities.

2 AIT 512, 524, and 542 can be taken in any order so it will depend on which ones are offered in a given semester and if the student has the requisite knowledge to take them. AIT 502 will be required in addition to these courses if the student does not have all of the necessary skills in programming languages such as Java to take the higher-level AIT courses. These courses are sometimes delivered online and may be restricted when students are in the Pathway program.

The following grid is for the second semester of the Bridge, 2-semester pathway into the Master's of Science in Applied Information Technology degree for students with certain 3-year degrees:

Code	Title	Credits
Bridge semester 2 of 2		
EAP 507	Graduate Communication in the Disciplines II	4
INYO 502	Graduate Transitions for International Students II	2
Upper-level Undergraduate Mason Core Course [1]		3
Required Major Course [2]		3
AIT 502	Programming Essentials	
AIT 512	Algorithms and Data Structures Essentials	
AIT 524	Database Management Systems	
AIT 542	Fundamentals of Computing Platforms	
Total Credits		12

1 Bridge students will take two upper-level undergraduate Mason Core courses instead of or in addition to select Pathway and/or major courses, one in each semester of the pathway. These two courses substitute for a "fourth year" of undergraduate study as is required by American colleges and universities.

2 AIT 512, 524, and 542 can be taken in any order so it will depend on which ones are offered in a given semester and if the student has the requisite knowledge to take them. AIT 502 will be required in addition to these courses if the student does not have all of the necessary skills in programming languages such as Java to take the higher-level AIT courses. These courses are sometimes delivered online and may be restricted when students are in the Pathway program.

Bioengineering Graduate Pathway

The following grid is for the first semester of the standard, 2-semester pathway into the Master's of Science in Bioengineering degree:

Code	Title	Credits
Standard semester 1 of 2		
EAP 506	Graduate Communication in the Disciplines I	4
INYO 501	Graduate Transitions for International Students I	2
Language Support Course [1]		0-2
Required Major Course(s): [2]		3-6
BENG 525	Neural Engineering	
BENG 538	Medical Imaging	
BENG 541	Biomaterials	
BENG 550	Advanced Biomechanics	
Total Credits		9-14

1 Students will be assigned a second major course by the program on the basis of English language placement results upon arrival. The second major course will be assigned if student places into the equivalent of AE Level 6 (or higher) and the type of language support course will be adjusted accordingly.

2 BENG 525, 538, 541, and 550 can be taken in any order so it will depend on which ones are offered in a given semester.

The following grid is for the second semester of the standard, 2-semester pathway into the Master's of Science in Bioengineering degree:

Code	Title	Credits
Standard semester 2 of 2		
EAP 507	Graduate Communication in the Disciplines II	4
INYO 502	Graduate Transitions for International Students II	2
Language Support Course [1]		0
Required Major Courses: [2]		6

BENG 525	Neural Engineering	
BENG 538	Medical Imaging	
BENG 541	Biomaterials	
BENG 550	Advanced Biomechanics	
Total Credits		12

1 Continuing students may be required to take an additional language support course.

2 BENG 525, 538, 541, and 550 can be taken in any order so it will depend on which ones are offered in a given semester.

The following grid is for the single semester of the accelerated, 1-semester pathway into the Master's of Science in Bioengineering degree:

Code	Title	Credits
Accelerated semester 1 of 1		
EAP 508	Graduate Communication in the Disciplines III	4
INYO 504	Accelerated Graduate Transitions for International Students	3
Language Support Course [1]		0
Required Major Courses: [2]		6
BENG 525	Neural Engineering	
BENG 538	Medical Imaging	
BENG 541	Biomaterials	
BENG 550	Advanced Biomechanics	
Total Credits		13

1 One-semester (Accelerated) students will be placed into language support courses depending on their entrance test scores when they arrive.

2 BENG 525, 538, 541, and 550 can be taken in any order so it will depend on which ones are offered in a given semester.

The following grid is for the first semester of the Bridge, 2-semester pathway into the Master's of Science in Bioengineering degree for students with certain 3-year degrees:

Code	Title	Credits
Bridge semester 1 of 2		
EAP 506	Graduate Communication in the Disciplines I	4
INYO 501	Graduate Transitions for International Students I	2
Upper-level Undergraduate Mason Core Course [1]		3
Required Major Course: [2]		3
BENG 525	Neural Engineering	
BENG 538	Medical Imaging	
BENG 541	Biomaterials	
BENG 550	Advanced Biomechanics	
Total Credits		12

1 Bridge students will take two upper-level undergraduate Mason Core courses instead of or in addition to select Pathway and/or major courses, one in each semester of the pathway. These two courses substitute for a "fourth year" of undergraduate study as is required by American colleges and universities.

2 BENG 525, 538, 541, and 550 can be taken in any order so it will depend on which ones are offered in a given semester.

The following grid is for the second semester of the Bridge, 2-semester pathway into the Master's of Science in Bioengineering degree for students with certain 3-year degrees:

Code	Title	Credits
Bridge semester 2 of 2		
EAP 507	Graduate Communication in the Disciplines II	4
INYO 502	Graduate Transitions for International Students II	2
Upper-level Undergraduate Mason Core Course [1]		3
Required Major Course: [2]		3
BENG 525	Neural Engineering	
BENG 538	Medical Imaging	
BENG 541	Biomaterials	
BENG 550	Advanced Biomechanics	
Total Credits		12

1 Bridge students will take two upper-level undergraduate Mason Core courses instead of or in addition to select Pathway and/or major courses, one in each semester of the pathway. These two courses substitute for a "fourth year" of undergraduate study as is required by American colleges and universities.

2 BENG 525, 538, 541, and 550 can be taken in any order so it will depend on which ones are offered in a given semester.

INTO Mason: Health and Human Services Graduate Pathways

Requirements

Graduate International Pathways to master's degrees in Health and Human Services

INTO Mason provides five Graduate International Pathways for international students to enter various graduate degrees in the College of Health and Human Services (CHHS) at George Mason University. The pathways give students the academic foundation, essential language skills, and cultural knowledge to successfully move on to their master's degree programs. For most students, enrolling in a Graduate International Pathway will add one or two additional semesters to their overall master's degree program.

The following are the available Graduate International Pathways at INTO Mason to degrees in the College of Health and Human Services at GMU:

- Health Informatics
- Health Systems Management
- Nutrition
- Public Health
- Social Work

The following are the types of pathways available:

- **One Term pathways (Accelerated)**: These pathways lead students through their first semester of graduate school. Upon completion of all matriculation requirements, students will move on to their degree-seeking program often with several graduate credits completed as determined by the graduate degree program. Four of the five CHHS pathways have one-term options available (all except Social Work).
- **Two Term pathways (Standard)**: These pathways lead students through their first semester of graduate school. Upon completion of all matriculation requirements, students will move on to their degree-seeking program often with several graduate credits completed as determined by the graduate degree program. All five CHHS pathways have two-term options available.

Graduate International Pathways are designed for international students who:

- Need further English language development. Students who require a moderate amount of English language support can enter all available International Pathways to strengthen their language proficiency and ensure their long-term academic success
- Fall short of meeting the minimum GPA or admission test score requirements
- Need to improve study skills for success in their chosen field of study
- Any or all of the above

Administered through INTO Mason in partnership with the academic units across the university, the courses in each Graduate International Pathway are taught by highly qualified Mason instructional faculty members and supported by International Pathways academic advisors.

Students enrolled in any Graduate International Pathway should review the program's student guidebook for specific details related to program requirements and expectations.

INTO Mason: Humanities and Social Sciences Graduate Pathways

Banner Code: IN-MA-P001

Requirements

Graduate International Pathways to master's degrees in Humanities and Social Sciences

INTO Mason provides three Graduate International Pathways for international students to enter various graduate degrees in the College of Humanities and Social Sciences (CHSS) at George Mason University. The pathways give students the academic foundation, essential language skills, and cultural knowledge to successfully move on to their master's degree programs. For most students, enrolling in a Graduate International Pathway will add one or two additional semesters to their overall master's degree program.

The following are the available Graduate International Pathways at INTO Mason to degrees in the College of Humanities and Social Sciences at GMU:

- Economics
- Global Affairs
- Linguistics

The following are the types of pathways available:

- **One Term pathways (Accelerated)**: These pathways lead students through their first semester of graduate school. Upon completion of all matriculation requirements, students will move on to their degree-seeking program often with several graduate credits completed as determined by the graduate degree program. One CHSS pathways the one-term option available (Economics only).
- **Two Term pathways (Standard)**: These pathways lead students through their first year of graduate school. Upon completion of all matriculation requirements, students will move on to their degree-seeking program often with several graduate credits completed as determined by the graduate degree program. All CHSS pathways have two-term options available.
- **Bridge pathways**: These pathways provide foundational coursework designed to substitute for an additional year of undergraduate academic coursework, to render students with three-year baccalaureate degrees eligible to move on to their graduate degree program. Students will often move on to those degree-seeking programs with several graduate credits completed as determined by the graduate degree program. Two of the three pathways have Bridge options available (all except Linguistics).

Graduate International Pathways are designed for international students who:

- Need further English language development. Students who require a moderate amount of English language support can enter all available International Pathways to strengthen their language proficiency and ensure their long-term academic success
- Require a fourth year of undergraduate study. Students who hold three-year baccalaureate degrees that are not formally evaluated as equivalent to a four-year U.S. bachelor's degree may enter many Graduate International Pathways. For these students, their pathway acts as a "bridge" enhancing their international educational background with academic coursework to meet the eligibility for admission to a GMU graduate degree program
- Fall short of meeting the minimum GPA or admission test score requirements
- Need to improve study skills for success in their chosen field of study
- Any or all of the above

Administered through INTO Mason in partnership with the academic units across the university, the courses in each Graduate International Pathway are taught by highly qualified Mason instructional faculty members and supported by International Pathways academic advisors.

Students enrolled in any Graduate International Pathway should review the program's student guidebook for specific details related to program requirements and expectations.

Program Requirements

The following Graduate International Pathways are offered by INTO Mason in collaboration with George Mason University's College of Humanities and Social Sciences:

Economics Graduate Pathway

The following grid is for the first semester of the standard, 2-semester pathway into the Master of Arts in Economics degree:

Code	Title	Credits
Standard semester 1 of 2		
EAP 506	Graduate Communication in the Disciplines I	4
INYO 501	Graduate Transitions for International Students I	2
Language Support Course [1]		0-2
ECON 630	Mathematical Economics I [2]	3
Total Credits		9-11

1. Students will be assigned a second major course by the program on the basis of English language placement results upon arrival.
2. A degree in economics is not required but it is encouraged that applicants should have satisfactorily completed the following before enrolling in graduate courses: [1] Intermediate microeconomics (ECON 306), [2] Intermediate macroeconomics (ECON 311), [3] at least one semester of calculus (MATH 113 or equivalent), and [4] at least one semester of statistics (OM 210 or STAT 250 and STAT 350, or equivalent). Depending on the academic background of the student, s/he may be required to take one or more of these pre-requisite classes during the pathway, which will be determined in consultation with an advisor. Any pre-requisites taken will not count toward the MA in Economics degree.

The following grid is for the second semester of the standard, 2-semester pathway into the Master of Arts in Economics degree:

Code	Title	Credits
Standard semester 2 of 2		
EAP 507	Graduate Communication in the Disciplines II	4
INYO 502	Graduate Transitions for International Students II	2
Language Support Course [1]		0
Required Major Courses (students will take two of the following courses): [2]		6
ECON 535	Survey of Applied Econometrics	
ECON 615	Macroeconomic Theory	
ECON 5---	Economics Elective [3]	
ECON 6---	Economics Elective [3]	
Total Credits		12

1. Continuing students may be required to take an additional language support course.
2. A degree in economics is not required but it is encouraged that applicants should have satisfactorily completed the following before enrolling in graduate courses: [1] Intermediate microeconomics (ECON 306), [2] Intermediate macroeconomics (ECON 311), [3] at least one semester of calculus (MATH 113 or equivalent), and [4] at least one semester of statistics (OM 210 or STAT 250 and STAT 350, or equivalent). Depending on the academic background of the student, s/he may be required to take one or more of these pre-requisite classes, which will be determined in consultation with an advisor. Any pre-requisites taken will not count toward the MA in Economics degree.
3. ECON Electives will be chosen in consultation with advisors.

The following grid is for the single semester of the accelerated, 1-semester pathway into the Master of Arts in Economics degree:

Code	Title	Credits
Accelerated semester 1 of 1		
EAP 508	Graduate Communication in the Disciplines III	4
INYO 504	Accelerated Graduate Transitions for International Students	3
Required Major Courses (students will take two of the following courses): [1]		6
ECON 630	Mathematical Economics I	
ECON 611	Microeconomic Theory	
ECON 5---	Economics Elective [2]	
ECON 6---	Economics Elective [2]	
Total Credits		13

1. A degree in economics is not required but it is encouraged that applicants should have satisfactorily completed the following before enrolling in graduate courses: [1] Intermediate microeconomics (ECON 306), [2] Intermediate macroeconomics (ECON 311), [3] at least one semester of calculus (MATH 113 or equivalent), and [4] at least one semester of statistics (OM 210 or STAT 250 and STAT 350, or equivalent). Depending on the academic background of the student, s/he may be required to take one or more of these pre-requisite classes, which will be determined in consultation with an advisor. Any pre-requisites taken will not count toward the MA in Economics degree.
2. ECON Electives will be chosen in consultation with advisors.

The following grid is for the first semester of the Bridge, 2-semester pathway into the Master of Arts in Economics degree for students with certain 3-year degrees:

Code	Title	Credits
Bridge semester 1 of 2		
EAP 506	Graduate Communication in the Disciplines I	4
INYO 501	Graduate Transitions for International Students I	2
Upper-level Undergraduate Mason Core Course [1]		3
ECON 630	Mathematical Economics I [2]	3
Total Credits		12

1 Bridge students will take two upper-level undergraduate Mason Core courses instead of or in addition to select Pathway and/or major courses, one in each semester of the pathway. These two courses substitute for a "fourth year" of undergraduate study as is required by American colleges and universities.

2 A degree in economics is not required but it is encouraged that applicants should have satisfactorily completed the following before enrolling in graduate courses: [1] Intermediate microeconomics (ECON 306), [2] Intermediate macroeconomics (ECON 311), [3] at least one semester of calculus (MATH 113 or equivalent), and [4] at least one semester of statistics (OM 210 or STAT 250 and STAT 350, or equivalent). Depending on the academic background of the student, s/he may be required to take one or more of these pre-requisite classes, which will be determined in consultation with an advisor. Any pre-requisites taken will not count toward the MA in Economics degree.

The following grid is for the second semester of the Bridge, 2-semester pathway into the Master of Arts in Economics degree for students with certain 3-year degrees:

Code	Title	Credits
Bridge semester 2 of 2		
EAP 507	Graduate Communication in the Disciplines II	4
INYO 502	Graduate Transitions for International Students II	2
Upper-level Undergraduate Mason Core Course [1]		3
ECON 535	Survey of Applied Econometrics [2]	3
Total Credits		12

1 Bridge students will take two upper-level undergraduate Mason Core courses instead of or in addition to select Pathway and/or major courses, one in each semester of the pathway. These two courses substitute for a "fourth year" of undergraduate study as is required by American colleges and universities.

2 A degree in economics is not required but it is encouraged that applicants should have satisfactorily completed the following before enrolling in graduate courses: [1] Intermediate microeconomics (ECON 306), [2] Intermediate macroeconomics (ECON 311), [3] at least one semester of calculus (MATH 113 or equivalent), and [4] at least one semester of statistics (OM 210 or STAT 250 and STAT 350, or equivalent). Depending on the academic background of the student, s/he may be required to take one or more of these pre-requisite classes, which will be determined in consultation with an advisor. Any pre-requisites taken will not count toward the MA in Economics degree.

INTO Mason: Policy, Government and International Affairs Graduate Pathways

Requirements

Graduate International Pathways to master's degrees in the Schar School of Policy and Government

INTO Mason provides two Graduate International Pathways for international students to enter various graduate degrees in the Schar School of Policy and Government at George Mason University. The pathways give students the academic foundation, essential language skills, and cultural knowledge to successfully move on to their master's degree programs. For most students, enrolling in a Graduate International Pathway will add one or two additional semesters to their overall master's degree program.

The following are the available Graduate International Pathways at INTO Mason to degrees in the Schar School of Policy and Government at GMU:

- International Commerce and Policy
- Public Policy

The following is the type of pathway available:

- **Two Term pathways (Standard)**: These pathways lead students through their first year of graduate school. Upon completion of all matriculation requirements, students will move on to their degree-seeking program often with several graduate credits completed as determined by the graduate degree program. Both Schar School pathways have two-term options available.

Graduate International Pathways are designed for international students who:

- Need further English language development. Students who require a moderate amount of English language support can enter all available International Pathways to strengthen their language proficiency and ensure their long-term academic success
- Require a fourth year of undergraduate study. Students who hold three-year baccalaureate degrees that are not formally evaluated as equivalent to a four-year U.S. bachelor's degree may enter many Graduate International Pathways. For these students, their pathway acts as a "bridge" enhancing their international educational background with academic coursework to meet the eligibility for admission to a GMU graduate degree program
- Fall short of meeting the minimum GPA or admission test score requirements
- Need to improve study skills for success in their chosen field of study
- Any or all of the above

Administered through INTO Mason in partnership with the academic units across the university, the courses in each Graduate International Pathway are taught by highly qualified Mason instructional faculty members and supported by International Pathways academic advisors.

Students enrolled in any Graduate International Pathway should review the program's student guidebook for specific details related to program requirements and expectations.

INTO Mason: Science Graduate Pathways

Requirements

Graduate International Pathways to master's degrees in the College of Science

INTO Mason provides nine Graduate International Pathways for international students to enter various graduate degrees in the College of Science (COS) at George Mason University. The pathways give students the academic foundation, essential language skills, and cultural knowledge to successfully move on to their master's degree programs. For most students, enrolling in a Graduate International Pathway will add one or two additional semesters to their overall master's degree program.

The following are the available Graduate International Pathways at INTO Mason to degrees in the College of Science at GMU:

- Applied and Engineering Physics
- Bioinformatics and Computational Biology
- Bioinformatics Management
- Computational Science
- Earth Systems Science
- Environmental Science and Policy
- Forensic Science
- Geographic and Cartographic Sciences
- Mathematics

The following are the types of pathways available:

- **One Term pathways (Accelerated)**: These pathways lead students through their first semester of graduate school. Upon completion of all matriculation requirements, students will move on to their degree-seeking program often with several graduate credits completed as determined by the graduate degree program. Eight of the nine COS pathways have one-term options available.
- **Two Term pathways (Standard)**: These pathways lead students through their first semester of graduate school. Upon completion of all matriculation requirements, students will move on to their degree-seeking program often with several graduate credits completed as determined by the graduate degree program. All nine COS pathways have two-term options available.

Graduate International Pathways are designed for international students who:

- Need further English language development. Students who require a moderate amount of English language support can enter all available International Pathways to strengthen their language proficiency and ensure their long-term academic success
- Fall short of meeting the minimum GPA or admission test score requirements
- Need to improve study skills for success in their chosen field of study
- Any or all of the above

Administered through INTO Mason in partnership with the academic units across the university, the courses in each Graduate International Pathway are taught by highly qualified Mason instructional faculty members and supported by International Pathways academic advisors.

Students enrolled in any Graduate International Pathway should review the program's student guidebook for specific details related to program requirements and expectations.

INTO Mason: Visual and Performing Arts Graduate Pathways

Requirements

Graduate International Pathways to master's degrees in the College of Visual and Performing Arts

INTO Mason provides four Graduate International Pathways for international students to enter various graduate degrees in the College of Visual and Performing Arts (CVPA) at George Mason University. The pathways give students the academic foundation, essential language skills, and cultural knowledge to successfully move on to their master's degree programs. For most students, enrolling in a Graduate International Pathway will add one or two additional semesters to their overall master's degree program.

The following are the available Graduate International Pathways at INTO Mason to degrees in the College of Visual and Performing Arts at GMU:

- Arts Management
- Music

The following are the types of pathways available:

- **One Term pathways (Accelerated)**: These pathways lead students through their first semester of graduate school. Upon completion of all matriculation requirements, students will move on to their degree-seeking program often with several graduate credits completed as determined by the graduate degree program. The Music pathway has the one-term option available.
- **Two Term pathways (Standard)**: These pathways lead students through their first year of graduate school. Upon completion of all matriculation requirements, students will move on to their degree-seeking program often with several graduate credits completed as determined by the graduate degree program. Both CVPA pathways have two-term options available.
- **Bridge pathways**: These pathways provide foundational coursework designed to substitute for an additional year of undergraduate academic coursework, to render students with three-year baccalaureate degrees eligible to move on to their graduate degree program. Students will often move on to those degree-seeking programs with several graduate credits completed as determined by the graduate degree program. The Arts Management pathway only has the Bridge option available.

Graduate International Pathways are designed for international students who:

- Need further English language development. Students who require a moderate amount of English language support can enter all available

International Pathways to strengthen their language proficiency and ensure their long-term academic success

- Require a fourth year of undergraduate study. Students who hold three-year baccalaureate degrees that are not formally evaluated as equivalent to a four-year U.S. bachelor's degree may enter many Graduate International Pathways. For these students, their pathway acts as a "bridge" enhancing their international educational background with academic coursework to meet the eligibility for admission to a GMU graduate degree program
- Fall short of meeting the minimum GPA or admission test score requirements
- Need to improve study skills for success in their chosen field of study
- Any or all of the above

Administered through INTO Mason in partnership with the academic units across the university, the courses in each Graduate International Pathway are taught by highly qualified Mason instructional faculty members and supported by International Pathways academic advisors.

Students enrolled in any Graduate International Pathway should review the program's student guidebook for specific details related to program requirements and expectations.

Program Requirements

The following Graduate International Pathways are offered by INTO Mason in collaboration with George Mason University's College of Visual and Performing Arts:

Computer Game Design Graduate Pathway

The following grid is for the first semester of the standard, 2-semester pathway into the Master of Arts in Computer Game Design degree:

Code	Title	Credits
Standard semester 1 of 2		
EAP 506	Graduate Communication in the Disciplines I	4
INYO 501	Graduate Transitions for International Students I	2
Language Support Course [1]		0-2
One of the following GAME courses will likely be taken: [2,3]		3
GAME 610	Game Production	
GAME Course		
GAME 605	Game Design Graduate Seminar	1
Total Credits		10-12

1. Students will be assigned a language support course on the basis of English language placement results upon arrival.
2. There is no preferred degree for this pathway but evidence of computer programming knowledge in Python, Java, C, C#, or C++ (a minimum of 3 credits' worth) is preferred. If an applicant does not have this, they can take a computer programming course during their pathway.
3. A portfolio is required for admittance to this pathway displaying the applicant's skills in computer game design. Depending on the review of the portfolio by the Computer Game Design program, additional pre-requisite classes in Computer Game Design may be required.

The following grid is for the second semester of the standard, 2-semester pathway into the Master of Arts in Computer Game Design degree:

Code	Title	Credits
Standard semester 2 of 2		
EAP 507	Graduate Communication in the Disciplines II	4
INYO 502	Graduate Transitions for International Students II	2
Language Support Course [1]		0
Two of the following GAME Courses will likely be taken: [2,3]		6
GAME 610	Game Production	
GAME Class(es)		
GAME 605	Game Design Graduate Seminar	1
Total Credits		13

1. Continuing students may be required to take an additional language support course.
2. There is no preferred degree for this pathway but evidence of computer programming knowledge in Python, Java, C, C#, or C++ (a minimum of 3 credits' worth) is preferred. If an applicant does not have this, they can take a computer programming course during their pathway.
3. A portfolio is required for admittance to this pathway displaying the applicant's skills in computer game design. Depending on the review of the portfolio by the Computer Game Design program, additional pre-requisite classes in Computer Game Design may be required.

The following grid is for the single semester of the accelerated, 1-semester pathway into the Master of Arts in Computer Game Design degree:

Code	Title	Credits
Accelerated semester 1 of 1		
EAP 508	Graduate Communication in the Disciplines III	4
INYO 504	Accelerated Graduate Transitions for International Students	3
Two of the following GAME Courses will likely be taken: [2,3]		6
GAME 610	Game Production	
GAME Course(es)		
GAME 605	Game Design Graduate Seminar	1
Language Support Course [1]		0
Total Credits		14

1. Students will be assigned a language support course on the basis of English language placement results upon arrival.
2. There is no preferred degree for this pathway but evidence of computer programming knowledge in Python, Java, C, C#, or C++ (a minimum of 3 credits' worth) is preferred. If an applicant does not have this, they can take a computer programming course during their pathway.
3. A portfolio is required for admittance to this pathway displaying the applicant's skills in computer game design. Depending on the review of the portfolio by the Computer Game Design program, additional pre-requisite classes in Computer Game Design may be required.

The following grid is for the first semester of the Bridge, 2-semester pathway into the Master of Arts in Computer Game Design degree for students with certain 3-year degrees:

Code	Title	Credits
Bridge semester 1 of 2		
EAP 506	Graduate Communication in the Disciplines I	4
INYO 501	Graduate Transitions for International Students I	2
Upper-level Undergraduate Mason Core Course [1]		3
One GAME Course will likely be taken: [2,3]		3
GAME 610	Game Production	
GAME Course		
GAME 605	Game Design Graduate Seminar	1
Total Credits		13

1. Bridge students will take two upper-level undergraduate Mason Core courses instead of or in addition to select Pathway and/or major courses, one in each semester of the pathway. These two courses substitute for a "fourth year" of undergraduate study as is required by American colleges and universities.
2. There is no preferred degree for this pathway but evidence of computer programming knowledge in Python, Java, C, C#, or C++ (a minimum of 3 credits' worth) is preferred. If an applicant does not have this, they can take a computer programming course during their pathway.
3. A portfolio is required for admittance to this pathway displaying the applicant's skills in computer game design. Depending on the review of the portfolio by the Computer Game Design program, additional pre-requisite classes in Computer Game Design may be required.

The following grid is for the second semester of the Bridge, 2-semester pathway into the Master of Arts in Computer Game Design degree for students with certain 3-year degrees:

Code	Title	Credits
Bridge semester 2 of 2		
EAP 507	Graduate Communication in the Disciplines II	4
INYO 502	Graduate Transitions for International Students II	2
Upper-level Undergraduate Mason Core Course [1]		3
One of the following GAME Courses will likely be taken: [2,3]		3
GAME 610	Game Production	
GAME Course		
GAME 605	Game Design Graduate Seminar	1
Total Credits		13

1. Bridge students will take two upper-level undergraduate Mason Core courses instead of or in addition to select Pathway and/or major courses, one in each semester of the pathway. These two courses substitute for a "fourth year" of undergraduate study as is required by American colleges and universities.
2. There is no preferred degree for this pathway but evidence of computer programming knowledge in Python, Java, C, C#, or C++ (a minimum of 3 credits' worth) is preferred. If an applicant does not have this, they can take a computer programming course during their pathway.
3. A portfolio is required for admittance to this pathway displaying the applicant's skills in computer game design. Depending on the review of the portfolio by the Computer Game Design program, additional pre-requisite classes in Computer Game Design may be required.

MASON CORE

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Overview

The Mason Graduate is an Engaged Citizen and Well-Rounded Scholar who is Prepared to Act.

The Mason Core is Mason's general education program that builds the foundation for The Mason Graduate. All undergraduates seeking a baccalaureate degree must complete Mason Core requirements. The Mason Core provides a breadth of liberal education courses, complementing the depth of knowledge and skills they build in their majors and minors. Additional requirements for specific degree programs can be found in the college or school sections of this catalog.

The Mason Core prepares students for work in their majors and minors, for their careers, and for life-long learning. Foundation courses build key knowledge and skills needed for academic success. Exploration courses provide a breadth of learning across the university. Integration courses include upper-division courses that are designed to integrate knowledge and skills learned from Foundation and Exploration courses into the major. Courses are designed around learning outcomes that help develop the qualities we expect of all students graduating with a Bachelor's degree from George Mason University.

All undergraduates seeking a baccalaureate degree must complete Mason Core requirements. Additional requirements for specific degree programs can be found in the college or school sections of this catalog.

Note: The course list reflects approved courses as of press time. Please visit the Mason Core website (https://masoncore.gmu.edu/recently-approved-courses-2/) for the most recent list of courses as the list is update throughout the academic year. Students may also find these courses by searching by Mason Core attributes in Patriot Web during registration.

Foundation Requirements (12 credits)

Foundation requirements help ensure that students master the tools and techniques necessary to succeed in college and throughout their lives and careers. These courses emphasize skills—in writing, speaking, and working with numbers and technology—that can be applied to any major field of study and career goal.

Written Communication (3 credits, lower-level)

Learning Outcomes:

Students develop the ability to use written communication as a means of discovering and expressing ideas and meanings: in short, employing writing as a way of thinking. Students begin this process at the Foundation level in English 101 (100 for ESL students) and build higher-level skills at the Integration level in English 302. Writing will be emphasized in many courses throughout a student's career, and at least one course in every student's major is designated "writing intensive" (Integration level).

Required:

The following courses as well as an approved writing-intensive course in the major.

Code	Title	Credits
ENGH 100	Composition for Multilingual Writers (Mason Core)	4
ENGH 101	Composition (Mason Core)	3

Oral Communication (3 credits)

Learning Outcomes:

1. Students will demonstrate understanding of and proficiency in constructing and delivering multiple message types.
2. Students will understand and practice effective elements of ethical verbal and nonverbal communication.
3. Students will develop analytical skills and critical listening skills.
4. Students will understand the influence of culture in communication and will know how to cope with cultural differences when presenting information to an audience. Students develop the ability to use oral communication as a way of thinking and learning, as well as sharing ideas.

Required:

COMM 101 should be taken by all students unless their degree program specifies a different requirement. Students will be expected to continue developing oral communication skills in additional Mason Core courses as appropriate.

Code	Title	Credits
COMM 100	Public Speaking (Mason Core)	3
COMM 101	Fundamentals of Communication (Mason Core)	3
DANC 454	Methods of Teaching Dance (Mason Core)	3
INTS 101	Narratives of Identity (Mason Core)	6
INTS 202	Public Speaking and Critical Thinking Skills (Mason Core)	4

Quantitative Reasoning (3 credits)

Learning Outcomes:

1. Students are able to interpret quantitative information (i.e., formulas, graphs, tables, models, and schematics) and draw inferences from them.
2. Given a quantitative problem, students are able to formulate the problem quantitatively and use appropriate arithmetical, algebraic, and/or statistical methods to solve the problem.
3. Students are able to evaluate logical arguments using quantitative reasoning.
4. Students are able to communicate and present quantitative results effectively.

Required:

One approved course.

Code	Title	Credits
CDS 292	Introduction to Social Network Analysis (Mason Core)	3

EDRS 220	Introduction to Applied Quantitative Analysis (Mason Core)	3
HNRT 125	Applied Quantitative Reasoning (Mason Core)	3
MATH 106	Quantitative Reasoning (Mason Core)	3
MATH 108	Introductory Calculus with Business Applications (Mason Core)	3
MATH 110	Introductory Probability (Mason Core)	3
MATH 111	Linear Mathematical Modeling (Mason Core)	3
MATH 113	Analytic Geometry and Calculus I (Mason Core)	4
MATH 115	Analytic Geometry and Calculus I (Honors) (Mason Core)	4
MATH 124	Calculus with Algebra/Trigonometry, Part B (Mason Core)	3
MATH 125	Discrete Mathematics I (Mason Core)	3
MATH 272	Mathematics for the Elementary School Teachers II (Mason Core)	3
SOCI 313	Statistics for the Behavioral Sciences (Mason Core)	4
STAT 250	Introductory Statistics I (Mason Core)	3

Information Technology and Computing (3 credits)

Learning Outcomes:

Information technology and computing can significantly augment humans' ability to produce, consume, process, and communicate information. Thus, students need to understand ways to use such technology to enhance their lives, careers, and society, while being mindful of challenges such as security, source reliability, automation, and ethical implications. These factors have made it essential for students to understand how to effectively navigate the evolving technological landscape. IT courses offered in the majors may focus on disciplinary applications and concerns of information technology.

IT courses meet the following learning outcomes:

1. Students will understand the principles of information storage, exchange, security, and privacy and be aware of related ethical issues.
2. Students will become critical consumers of digital information; they will be capable of selecting and evaluating appropriate, relevant, and trustworthy sources of information.
3. Students can use appropriate information and computing technologies to organize and analyze information and use it to guide decision-making.
4. Students will be able to choose and apply appropriate algorithmic methods to solve a problem.

Required:

One approved 3-credit course that meets all IT requirements or an approved sequence of courses that meet all IT requirements.

Courses meeting IT requirements

Code	Title	Credits
ANTH 395	Work, Technology, and Society: An IT Perspective	3
AVT 110	Digital Design Studio	3
AVT 180	New Media in the Creative Arts	3
CDS 130	Computing for Scientists	3
CS 100	Principles of Computing	3
CS 112	Introduction to Computer Programming	4
CYSE 130	Introduction to Computing for Digital Systems Engineering	3
ELED 257	Integrating Technology in PreK-6	3
GOVT 300	Research Methods and Analysis	4
HIST 390	The Digital Past	3
INTS 203	Inquiry for Action: Facilitating Change (Mason Core)	6
INTS 249	Digital Literacy	4
IT 104	Introduction to Computing	3
MIS 303	Introduction to Business Information Systems	3
MUSI 259	Music in Computer Technology	3
PHYS 251	Introduction to Computer Techniques in Physics	3
SOCI 410	Social Surveys and Attitude and Opinion Measurements	3
SYST 130	Introduction to Computing for Digital Systems Engineering	3
The following must be taken in sequence:		
PSYC 300	Statistics in Psychology	4
PSYC 301	Research Methods in Psychology	4
PSYC 372	Biopsychology	3

Exploration Requirements (22 credits)

Exploration requirements help ensure that students become acquainted with the broad range of intellectual domains that contribute to a liberal education. By experiencing subject matter and ways of knowing in a variety of fields, students will be better able to synthesize new knowledge, respond to fresh challenges, and meet the demands of a complex world.

The course list reflects approved courses as of press time. See the most current list (https://masoncore.gmu.edu/recently-approved-courses-2/) for updates.

Note: Beginning Fall 2014, certain courses within the Mason Core can count for more than one category, if approved by the Mason Core committee. Students will be allowed to double count two courses (up to six credit hours) to fulfill their Mason Core requirements. Courses that qualify for double counting will be listed in their individually approved sections. Students may not double count credits in Oral Communication, Written Communication, or Quantitative Reasoning categories.

Arts (3 credits)

Mason courses in the film making, visual and performing arts stress generative, inquiry based learning through direct aesthetic and creative experience in the studio environment. Art history courses address the intrinsic relationship of personal and cultural creativity, and the manifestation of aesthetics, visual culture and visual narrative within historical contexts.

Learning Outcomes:

Students who successfully complete a course in the Arts category must meet the first learning outcome and a minimum of two of the remaining four learning outcomes:

1. Demonstrate an understanding of the relationship between artistic process, and a work's underlying concept, and where appropriate, contexts associated with the work.
2. Identify and analyze the formal elements of a particular art form using vocabulary and critique appropriate to that form.
3. Analyze cultural productions using standards appropriate to the form, as well as the works cultural significance and context.
4. Analyze and interpret the content of material or performance culture through its social, historical, and personal contexts.
5. Engage in generative artistic processes, including conception, creation, and ongoing critical analysis.

Required:
One approved course.

Code	Title	Credits
ARTH 101	Introduction to the Visual Arts (Mason Core)	3
ARTH 102	Symbols and Stories in Art (Mason Core)	3
ARTH 103	Introduction to Architecture (Mason Core)	3
ARTH 104	Design in the 20th Century (Mason Core)	3
ARTH 200	History of Western Art I (Mason Core)	3
ARTH 201	History of Western Art II (Mason Core)	3
ARTH 203	Survey of Asian Art (Mason Core)	3
ARTH 204	Survey of Latin American Art (Mason Core)	3
ARTH 206	Survey of African Art (Mason Core)	3
ARTH 311	Design of Cities (Mason Core)	3
ARTH 321	Greek Art and Archaeology (Mason Core)	3
ARTH 322	Roman Art and Archaeology (Mason Core)	3
ARTH 324	From Alexander the Great to Cleopatra: The Hellenistic World (Mason Core)	3
ARTH 333	Early Christian and Byzantine Art (Mason Core)	3
ARTH 334	Western Medieval Art (Mason Core)	3
ARTH 335	Arts of Medieval England (Mason Core)	3
ARTH 340	Early Renaissance Art in Italy, 1300-1500 (Mason Core)	3
ARTH 341	Northern Renaissance Art (Mason Core)	3
ARTH 342	High Renaissance Art in Italy, 1480-1570 (Mason Core)	3
ARTH 343	The Art of Venice (Mason Core)	3
ARTH 344	Baroque Art in Italy, France, and Spain, 1600-1750 (Mason Core)	3
ARTH 345	Northern Baroque Art, 1600-1750 (Mason Core)	3
ARTH 350	History of Photography (Mason Core)	3
ARTH 360	Nineteenth-Century European Art (Mason Core)	3
ARTH 362	Twentieth-Century European Art (Mason Core)	3
ARTH 370	Arts of the United States (Mason Core)	3
ARTH 371	American Architecture and Material Culture (Mason Core)	3
ARTH 372	Studies in 18th- and 19th-Century Art of the United States (Mason Core)	3
ARTH 373	Studies in 20th-Century Art of the United States (Mason Core)	3
ARTH 376	Twentieth-Century Latin American Art (Mason Core)	3
AVT 103	Introduction to the Artist's Studio (Mason Core)	3
AVT 104	Two-Dimensional Design and Color (Mason Core)	3
AVT 215	Typography (Mason Core)	3
AVT 222	Drawing I (Mason Core)	3
AVT 232	Painting I (Mason Core)	3
AVT 243	Printmaking I (Mason Core)	3
AVT 252	Darkroom Photography I (Mason Core)	3
AVT 253	Digital Photography I (Mason Core)	3
AVT 262	Sculpture I (Mason Core)	3
AVT 272	Interdisciplinary Arts (Mason Core)	3
AVT 385	EcoArt (Mason Core)	3
DANC 101	Dance Appreciation (Mason Core)	3
DANC 119	Dance in Popular Culture: Afro-Latino Dance (Mason Core)	3
DANC 125	Modern/Contemporary Dance I (Mason Core)	3
DANC 131	Beginning Jazz Technique (Mason Core)	3
DANC 145	Ballet I (Mason Core)	3
DANC 161	Beginning Tap Dance (Mason Core)	3
DANC 225	Modern/Contemporary Dance II (Mason Core)	3
DANC 231	Intermediate Jazz Technique (Mason Core)	3
DANC 245	Ballet II (Mason Core)	3
DANC 301	What is Dance? (Mason Core)	3
DANC 325	Modern/Contemporary Dance III (Mason Core)	1-3
DANC 331	Advanced Jazz Dance (Mason Core)	3
DANC 345	Ballet III (Mason Core)	1-3
DANC 390	Dance History I (Mason Core)	3
DANC 391	Dance History II (Mason Core)	3
DANC 425	Advanced Modern/Contemporary Dance I (Mason Core)	1-3
DSGN 102	Design in the Modern World (Mason Core)	3
ENGH 315	Folklore and Folklife (Mason Core)	3
ENGH 370	Introduction to Documentary (Mason Core)	3
ENGH 371	Television Studies (Mason Core)	3
ENGH 372	Introduction to Film (Mason Core)	3
ENGH 396	Introduction to Creative Writing (Mason Core)	3
FAVS 204	Ways of Seeing: Perception, Form and Film (Mason Core)	3
FAVS 225	Introduction to World Cinema (Mason Core)	3
FAVS 280	Writing for the Moving Image (Mason Core)	3
GAME 101	Introduction to Game Design (Mason Core)	3

INTS 103	Human Creativity: Science and Art (Mason Core)	6
INTS 245	Visual Culture and Society (Mason Core)	4
INTS 346	Art as Social Action (Mason Core)	4
MUSI 100	Fundamentals of Music (Mason Core)	3
MUSI 101	Introduction to Classical Music (Mason Core)	3
MUSI 102	Popular Music in America (Mason Core)	3
MUSI 106	Fundamentals of Rock, Blues, and Jazz (Mason Core)	3
MUSI 107	Jazz and Blues in America (Mason Core)	3
MUSI 280	Athletic and Ceremonial Ensemble (Mason Core)	0-1
MUSI 301	Music in Motion Pictures (Mason Core)	3
MUSI 302	American Musical Theater (Mason Core)	3
MUSI 380	Wind Symphony (Mason Core)	1
MUSI 381	University Chorale (Mason Core)	1
MUSI 382	Piano Ensemble (Mason Core)	1
MUSI 383	Symphonic Band (Mason Core)	1
MUSI 385	Chamber Singers (Mason Core)	1
MUSI 387	Symphony Orchestra (Mason Core)	1
MUSI 389	Jazz Ensemble (Mason Core)	1
MUSI 485	Chamber Ensembles (Mason Core)	1
PHIL 156	What Is Art? (Mason Core)	3
THR 101	Theatrical Medium (Mason Core)	3
THR 150	Greeks to Restoration (Mason Core)	3
THR 151	Romanticism to Present (Mason Core)	3
THR 210	Acting I (Mason Core)	3
THR 230	Fundamentals of Production (Mason Core)	3
THR 395	Theater as the Life of the Mind (Mason Core)	3
THR 411	Great Film Directors (Mason Core)	3
THR 412	Great Film Performances (Mason Core)	3

Global Understanding (3 credits)

Learning Outcomes:

The goal of the global understanding category is to help students see the world from multiple perspectives, reflect upon their positions in a global society, and be prepared for future engagement as global citizens. While it may include a historical perspective, global understanding courses focus primarily on a contemporary understanding of one's place in a global society.

Courses in this category must meet a minimum of three of the following learning outcomes:

1. Identify and articulate one's own values and how those values influence their interactions and relationships with others, both locally and globally.

2. Demonstrate understanding of how the patterns and processes of globalization make visible the interconnections and differences among and within contemporary global societies.

3. Demonstrate the development of intercultural competencies.

4. Explore individual and collective responsibilities within a global society through analytical, practical, or creative responses to problems or issues, using resources appropriate to the field.

Note: A student may also meet the Global Understanding requirement through a full-semester study abroad or 12-15 credit hour program; shorter-term study abroad courses must include and meet the learning outcomes listed below and be evaluated prior to departure.

Required:

One approved course.

Code	Title	Credits
ANTH 302	Peoples and Cultures of Latin America (Mason Core)	3
ANTH 307	Ancient Mesoamerica (Mason Core)	3
ANTH 308	Peoples and Cultures of the Middle East (Mason Core)	3
ANTH 309	Peoples and Cultures of India (Mason Core)	3
ANTH 312	Political Anthropology (Mason Core)	3
ANTH 313	Myth, Magic, and Mind (Mason Core)	3
ANTH 331	Refugees (Mason Core)	3
ANTH 332	Cross-Cultural Perspectives on Globalization (Mason Core)	3
ANTH 382	Urban Anthropology (Mason Core)	3
ARTH 319	Art and Archaeology of the Ancient Near East (Mason Core)	3
ARTH 320	Art of the Islamic World (Mason Core)	3
ARTH 382	Arts of India (Mason Core)	3
ARTH 383	Arts of Southeast Asia (Mason Core)	3
ARTH 384	Arts of China (Mason Core)	3
ARTH 385	Arts of Japan (Mason Core)	3
ARTH 386	The Silk Road (Mason Core)	3
BUS 200	Global Environment of Business (Mason Core)	3
CEIE 100	Environmental Engineering around the World (Mason Core)	3
CEIE 497	Applied Engineering Abroad (Mason Core)	3
COMM 305	Foundations of Intercultural Communication (Mason Core)	3
COMM 456	Comparative Mass Media (Mason Core)	3
CONF 340	Global Conflict Analysis and Resolution (Mason Core)	3
CRIM 405	Law and Justice around the World (Mason Core)	3
DANC 118	World Dance (Mason Core)	3
DANC 318	Global Perspectives: World Dance Forms (Mason Core)	3
DANC 418	Global Dance Intensive (Mason Core)	3
ECON 360	Economics of Developing Areas (Mason Core)	3
ECON 361	Economic Development of Latin America (Mason Core)	3
ECON 362	African Economic Development (Mason Core)	3
ECON 380	Economies in Transition (Mason Core)	3

EDSE 204	Disability in a Global Society (Mason Core)	3
ENGH 362	Global Voices (Mason Core)	3
ENGH 366	The Idea of a World Literature (Mason Core)	3
ENGR 398	Applied Engineering Abroad (Mason Core)	3
EVPP 381	Nature and Culture in Global Wetlands (Mason Core)	4
FAVS 300	Global Horror Film (Mason Core)	3
FAVS 320	Afrofuturism and Their Kin (Mason Core)	3
FRLN 331	Contexts for Global Cinema (Mason Core)	3
GCH 205	Global Health (Mason Core)	3
GGS 101	Major World Regions (Mason Core)	3
GGS 317	Geography of China (Mason Core)	3
GLOA 101	Introduction to Global Affairs (Mason Core)	3
GOVT 132	Introduction to International Politics (Mason Core)	3
GOVT 133	Introduction to Comparative Politics (Mason Core)	3
HIST 251	Survey of East Asian History (Mason Core)	3
HIST 252	Survey of East Asian History (Mason Core)	3
HIST 261	Survey of African History (Mason Core)	3
HIST 262	Survey of African History (Mason Core)	3
HIST 271	Survey of Latin American History (Mason Core)	3
HIST 272	Survey of Latin American History (Mason Core)	3
HIST 281	Survey of Middle Eastern Civilization (Mason Core)	3
HIST 282	Survey of Middle Eastern Civilization (Mason Core)	3
HIST 328	Rise of Russia (Mason Core)	3
HIST 329	Modern Russia and the Soviet Union (Mason Core)	3
HIST 354	Modern China (Mason Core)	3
HIST 356	Modern Japan (Mason Core)	3
HIST 357	Postwar Japan (Mason Core)	3
HIST 358	Post-1949 China (Mason Core)	3
HIST 360	History of South Africa (Mason Core)	3
HIST 364	Revolution and Radical Politics in Latin America (Mason Core)	3
HIST 365	Conquest and Colonization in Latin America (Mason Core)	3
HIST 384	Global History of Christianity (Mason Core)	3
HIST 387	Topics in Global History (Mason Core)	3-6
HIST 460	Modern Iran (Mason Core)	3
HIST 462	Women in Islamic Society (Mason Core)	3
INTS 102	Global Networks and Communities (Mason Core)	6
INTS 303	Introduction to International Studies (Mason Core)	3
INTS 315	Spirituality and Conflict Transformation (Mason Core)	6
INTS 390	International Internship (Mason Core)	1-6
INTS 406	Global Leadership (Mason Core)	3
INTS 416	Refugee and Internal Displacement (Mason Core)	3
INYO 105	American Cultures (Mason Core)	3
JAPA 310	Japanese Culture in a Global World (Mason Core)	3
MBUS 305	Introduction to International Business (Mason Core)	3
MUSI 103	Musics of the World (Mason Core)	3
MUSI 431	Music History in Society III (Mason Core)	3
PHIL 243	Global Environmental Ethics (Mason Core)	3
PROV 150	International Experience: Global Understanding (Mason Core)	0
PSYC 379	Applied Cross-Cultural Psychology (Mason Core)	3
RELI 100	The Human Religious Experience (Mason Core)	3
RELI 211	Religions of the West (Mason Core)	3
RELI 212	Religions of Asia (Mason Core)	3
RELI 313	Hinduism (Mason Core)	3
RELI 315	Buddhism (Mason Core)	3
RELI 320	Religion and Revolution in Latin America (Mason Core)	3
RELI 322	Religions of Africa (Mason Core)	3
RELI 341	Global Perspectives on Spirituality and Healing (Mason Core)	3
RELI 370	Judaism (Mason Core)	3
RELI 374	Islamic Thought (Mason Core)	3
RELI 384	Global History of Christianity (Mason Core)	3
RUSS 354	Contemporary Post-Soviet Life (Mason Core)	3
SOCI 120	Globalization and Society (Mason Core)	3
SOCI 320	Globalization and Social Change (Mason Core)	3
SOCI 330	US Immigrants and Immigration (Mason Core)	3
SOCI 332	The Urban World (Mason Core)	3
SPAN 212	Intermediate Spanish II: Local and Global Contexts (Mason Core)	3
SPAN 322	Introduction to Latin American Culture (Mason Core)	3
SPAN 466	Latin American Civilization and Culture (Mason Core)	3
SYST 202	Engineering Systems in a Complex World (Mason Core)	3
SYST 497	Applied Engineering Abroad (Mason Core)	3
THR 359	World Stages (Mason Core)	3
TOUR 210	Global Understanding through Travel and Tourism (Mason Core)	3

UNIV 381	Foundations for Building a Just Society (Mason Core)	3
WMST 100	Global Representations of Women (Mason Core)	3

Literature (3 credits)

Learning Outcomes:

1. Students will be able to read for comprehension, detail, and nuance.
2. Identify the specific literary qualities of language as employed in the texts they read.
3. Analyze the ways specific literary devices contribute to the meaning of a text.
4. Identify and evaluate the contribution of the social, political, historical, and cultural contexts in which a literary text is produced.
5. Evaluate a critical argument in others' writing as well as one's own.

Required:

One approved course.

Code	Title	Credits
ARAB 325	Major Arab Writers/Stories (Mason Core)	3
CHIN 310	Survey of Chinese Literature (Mason Core)	3
CHIN 311	Modern Chinese Literature in Translation (Mason Core)	3
CHIN 325	Major Chinese Writers (Mason Core)	3
CHIN 328	Asian American Women Writers (Mason Core)	3
CLAS 250	Classical Mythology (Mason Core)	3
CLAS 260	The Legacy of Greece and Rome (Mason Core)	3
CLAS 340	Greek and Roman Epic (Mason Core)	3
CLAS 350	Greek and Roman Tragedy (Mason Core)	3
CLAS 360	Greek and Roman Comedy (Mason Core)	3
CLAS 380	Greek and Roman Novels (Mason Core)	3
ELED 258	Children's Literature for Teaching in Diverse Settings (Mason Core)	3
ENGH 201	Reading and Writing about Texts (Mason Core)	3
ENGH 202	Texts and Contexts (Mason Core)	3
ENGH 203	Western Literary Tradition (Mason Core)	3
ENGH 204	Western Literary Traditions (Mason Core)	3
FREN 325	Major French Writers (Topic Varies) (Mason Core)	3
FREN 329	Problems of Western Civilization in French Literature (Mason Core)	3
FRLN 330	Topics in World Literature (Mason Core)	3
GERM 325	Major Writers (Mason Core)	3
HIST 334	American Scriptures (Mason Core)	3
INTS 101	Narratives of Identity (Mason Core)	6
ITAL 320	Topics in Italian Film and Literature (Mason Core)	3
ITAL 325	Major Italian Writers (Mason Core)	3
JAPA 340	Topics in Japanese Literature (Mason Core)	3
KORE 311	Modern Korean Literature in Translation (Mason Core)	3
PHIL 253	Philosophy and Literature (Mason Core)	3
RELI 235	Religion and Literature (Mason Core)	3
RELI 271	The Bible as Literature (Mason Core)	3
RELI 333	Spiritual Autobiography (Mason Core)	3
RUSS 325	Major Russian Writers (Mason Core)	3
RUSS 326	A Survey of Russian Literature (Mason Core)	3
RUSS 327	A Survey of Russian Literature (Mason Core)	3
SPAN 325	Major Hispanic Writers (Mason Core)	3

Natural Science (7 credits total)

The Mason Core natural sciences courses engage students in scientific exploration; foster their curiosity; enhance their enthusiasm for science; and enable them to apply scientific knowledge and reasoning to personal, professional and public decision-making. Lab courses must meet all five learning outcomes. Non-lab courses must meet learning outcomes 1 through 4.

Learning Outcomes:

1. Understand how scientific inquiry is based on investigation of evidence from the natural world, and that scientific knowledge and understanding: a) evolves based on new evidence, and b) differs from personal and cultural beliefs.
2. Recognize the scope and limits of science.
3. Recognize and articulate the relationship between the natural sciences and society and the application of science to societal challenges (e.g., health, conservation, sustainability, energy, natural disasters, etc.).
4. Evaluate scientific information (e.g., distinguish primary and secondary sources, assess credibility and validity of information).
5. Participate in scientific inquiry and communicate the elements of the process, including: a) making careful and systematic observations, b) developing and testing a hypothesis, c) analyzing evidence, and d) Interpreting results.

Required:

Two approved science courses. At least one course will include laboratory experience.

Note: PHYS 170/270 when accompanied by PHYS 161/261 can be used to fulfill a 4-credit lab science requirement.

Non-lab (3 credits)

Code	Title	Credits
ANTH 135	Introduction to Biological Anthropology (Mason Core)	3
ASTR 103	Astronomy (Mason Core)	3
ASTR 111	The Solar System (Mason Core)	3
ASTR 113	Stars, Galaxies, and the Universe (Mason Core)	3
ASTR 302	Foundations of Cosmological Thought (Mason Core)	3
ASTR 303	Black Holes (Mason Core)	3
BIOL 103	Introductory Biology II-Survey of Cell and Molecular Biology (Mason Core)	3
BIOL 107	Intro Biology II Lecture (Mason Core)	3

BIOL 140	Plants and People (Mason Core)	3
CDS 101	Introduction to Computational and Data Sciences (Mason Core)	3
CHEM 101	Introduction to Modern Chemistry (Mason Core)	3
CHEM 102	Chemistry for Changing Times (Mason Core)	3
CHEM 271	General Chemistry for Engineers Lecture (Mason Core)	3
CLIM 101	Global Warming: Weather, Climate, and Society (Mason Core)	3
CLIM 111	Introduction to the Fundamentals of Atmospheric Science (Mason Core)	3
COS 301	Great Ideas in Science (Mason Core)	3
EVPP 108	Ecosphere - Introduction to Environmental Science I-Lecture (Mason Core)	3
EVPP 112	Ecosphere: Introduction to Environmental Science II-Lecture (Mason Core)	3
EVPP 201	Environment and You: Issues for the Twenty-First Century (Mason Core)	3
FRSC 101	Principles of Forensic Science (Mason Core)	3
GEOL 102	Historical Geology (Mason Core)	3
GEOL 134	Evolution and Extinction (Mason Core)	3
GGS 102	Physical Geography (Mason Core)	3
INTS 103	Human Creativity: Science and Art (Mason Core)	6
INTS 211	Introduction to Conservation Studies (Mason Core)	3-6
INTS 301	Science in the News (Mason Core)	3
NEUR 101	Introduction to Neuroscience (Mason Core)	3
NUTR 295	Introduction to Nutrition (Mason Core)	3
PHYS 106	The Quantum World: A Continuous Revolution in What We Know and How We Live (Mason Core)	3
PHYS 111	Introduction to the Fundamentals of Atmospheric Science (Mason Core)	3
PHYS 160	University Physics I (Mason Core)	3
PHYS 170	Introductory and Modern Physics I (Mason Core)	3
PHYS 243	College Physics I (Mason Core)	3
PHYS 245	College Physics II (Mason Core)	3
PHYS 260	University Physics II (Mason Core)	3
PHYS 262	University Physics III (Mason Core)	3
PHYS 270	Introductory and Modern Physics II (Mason Core)	3

Lab (4 credits)

Code	Title	Credits
ASTR 111	The Solar System (Mason Core)	3
ASTR 112	The Solar System Lab (Mason Core)	1
ASTR 113	Stars, Galaxies, and the Universe (Mason Core)	3
ASTR 114	Stars, Galaxies, and the Universe Lab (Mason Core)	1
ASTR 115	Finding New Worlds (Mason Core)	4
BIOL 102	Introductory Biology I-Survey of Biodiversity and Ecology (Mason Core)	4
BIOL 105	Introductory Biology II Laboratory (Mason Core)	1
BIOL 106	Introductory Biology II Laboratory (Mason Core)	1
BIOL 213	Cell Structure and Function (Mason Core)	4
CDS 101	Introduction to Computational and Data Sciences (Mason Core)	3
CDS 102	Introduction to Computational and Data Sciences Lab (Mason Core)	1
CHEM 103	Chemical Science in a Modern Society (Mason Core)	4
CHEM 104	Chemistry for Changing Times (Mason Core)	4
CHEM 155	Introduction to Environmental Chemistry I (Mason Core)	4
CHEM 156	Introduction to Environmental Chemistry II (Mason Core)	4
CHEM 211	General Chemistry I (Mason Core)	3
CHEM 212	General Chemistry II (Mason Core)	3
CHEM 213	General Chemistry Laboratory I (Mason Core)	1
CHEM 214	General Chemistry Laboratory II (Mason Core)	1
CHEM 271	General Chemistry for Engineers Lecture (Mason Core)	3
CHEM 272	General Chemistry for Engineers Lab (Mason Core)	1
CLIM 102	Introduction to Global Climate Change Science (Mason Core)	4
CLIM 111	Introduction to the Fundamentals of Atmospheric Science (Mason Core)	3
CLIM 112	Introduction to the Fundamentals of Atmospheric Science Lab (Mason Core)	1
EVPP 108	Ecosphere - Introduction to Environmental Science I-Lecture (Mason Core)	3
EVPP 109	Ecosphere- Introduction to Environmental Science I- Lab (Mason Core)	1
EVPP 112	Ecosphere: Introduction to Environmental Science II-Lecture (Mason Core)	3
EVPP 113	Ecosphere: Introduction to Environmental Science II–Lab (Mason Core)	1
GEOL 101	Introductory Geology I (Mason Core)	4
GEOL 102	Historical Geology (Mason Core)	3
GEOL 104	Historical Geology Laboratory (Mason Core)	1
GGS 121	Dynamic Atmosphere and Hydrosphere (Mason Core)	4
INTS 210	Sustainable World (Mason Core)	4
INTS 311	The Mysteries of Migration: Consequences for Conservation (Mason Core)	6
INTS 401	Conservation Biology (Mason Core)	6
INTS 403	Conservation Behavior (Mason Core)	6

PHYS 103	Physics and Everyday Phenomena I (Mason Core)	4
PHYS 104	Physics and Everyday Phenomena II (Mason Core)	4
PHYS 111	Introduction to the Fundamentals of Atmospheric Science (Mason Core)	3
PHYS 112	Introduction to the Fundamentals of Atmospheric Science Lab (Mason Core)	1
PHYS 160	University Physics I (Mason Core)	3
PHYS 161	University Physics I Laboratory (Mason Core)	1
PHYS 170	Introductory and Modern Physics I (Mason Core)	3
PHYS 243	College Physics I (Mason Core)	3
PHYS 244	College Physics I Lab (Mason Core)	1
PHYS 245	College Physics II (Mason Core)	3
PHYS 246	College Physics II Lab (Mason Core)	1
PHYS 260	University Physics II (Mason Core)	3
PHYS 261	University Physics II Laboratory (Mason Core)	1
PHYS 262	University Physics III (Mason Core)	3
PHYS 263	University Physics III Laboratory (Mason Core)	1
PHYS 270	Introductory and Modern Physics II (Mason Core)	3

Social and Behavioral Sciences (3 credits)

Learning Outcomes:

The following three learning outcomes are required goals of disciplinary or interdisciplinary courses:

1. Explain how individuals, groups or institutions are influenced by contextual factors;
2. Demonstrate awareness of changes in social and cultural constructs;
3. Use appropriate methods and resources to apply social and behavioral science concepts, terminology, principles and theories in the analysis of significant human issues, past or present.

Required:

One approved course.

Code	Title	Credits
AFAM 200	Introduction to African American Studies (Mason Core)	3
ANTH 114	Introduction to Cultural Anthropology (Mason Core)	3
ANTH 120	Unearthing the Past: Prehistory, Culture and Evolution (Mason Core)	3
ANTH 121	People of the Earth: Humanity's First Five Million Years (Mason Core)	3
ANTH 135	Introduction to Biological Anthropology (Mason Core)	3
ANTH 363	Humans, Disease, and Death (Mason Core)	3
ANTH 396	Issues in Anthropology: Social Sciences (Mason Core)	3
BUS 100	Business and Society (Mason Core)	3
CONF 101	Conflict and Our World (Mason Core)	3
CONS 410	Human Dimensions in Conservation (Mason Core)	3
CRIM 100	Introduction to Criminal Justice (Mason Core)	3
ECON 100	Economics for the Citizen (Mason Core)	3
ECON 103	Contemporary Microeconomic Principles (Mason Core)	3
ECON 104	Contemporary Macroeconomic Principles (Mason Core)	3
ECON 105	Environmental Economics for the Citizen (Mason Core)	3
ECON 367	Money, Markets, and Economic Policy (Mason Core)	3
EDEP 350	Perspectives on Achievement Motivation (Mason Core)	3
EDSE 203	Disability in American Culture (Mason Core)	3
EDUC 200	Introduction to Education: Teaching, Learning and Schools (Mason Core)	3
EDUC 203	Disability in American Culture (Mason Core)	3
GCH 325	Stress and Well-Being (Mason Core)	3
GGS 103	Human Geography (Mason Core)	3
GGS 301	Political Geography (Mason Core)	3
GOVT 101	Democratic Theory and Practice (Mason Core)	3
GOVT 103	Introduction to American Government (Mason Core)	3
GOVT 367	Money, Markets and Economic Policy (Mason Core)	3
HDFS 200	Individual and Family Development (Mason Core)	3
HEAL 230	Introduction to Health Behavior (Mason Core)	3
HIST 121	Formation of the American Republic (Mason Core)	3
HIST 122	Development of Modern America (Mason Core)	3
INTS 203	Inquiry for Action: Facilitating Change (Mason Core)	6
INTS 300	Law and Justice (Mason Core)	3
INTS 304	Social Movements and Community Activism (Mason Core)	4
INTS 316	Introduction to Childhood Studies (Mason Core)	4
INTS 317	Issues in Family Relationships (Mason Core)	4
INTS 319	Contemporary Youth Studies (Mason Core)	3
INTS 320	Construction of Differences: Race, Class, and Gender (Mason Core)	6
INTS 321	Parent-Child Relations (Mason Core)	3
INTS 331	The Nonprofit Sector (Mason Core)	4
INTS 334	Environmental Justice (Mason Core)	4

INTS 336	Poverty, Wealth and Inequality in the US (Mason Core)	3
INTS 347	Gender Representation in Popular Culture (Mason Core)	3-6
INTS 361	Neighborhood, Community, and Identity (Mason Core)	3-6
INTS 362	Social Justice and Human Rights (Mason Core)	3
INTS 371	Food Systems and Policy (Mason Core)	3
INTS 436	Social Justice Education (Mason Core)	4
INTS 437	Critical Race Studies (Mason Core)	3
INTS 438	Representations of Race (Mason Core)	4
LING 100	Human Language (Mason Core)	3
LING 306	General Linguistics (Mason Core)	3
PSYC 100	Basic Concepts in Psychology (Mason Core)	3
PSYC 211	Developmental Psychology (Mason Core)	3
PSYC 231	Social Psychology (Mason Core)	3
SOCI 101	Introductory Sociology (Mason Core)	3
SOCI 308	Race and Ethnicity in a Changing World (Mason Core)	3
SOCI 315	Contemporary Gender Relations (Mason Core)	3
SOCI 352	Social Problems and Solutions (Mason Core)	3
SOCI 355	Social Inequality (Mason Core)	3
SOCI 360	Youth Culture and Society (Mason Core)	3
SOCI 371	The Individual and Society (Mason Core)	3
SOCW 200	Introduction to Social Work (Mason Core)	3
TOUR 311	Women and Tourism (Mason Core)	3
UNIV 381	Foundations for Building a Just Society (Mason Core)	3
WMST 200	Introduction to Women and Gender Studies (Mason Core)	3

Western Civilization/World History (3 credits)

Learning Outcomes:

Courses must meet at least three of the five learning outcomes.

1. Demonstrate familiarity with the major chronology of Western civilization or world history.
2. Demonstrate the ability to narrate and explain long-term changes and continuities in Western civilization or world history.
3. Identify, evaluate, and appropriately cite online and print resources.
4. Develop multiple historical literacies by analyzing primary sources of various kinds (texts, images, music) and using these sources as evidence to support interpretation of historical events.
5. Communicate effectively— through speech, writing, and use of digital media—their understanding of patterns, process, and themes in the history of Western civilization or the world.

Required:

One approved course.

Code	Title	Credits
HIST 100	History of Western Civilization (Mason Core)	3
HIST 125	Introduction to World History (Mason Core)	3
INTS 102	Global Networks and Communities (Mason Core)	6

Transfer students may substitute one of the following for HIST 100 History of Western Civilization (Mason Core)

Code	Title	Credits
HIST 101	Foundations of Western Civilization	3
HIST 102	Development of Western Civilization	3
HIST 301	Classical Greece	3
HIST 302	Classical Rome	3
HIST 304	Western Europe in the Middle Ages	3
HIST 305	The Renaissance	3
HIST 306	The Reformation	3
HIST 308	Nineteenth-Century Europe	3
HIST 309	Europe in Crisis: 1914-1948	3
HIST 312	Nationalism in Eastern Europe	3
HIST 314	History of Germany	3
HIST 322	Modern Britain	3
HIST 388	Topics in European History	3
HIST 436	European Society and Culture: 19th and 20th Centuries	3

Transfer students may substitute one of the following for HIST 125 Introduction to World History (Mason Core)

Code	Title	Credits
HIST 202	Freshman/Sophomore Seminar in Global History	3
HIST 387	Topics in Global History (Mason Core)	3-6

Integration Requirements (9 credits)

Written Communication (3 credits, upper-level)

Learning Outcomes:

Students develop the ability to use written communication as a means of discovering and expressing ideas and meanings: in short, employing writing as a way of thinking. Students begin this process at the Foundation level in ENGH 101 Composition (Mason Core) (ENGH 100 Composition for Multilingual Writers (Mason Core) for ESL students) and build higher-level skills at the Integration level in ENGH 302 Advanced Composition (Mason Core). Writing will be emphasized in many courses throughout a student's career, and at least one course in every student's major is designated "writing intensive" (Integration level).

Required:

The following course as well as an approved writing-intensive course in the major.

Code	Title	Credits
ENGH 302	Advanced Composition (Mason Core)	3

Writing-Intensive Course Requirement (usually 3 credits)

As part of the university's commitment to student writers in all undergraduate programs, at least one upper-division course in each major has been designated as fulfilling the "writing intensive" (WI) requirement.

The following courses have been approved to meet the writing-intensive requirement.

NOTE: students MUST select the course approved for their major. See specific degree program for details.

Code	Title	Credits
ACCT 461	Assurance and Audit Services	3
ACCT 493	Financial Planning and Wealth Management Capstone	3
ANTH 490	Theories, Methods, and Issues II	3
ARAB 331	Reading and Conversation II	3
ARTH 400	Historiography and Methods of Research in Art History (Topic Varies)	3
ARTH 420	Advanced Studies in Ancient Art	3
ARTH 430	Advanced Studies in Medieval or Islamic Art	3
ARTH 440	RS: Advanced Studies in Renaissance and Baroque Art	3
ARTH 460	RS: Advanced Studies in 20th-Century European Art	3
ARTH 471	Advanced Studies in Art of the United States	3
ARTH 472	RS: Advanced Studies in 20th-Century Latin American Art	3
ARTH 474	Advanced Studies in Contemporary Art	3
ARTH 482	RS: Advanced Studies in Asian Art	3
ARTH 490	Independent Study in Art History	3
ARTH 491	Independent Study in Art History	3
ARTH 492	Honors Directed Readings	3
ARTH 493	Honors Directed Research	3
ARTH 495	RS: Objects and Archives in Art History	3
ARTH 499	Advanced Studies in Art History	3
ASTR 402	RS: Methods of Observational Astronomy (Mason Core)	4
AVT 395	Writing for Artists	3
AVT 396	Writing for Designers	3
BENG 360	Biomedical Imaging	3
BIOL 308	Foundations of Ecology and Evolution	5
BIOL 338	Lab for Fundamentals of Ecology and Evolution	2
BIS 390	The Research Process	3
CDS 302	Scientific Data and Databases	3
CEIE 301	Engineering and Economic Models in Civil Engineering	3
CHEM 336	Physical Chemistry Lab I	2
CHEM 465	Biochemistry Lab	2
CHIN 480	Fourth-Year Chinese I	3
CLIM 408	Senior Research	3
COMM 300	Rhetorical Theory and Criticism	3
CONF 302	Culture, Identity, and Conflict	3
CRIM 495	Capstone in Criminology, Law and Society (Mason Core)	3
CS 306	Synthesis of Ethics and Law for the Computing Professional (Mason Core)	3
CS 321	Software Engineering	3
CYSE 491	Engineering Senior Seminar	3
DANC 390	Dance History I (Mason Core)	3
DANC 391	Dance History II (Mason Core)	3
ECE 333	Linear Electronics I	3
ECE 491	Engineering Seminar	1
ECED 411	Assessment of Diverse Young Learners	3
ECON 355	The Political Economy of Nonprofit Institutions	3
ECON 365	Topics in Economic History	3
ECON 395	Effective Writing in Economics	3
ECON 435	Economics of Energy	3
ECON 470	Economics of Regulation	3
ECON 485	Smithian Political Economy I	3
EDSE 452	Intersectionality and Disability	3
ELED 459	Research and Assessment in Elementary Education	3
ENGH 305	Dimensions of Writing and Literature	3
EVPP 337	Environmental Policy Making in Developing Countries	3
FAVS 304	Ways of Thinking: Film, TV, and Beyond	3
FAVS 380	TV Writing	3
FAVS 496	Advanced Visual Storytelling (Mason Core)	3
FAVS 498	Development for Senior Project	3
FNAN 477	Student Managed Investment Fund	3
FNAN 493	Financial Planning and Wealth Management Capstone	3
FNAN 498	RS: Contemporary Topics in Finance	3
FREN 309	Reading and Writing Skills Development	3
FRSC 302	Forensic Trace Analysis	3
FRSC 304	Forensic Chemistry	3
GAME 332	RS: Story Design for Computer Games	3
GCH 411	Health Program Planning and Evaluation	3
GCH 465	Community Health Capstone (Mason Core)	3
GEOL 305	Environmental Geology	3
GEOL 317	Geomorphology	4
GEOL 334	Vertebrate Paleontology	4
GGS 415	Seminar in Geographic Thought and Methodology	3
GOVT 490	Synthesis Seminar (Mason Core)	3
GOVT 491	Honors Seminar (Mason Core)	3
HAP 465	Integration of Professional Skills and Issues (Mason Core)	3
HDFS 401	Family Law and Public Policy	3
HIST 300	Introduction to Historical Method (Mason Core)	3
HIST 499	RS: Senior Seminar in History (Mason Core)	3
INTS 311	The Mysteries of Migration: Consequences for Conservation (Mason Core)	6
INTS 334	Environmental Justice (Mason Core)	4

INTS 337	Social Justice Consciousness and Action	3
INTS 391	Understanding Integrative Studies	3
INTS 491	The Senior Capstone Experience	3
INTS 492	Graduation Portfolio	0
INTS 498	Experiential Learning	1-15
IT 343	IT Project Management	3
KINE 450	Research Methods	3
KORE 370	Advanced Korean Writing	3
LAS 499	Research Seminar in Latin American Studies (Mason Core)	3
MATH 300	Introduction to Advanced Mathematics	3
ME 444	Mechanical Design II (Mason Core)	3
MGMT 313	Organizational Behavior	3
MIS 330	Systems Analysis and Design	3
MIS 431	Data Mining for Business Applications	3
MKTG 471	Marketing Management	3
MLAB 300	Science Writing	2
MUSI 332	Music History in Society II	3
MUSI 438	Music History in Society B	3
NEUR 410	Current Topics in Neuroscience	3
NEUR 411	Seminar in Neuroscience	3
NURS 465	Examination and Integration of Professional and Health Care Issues (Mason Core)	3
NUTR 326	Food Systems	3
OM 456	Quality Management	3
OSCM 456	Quality Management	3
PHED 340	Social and Cultural Issues in Physical Education	3
PHIL 421	Seminar (Mason Core)	3
PHIL 422	Honors Seminar (Mason Core)	3
PHYS 407	Senior Laboratory in Modern Physics (Mason Core)	4
PHYS 410	Computational Physics Capstone (Mason Core)	4
PSYC 301	Research Methods in Psychology	4
PSYC 304	Principles of Learning	4
PSYC 309	Sensation, Perception, and Information Processing	4
RELI 420	Seminar	3
RHBS 455	Research in Rehabilitation Science (Mason Core)	3
RUSS 302	Russian Conversation and Composition	3
RUSS 325	Major Russian Writers (Mason Core)	3
SOCI 412	Contemporary Sociological Theory	3
SOCI 485	RS: Sociological Analysis and Practice (Mason Core)	3
SOCW 471	Research in Social Work	3
SPAN 370	Spanish Writing and Stylistics	3
SRST 450	Research Methods	3
STAT 489	Pre-Capstone Professional Development	3
SYST 489	Senior Seminar	3
THR 350	Script Analysis	3
THR 482	Advanced Screenplay Workshop	3

Synthesis or Capstone Experience Requirement (minimum 3 credits)

The purpose of the synthesis course is to provide students with the opportunity to synthesize the knowledge, skills and values gained from the Mason Core curriculum. Synthesis courses strive to expand students' ability to master new content, think critically, and develop life-long learning skills across the disciplines. While it is not feasible to design courses that cover "all" areas of general education, synthesis courses should function as a careful alignment of disciplinary goals with a range of Mason Core learning outcomes.

Learning Outcomes for Synthesis:

The Mason Core synthesis course must address outcomes 1 and 2, and at least one outcome under 3. Upon completing a synthesis course, students will be able to:

1. Communicate effectively in both oral and written forms, applying appropriate rhetorical standards (e.g., audience adaptation, language, argument, organization, evidence, etc.)
2. Using perspectives from two or more disciplines, connect issues in a given field to wider intellectual, community or societal concerns
3. Apply critical thinking skills to:
   a. Evaluate the quality, credibility and limitations of an argument or a solution using appropriate evidence or resources, OR,
   b. Judge the quality or value of an idea, work, or principle based on appropriate analytics and standards

Required: One approved course.

Note: The course list reflects approved courses as of press time. See the most current list (https://masoncore.gmu.edu/recently-approved-courses-2/) for updates.

Synthesis Courses

Code	Title	Credits
ANTH 400	Engaging the World: Anthropological Perspectives (Mason Core)	3
ARTH 394	The Museum (Mason Core)	3
AVT 385	EcoArt (Mason Core)	3
AVT 497	Senior Project (Mason Core)	3
AVT 498	Senior Design Project (Mason Core)	3
BENG 492	Senior Advanced Design Project I (Mason Core)	3
BINF 354	Foundations in Mathematical Biology (Mason Core)	3
BIOL 301	Biology and Society (Mason Core)	3
BIS 490	RS: Senior Project (Mason Core)	4
CEIE 490	Civil Engineering Senior Design Project I (Mason Core)	1-3
COMM 326	Rhetoric of Social Movements and Political Controversy (Mason Core)	3
COMM 362	Argument and Public Policy (Mason Core)	3
COMM 454	Free Speech and Ethics (Mason Core)	3
CONF 490	RS: Integration (Mason Core)	3
CONS 490	RS: Integrated Conservation Strategies (Mason Core)	3

CONS 491	RS: Conservation Management Planning (Mason Core)	4
COS 310	Introduction to Science Policy (Mason Core)	3
CRIM 495	Capstone in Criminology, Law and Society (Mason Core)	3
CS 306	Synthesis of Ethics and Law for the Computing Professional (Mason Core)	3
DANC 490	Senior Dance Seminar (Mason Core)	3
ECE 492	Senior Advanced Design Project I (Mason Core)	1
ECE 493	RS: Senior Advanced Design Project II (Mason Core)	2
EVPP 480	Sustainability in Action (Mason Core)	4
FAVS 352	Ethics of Film and Video (Mason Core)	3
FRLN 385	Multilingualism, Identity, and Power (Mason Core)	3
GAME 490	Senior Game Design Capstone (Mason Core)	3
GEOL 420	Earth Science and Policy (Mason Core)	3
GGS 303	Geography of Resource Conservation (Mason Core)	3
GGS 304	Population Geography (Mason Core)	3
GOVT 490	Synthesis Seminar (Mason Core)	3
GOVT 491	Honors Seminar (Mason Core)	3
HAP 465	Integration of Professional Skills and Issues (Mason Core)	3
HDFS 400	Advanced Family Processes (Mason Core)	3
HIST 300	Introduction to Historical Method (Mason Core)	3
HIST 499	RS: Senior Seminar in History (Mason Core)	3
IT 492	Senior Design Project I (Mason Core)	3
LAS 499	Research Seminar in Latin American Studies (Mason Core)	3
MATH 400	History of Math (Topic Varies) (Mason Core)	3
NURS 465	Examination and Integration of Professional and Health Care Issues (Mason Core)	3
PHIL 309	Bioethics (Mason Core)	3
PHIL 343	Topics in Environmental Philosophy (Mason Core)	3
PHIL 377	Darwin: Biology and Beyond (Mason Core)	3
PHIL 379	Perspectives on Time (Mason Core)	3
PHYS 346	Quarks to Strings (Mason Core)	3
PROV 342	The George Mason Debates in Current Affairs (Mason Core)	3
PSYC 405	Mystery, Madness, and Murder (Mason Core)	3
PSYC 406	Psychology of Communication (Mason Core)	3
PSYC 427	Community Engagement for Social Change (Mason Core)	3
RELI 490	Comparative Study of Religions (Mason Core)	3
RUSS 353	Russian Civilization (Mason Core)	3
SOCI 377	Art and Society (Mason Core)	3
SOCI 483	The Sociology of Higher Education (Mason Core)	3
SOCW 375	Human Behavior and the Family Life Course (Mason Core)	3
SPAN 388	Introduction to Latina/o Studies (Mason Core)	3
SYST 495	Senior Design Project II (Mason Core)	3
THR 440	Advanced Studies in Directing/ Dramaturgy (Mason Core)	3
THR 496	Text in Production (Mason Core)	3

The purpose of the capstone course or sequence of courses is to provide a high impact, culminating element of an undergraduate education, helping students develop a more comprehensive and integrative understanding of their area of study and to utilize critical thinking skills. Capstone courses provide students opportunities to apply and demonstrate their knowledge and generally involve integrative /applied/ experiential projects. Student learning in a Capstone course is assessed using a set of identified learning outcomes, and for critical thinking, as defined by the American Association of Colleges & Universities.
While each academic degree program defines its learning outcomes, a Capstone course or sequence should follow these guidelines:

- Minimum of 3 credits
- Later in the curriculum, after a student has taken at least 85 credits, and at the 400 course level
- No more than 35 students in the course or equivalent instructional/ mentored support
- Emphasis on experiential/applied/integrative learning
- Allow students to apply critical thinking skills
- Learning outcomes defined by the degree program

Required: One approved upper-division course. Please speak with an advisor to determine the appropriate course to fulfill your major's requirement.

Capstone Courses [1]

Code	Title	Credits
ARAB 351	Media Arabic II (Spoken Media) (Mason Core)	3
ARAB 355	Advanced Arabic Media: Debates Context (Mason Core)	3
ARAB 440	Topics in Arabic Religious Thought and Texts (Mason Core)	3
ASTR 402	RS: Methods of Observational Astronomy (Mason Core)	4
ATEP 441	Senior Seminar in Athletic Training (Mason Core)	3
AVT 497	Senior Project (Mason Core)	3
AVT 498	Senior Design Project (Mason Core)	3
BAS 491	Applied Sciences Capstone (Mason Core)	3
BENG 492	Senior Advanced Design Project I (Mason Core)	3

BIOL 379	RS: Ecological Sustainability (Mason Core)	4
BUS 498	Capstone Course: Advanced Business Models (Mason Core)	3
CDS 492	Capstone in Data Science (Mason Core)	3
CEIE 490	Civil Engineering Senior Design Project I (Mason Core)	1-3
CHIN 318	Introduction to Classical Chinese (Mason Core)	3
CHIN 355	Readings in Chinese Poetry and Poetics (Mason Core)	3
CHIN 475	Chinese Popular Culture (Mason Core)	3
CONS 496	Research in Conservation (Mason Core)	6
CYSE 493	Senior Advanced Design Project II (Mason Core)	3
ECE 492	Senior Advanced Design Project I (Mason Core)	1
ECE 493	RS: Senior Advanced Design Project II (Mason Core)	2
ECED 490	Internship in Early Childhood Education (Mason Core)	3-6
ECED 492	Internship in Early Childhood Education (Non-Licensure) (Mason Core)	6-12
ECON 491	Capstone in Economics (Mason Core)	3
ECON 493	Capstone Internship (Mason Core)	3
ECON 495	RS: Honors Thesis in Economics (Mason Core)	3-6
EDSE 481	Internship: Professional Services (Mason Core)	12
EDSE 482	Internship: General Curriculum (Mason Core)	12
EDSE 483	Internship: Adapted (Severe Disabilities) (Mason Core)	12
EDSE 484	Internship: Blindness and Visual Impairments (Mason Core)	12
ELED 490	Internship in Elementary Education (Mason Core)	3-9
ENGH 401	RS: Honors Thesis Writing Seminar (Mason Core)	3
ENGH 417	RS: Topics in Folklore Research (Mason Core)	3
ENGH 458	RS: Topics in Literary Research (Mason Core)	3
ENGH 470	RS: Topics in Film/Media History (Mason Core)	3
ENGH 484	RS: Writing Ethnography (Mason Core)	3
ENGH 486	RS: Writing Nonfiction for Publication (Mason Core)	3
ENGH 495	Capstone and Thesis (Mason Core)	3
EVPP 378	RS: Ecological Sustainability (Mason Core)	4
FAVS 496	Advanced Visual Storytelling (Mason Core)	3
FAVS 497	Senior Film Practicum (Mason Core)	3
FAVS 499	Senior Project (Mason Core)	3
GAME 490	Senior Game Design Capstone (Mason Core)	3
GCH 465	Community Health Capstone (Mason Core)	3
GLOA 400	Global Affairs Capstone (Mason Core)	3
HAP 489	Pre-Internship Seminar (Mason Core)	3
HAP 498	Health Administration Internship (Mason Core)	4
IT 492	Senior Design Project I (Mason Core)	3
IT 493	Senior Design Project II (Mason Core)	4
KINE 490	Kinesiology Internship III (Mason Core)	12
LING 480	RS: First Language Acquisition (Mason Core)	3
MATH 401	Mathematics through 3D Printing (Mason Core)	3
ME 444	Mechanical Design II (Mason Core)	3
MUSI 324	Junior Recital (Mason Core)	1
MUSI 424	Senior Recital (Mason Core)	1
MUSI 490	RS: Musical Communication in Context (Mason Core)	3
MUSI 491	Musical Communication in Performance (Mason Core)	1
MUSI 495	Internship in Music Education (Mason Core)	6-12
PHED 415	Student Teaching in Physical Education (Mason Core)	12
PHIL 421	Seminar (Mason Core)	3
PHIL 422	Honors Seminar (Mason Core)	3
PHYS 407	Senior Laboratory in Modern Physics (Mason Core)	4
PHYS 410	Computational Physics Capstone (Mason Core)	4
PRLS 490	Recreation Management Internship (Mason Core)	12
RHBS 455	Research in Rehabilitation Science (Mason Core)	3
SEED 492	Internship: Secondary Education English (Mason Core)	6
SEED 493	Internship: Secondary Education Math (Mason Core)	6
SEED 494	Internship: Secondary Education Science (Mason Core)	6
SEED 496	Internship: Secondary Education Computer Science (Mason Core)	6
SOCI 416	Internship in Sociology I (Mason Core)	3-6
SOCI 485	RS: Sociological Analysis and Practice (Mason Core)	3
SOCW 472	RS: Integrative Methods in Social Action and Social Change (Mason Core)	3
SPMT 490	Internship (Mason Core)	12
STAT 490	Capstone in Statistics (Mason Core)	3
SYST 495	Senior Design Project II (Mason Core)	3
TOUR 490	Hospitality, Tourism, and Events Management Internship (Mason Core)	12

[1] Edited on June 16, 2020. The following courses do not fulfill the Capstone requirement for the 20-21 catalog year and were removed from this list: AVT 385, DANC 125, DANC 145, HEAL 230, PHIL 243, RELI 341, ENGH 302, COMM 101, HIST 390, GLOA 101.

UNIVERSITY HONORS

Phone: 703-993-1110
Website: honorscollege.gmu.edu

Administration

- Zofia Burr, Dean
- Jan Allbeck, Associate Dean
- Anthony Hoefer, Assistant Dean

The Honors College

The Honors College focuses attention on the excellence of Mason's student body and highlights the full spectrum of opportunities for academic achievement, professional development, and public service that Mason offers our most highly-motivated undergraduates. The Honors College provides talented students in all majors an enriched academic and social environment that enhances their college experience. Participation in challenging and innovative programs encourages student leadership and active engagement in local, national, and global communities.

Through the resources of the Honors College, the university provides students the support to excel academically and to pursue life-long goals. Included in these resources is the Honors College curriculum, which offers challenging courses that fulfill general education requirements. Senior faculty, including Mason's Robinson Professors, teach small classes of students taking the curriculum. A select group of entering students is invited to become part of the University Scholars, a community of learners and leaders who receive Mason's most competitive merit-based scholarships. All Honors College students have access to the Office of Fellowships, which provides advice and information to high-achieving Mason undergraduates and recent alumni about the application process for nationally competitive fellowships.

The benefits of being part of the Honors College include participating in a diverse living-learning community. Community programs include special lectures, events, and excursions on and off campus, as well as opportunities to take advantage of internships and cultural programs in Washington, D.C.

All students in the Honors College receive individualized academic advising, priority registration, and opportunities for close interaction with faculty for one-on-one mentoring and graduate and professional advising.

Faculty

Honors students have the opportunity to study with some of Mason's most accomplished teachers and scholars from disciplines across the university, including Mason's Robinson Professors.

Admissions & Policies

Admissions

Admission to the Honors College is based on a holistic review of each student's academic performance as well as any other information included in the general application, such as rigor of coursework, standardized test scores, class rank, essay response, teacher recommendations, outstanding leadership, and commitment to community service. Space is limited in each class, and admissions criteria may vary according to the applicant pool in any given year.

Admission to the Honors College requires an application and is open to both incoming first-year and transfer students.

Policies

Continuation in Honors

A student whose GPA falls below 2.00 (1.80 in the first or second semester) will be placed on academic warning and may be ineligible to continue in the Honors College. Students are required to take and pass with a grade of "C" or higher either HNRS 110 Principles of Research and Inquiry or HNRS 302 Principles of Research and Inquiry for Transfer Students in their first semester in the Honors College to maintain their Honors College status.

Honors students are expected to maintain high standards of academic integrity and personal conduct. Students may be asked to withdraw from the program for a violation of the University Honor Code or any other conduct that reflects adversely on the Honors College.

Students who leave the Honors College before completion of the curriculum must meet Mason Core requirements and college-level requirements for their particular degree programs. On leaving the college and before registering for Mason Core courses, students should be advised on equivalencies between the honors courses they have completed and Mason Core requirements.

Transfer of Honors Credits

Because of the sequential and integrated nature of the program, honors courses may not correspond exactly to courses used to fulfill Mason Core requirements. A list of equivalencies is available in the Honors College office.

Requirements

Honors Curriculum

Starting in their first semesters on campus, Honors College students are challenged to identify, articulate, and evaluate multiple perspectives on questions of cultural, scientific, or global significance and to consider evidence that broadens their understanding and challenges their beliefs.

The Honors College inquiry-driven curriculum provides exceptionally motivated students with an alternative to the Mason Core. The Honors College curriculum allows students increased opportunities to pursue minors and other individual interests such as extended research. Students may also take honors sections of selected major courses as well as upper division courses offered by the Honors College. Beyond the Honors College requirements, students must satisfy all requirements of their college and major and Mason undergraduate program requirements for admissions, residency, credit hours, quality, and upper level credits.

Students who complete their Honors College curriculum with a GPA of 3.00 or higher and with no more than one C- or D in HNRS courses will receive a designation of *Honors College Requirements Completed* on their transcripts. Students whose GPA falls below 3.00 or who have a C- or D in multiple HNRS courses may complete the honors curriculum to satisfy

Mason Core requirements but will not receive honors recognition on their transcripts.

Students must take a minimum of 12 credits of HNRS courses from the Honors College at Mason. Students must also complete the *Foundations*; *Inquiry in the Arts, Humanities, & Social Sciences*; *Civic Engagement*; *Multi-Disciplinary Challenges* requirements.

Foundations

Introduction to Inquiry and Research: Honors students are introduced to methods for formulating, articulating, pursuing, and communicating research questions and the subsequent findings. **Students must take one of the following during their first semester as an Honors College student**:

Code	Title	Credits
HNRS 110	Principles of Research and Inquiry	4
or		
HNRS 302	Principles of Research and Inquiry for Transfer Students	3

Inquiry in the Arts, Humanities, & Social Sciences

Students will pursue answers to focused questions in the arts, humanities, and social sciences. Specific topics will vary by semester and section. (12 credits)

Code	Title	Credits
HNRS 122	Reading the Arts (Topic Varies)	
HNRS 130	Identity, Community, and Difference (Topics Vary)	
HNRS 131	Contemporary Social Issues (Topic Varies)	
HNRS 240	Reading the Past (Topic Varies)	

Civic Engagement

Students will explore their roles and responsibilities in society and/or identify and address issues of public or community concern. Specific topics will vary by semester and section (3 credits).

Code	Title	Credits
HNRS 260	Society and Community Engagement Topics (Topics Vary)	3
or		
HNRS 261	Community Connection Practicum (Topics Vary)	3

Multi-Disciplinary Challenges

Students will address complex challenges through scholarly research (HNRS 360) or experiential learning (HNRS 361). Specific topics will vary by semester and section. (3 credits)

Code	Title	Credits
HNRS 360	Multi-Disciplinary Topics (Topic Varies)	3
or		
HNRS 361	Multi-Disciplinary Practicum (Topic Varies)	3

Honors College Electives

Students are encouraged to explore fields in more depth through approved departmental honors courses.

Code	Title	Credits
BINF 490	Independent Senior Research in Bioinformatics and Computational Biology	
BIOL 213	Cell Structure and Function (Mason Core) (Honors section only)	
BIOL 214	Biostatistics for Biology Majors (Honors section only)	
BIOL 308	Foundations of Ecology and Evolution (Honors section only)	
BIOL 311	General Genetics (Honors section only)	
BIOL 314	Introduction to Research Design and Analysis	
BIOL 493	Honors Research in Biology	
BUS 100	Business and Society (Mason Core) (Honors section only)	
BUS 200	Global Environment of Business (Mason Core) (Honors section only)	
CHEM 211	General Chemistry I (Mason Core) (Honors section only)	
CHEM 212	General Chemistry II (Mason Core) (Honors section only)	
CHEM 213	General Chemistry Laboratory I (Mason Core) (Honors section only)	
CHEM 214	General Chemistry Laboratory II (Mason Core) (Honors section only)	
CHEM 355	Undergraduate Research	
CS 211	Object-Oriented Programming (Honors section only)	
CS 390	Research and Project Design Principles in Computing	
ECON 103	Contemporary Microeconomic Principles (Mason Core) (Honors section only)	
ENGR 107	Introduction to Engineering (Mason Core) (Honors section only)	
HHS 492	RS: Internship in Clinical Research	
MATH 116	Analytic Geometry and Calculus II (Honors)	
MATH 215	Analytic Geometry and Calculus III (Honors)	
MATH 216	Theory of Differential Equations	
PHYS 160	University Physics I (Mason Core) (Honors section only)	
PHYS 260	University Physics II (Mason Core) (Honors section only)	
STAT 250	Introductory Statistics I (Mason Core) (Honors section only)	
STAT 350	Introductory Statistics II (Honors section only)	
UNIV 495	RS: Undergraduate Research Scholars Program Seminar	

Additional Requirements

- **Quantitative Reasoning**: Honors students must take at least one approved Quantitative Reasoning course. The Honors College quantitative reasoning requirement mirrors the mathematics or quantitative reasoning requirement of the student's college and

major. Students whose college and major do not have a quantitative reasoning or mathematics requirement must take one of the following courses:

Code	Title	Credits
CDS 292	Introduction to Social Network Analysis (Mason Core)	3
HNRT 125	Applied Quantitative Reasoning (Mason Core)	3
HNRT 225	Applied Calculus	3
MATH 108	Introductory Calculus with Business Applications (Mason Core)	3
MATH 110	Introductory Probability (Mason Core)	3
MATH 111	Linear Mathematical Modeling (Mason Core)	3
MATH 113	Analytic Geometry and Calculus I (Mason Core)	4
MATH 115	Analytic Geometry and Calculus I (Honors) (Mason Core)	4
MATH 124	Calculus with Algebra/Trigonometry, Part B (Mason Core)	3
MATH 125	Discrete Mathematics I (Mason Core)	3
SOCI 313	Statistics for the Behavioral Sciences (Mason Core)	4
STAT 250	Introductory Statistics I (Mason Core)	3

- **Science**: The Honors College science requirement mirrors the science requirement of a student's college and major.
- **Foreign Language:** Students pursuing BA degrees may have a foreign language requirement.
- Beyond the Honors College requirements, students must satisfy all requirements of their college and major and Mason undergraduate program requirements for admissions, residency, credit hours, quality, and upper-level credits.

COLLEGES AND SCHOOLS

- Antonin Scalia Law School
- College of Education and Human Development
- College of Health and Human Services
- College of Humanities and Social Sciences
- College of Science
- College of Visual and Performing Arts
- Interdisciplinary Programs and Courses
- Jimmy and Rosalynn Carter School for Peace and Conflict Resolution
- Schar School of Policy and Government
- School of Business
- Volgenau School of Engineering

Antonin Scalia Law School

Antonin Scalia Law School, George Mason University

3301 Fairfax Drive
Arlington, Virginia 22201

Email:

Admissions: lawadmit@gmu.edu
Law School Records Office: lwrecord@gmu.edu

Phone: 703-993-8000
Fax: (703) 993-8088

Website: law.gmu.edu

View on YouTube (https://www.youtube.com/watch/?v=hoGbhXPyeco)

For detailed admission, curriculum, and policy information specific to the Antonin Scalia Law School at George Mason University, please see the Law School Catalog (https://www.law.gmu.edu/academics/catalog/)

About Us

- Located in Arlington just a few miles from downtown Washington D.C.
- Provides top-ranked programs in law, including the fourth best part-time JD program in the country.
- Established 1972 as the International School of Law in Washington, D.C.; merged with George Mason University in 1979 to become George Mason University School of Law
- In July 2016, the school was renamed the Antonin Scalia Law School.
- Occupies the 150,000 square-foot Hazel Hall, opened in 1999.
- Accredited by the American Bar Association (https://www.americanbar.org/) (ABA)
- Member of the Association of American Law Schools (https://www.aals.org/contact/) (AALS)
- Host to research programs and centers:
  - Law and Economics Center (http://www.masonlec.org/)
  - Center for the Protection of Intellectual Property (https://cpip.gmu.edu/)
  - Global Antitrust Institute (https://gai.gmu.edu/)
  - C. Boyden Gray Center for the Study of the Administrative State (https://administrativestate.gmu.edu/)
  - National Security Institute (https://nationalsecurity.gmu.edu/)
  - Liberty & Law Center (https://libertycenter.gmu.edu/)
  - Center for the Middle East & International La (https://cmeil.gmu.edu/)w (https://cmeil.gmu.edu)
  - Corley Institute for Diversity & Inclusion Education (https://corleyinstitute.gmu.edu)

Faculty and Curriculum

- Scalia Law faculty ranks 19th for scholarly impact in the 2018 study by Gregory Sisk, et al., Scholarly Impact of Law School Faculties in 2018: Updating the Leiter Score Ranking for the Top Third *(*https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3230371*).*
- Faculty/student ratio: 1:11.8
- Full-time faculty: 44; Part-time faculty: 157
- Innovative and demanding curriculum (https://www.law.gmu.edu/academics/jd/) emphasizes the role of economic analysis in law (Economics for Lawyers is a required first-year course), as well as legal writing skills and substantive preparation for practice
- Specialty concentrations (https://www.law.gmu.edu/academics/specializations/) offered in: Antitrust Law, Communications Law, Corporate and Securities Law, Criminal Law, Immigration Law, Cyber Law Concentration, Financial Services Regulation Law, Immigration Law, Intellectual Property Law, International Business Law, Legal and Economic Theory, Litigation Law, National Security Law & Policy, Personal Law, Public Interest Litigation & Advocacy, Regulatory Law, Sports Law, and Tax Law.

Degrees

- Juris Doctor (JD) (https://www.law.gmu.edu/academics/degrees/jd/)
- Master of Law (LLM) (https://www.law.gmu.edu/academics/llm/)
- Juris Master (JM) (https://www.law.gmu.edu/academics/degrees/jm_program/)
- Dual Degree in Law and Business (https://www.law.gmu.edu/academics/degrees/jd_mba/)
- Joint Degree in Law & Public Policy (https://www.law.gmu.edu/academics/degrees/jd_mpp/)

College of Education and Human Development

2100 Thompson Hall
Fairfax Campus
MSN: 4B3

Phone: 703-993-2010
Website: cehd.gmu.edu

Administration

- Robert Baker, Interim Dean
- Martin Ford, Senior Associate Dean
- Ellen Rodgers, Associate Dean for Student and Academic Affairs
- Anthony (Eamonn) Kelly, Associate Dean for Research
- Ivory Berry, Assistant Dean for Student Success

College Code: E1

The College of Education and Human Development (CEHD) is committed to excellence, innovation, and collaboration in research and the preparation of professionals for the highest levels of practice and service in diverse schools, organizations, and communities.

CEHD provides leadership in transforming schools, organizations, and communities through research, teaching, and collaboration. CEHD faculty members prepare scholars and practitioners through multidisciplinary programs of study that facilitate the understanding, integration, and application of knowledge. Through research activities, faculty and students expand and refine the knowledge base for teaching and learning. In response to the richness and complexity of a pluralistic society, CEHD infuses diversity into academic programs and research. The faculty develops and supports knowledgeable, caring, and reflective professionals who facilitate excellence and equity for all learners. CEHD students and faculty demonstrate their growth and development in ways meaningful to their communication and professional organizations. Innovative programs and the integration of technology provide opportunities for students to develop, examine, evaluate, and practice professional knowledge, skills, and dispositions.

Undergraduate Degrees, Minors, and Certificates

CEHD offers undergraduate degrees, minors, and certificates. The School of Sport, Recreation and Tourism Management within the College of Education and Human Development collaborates with the College of Humanities and Social Sciences, the School of Business, the College of Science, the Volgenau School of Engineering, the College of Visual and Performing Arts, and the Jimmy and Rosalynn Carter School for Peace and Conflict Resolution to offer minors in interdisciplinary areas of study. Students may elect to take a minor in addition to their major field of study. For policies governing all minors, see AP.5.3.4 Minors.

In addition, School of Education collaborates with the College of Science (Departments of Atmospheric, Oceanic, and Earth Sciences; Biology; Chemistry and Biochemistry; Mathematical Sciences; and Physics and Astronomy), the College of Humanities and Social Sciences (Department of English) and the Volgenau School of Engineering (Department of Computer Science) to offer undergraduate secondary education certificates and the College of Visual and Performing Arts (Schools of Music and Theater) to provide programs in music and theater education that can lead to VA teaching licensure. CEHD also collaborates with School of Integrative Studies to support three interdisciplinary degree concentrations which prepare students for graduate study in education.

Graduate Degrees and Certificates

CEHD offers one doctoral degree, as well as master's degrees and graduate certificates.

Requirements & Policies

Policies

In addition to the policies stated in Academic Policies, the following policies and procedures apply to all students in the college.

Communication Policy

All correspondence from the program, school, college, and university administration is sent to the student's official Mason e-mail account. Students must use their Mason e-mail account to communicate with their programs and other administrative units.

CEHD Academic Policies

Students are ultimately responsible for their academic progress towards their degrees and/or certificates. They are strongly advised to consult Academic Policies for information concerning university-wide requirements for degree and non-degree students in addition to those for this college. Students with questions regarding academic policies and college-level requirements should contact the CEHD Student and Academic Affairs Office (Thompson Hall, Suite 2200; 703-993-2080; cehdsaa@gmu.edu). Additional policy information and forms are available online. (http://cehd.gmu.edu/saa/)

CEHD Grading Policy

All CEHD undergraduate and graduate students are held to the university grading policies as described in AP.3 Grading. Those students enrolled in a CEHD licensure program have higher minimum grade requirements which are detailed in each specific program's page.

Grade Appeals

For courses taken within the College of Education and Human Development, students may appeal grades that they believe were assigned unjustly or were based on unclear criteria in accordance with Academic Policies. Students who would like to contest a course grade should first contact their instructor for clarification. If a mutually satisfactory resolution is not reached, the student may submit a formal grade appeal to the CEHD Office of Student and Academic Affairs (SAA) for program-level and/or college review. For more information regarding the grade appeal process, please refer to the SAA website (http://catalog.gmu.edu//cehd.gmu.edu/students/policies-procedures/).

Study Elsewhere

Once enrolled in degree status at Mason, undergraduate students with fewer than 60 hours of transfer coursework (not including registration through the Consortium of Universities of the Washington Metropolitan Area or coursework completed through the Global Education Office) may take up to twelve credits of coursework in CEHD disciplines at another institution. Students with 60 or more hours of transfer coursework are not permitted to take additional coursework in CEHD disciplines at another institution. A student may seek permission for additional hours beyond these limits for summer registration if his/her permanent residence is more than fifty miles from the Fairfax campus. Students who enroll elsewhere without advance written permission will not receive transfer credit for the coursework taken at another institution unless they re-apply for admission to Mason as transfer applicants and meet all priority deadlines. Re-admission is not guaranteed and transfer credit is awarded based upon course equivalencies in effect at the time of re-admission. Courses previously attempted at Mason (including withdrawals) cannot be taken elsewhere.

Professional Teacher Licensure

CEHD is responsible for professional courses, special standards, and licensure recommendations for students completing state-approved (Virginia) licensure programs that prepare teachers, administrators, counselors, and related-instructional personnel.

Initial teacher licensure is available at the undergraduate level in elementary education, early childhood education for diverse learners, special education, and secondary education: biology, chemistry, computer science, earth science, English, health and physical education, mathematics, music, and physics. Initial teacher licensure is available at

the graduate level in art, early childhood, elementary, English as a second language, foreign language, secondary, and theater arts. The Special Education Program offers initial teacher licensure through graduate certificates that include Adapted Curriculum, General Curriculum, and Visual Impairments.

For more information please contact the CEHD Office of Admissions (Thompson Hall, Suite 1700; 703-993-2892; cehdgrad@gmu.edu). Additional information is available online (http://cehd.gmu.edu/admissions/).

Notes on Background Checks and Licensure

The majority of Mason CEHD programs require multiple field experiences. Our school and agency partners require Mason students to be fingerprinted and pass a criminal background check prior to field experience work. Students must assume the risk that classes may be deferred and their program delayed due to the individual severity of notations on such a check and review by individual agencies.

George Mason University will verify completion of the requirements of a Virginia Department of Education (VDOE) state-approved preparation program at the graduate or undergraduate level. Such verification does not guarantee the issuance of Virginia Collegiate Professional, Postgraduate Professional, or Pupil Personnel license from the Commonwealth of Virginia. It is solely the student's responsibility to comply with all requirements for licensure by the Commonwealth. Under Virginia law, a social security number is required for licensure.

Academic Units

- School of Education
- School of Kinesiology
- School of Sport, Recreation and Tourism Management

School of Education

Phone: 703-993-2892
Email: preteach@gmu.edu
Website: cehd.gmu.edu

Overview

The School of Education (SOED) offers a doctoral degree, several master's and bachelor's degrees, as well as many accelerated master's programs, minors, undergraduate and graduate certificates. Within each degree program students have the option to choose a concentration that best meets their interests or needs. Additionally, students may pursue coursework leading to initial teacher licensure. Students can pursue a Master's degree and one graduate certificate concurrently.

Collaborative Undergraduate Degree Licensure Programs

SOED supports undergraduate students from a variety of disciplines interested in education and teacher licensure. Collaborative undergraduate degree licensure programs are available including undergraduate certificates and the music and theater programs below. For more information, contact us (preteach@gmu.edu) or visit our website (http://cehd.gmu.edu/undergraduate/think-you-want-to-be-a-teacher/).

Concentration in Music Education (PK–12)

The BM in Music with a concentration in Music Education allows students to obtain certification to teach in Virginia public school systems. Students may follow an instrumental or choral/general music emphasis in the curriculum. For details, see School of Music.

Concentration in Theater Education (PK-12)

Upon successful completion of the requirements for a BA in Theater with a concentration in Theater Education for Theater Arts PK-12, students may pursue coursework that will allow them to attain licensure to teach Theater Arts in Virginia public school systems. For details, see School of Theater.

Collaborative Graduate Degree Licensure Programs

Teaching Theatre Licensure (PK-12)

Upon successful completion of the requirements for a Teaching Theatre PK-12 Graduate Certificate, students can obtain licensure to teach Theater in Virginia public school systems. For details, see School of Theater.

Visual Arts Licensure (PK-12)

Upon successful completion of the requirements for an Art Education Graduate Certificate, students can obtain licensure to teach Art in Virginia public school systems. For details, see School of Art.

Accelerated Master's Programs

The Graduate School of Education collaborates with undergraduate programs to offer accelerated Master's programs. For more information, see the website. (http://cehd.gmu.edu/bachelors-accelerated-masters-program/)

Faculty

School Faculty

Professors

Berkeley, Brigham, Buehl, Burns, Dabbagh, DeMulder, Fox, Haley, Hjalmarson, Holton, Kelly, Kidd, King-Sears, Kitsantas, Mason, Parker, S. Parsons, Peters-Burton, Reybold, Samaras, Shaklee, Suh, Zenkov

Associate Professors

Baily, P. Baker, Bannan, Banville, Barthold, Bean, Biggs, Borup, Carney, Y. Chung, Coogle, Duke, Evmenova, Frank, A. Gilbert, Goodman, Groth, D. Hathaway, J. Hathaway, Hoch, Hutchison, Jerome, Jorgenson, Letiecq, Levine-Brown, Mattix Foster, A. Miller, Pamas, K. Park, A. Parsons, Pierce, Ramos, Regan, Rowe, Shahrokhi, Sheridan, Shin, Sprague, B. Steen, S. Steen, Steinberg, Talleyrand Abrams, Veseley, Williams van Rooij, Weiss, Wong

Assistant Professors

Ainsworth, Avila, C. Baker, Beadles, Call-Cummings, Dailey, Dodman, Drake-Patrick, Ferguson, Fisher-Maltese, Francis, Glaser, Helmsing, Holincheck, Houston, Hunter, Kaya, Kim, LaCroix, Marshall, Marttinen,

Melchior, Nagro, K. O'Brien, J. Park, Patzak, Powell, Ray, Satsangi, Sopko, Stone, Stribling, Sturrock, Varier, Viano, Wills

Instructors

Dummett, George, Jacobson, Krout, Norden, C. O'Brien, Rioux-Bailey, Taylor

Programs

- Add-On Endorsement in Special Education, General Curriculum Graduate Certificate
- American Sign Language Minor
- Applied Behavior Analysis Graduate Certificate
- Assistive Technology Graduate Certificate
- Assistive Technology Minor
- Autism Spectrum Disorders Graduate Certificate
- Counseling Graduate Certificate
- Counseling, MEd
- Curriculum and Instruction Graduate Certificate
- Curriculum and Instruction, MEd
- Early Childhood Education (PK-3) Licensure Graduate Certificate
- Early Childhood Education for Diverse Learners Minor
- Early Childhood Education for Diverse Learners, BSEd
- Early Childhood Special Education Licensure Graduate Certificate
- Education Assessment, Evaluation, and Data Literacy Graduate Certificate
- Education Leadership Graduate Certificate
- Education Leadership, MEd
- Education Policy Graduate Certificate
- Education, PhD
- Educational Psychology Minor
- Educational Psychology, MS
- Elementary Education, BSEd
- Gifted Education Graduate Certificate
- Health Promotion Minor
- Human Development and Family Science Minor (CEHD)
- Human Development and Family Science, BA (CEHD)
- International ESOL / ESL Teacher Education Graduate Certificate
- Learning Design and Technology, MS
- Learning Technologies Graduate Certificate
- Literacy / Reading Instruction Graduate Certificate
- Mild Disabilities Minor
- Physical Education, BSEd
- Psychology, MA (CEHD)
- Research Methods Graduate Certificate
- School Psychology Graduate Certificate
- Secondary Education - Biology (6-12) Undergraduate Certificate
- Secondary Education - Chemistry (6-12) Undergraduate Certificate
- Secondary Education - Computer Science (6-12) Undergraduate Certificate
- Secondary Education - Earth Science (6-12) Undergraduate Certificate
- Secondary Education - English (6-12) Undergraduate Certificate
- Secondary Education - Mathematics (6-12) Undergraduate Certificate
- Secondary Education - Physics (6-12) Undergraduate Certificate
- Secondary Education Licensure Graduate Certificate
- Severe Disabilities Minor
- Special Education Graduate Certificate
- Special Education Leadership Graduate Certificate
- Special Education, BSEd
- Special Education, MEd
- Specialized Reading Instruction for Students with Specific Learning Disabilities Graduate Certificate
- Visual Impairment and Blindness Minor

Add-On Endorsement in Special Education, General Curriculum Graduate Certificate

Banner Code: E1-CERG-EDGC

Academic Advising

Phone: 703-993-3670
Email: speced@gmu.edu
Website: https://education.gmu.edu/special-education/teacher-licensure/special-education-general-add-on

This certificate is designed for elementary and secondary education teachers. Coursework provides knowledge and skills for working with students with disabilities, and meets Virginia Department of Education (VDOE) requirements for teachers endorsed in elementary education (such as early/primary education preK-3 or elementary education preK-6) or in English, history and social sciences, mathematics, biology, chemistry, Earth science, or physics to add a grade level endorsement in special education: general curriculum.

Admissions & Policies

Policies

The VDOE add-on endorsement is grade-level specific and requires a current VDOE endorsement in elementary education (such as early/primary education preK-3 or elementary education preK-6) or in English, history and social sciences, mathematics, biology, chemistry, Earth science, or physics.

Students who have completed graduate or undergraduate coursework equivalent to certificate coursework prior to admission to this program may request that some courses in this certificate be waived. Students who are eligible to waive coursework must complete a minimum of 12 credits to graduate. Students must earn a B- or better in all coursework.

For policies governing all graduate certificates, see AP.6.8 Requirements for Graduate Certificates (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-8).

Requirements

Certificate Requirements

Total credits: 16

This certificate may be pursued on a full-or part-time basis.

Coursework

Code	Title	Credits
EDSE 501	Introduction to Special Education	3
EDSE 544	Adapted Instructional Methods and Transition for Secondary Learners [1]	3
or EDSE 627	Assessment	
EDSE 641	Instructional Strategies for Reading and Writing	3
EDSE 643	Instructional Strategies for Math	3
EDSE 662	Consultation and Collaboration	3
EDCI 790	Internship in Education	1
Total Credits		16

[1] Students seeking to add an endorsement to an elementary license must take EDSE 627. All others must take EDSE 544.

American Sign Language Minor

Banner Code: ASL

Academic Advising

Phone: 703-993-3670
Email: speced@gmu.edu
Website: education.gmu.edu/special-education/american-sign-language

Overview

The American Sign Language (ASL) minor will provide students with the skills and knowledge to work with the Deaf community.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 17

Students must successfully complete EDSE 115 American Sign Language (ASL) I or its equivalent prior to enrolling in coursework.

Code	Title	Credits
EDSE 116	American Sign Language (ASL) II	4
EDSE 219	American Sign Language (ASL) III	4
EDSE 315	American Sign Language (ASL) IV	3
EDSE 410	Deaf History	3
EDSE 420	Deaf Culture	3
Total Credits		17

Applied Behavior Analysis Graduate Certificate

Banner Code: E1-CERG-ABAC

Academic Advising

Phone: 703-993-3670
Email: speced@gmu.edu
Website: https://education.gmu.edu/special-education/behavior-analyst-certification

This 21-credit non-licensure certificate is designed to increase the professional training of individuals responsible for designing, implementing, and monitoring behavioral treatment programs in schools and agencies, such as psychiatric hospitals.

This graduate certificate may be pursued on a part-time basis only, unless students complete the certificate in conjunction with the Master's in Special Education. With concurrent enrollment in the MEd, this certificate may be pursued on a full-time basis.

Admissions & Policies

Policies

For policies governing all graduate certificates, see AP.6.8 Requirements for Graduate Certificates.

Requirements

Certificate Requirements

Total credits: 21

This certificate may be pursued on a part-time basis only.

Coursework

Code	Title	Credits
EDSE 619	Principles and Procedures of Behavior Analysis	3
EDSE 621	Applied Behavior Analysis: Empirical Bases	3
EDSE 622	Philosophical and Conceptual Issues in Behavior Analysis	3
EDSE 623	Applied Behavior Analysis: Assessments and Interventions	3
EDSE 624	Applied Behavior Analysis: Applications	3
EDSE 625	Applied Behavior Analysis: Verbal Behavior	3
EDSE 664	Ethical and Professional Conduct for Behavior Analysis	3
Total Credits		21

Assistive Technology Graduate Certificate

Banner Code: E1-CERG-AT

Academic Advising

Phone: 703-993-3670
Email: atprog@gmu.edu
Website: https://education.gmu.edu/assistive-technology/at-program-options/at-graduate-certificate

This 15-credit non-licensure certificate provides supplemental training for practitioners, families, and caregivers who use assistive technology while working with people with disabilities. The certificate is appropriate for general and special educators, related service personnel, adult service providers, and families and caregivers who need to apply assistive technology solutions within their specific discipline or school, work, home, or community setting.

All coursework is offered in an online format and the graduate certificate may be pursued on a part-time or full-time basis.

Admissions & Policies

Policies

For policies governing all graduate certificates, see AP.6.8 Requirements for Graduate Certificates.

Requirements

Certificate Requirements

Total credits: 15

This certificate may be pursued on a full-or part-time basis.

Required Courses

Code	Title	Credits
EDAT 510	Introduction to Assistive Technology	3
EDAT 610	Designing Adapted Environments	3
Total Credits		6

Electives

Code	Title	Credits
Select nine credits from the following:		9
EDAT 521	Augmentative Communication	
EDAT 522	Assistive Technology for Individuals with Sensory Impairments	
EDAT 523	Accessibility and Input Modifications	
EDAT 524	Universal Design for Learning	
EDAT 525	Software and Mobile Applications for Individuals with Disabilities	
EDAT 527	Assistive Technology for Independent Living and Employment	
Total Credits		9

Assistive Technology Minor

Banner Code: AT

Academic Advising

Phone: 703-993-3670
Email: atprog@gmu.edu
Website: https://education.gmu.edu/assistive-technology/at-program-options/at-minor-program

This 15-credit minor provides undergraduate students with background knowledge in assistive technology. The minor is designed to provide undergraduate students with an opportunity to enhance their knowledge and connect how AT can benefit their field of study.

Admissions & Policies

Policies

At least eight of the required 15 credits must be applied only to this minor and may not be used to fulfill requirements of the student's major, concentration, an undergraduate certificate, or another minor. Students must complete all coursework with a minimum GPA of 2.00. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 15

Coursework

Code	Title	Credits
EDAT 410	Introduction to Assistive Technology	3
EDAT 421	Augmentative Communication	3
EDAT 422	Assistive Technology for Individuals with Sensory Impairments	3
EDAT 423	Accessibility and Input Modifications	3
EDSE 203	Disability in American Culture (Mason Core)	3
Total Credits		15

Autism Spectrum Disorders Graduate Certificate

Banner Code: E1-CERG-ASD

Academic Advising

Phone: 703-993-3670
Email: speced@gmu.edu
Website: https://education.gmu.edu/special-education/autism-spectrum-disorders

This 15-credit non-licensure certificate provides training in topic areas required to implement instructional programs for individuals with autism across their lifespan. The certificate is appropriate for special educators, general educators, related service providers, parents, and others who provide instruction to students with autism in a variety of educational, community and vocational settings.

This graduate certificate is offered in an asynchronous online format and may only be pursued on a part-time basis.

Admissions & Policies

Policies

For policies governing all graduate certificates, see AP.6.8 Requirements for Graduate Certificates.

Requirements

Certificate Requirements

Total credits: 15

This certificate may be pursued on a part-time basis only.

Requirements

Code	Title	Credits
EDSE 620	Supporting the Behavior and Sensory Needs of Individuals with Autism	3
EDSE 634	Characteristics of Individuals with Autism	3
EDSE 635	Interventions for Individuals with Autism	3
EDSE 636	Supporting Communication and Literacy for Individuals with Autism	3
EDSE 637	Autism Across the Lifespan: Collaboration with Critical Partners	3
Total Credits		15

Counseling Graduate Certificate

Banner Code: E1-CERG-CNSL

Academic Advising

Phone: 703-993-2087
Email: counsel@gmu.edu
Website: https://education.gmu.edu/counseling/counseling-licensure-post-masters-graduate-certificate

This 15-credit certificate is designed for individuals who possess a master's degree in counseling from George Mason and seek 15 credits of post-graduate coursework to meet licensure requirements as a Virginia Professional School Counselor or Virginia Licensed Professional Counselor. Applicants should review licensure requirements for becoming a Virginia Licensed Professional Counselor and verify course equivalency with the Virginia Board of Counseling (see Board of Counseling content area list online (http://www.dhp.virginia.gov/counseling/)).

Available Concentrations

Concentration in School Counseling (Post-Master's)

This 15-credit concentration is designed for individuals who possess a master's degree in counseling and seek 15 credits of post-graduate coursework to meet licensure requirements as a Virginia Professional School Counselor.

Concentration in Clinical Mental Health Counseling (Post-Master's)

This 15-credit concentration is designed for individuals who possess a master's degree in counseling and seek 15 credits of post-graduate coursework to meet licensure requirements as a Virginia Licensed Professional Counselor. Applicants should review licensure requirements for becoming a Virginia Licensed Professional Counselor and verify course equivalency with the Virginia Board of Counseling (see Board of Counseling content area list online (http://www.dhp.virginia.gov/counseling/)).

Admissions & Policies

Admissions

- An admissions interview is required, but may be waived for a Mason graduate in good standing.
- Applicants must have an earned Master's in Counseling with a primary focus in Community Agency/Clinical Mental Health Counseling or School Counseling; other applicable areas of counseling considered upon review.

Policies

Individuals interested in pursuing a license in school counseling or as a Licensed Professional Counselor (LPC) should submit a full application. This is a competitive and holistic process in which the faculty will conduct a full transcript review and admissions interview.

For policies governing all graduate certificates, see AP.6.8 Requirements for Graduate Certificates.

Requirements

Certificate Requirements

Total credits: 15

This certificate may be pursued on a part-time basis only.

Concentration in School Counseling (Post Master's) (SCPM)

Students studying for the MEd in Counseling may also meet Virginia School Counselor licensure requirements through coursework offered under the MEd's School Counseling PK-12 concentration. Students must successfully complete (pass) a minimum of nine counseling and development credits with a grade of B or better prior to enrolling in practicum or internship.

Coursework

Code	Title	Credits
EDCD 606	Counseling Children and Adolescents	3
EDCD 613	Introduction to School Counseling	3

EDCD 626	Principles and Practices of School Counseling	3
EDCD 755	Practicum in Counseling	3
EDCD 791	Internship in Counseling	3
Total Credits		15

Concentration in Clinical Mental Health Counseling (Post Master's) (CHPM)

Choose 15 credits from the following Licensed Professional Counselor courses listed below. Students studying for the MEd in Counseling may also meet Virginia Licensed Professional Counselor licensure requirements through coursework offered under the MEd's Clinical Mental Health Counseling concentration.

Coursework

Code	Title	Credits
Select 15 credits from the following:		15
EDCD 609	Counseling Skills and Strategies for Adults	
EDCD 652	Introduction to Substance Abuse Counseling	
EDCD 656	Diagnosis and Treatment Planning for Mental Health Professionals	
EDCD 658	Couples and Family Counseling	
EDCD 755	Practicum in Counseling	
EDCD 791	Internship in Counseling	
Total Credits		15

Counseling, MEd

Banner Code: E1-MED-CNSL

Academic Advising

Phone: 703-993-2087
Email: counsel@gmu.edu
Website: https://education.gmu.edu/counseling/

This master's program emphasizes the integration of theory and practice and culminates with internships in an appropriate setting. Students may choose one of two concentrations: Clinical Mental Health Counseling or School Counseling.

Admissions & Policies

Policies

Grading

Students enrolled in this degree program must earn a B or higher in counseling courses and in all licensure coursework, including practicum and internship courses. Students are permitted to repeat a course only once.

For policies governing all graduate programs, see AP.6 Graduate Policies.

Requirements

(formerly E1-MED-CNDV)

Degree Requirements

Total credits: 60

Core Coursework

Code	Title	Credits
EDCD 525	Advanced Human Growth and Development	3
EDCD 601	Introduction to Research in Counseling	3
EDCD 602	Foundations in Counseling	3
EDCD 603	Counseling Theories and Practice	3
EDCD 604	Assessment and Appraisal in Counseling	3
EDCD 606	Counseling Children and Adolescents	3
EDCD 608	Group Processes and Analyses	4
EDCD 609	Counseling Skills and Strategies for Adults	3
EDCD 610	Career and Educational Counseling	3
EDCD 619	Trauma and Crisis Counseling	3
EDCD 628	Counseling and Social Justice	3
EDCD 656	Diagnosis and Treatment Planning for Mental Health Professionals	3
EDCD 660	Multicultural Counseling	3
Total Credits		40

Concentration in Clinical Mental Health Counseling (CMH)

Students studying for the MEd in Counseling may also meet Virginia Licensed Professional Counselor licensure requirements through coursework offered under the MEd's Clinical Mental Health Counseling concentration. Students must complete the following Licensed Professional Counselor courses listed below.

Code	Title	Credits
EDCD 652	Introduction to Substance Abuse Counseling	3
EDCD 654	Counseling and Ethics in Community Agencies	3
EDCD 658	Couples and Family Counseling	3
EDCD 750	Practicum in Mental Health Counseling	3
EDCD 792	Internship in Mental Health Counseling I	3
EDCD 793	Internship in Mental Health Counseling II	3
Electives selected from EDCD courses or permission of advisor		2
Total Credits		20

Concentration in School Counseling (SC)

Students studying for the MEd in Counseling may also meet Virginia School Counselor licensure requirements through coursework offered under the MEd's School Counseling concentration. Students must complete the following Virginia Professional School Counselor courses listed below.

Code	Title	Credits
EDCD 611	Introduction to Ethical and Legal Issues in School Counseling	3
EDCD 613	Introduction to School Counseling	3
EDCD 626	Principles and Practices of School Counseling	3
EDCD 751	Practicum in School Counseling	3
EDCD 794	Internship in School Counseling I	3
EDCD 795	Internship in School Counseling II	3
Electives selected from EDCD courses or permission of advisor		2
Total Credits		20

Curriculum and Instruction Graduate Certificate

Banner Code: E1-CERG-CRIN

Phone: 703-993-3173
Email: TCLDEL@gmu.edu
Website: https://education.gmu.edu/teaching-culturally-diverse-exceptional-learners/degree-options/international-baccalaureate-graduate-certificate

Available Concentration

Concentration in International Baccalaureate (IB) in Teaching and Learning

This 15-credit concentration provides advanced professional development for teachers on the philosophy, elements, and assessments of the Primary Years Programme (PYP), Middle Years Programme (MYP), and Diploma Programme (DP). The coursework focuses on the theory, pedagogy, and research under-girding the International Baccalaureate programs. Upon completion of the coursework, teachers may apply to the IB organization for the IB certificate in teaching and learning.

Admissions & Policies

Policies

For policies governing all graduate certificates, see AP.6.8 Requirements for Graduate Certificates.

Requirements

Certificate Requirements

Total credits: 15

This certificate may be pursued on a full-or part-time basis.

Concentration in International Baccalaureate (IB) in Teaching and Learning (IBTL)

Students must earn a B or higher in all coursework.

Coursework

Code	Title	Credits
EDUC 621	Teaching and Learning in the International Baccalaureate Programme	3
EDUC 622	Curriculum Development across IB Programs	3
EDUC 623	Models and Strategies for Teaching and Learning in IB Schools	3
EDUC 624	Assessment and Learning in IB Schools	3
EDUC 626	Inquiry into Action: IB Teachers, Learners, and Schools	3
Total Credits		15

Notes

Upon completion of this graduate certificate, teachers may apply to the International Baccalaureate (IB) organization for the IB certificate in teaching and learning.

Curriculum and Instruction, MEd

Banner Code: E1-MED-CRIN

Academic Advising

Phone: 703-993-2080
Email: cehdsaa@gmu.edu

This master's degree is offered to students preparing for initial teacher licensure, advanced teacher education, or ancillary educational programs.

Requirements

Degree Requirements

Total credits: 30-39

Concentrations are listed within the subject areas listed below. Each concentration wholly describes the requirements for the degree and the concentration. Students should choose one concentration.

Concentration Areas

- Advanced Studies in Teaching and Learning (ASTL)
- Assistive Technology
- Teaching Culturally & Linguistically Diverse & Exceptional Learners
- Early Childhood and Elementary Education
- Learning Technologies
- Literacy/Reading
- Mathematics Specialist Leader
- Secondary Education (6–12)
- Transformative Teaching

Advanced Studies in Teaching and Learning (ASTL)

The ASTL Concentrations are for practicing teachers and other educators with one or more years of teaching experience who want to continue to grow professionally. The program is comprised of two components: 12 credits in Education Core focused on advanced

pedagogy and professional learning, plus 18-21 credits in an area of specialization, called the Concentration. The successful completion of these two program components comprises the master's degree. All 18 Concentrations provide advanced, graduate-level coursework taught by experienced faculty in that specialization area. The courses, aligned with the National Board for Professional Teaching Standards, help teachers think and practice as board-certified teachers. The program develops teacher-leaders who take an inquiry stance on their educational practice and lead from the classroom and beyond as they contribute to ongoing school improvement and educational change. While developing expertise in a content area and increasing their understanding of culturally and linguistically diverse students and families, teachers reflect critically on issues of equity and social justice and use systematic inquiry to inform decision-making and effect change.

Experienced teachers and other educators with or without a master's degree may apply for the master's degree program. The ASTL program also provides an option for teachers who to earn a Gifted Education Graduate Certificate.

MEd Requirements Common to all ASTL Concentrations

Code	Title	Credits
EDUC 606	Education and Culture	3
EDUC 612	Inquiry into Practice	2
EDUC 613	How Students Learn	3
EDUC 614	Designing and Assessing Teaching and Learning	2
EDUC 615	Educational Change	2
Total Credits		12

Concentration in ASTL: Advanced International Baccalaureate Research (AIB)

This concentration provides advanced professional development for teachers on the philosophy, elements, and assessments of the Primary Years Programme (PYP), Middle Years Programme (MYP), and Diploma Programme (DP). The coursework focuses on the theory, pedagogy, and research undergirding the International Baccalaureate programs. The combination of the ASTL IB Concentration coursework and the ASTL Core coursework result in the International Baccalaureate Advanced Award in Teaching and Learning Research.

Coursework

Code	Title	Credits
EDUC 621	Teaching and Learning in the International Baccalaureate Programme	3
EDUC 622	Curriculum Development across IB Programs	3
EDUC 623	Models and Strategies for Teaching and Learning in IB Schools	3
EDUC 624	Assessment and Learning in IB Schools	3
EDUC 626	Inquiry into Action: IB Teachers, Learners, and Schools	3
EDUC 627	Contemporary Issues and Trends in IB	3
Total Credits		18

Concentration in ASTL: Designing Digital Learning in Schools (ADDL)

This concentration is offered to practicing teachers who wish to gain the necessary knowledge and skills for integrating digital learning and K–12 curricular knowledge outcomes. The concentration is framed by four learning outcomes: investigation of the theory and practice of digital learning, connection of digital learning and knowledge outcomes, use of design principles and processes to inform practice, knowledge of a range of technologies appropriate for PreK-12 learners.

Coursework

Code	Title	Credits
EDIT 780	Principles of School-Based Design	3
EDIT 781	Designing for Information Using	3
EDIT 782	Designing for Literacy	3
EDIT 783	Designing for Problem Solving	3
EDIT 784	Designing for Community Participation	3
EDIT 787	Teacher Leadership and Advocacy for Digital Learning	3
Total Credits		18

Concentration in ASTL: Diversity and Exceptionality in PK-12 Schools (ADEP)

This concentration joins graduate courses in Special Education, Gifted Education, and Second Language Learning. It is designed for general education teachers who seek to enhance their professional knowledge and skills related to students with disabilities, students who demonstrate advanced capabilities in various domains, and English Learners.

Coursework

In consultation with an advisor, choose 6 courses (18 credits) from among the following, with the goal of selecting at least one course from each area.

Code	Title	Credits
Select 6 courses from the following:		18
Students with Disabilities who Access the General Curriculum		
EDAT 524	Universal Design for Learning	
EDSE 501	Introduction to Special Education	
EDSE 502	Classroom Management and Applied Behavior Analysis	
EDSE 503	Language Development and Reading	
EDSE 540	Characteristics of Students with Disabilities who Access the General Curriculum	
EDSE 628	Elementary Reading, Curriculum, Strategies for Students Who Access the General Education Curriculum	
EDSE 629	Secondary Curriculum and Strategies for Students with Disabilities who Access the General Curriculum	
EDSE 662	Consultation and Collaboration	
Gifted		
EDCI 621	Introduction to Gifted and Talented Learners	
EDCI 622	Curriculum and Instructional Strategies for Gifted Learners	
EDCI 624	Advanced Assessment and Evaluation of Gifted Learners	
English for Speakers of Other Languages		

EDCI 630	Supporting English Learners in PK-12 Schools	
Total Credits		18

Concentration in ASTL: Early Childhood Education (AECE)

This concentration provides advanced professional development in preschool through third grade content and includes two required courses and four electives. The concentration focuses on advancing the professional knowledge of practicing teachers who teach and work with diverse young children and their families.

Coursework

Code	Title	Credits
ECED 601	Frameworks for Early Childhood Education	3
ECED 685	Applied and Teacher Research in Early Childhood Education	3
or ECED 691	Policy Perspectives in Early Childhood Education	
Electives		
Select four courses from the following:		12
Any graduate ECED course(s)		
EDCI 630	Supporting English Learners in PK-12 Schools	
EDRD 630	Literacy Foundations and Instruction for Diverse Populations: Birth through Middle Childhood	
Total Credits		18

Concentration in ASTL: Mathematics K-8 (AMTK)

This concentration combines the study of mathematics content appropriate for kindergarten through eighth grade with the study of mathematics education research, curriculum, leadership, and assessment.

Coursework

Code	Title	Credits
MATH 610	Number Systems and Number Theory for K-8 Teachers	3
MATH 611	Geometry and Measurement for K-8 Teachers	3
MATH 612	Probability and Statistics for K-8 Teachers	3
MATH 613	Algebra and Functions for K-8 Teachers	3
MATH 614	Rational Numbers and Proportional Reasoning for K-8 Teachers	3
Electives		
Select one from the following:		3
EDCI 645	Curriculum Development in Mathematics Education	
EDCI 646	Mathematics Education Leadership for School Change	
EDCI 666	Research in Mathematics Teaching	
Total Credits		18

Concentration in ASTL: French (AFRN)

This concentration provides advanced professional development and language study for practicing world language teachers of French. The 18 concentration credits include a combination of modern language courses and targeted electives.

Coursework

Code	Title	Credits
Literature [1]		
Select 6 credits from the following:		6
FREN 515	Topics in Medieval French Literature and Culture	
FREN 516	Topics in Renaissance French Literature and Culture	
FREN 517	Topics in Seventeenth-Century French Literature and Culture	
FREN 518	Topics in Eighteenth-Century French Literature and Culture	
FREN 519	Topics in Nineteenth-Century French Literature and Culture	
FREN 520	Topics in Twentieth and Twenty-First-Century French Literature and Culture	
FREN 550	Special Topics	
FREN 551	Topics in Francophone Sub-Saharan Literature and Culture	
FREN 553	Topics in North African Francophone Literature and Culture	
FREN 554	Topics in Francophone Caribbean Literature and Culture	
FREN 555	Special Topics related to Francophone Literature and Culture	
FREN 557	Topics in Quebec and French-Canadian Literature and Culture	
FREN 567	Special Topics related to French and Francophone Literature and Culture	
Language and Linguistics		
Select 6 credits from the following in consultation with an advisor:		6
FREN 562	Stylistics	
FREN 563	History of the French Language	
FREN 564	Advanced Translation	
FREN 565	Special Topics Related to the French Language	
FREN 570	French and Francophone Cinema	
FREN 575	Grammatical Analysis	
Electives		
Select 6 credits from the courses above or below in consultation with an advisor: [2]		6
FRLN 510	Bibliography and Research in Foreign Languages and Literature	
FRLN 525	Literary Translation	
FRLN 550	Special Topics	
FRLN 565	Theory of Translation	
FRLN 572	Integrating Technology into Language Learning	
FRLN 573	Basic Issues in Language Pedagogy	
FRLN 575	Heritage Language Education	
FRLN 590	Internship and Seminar in Translation	
FRLN 620	Literary Theory and Criticism	

FRLN 660	Approaches to the Study of Language	
FRLN 670	Topics in Language Learning and Teaching	
Total Credits		18

1 Courses may be substituted with advisor-approved literature-related electives in French. Courses must cover two different chronological periods or Francophone regions in consultation with an advisor.

2 Courses may be substituted with advisor-approved language and literature-related electives.

Concentration in ASTL: Spanish (ASPN)

This concentration provides advanced professional development and language study for practicing world language teachers of Spanish. The 18 concentration credits include a combination of modern language courses and targeted electives.

Coursework

Code	Title	Credits
SPAN 502	Hispanic Sociolinguistics	3
SPAN 510	Methods of Literary and Cultural Studies	3
Electives		
Select 12 credits from the following: [1]		12
SPAN 501	Applied Spanish Grammar	
SPAN 505	Applied Spanish Stylistics in Multilingual and Multimodal Contexts	
SPAN 512	Mass Media and Popular Culture	
SPAN 520	Studies in Medieval Spanish Literature	
SPAN 525	Studies in Renaissance Literature	
SPAN 530	Studies in the Literature of the Golden Age	
SPAN 540	Studies in 20th-Century Literature	
SPAN 544	Spanish-Language Film, Television, and Digital Media	
SPAN 545	Studies in Hispanic Literature	
SPAN 551	Special Topics in Spanish	
SPAN 560	Studies in Spanish American Poetry	
SPAN 565	Studies in Spanish American Drama	
SPAN 570	Language Politics and Policy	
SPAN 571	Methods and Curriculum Design for Teaching Spanish	
SPAN 576	Advanced Translation	
SPAN 580	Contemporary Hispanic Institutions	
SPAN 635	Seminar in Don Quixote	
SPAN 650	Seminar in Twentieth-Century Drama	
SPAN 655	Seminar in Twentieth-Century Prose	
SPAN 670	Seminar in Spanish American Prose	
SPAN 675	Seminar in Literature and Art	
SPAN 680	Seminar in Literature and Society	
SPAN 685	Seminar in Literature and Ideas	
FRLN 575	Heritage Language Education	
FRLN 670	Topics in Language Learning and Teaching	
Total Credits		18

1 Courses may be substituted with advisor-approved language and literature-related electives.

Concentration in ASTL: Gifted Education (AGIE)

This concentration provides advanced professional development through endorsement or master's degree for teachers of gifted students. The concentration meets NAGC/CEC graduate standards and focuses on culturally diverse, multilingual, twice exceptional, and traditionally defined gifted students and programs.

Students must earn a B- or higher in all coursework.

Coursework

Code	Title	Credits
EDCI 621	Introduction to Gifted and Talented Learners	3
EDCI 622	Curriculum and Instructional Strategies for Gifted Learners	3
EDCI 623	Supporting the Social Emotional Needs of Gifted Learners	3
EDCI 624	Advanced Assessment and Evaluation of Gifted Learners	3
Electives		**6**
Select two courses (6 credits) from the following: [1]		
EDCI 625	Contemporary Issues and Trends in Gifted Education	
EDCI 626	Action Research in Gifted Education	
EDCI 627	Advanced Practicum in Gifted Education [2]	
EDCI 630	Supporting English Learners in PK-12 Schools	
EDCI 660	Integrated STEM Teaching	
EDUC 608	Teacher Leadership for Professional Learning	
Total Credits		18

1 Courses may be substituted with advisor approval.

2 The EDCI 627 Advanced Practicum in Gifted Education or one year of successful full-time teaching with gifted students in an accredited public or non-public school is required for the Virginia Add-On Endorsement in Gifted Education (VA Licensure Regulations for School Personnel, 2018).

Concentration in ASTL: History/Social Science (AHSS)

This concentration is designed for educators at all grade levels who seek to strengthen their professional practice of teaching, while also deepening and broadening their content knowledge of history and/or the social sciences.

Coursework

Code	Title	Credits
Choose 18 credit hours from advisor-approved electives in History, Geography, and/or Sociology/Anthropology. Courses may be substituted with advisor-approved elective.		18
Total Credits		18

Concentration in ASTL: Individualized (AATL)

This individualized concentration is developed in concert with a student's advisor to provide coursework in a student's specialized area that is not provided in other ASTL concentrations. The student works

with the program director to design a program of study that provides individualized learning experiences in an area of expertise relevant to one's professional educational setting.

Coursework

Code	Title	Credits
Select 18 credits selected in consultation with advisor.		18
Total Credits		18

Concentration in ASTL: Literacy PK–12 Classroom Teachers (AP12)

This concentration includes three required literacy courses and three approved electives in ESOL, special education, psychology, secondary and elementary education, early childhood, writing, and other areas. The coursework includes theory and strategies in literacy and reading for teachers in any discipline, PK–12.

Coursework

Code	Title	Credits
EDRD 630	Literacy Foundations and Instruction for Diverse Populations: Birth through Middle Childhood	3
EDRD 631	Literacy Foundations and Instruction for Diverse Populations: Adolescence Through Adulthood	3
EDRD 632	Literacy Assessments and Interventions for Groups	3
Electives		
Select 9 credits from the following: [1]		9
EDCI 630	Supporting English Learners in PK-12 Schools	
EDRD 633	Literacy Assessments and Interventions for Individuals [2]	
EDRD 637	Supervised Literacy Practicum [2]	
EDSE 662	Consultation and Collaboration	
EDSE 627	Assessment	
Total Credits		18

[1] Students may choose an alternate elective with advisor approval.

[2] Must be taken concurrently

Concentration in ASTL: Literacy: Reading Specialist (ALRS)

This concentration provides a state-approved sequence of courses that can lead to eligibility for the K-12 Reading Specialist endorsement in Virginia. (Additional state licensure requirements include an initial teaching license, a satisfactory score on the Reading for Virginia Educators: Reading Specialist exam, and at least three years of teaching experience under contract.) Coursework helps teachers develop an in-depth understanding of literacy development across the lifespan, instructional and assessment strategies for individuals and groups of students, and provides preparation as Reading Specialist. Students must earn a B- or higher in all licensure coursework.

Coursework

Code	Title	Credits
EDRD 630	Literacy Foundations and Instruction for Diverse Populations: Birth through Middle Childhood	3
EDRD 631	Literacy Foundations and Instruction for Diverse Populations: Adolescence Through Adulthood	3
EDRD 632	Literacy Assessments and Interventions for Groups	3
EDRD 633	Literacy Assessments and Interventions for Individuals [1]	3
EDRD 634	School-Based Leadership in Literacy	3
EDRD 635	School-Based Inquiry in Literacy	3
EDRD 637	Supervised Literacy Practicum [1]	3
Total Credits		21

[1] Must be taken concurrently

Concentration in ASTL: Secondary Mathematics Education, Grades 6-12 (AMT6)

This concentration provides advanced professional development in mathematics teaching and learning for practicing middle and high school mathematics teachers. The coursework focuses on current research in mathematics education, inquiry, technology, and a community of mathematics practice.

Coursework

Code	Title	Credits
EDCI 666	Research in Mathematics Teaching	3
EDCI 702	Internship in Mathematics Education	3
MATH 601	Analysis I for Teachers	3
MATH 604	Geometry for Teachers	3
or MATH 614	Rational Numbers and Proportional Reasoning for K-8 Teachers	
MATH 607	Algebraic Structure for Teachers	3
MATH 608	Problem Solving in Mathematics	3
Total Credits		18

Concentration in ASTL: Physical Education (APED)

This concentration provides coursework in research design, curriculum development, collaborative supervision, research in pedagogy, and advanced adapted content. It is designed for practicing PE teachers seeking to improve their professional knowledge and teaching performance for improving student learning.

Coursework

Code	Title	Credits
PHED 660	Research Reading Seminar in Physical Education	3
PHED 670	Analysis of Teaching in Physical Education	3
PHED 672	Curriculum and Assessment in Physical Education	3
PHED 673	Motor Development for Special Populations	3
PHED 680	Mentoring and Supervising in Physical Education	3
Electives		
Select one course from the following: [1]		3
EDCI 630	Supporting English Learners in PK-12 Schools	

EDUC 608	Teacher Leadership for Professional Learning	
EFHP 610	Advanced Exercise Physiology	
EFHP 611	Movement and Fitness Assessment	
EFHP 614	Advanced Exercise Nutrition	
EFHP 618	Exercise and Sport Psychology	
HEAL 516	Program Development and Resources in Health Education	
Total Credits		18

[1] Students may choose an alternate elective with advisor approval.

Concentration in ASTL: Science K-12 (AS12)

This concentration provides advanced professional development in science teaching and learning for practicing elementary, middle, or high school science teachers.

Coursework

Code	Title	Credits
EDCI 663	Research in Science Teaching	3
EDCI 670	Advanced Methods in Science Teaching	3
EDCI 671	Innovations in Science Teaching	3
EDUC 547	Scientific Inquiry and the Nature of Science	3
Electives		
Select six credits of science coursework with advisor approval.		6
Total Credits		18

Concentration in ASTL: Science, Technology, Engineering, and Mathematics (STEM) (ASTM)

This concentration provides advanced professional development in science, technology, engineering and mathematics teaching and learning for practicing elementary, middle, or high school science teachers.

Coursework

Code	Title	Credits
EDCI 660	Integrated STEM Teaching	3
In consultation with advisor, choose an additional 5 courses (15 credits) from the following, with the goal of selecting at least one course from each area:		15
Designing Digital Learning in Schools		
EDIT 780	Principles of School-Based Design	
EDIT 781	Designing for Information Using	
EDIT 782	Designing for Literacy	
EDIT 783	Designing for Problem Solving	
Math Education Leadership		
EDCI 644	Mathematics Learning and Assessment (K-8)	
EDCI 645	Curriculum Development in Mathematics Education	
EDCI 646	Mathematics Education Leadership for School Change	
MATH 610	Number Systems and Number Theory for K-8 Teachers	
MATH 611	Geometry and Measurement for K-8 Teachers	
MATH 612	Probability and Statistics for K-8 Teachers	
MATH 613	Algebra and Functions for K-8 Teachers	
MATH 614	Rational Numbers and Proportional Reasoning for K-8 Teachers	
Science		
EDCI 663	Research in Science Teaching	
EDCI 670	Advanced Methods in Science Teaching	
EDCI 671	Innovations in Science Teaching	
Total Credits		18

Concentration in ASTL: Special Education (ASPE)

This concentration provides advanced expertise for educators, administrators, and other professionals providing services to individuals with special needs.

Coursework

Code	Title	Credits
Select 18 credits of Special Education (EDSE) and/or Assistive Technology (EDAT) coursework in consultation with advisor.		18
Total Credits		18

Concentration in ASTL: Teacher Leadership (ATL)

This concentration provides advanced professional development in school leadership. The educational leadership coursework focuses on teachers as leaders in their classrooms, teams, departments, programs, and schools.

Coursework

Code	Title	Credits
EDLE 610	Leading Schools and Communities	3
EDLE 620	Organizational Theory and Leadership	3
EDLE 636	Adult Motivation and Conflict Management in Education Settings: A Case Study Approach	3
EDLE 690	Using Research to Lead School Improvement	3
EDEP 591	Data-Driven Decision Making for Continuous Educational Improvement	3
or EDLE 618	Supervision and Evaluation of Instruction	
EDUC 608	Teacher Leadership for Professional Learning	3
Total Credits		18

Assistive Technology

The Assistive Technology program prepares educators and other professionals to work with individuals with disabilities, service providers, and family members. Graduates will use technology to assist individuals to function more effectively in school, home, work, and community environments.

Concentration in Assistive Technology (AT)

Coursework

Code	Title	Credits
EDAT 510	Introduction to Assistive Technology	3
EDAT 521	Augmentative Communication	3
EDAT 522	Assistive Technology for Individuals with Sensory Impairments	3
EDAT 523	Accessibility and Input Modifications	3
EDAT 524	Universal Design for Learning	3
EDAT 525	Software and Mobile Applications for Individuals with Disabilities	3
EDAT 527	Assistive Technology for Independent Living and Employment	3
EDAT 610	Designing Adapted Environments	3
EDAT 649	Assistive Technology Assessment	3
EDSE 590	Special Education Research	3
or EDIT 590	Educational Research in Technology	
Total Credits		30

Teaching Culturally & Linguistically Diverse & Exceptional Learners

The Teaching Culturally and Linguistically Diverse and Exceptional Learners (TCLDEL) is a Master of Education (MEd) program in Curriculum and Instruction designed to prepare teachers to work with culturally and linguistically diverse learners in the U.S. and around the world. The TCLDEL concentrations focus on a variety of student needs with special emphasis on language learners. Whether you are entering the field of education or have been a teacher for a number of years, TCLDEL concentrations can provide you with the knowledge, skills, and dispositions to support learning effectively, respond to diverse learners' needs, and create more equitable and socially just classrooms in U.S. and international contexts. TCLDEL has concentrations that lead to Virginia state licensure in ESOL, foreign languages, and elementary education as well as non-licensure options in the fields of IB and TESOL.

Initial Virginia state licensure concentrations include:

- PK-6 Virginia state licensure in Elementary Education focused specifically on teaching in international school contexts; and
- PK-12 Virginia state licensure to teach English to Speakers of Other Languages (ESOL);
- PK-12 Virginia state licensure to teach one of the following foreign languages: Arabic, Chinese, French, German, Japanese, Latin, Korean, and Spanish.

Non-licensure concentrations include:

- International Baccalaureate (IB) Education, which provides coursework for the IB certificate in teaching and learning (authorized by the IB). Upon completion of the coursework, teachers may apply to the IB organization for the IB certificate in teaching and learning.
- English to Speakers of Other Languages (ESOL) Education for licensed PK-12 teachers; and
- Teaching English to Speakers of Other Languages (TESOL) across the life span (PK-Adult) for diverse classrooms in the U.S. and around the world (100% online).

Concentration in English to Speakers of Other Languages (ESOL) Education (PK-12 Licensure) (ESLI)

Coursework

Code	Title	Credits
EDCI 510	Linguistics for PreK-12 ESOL Teachers	3
EDCI 516	Bilingualism and Language Acquisition Research	3
EDCI 519	Methods of Teaching Culturally and Linguistically Diverse Learners	3
EDCI 520	Assessment of Language Learners	3
EDCI 776	Consultation and Collaboration in Diverse K-12 Settings	3
EDCI 777	Research to Practice	3
EDCI 793	Internship in Education: PK-12 ESL/ESOL Education	6
EDRD 515	Language and Literacy in Global Contexts	3
EDRD 610	Content Literacy for English Language Learners, PK-12	3
EDUC 511	Child and Adolescent Development in Global Contexts	3
EDUC 537	Introduction to Culturally Linguistically Diverse Learners	3
Total Credits		36

Concentration in English to Speakers of Other Languages (ESOL) Education (PK-12 Non-Licensure) (ESNL)

Coursework

Code	Title	Credits
EDCI 510	Linguistics for PreK-12 ESOL Teachers	3
EDCI 516	Bilingualism and Language Acquisition Research	3
EDCI 519	Methods of Teaching Culturally and Linguistically Diverse Learners	3
EDCI 520	Assessment of Language Learners	3
EDCI 776	Consultation and Collaboration in Diverse K-12 Settings	3
EDCI 777	Research to Practice	3
EDRD 515	Language and Literacy in Global Contexts	3
EDRD 610	Content Literacy for English Language Learners, PK-12	3
EDUC 511	Child and Adolescent Development in Global Contexts	3
EDUC 537	Introduction to Culturally Linguistically Diverse Learners	3
Total Credits		30

Concentration in Arabic Foreign Language Education (PK-12 Licensure) (ARLE)

Coursework

Code	Title	Credits
EDCI 516	Bilingualism and Language Acquisition Research	3
EDCI 520	Assessment of Language Learners	3

EDCI 560	Methods of Teaching in Foreign/World Languages	3
EDCI 684	Advanced Methods of Teaching Foreign/ Second Languages in PK-12 Schools	3
EDCI 776	Consultation and Collaboration in Diverse K-12 Settings	3
EDCI 777	Research to Practice	3
EDCI 794	Internship in Education: PK-12 Foreign/ World Language Education	6
EDRD 515	Language and Literacy in Global Contexts	3
EDRD 620	Reading/Writing in Foreign/World Languages	3
EDUC 511	Child and Adolescent Development in Global Contexts	3
EDUC 537	Introduction to Culturally Linguistically Diverse Learners	3
Total Credits		36

Concentration in Chinese Foreign Language Education (PK-12 Licensure) (CHLE)

Coursework

Code	Title	Credits
EDCI 516	Bilingualism and Language Acquisition Research	3
EDCI 520	Assessment of Language Learners	3
EDCI 560	Methods of Teaching in Foreign/World Languages	3
EDCI 684	Advanced Methods of Teaching Foreign/ Second Languages in PK-12 Schools	3
EDCI 776	Consultation and Collaboration in Diverse K-12 Settings	3
EDCI 777	Research to Practice	3
EDCI 794	Internship in Education: PK-12 Foreign/ World Language Education	6
EDRD 515	Language and Literacy in Global Contexts	3
EDRD 620	Reading/Writing in Foreign/World Languages	3
EDUC 511	Child and Adolescent Development in Global Contexts	3
EDUC 537	Introduction to Culturally Linguistically Diverse Learners	3
Total Credits		36

Concentration in French Foreign Language Education (PK-12 Licensure) (FRLE)

Coursework

Code	Title	Credits
EDCI 516	Bilingualism and Language Acquisition Research	3
EDCI 520	Assessment of Language Learners	3
EDCI 560	Methods of Teaching in Foreign/World Languages	3
EDCI 684	Advanced Methods of Teaching Foreign/ Second Languages in PK-12 Schools	3
EDCI 776	Consultation and Collaboration in Diverse K-12 Settings	3
EDCI 777	Research to Practice	3
EDCI 794	Internship in Education: PK-12 Foreign/ World Language Education	6
EDRD 515	Language and Literacy in Global Contexts	3
EDRD 620	Reading/Writing in Foreign/World Languages	3
EDUC 511	Child and Adolescent Development in Global Contexts	3
EDUC 537	Introduction to Culturally Linguistically Diverse Learners	3
Total Credits		36

Concentration in German Foreign Language Education (PK-12 Licensure) (GELE)

Coursework

Code	Title	Credits
EDCI 516	Bilingualism and Language Acquisition Research	3
EDCI 520	Assessment of Language Learners	3
EDCI 560	Methods of Teaching in Foreign/World Languages	3
EDCI 684	Advanced Methods of Teaching Foreign/ Second Languages in PK-12 Schools	3
EDCI 776	Consultation and Collaboration in Diverse K-12 Settings	3
EDCI 777	Research to Practice	3
EDCI 794	Internship in Education: PK-12 Foreign/ World Language Education	6
EDRD 515	Language and Literacy in Global Contexts	3
EDRD 620	Reading/Writing in Foreign/World Languages	3
EDUC 511	Child and Adolescent Development in Global Contexts	3
EDUC 537	Introduction to Culturally Linguistically Diverse Learners	3
Total Credits		36

Concentration in Japanese Foreign Language Education (PK-12 Licensure) (JALE)

Coursework

Code	Title	Credits
EDCI 516	Bilingualism and Language Acquisition Research	3
EDCI 520	Assessment of Language Learners	3
EDCI 560	Methods of Teaching in Foreign/World Languages	3
EDCI 684	Advanced Methods of Teaching Foreign/ Second Languages in PK-12 Schools	3
EDCI 776	Consultation and Collaboration in Diverse K-12 Settings	3
EDCI 777	Research to Practice	3
EDCI 794	Internship in Education: PK-12 Foreign/ World Language Education	6
EDRD 515	Language and Literacy in Global Contexts	3

EDRD 620	Reading/Writing in Foreign/World Languages	3
EDUC 511	Child and Adolescent Development in Global Contexts	3
EDUC 537	Introduction to Culturally Linguistically Diverse Learners	3
Total Credits		36

Concentration in Korean Foreign Language Education (PK-12 Licensure) (KOLE)

Coursework

Code	Title	Credits
EDCI 516	Bilingualism and Language Acquisition Research	3
EDCI 520	Assessment of Language Learners	3
EDCI 560	Methods of Teaching in Foreign/World Languages	3
EDCI 684	Advanced Methods of Teaching Foreign/ Second Languages in PK-12 Schools	3
EDCI 776	Consultation and Collaboration in Diverse K-12 Settings	3
EDCI 777	Research to Practice	3
EDCI 794	Internship in Education: PK-12 Foreign/ World Language Education	6
EDRD 515	Language and Literacy in Global Contexts	3
EDRD 620	Reading/Writing in Foreign/World Languages	3
EDUC 511	Child and Adolescent Development in Global Contexts	3
EDUC 537	Introduction to Culturally Linguistically Diverse Learners	3
Total Credits		36

Concentration in Latin Foreign Language Education (PK-12 Licensure) (LALE)

Coursework

Code	Title	Credits
EDCI 516	Bilingualism and Language Acquisition Research	3
EDCI 520	Assessment of Language Learners	3
EDCI 560	Methods of Teaching in Foreign/World Languages	3
EDCI 684	Advanced Methods of Teaching Foreign/ Second Languages in PK-12 Schools	3
EDCI 776	Consultation and Collaboration in Diverse K-12 Settings	3
EDCI 777	Research to Practice	3
EDCI 794	Internship in Education: PK-12 Foreign/ World Language Education	6
EDRD 515	Language and Literacy in Global Contexts	3
EDRD 620	Reading/Writing in Foreign/World Languages	3
EDUC 511	Child and Adolescent Development in Global Contexts	3
EDUC 537	Introduction to Culturally Linguistically Diverse Learners	3
Total Credits		36

Concentration in Spanish Foreign Language Education (PK-12 Licensure) (SPLE)

Coursework

Code	Title	Credits
EDCI 516	Bilingualism and Language Acquisition Research	3
EDCI 520	Assessment of Language Learners	3
EDCI 560	Methods of Teaching in Foreign/World Languages	3
EDCI 684	Advanced Methods of Teaching Foreign/ Second Languages in PK-12 Schools	3
EDCI 776	Consultation and Collaboration in Diverse K-12 Settings	3
EDCI 777	Research to Practice	3
EDCI 794	Internship in Education: PK-12 Foreign/ World Language Education	6
EDRD 515	Language and Literacy in Global Contexts	3
EDRD 620	Reading/Writing in Foreign/World Languages	3
EDUC 511	Child and Adolescent Development in Global Contexts	3
EDUC 537	Introduction to Culturally Linguistically Diverse Learners	3
Total Credits		36

Concentration in International Baccalaureate (IB) Education (IBE)

Code	Title	Credits
EDCI 776	Consultation and Collaboration in Diverse K-12 Settings	3
EDCI 777	Research to Practice	3
EDRD 515	Language and Literacy in Global Contexts	3
EDUC 511	Child and Adolescent Development in Global Contexts	3
EDUC 537	Introduction to Culturally Linguistically Diverse Learners	3
EDUC 621	Teaching and Learning in the International Baccalaureate Programme	3
EDUC 622	Curriculum Development across IB Programs	3
EDUC 623	Models and Strategies for Teaching and Learning in IB Schools	3
EDUC 624	Assessment and Learning in IB Schools	3
EDUC 626	Inquiry into Action: IB Teachers, Learners, and Schools	3
Total Credits		30

Concentration in International Elementary Education (PK-6 Licensure) (IEEP)

Code	Title	Credits
EDCI 776	Consultation and Collaboration in Diverse K-12 Settings	3
EDCI 777	Research to Practice	3
EDCI 792	Internship in Education: PK-6 International Elementary Education	6
EDRD 515	Language and Literacy in Global Contexts	3
EDUC 511	Child and Adolescent Development in Global Contexts	3
EDUC 512	Teaching Elementary Social Studies in International Schools	3
EDUC 513	Teaching Elementary Math in International Schools	3
EDUC 514	Teaching Elementary Science in International Schools	3
EDUC 516	Language Across the Elementary International School Curriculum	3
EDUC 520	Elementary Curriculum, Instruction, and Assessment in International Schools	3
EDUC 537	Introduction to Culturally Linguistically Diverse Learners	3
Total Credits		36

Concentration in Teaching English to Speakers of Other Languages (TESOL)(PK-Adult Non-Licensure) (TEOL)

Code	Title	Credits
EDCI 580	Human Development and Learning	3
EDCI 581	Understanding Culturally and Linguistically Diverse Learners	3
EDCI 582	Foundations in Language and Literacy	3
EDCI 583	Research and Practice with Bi-Multilingual Learners	3
EDCI 584	Linguistics for TESOL Professionals	3
EDCI 585	TESOL Methodology	3
EDCI 586	Assessment in English Language Teaching	3
EDCI 587	Content Literacy in English Language Teaching	3
EDCI 588	Consultation and Collaboration in Educational Settings	3
EDCI 589	Cultural and Linguistic Inquiry in TESOL	3
Total Credits		30

Early Childhood and Elementary Education

Concentration in Early Childhood Education for Diverse Learners Non-Licensure (ECDL)

This concentration leads to a master's degree for professionals who already hold an early childhood education teacher license or are interested in working in an early childhood education context outside the classroom.

Coursework

Code	Title	Credits
ECED 501	Developmental Pathways of Diverse Learners, Birth-Adolescence	3
ECED 503	Inclusive Curriculum for Young Learners: Planning Instruction and Guidance	3
ECED 504	Engaging Families of Diverse Young Learners	3
ECED 511	Assessment of Diverse Young Learners	3
Select one course from the following:		3
ECED 601	Frameworks for Early Childhood Education	
ECED 685	Applied and Teacher Research in Early Childhood Education	
ECED 691	Policy Perspectives in Early Childhood Education	
Electives		
Select 15 credits from graduate ECED courses or courses approved by an academic advisor		15
Total Credits		30

Concentration in Early Childhood Education for Diverse Learners Licensure (ECLI)

This 30- to 36-credit concentration offers required coursework for teacher licensure in Early/Primary Education PreK-3. Students who have completed graduate or undergraduate coursework equivalent to concentration coursework prior to admission to this program may request that some courses in this concentration be waived. Students who are eligible to waive coursework must complete a minimum of 30 graduate-level credits to graduate. A grade of B- or better must be earned in all coursework.

In addition to the ECED concentration coursework, students must complete specific content area coursework in English, mathematics, science, and the social sciences as well as mandated state/accreditation assessments.

Coursework

Code	Title	Credits
ECED 501	Developmental Pathways of Diverse Learners, Birth-Adolescence	3
ECED 502	Foundations of Language and Literacy for Diverse Prekindergarten and Kindergarten Learners	3
ECED 503	Inclusive Curriculum for Young Learners: Planning Instruction and Guidance	3
ECED 504	Engaging Families of Diverse Young Learners	3
ECED 511	Assessment of Diverse Young Learners	3
ECED 512	Language and Literacy Assessment and Instruction for Diverse Primary Grade Learners	3
ECED 513	Integrating Social Studies Across the Content Areas for Diverse Young Learners	3
ECED 515	Mathematics for Diverse Young Learners	3
ECED 516	Science for Diverse Young Learners	3
ECED 781	Seminar in Early Childhood Education	3

ECED 788	Internship in Early Childhood Education Prekindergarten-Third Grade	6
Total Credits		36

Concentration in Elementary Education (ELED)

The 39-credit concentration and initial licensure component provides professionals with the specialized knowledge, skills, and dispositions needed to meet the educational needs of students attending today's elementary schools. Specific content and endorsement courses are required; all courses are taught in cohorts only. Two cohort models (one- or two-semester internships) provide flexibility for all students. The two-semester internship cohort begins each spring and fall semester; the one-semester internship cohort begins each summer semester. Contact the Elementary Program for additional information.

All students are required to submit and successfully complete a series of performance-based assessments. These assessments include content knowledge, pedagogical skills, and dispositions.

Students enrolled in this concentration must earn a B or higher in all coursework.

Coursework

Code	Title	Credits
ELED 544	Introduction to Elementary Methods and Management	3
ELED 545	Differentiating Elementary Methods and Management	3
ELED 552	Mathematics Methods for the Elementary Classroom	3
ELED 553	Science Methods for the Elementary Classroom	3
ELED 554	Methods of Teaching Social Studies and Integrating Fine Arts in the Elementary Classroom	3
ELED 555	Literacy Teaching and Learning in Diverse Elementary Classrooms I	3
ELED 556	Literacy Teaching and Learning in Diverse Elementary Classrooms II	3
ELED 559	Research and Assessment in Elementary Education	1-3
ELED 790	Internship in Elementary Education [1]	1-6
ELED 542	Foundations of Elementary Education	3
ELED 543	Children, Family, Culture, and Schools, ages 4-12 Years	3
Select one course from the following:		3
EDSE 501	Introduction to Special Education	
EDUC 537	Introduction to Culturally Linguistically Diverse Learners	
ELED 790	Internship in Elementary Education [2]	
ELED 790	Internship in Elementary Education [3]	
Total Credits		32-39

[1] Year-long internship: students must register for 3 credits in the fall and 6 credits in the spring. Semester-long internship and intensive cohort: students must register for 6 credits during their internship and complete 3 credits of elective coursework. See below for elective course options

[2] applicable for yearlong interns, 3 credits

[3] study abroad in Cambridge, 3 credits

Learning Technologies

The concentration with an instructional technology focus provides professionals the specialized knowledge and skills needed to apply a wide range of learning technologies to achieve educational and instructional goals in P12 schools. The concentration combines current theoretical models and research-based practice with practical, hands-on experiences to cultivate the design of innovative and engaging learning opportunities and instructional applications using state-of-the-art technologies. The concentration serves the various needs and interests of P12 teachers including blended learning, online learning, and the integration of technology in schools.

Concentration in Learning Technologies in Schools (LTSC)

Coursework

Code	Title	Credits
EDIT 760	Blended and Online Teachers and Learners	1
EDIT 761	Models of Blended and Online Learning	2
EDIT 762	Quality K-12 Blended and Online Learning	1
EDIT 763	Tools for K-12 Blended and Online Learning	2
EDIT 764	Blended and Online Communication	3
Select one course from the following:		3
EDIT 767	Designing K-12 Blended and Online Learning	
EDIT 785	Designing School-Based Digital Learning	
Total Credits		12

Specialization

Select one of the following areas of specialization:

Blended and Online Learning in Schools Specialization

Code	Title	Credits
EDIT 765	Facilitating K-12 Blended and Online Learning	2
EDIT 766	Understanding Blended and Online Presence	2
EDIT 768	K-12 Online Design I	1
EDIT 769	K-12 Online Design II	1
EDIT 791	Project Development Practicum I	6
EDIT 792	Project Development Practicum II	6
Total Credits		18

Designing Digital Learning in Schools Specialization

Code	Title	Credits
EDIT 780	Principles of School-Based Design	3
EDIT 781	Designing for Information Using	3
EDIT 782	Designing for Literacy	3
EDIT 783	Designing for Problem Solving	3
EDIT 784	Designing for Community Participation	3

EDIT 787	Teacher Leadership and Advocacy for Digital Learning	3
Total Credits		18

Literacy/Reading

A master's degree and one graduate certificate are available to teachers in grades K-12 who are interested in gaining additional expertise in literacy/reading instruction and leadership. Courses combine current theory with practical, hands-on experience. A graduate certificate focusing on literacy coaching is also available for current reading specialists or literacy leaders. Literacy is also available as a primary or secondary specialization in the PhD in Education degree program.

Concentration in Literacy Leadership for Diverse Schools: K-12 Reading Specialist (LLDR)

This concentration is designed for teachers with at least 1 year of classroom experience and includes a 21-credit sequence of courses in literacy/reading instruction and leadership, 3 credits in research methodology, and 9 credits in courses related to diverse learners (English as a second language [ESL], special education, or an individualized program). Completion of all requirements earns students a master's degree in curriculum and instruction plus eligibility for the K-12 Reading Specialist endorsement in Virginia. (Additional state licensure requirements include an initial teaching license, a satisfactory score on the Reading for Virginia Educators: Reading Specialist exam, and at least 3 years of teaching experience under contract). Some coursework in ESL and/or special education may be applied toward add-on licenses in those areas.

Students must earn a B- or higher in all licensure coursework.

Coursework

Code	Title	Credits
EDRD 630	Literacy Foundations and Instruction for Diverse Populations: Birth through Middle Childhood	3
EDRD 631	Literacy Foundations and Instruction for Diverse Populations: Adolescence Through Adulthood	3
EDRD 632	Literacy Assessments and Interventions for Groups	3
EDRD 633	Literacy Assessments and Interventions for Individuals [1]	3
EDRD 634	School-Based Leadership in Literacy	3
EDRD 635	School-Based Inquiry in Literacy	3
EDRD 637	Supervised Literacy Practicum [1]	3
EDRS 590	Education Research	3
or EDSE 590	Special Education Research	
Electives		
Select three courses from the following: [2]		9
EDAT 510	Introduction to Assistive Technology	
EDAT 524	Universal Design for Learning	
EDCI 510	Linguistics for PreK-12 ESOL Teachers	
EDCI 516	Bilingualism and Language Acquisition Research	
EDCI 519	Methods of Teaching Culturally and Linguistically Diverse Learners	
EDCI 570	Teaching Young Adult Literacy in a Multicultural Setting	
EDCI 621	Introduction to Gifted and Talented Learners	
EDCI 622	Curriculum and Instructional Strategies for Gifted Learners	
EDCI 623	Supporting the Social Emotional Needs of Gifted Learners	
EDCI 630	Supporting English Learners in PK-12 Schools	
EDSE 501	Introduction to Special Education	
EDSE 502	Classroom Management and Applied Behavior Analysis	
EDSE 517	Computer Applications for Special Populations	
EDSE 540	Characteristics of Students with Disabilities who Access the General Curriculum	
EDSE 619	Principles and Procedures of Behavior Analysis	
EDSE 628	Elementary Reading, Curriculum, Strategies for Students Who Access the General Education Curriculum	
EDSE 629	Secondary Curriculum and Strategies for Students with Disabilities who Access the General Curriculum	
EDUC 537	Introduction to Culturally Linguistically Diverse Learners	
EDUC 595	Perspectives on Exceptl Tching	
Total Credits		33

1. Must be taken concurrently
2. Check course descriptions for prerequisites. Substitutions must be approved by your advisor.

Mathematics Specialist Leader

Concentration in Mathematics Specialist Leader (K-8) (MSPL)

This 30-credit concentration is designed for working professionals. Students study mathematics content and pedagogy, teaching, curriculum and professional development. They also explore school-based leadership issues in mathematics education. The internship is an individual experience designed and developed in consultation with a faculty advisor or mentor. This program includes all coursework required for Virginia mathematics specialist (K-8) endorsement. Students must earn a B- or higher in all program coursework. Graduates who apply for this endorsement must have three years of successful teaching experience at the time of application.

Coursework

Code	Title	Credits
EDCI 644	Mathematics Learning and Assessment (K-8)	3
EDCI 645	Curriculum Development in Mathematics Education	3
EDCI 646	Mathematics Education Leadership for School Change	3

EDCI 666	Research in Mathematics Teaching	3
EDCI 702	Internship in Mathematics Education	3
MATH 610	Number Systems and Number Theory for K-8 Teachers	3
MATH 611	Geometry and Measurement for K-8 Teachers	3
MATH 612	Probability and Statistics for K-8 Teachers	3
MATH 613	Algebra and Functions for K-8 Teachers	3
MATH 614	Rational Numbers and Proportional Reasoning for K-8 Teachers	3
Total Credits		30

Secondary Education (6–12)

The secondary education concentrations with a licensure component are designed to meet the needs of individuals who wish to be licensed or need to satisfy the requirements of a provisional license to teach at the secondary level. Specific endorsement areas are biology, chemistry, computer science, earth science, English, history and social science, mathematics, and physics. Note: only six credits (in total) may be taken as non-degree or transferred (with coordinator approval) from another accredited institution.

Grading Policy

Students enrolled in this degree program must earn a B or higher in all coursework.

Field Experience

Clinical experiences in public schools will be required throughout the program (a maximum of 15-30 clock hours per course or 45 clock hours per term). Arrangements will be made at the beginning of each term.

Internship Options

A 6-credit 16-week daytime internship is required for completion of the state-approved licensure program.

Two options are available to meet the needs of most individuals:

- Student teaching internship: A one-term daytime internship in the classroom of a mentor teacher. Teacher candidate assumes co teaching and independent teaching responsibilities.
- On-the-job internship: Available only to students who are employed as full-time provisionally licensed teachers and teaching in their endorsement area in an accredited middle or secondary school and want to complete a master's degree. In lieu of an internship, provisionally licensed teachers may choose to use their full-time teaching to satisfy the experience requirement for a full license; however, the 35-credit master's degree requires that 6 credits of approved coursework be substituted for the internship.

Concentration in Secondary Education Biology (SECB)

Code	Title	Credits
EDRD 619	Literacy in the Content Areas	3
EDUC 547	Scientific Inquiry and the Nature of Science	3
SEED 522	Foundations of Secondary Education	3
SEED 540	Human Development and Learning: Secondary Education	3
SEED 573	Teaching Science in the Secondary School	3
SEED 673	Advanced Methods of Teaching Science in the Secondary School	3
SEED 675	Research in Secondary Education	3
SEED 791	Internship Seminar in Secondary Teaching	2
Six credits of		6
SEED 794	Internship: Secondary Education Science	
Electives		
Select six credits from the following: [1]		6
EDCI 597	Special Topics in Education	
EDUC 674	Assessing Learning and Teaching in the Secondary School Classroom	
Total Credits		35

[1] SEED offers special topics courses that are currently listed as distinct sections of EDCI 597; students must obtain program approval before registering for any of these courses.

Concentration in Secondary Education Chemistry (SECC)

Code	Title	Credits
EDRD 619	Literacy in the Content Areas	3
EDUC 547	Scientific Inquiry and the Nature of Science	3
SEED 522	Foundations of Secondary Education	3
SEED 540	Human Development and Learning: Secondary Education	3
SEED 573	Teaching Science in the Secondary School	3
SEED 673	Advanced Methods of Teaching Science in the Secondary School	3
SEED 675	Research in Secondary Education	3
SEED 791	Internship Seminar in Secondary Teaching	2
Six credits of		6
SEED 794	Internship: Secondary Education Science	
Electives		
Select six credits from the following: [1]		6
EDCI 597	Special Topics in Education	
EDUC 674	Assessing Learning and Teaching in the Secondary School Classroom	
Total Credits		35

[1] SEED offers special topics courses that are currently listed as distinct sections of EDCI 597; students must obtain program approval before registering for any of these courses.

Concentration in Secondary Education Computer Science (SECO)

Code	Title	Credits
EDRD 619	Literacy in the Content Areas	3
SEED 522	Foundations of Secondary Education	3
SEED 540	Human Development and Learning: Secondary Education	3
SEED 566	Teaching Computer Science in the Secondary School	3

SEED 675	Research in Secondary Education	3
SEED 676	Advanced Methods of Teaching Computer Science in the Secondary School	3
SEED 791	Internship Seminar in Secondary Teaching	2
Six credits of		6
SEED 796	Internship: Secondary Education Computer Science	
Electives		
Select nine credits from the following: [1]		9
EDCI 597	Special Topics in Education	
EDUC 674	Assessing Learning and Teaching in the Secondary School Classroom	
Total Credits		35

[1] SEED offers special topics courses that are currently listed as distinct sections of EDCI 597; students must obtain program approval before registering for any of these courses.

Concentration in Secondary Education Earth Science (SECS)

Code	Title	Credits
EDRD 619	Literacy in the Content Areas	3
EDUC 547	Scientific Inquiry and the Nature of Science	3
SEED 522	Foundations of Secondary Education	3
SEED 540	Human Development and Learning: Secondary Education	3
SEED 573	Teaching Science in the Secondary School	3
SEED 673	Advanced Methods of Teaching Science in the Secondary School	3
SEED 675	Research in Secondary Education	3
SEED 791	Internship Seminar in Secondary Teaching	2
Six credits of		6
SEED 794	Internship: Secondary Education Science	
Electives		
Select six credits from the following: [1]		6
EDCI 597	Special Topics in Education	
EDUC 674	Assessing Learning and Teaching in the Secondary School Classroom	
Total Credits		35

[1] SEED offers special topics courses that are currently listed as distinct sections of EDCI 597; students must obtain program approval before registering for any of these courses.

Concentration in Secondary Education English (SECE)

Code	Title	Credits
EDRD 619	Literacy in the Content Areas	3
SEED 502	Young Adult Literature in Multicultural Settings	3
SEED 522	Foundations of Secondary Education	3
SEED 540	Human Development and Learning: Secondary Education	3
SEED 569	Teaching English in the Secondary School	3
SEED 669	Advanced Methods of Teaching English in the Secondary School	3
SEED 675	Research in Secondary Education	3
SEED 791	Internship Seminar in Secondary Teaching	2
Six credits of		6
SEED 792	Internship: Secondary Education English	
Electives		
Select six credits from the following: [1]		6
EDCI 597	Special Topics in Education	
EDUC 674	Assessing Learning and Teaching in the Secondary School Classroom	
Total Credits		35

[1] SEED offers special topics courses that are currently listed as distinct sections of EDCI 597; students must obtain program approval before registering for any of these courses.

Concentration in Secondary Education History and Social Science (SECH)

Code	Title	Credits
EDRD 619	Literacy in the Content Areas	3
SEED 522	Foundations of Secondary Education	3
SEED 540	Human Development and Learning: Secondary Education	3
SEED 567	Teaching Social Studies in the Secondary School	3
SEED 667	Advanced Methods of Teaching Social Sciences in the Secondary School	3
SEED 675	Research in Secondary Education	3
SEED 791	Internship Seminar in Secondary Teaching	2
Six credits of		6
SEED 795	Internship: Secondary Education Social Studies	
Electives		
Select nine credits from the following: [1]		9
EDCI 597	Special Topics in Education	
EDUC 674	Assessing Learning and Teaching in the Secondary School Classroom	
Total Credits		35

[1] SEED offers special topics courses that are currently listed as distinct sections of EDCI 597; students must obtain program approval before registering for any of these courses.

Concentration in Secondary Education Mathematics (SECM)

Code	Title	Credits
EDRD 619	Literacy in the Content Areas	3
SEED 522	Foundations of Secondary Education	3
SEED 540	Human Development and Learning: Secondary Education	3

SEED 572	Teaching Mathematics in the Secondary School	3
SEED 672	Advanced Methods of Teaching Mathematics in the Secondary School	3
SEED 675	Research in Secondary Education	3
SEED 791	Internship Seminar in Secondary Teaching	2
Six credits of		6
SEED 793	Internship: Secondary Education Math	
Electives		
Select nine credits from the following: [1]		9
EDCI 597	Special Topics in Education	
EDUC 674	Assessing Learning and Teaching in the Secondary School Classroom	
Total Credits		35

[1] Other courses may be considered with advisor approval.

Concentration in Secondary Education Physics (SECP)

Code	Title	Credits
EDRD 619	Literacy in the Content Areas	3
EDUC 547	Scientific Inquiry and the Nature of Science	3
SEED 522	Foundations of Secondary Education	3
SEED 540	Human Development and Learning: Secondary Education	3
SEED 573	Teaching Science in the Secondary School	3
SEED 673	Advanced Methods of Teaching Science in the Secondary School	3
SEED 675	Research in Secondary Education	3
SEED 791	Internship Seminar in Secondary Teaching	2
Six credits of		6
SEED 794	Internship: Secondary Education Science	
Electives		
Select six credits from the following: [1]		6
EDCI 597	Special Topics in Education	
EDUC 674	Assessing Learning and Teaching in the Secondary School Classroom	
Total Credits		35

[1] SEED offers special topics courses that are currently listed as distinct sections of EDCI 597; students must obtain program approval before registering for any of these courses.

Transformative Teaching

Concentration in Transformative Teaching (TTCH)

The Transformative Teaching program is a unique fully online, 30-credit master's degree cohort program for working educators who want to further develop their anti-racist, social justice-oriented teaching and leadership skills. The program offers a seamless experience between your work as an educator and your engagement with the course material and participation in the cohort. We build a learning community through a thoughtful sequence of courses and a core faculty team that supports and scaffolds the development of cohort members throughout the 2-years.

The program provides experienced educators with opportunities that help them to: (1) continually identify and rethink the routines and assumptions that shape their work; (2) critically reflect upon and improve their practice with the support of a learning community of peers and faculty (3) design thoughtful and constructive responses to the obstacles that inhibit teaching and student learning; (4) develop the skills and dispositions to commit to a career as an educator; and (5) be leaders in their schools, their professional associations, and their communities as anti-racist, civically-engaged advocates for educators and students.

Experienced educators with or without a master's degree may apply for the 30-credit master's degree program.

Coursework

Code	Title	Credits
EDUC 647	Critical Reflective Practice	1.5
EDUC 649	Critical Dialogue in Education	1.5
EDUC 651	Critical Theories and Pedagogies	3
EDUC 653	Technology and Learning	3
EDUC 655	Teacher Research Methods	3
EDUC 657	Teaching for Democracy and Social Justice	3
EDUC 659	Teacher Leadership	1.5
EDUC 661	Teacher Empowerment and Policy	1.5
EDUC 663	Culturally Relevant Pedagogy	3
EDUC 665	Teacher Inquiry in Practice I	3
EDUC 667	Teacher Inquiry in Practice II	3
EDUC 669	Teaching and Learning in Practice	3
Total Credits		30

Accelerated Master's

Biology, BA or BS/Curriculum and Instruction, Accelerated MEd (Secondary Education Biology Concentration)

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BA or BS in Biology (degree without concentration) and an MEd in Curriculum and Instruction (Secondary Education Biology concentration) (https://catalog.gmu.edu/colleges-schools/education-human-development/school-education/curriculum-instruction-med/) in an accelerated time-frame after satisfactory completion of a minimum of 143 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degree for policies related to this program.

This accelerated option is offered jointly by the Biology Undergraduate Program and the School of Education.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies (https://catalog.gmu.edu/admissions/graduate-policies/) and Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies. For information specific to this accelerated master's program, see Application Requirements and Deadlines (https://cehd.gmu.edu/bachelors-accelerated-masters-program/).

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits, and additional unit-specific criteria.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MEd program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- 3.0 overall GPA
- Completion of specific undergraduate coursework
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following which can be taken as Advanced Standing or Reserve Graduate credit (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) (to be determined by the student and their advisor):

Code	Title	Credits
EDRD 619	Literacy in the Content Areas	3
EDUC 547	Scientific Inquiry and the Nature of Science	3
SEED 522	Foundations of Secondary Education	3
SEED 540	Human Development and Learning: Secondary Education	3
SEED 573	Teaching Science in the Secondary School	3
SEED 673	Advanced Methods of Teaching Science in the Secondary School	3
SEED approved elective		

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies.

Chemistry, BA or BS/Curriculum and Instruction, Accelerated MEd (Secondary Education Chemistry Concentration)

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's option and obtain a BA or BS in Chemistry (degree without concentration) and an MEd in Curriculum and Instruction (Secondary Education Chemistry concentration) (https://catalog.gmu.edu/colleges-schools/education-human-development/school-education/curriculum-instruction-med/) in an accelerated time-frame after satisfactory completion of a minimum of 143 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degree for policies related to this program.

This accelerated option is offered jointly by the Department of Chemistry and Biochemistry and the School of Education.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies (https://catalog.gmu.edu/admissions/graduate-policies/) and Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies. For information specific to this accelerated master's program, see Application Requirements and Deadlines (https://cehd.gmu.edu/bachelors-accelerated-masters-program/).

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits, and additional unit-specific criteria.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MEd program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- 3.0 overall GPA
- Completion of specific undergraduate coursework
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following which can be taken as Advanced Standing or Reserve Graduate credit (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) (to be determined by the student and their advisor):

Code	Title	Credits
EDRD 619	Literacy in the Content Areas	3
EDUC 547	Scientific Inquiry and the Nature of Science	3
SEED 522	Foundations of Secondary Education	3
SEED 540	Human Development and Learning: Secondary Education	3
SEED 573	Teaching Science in the Secondary School	3
SEED 673	Advanced Methods of Teaching Science in the Secondary School	3
SEED approved elective		

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies.

Computer Science, BS/Curriculum and Instruction, Accelerated MEd (Secondary Education Computer Science Concentration)

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BS in Computer Science (degree without concentration) and an MEd in Curriculum and Instruction (Secondary Education Computer Science concentration) (https://catalog.gmu.edu/colleges-schools/education-human-development/school-education/curriculum-instruction-med/)in an accelerated time-frame after satisfactory completion of a minimum of 143 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degree for policies related to this program.

This accelerated option is offered jointly by the Department of Computer Science (https://catalog.gmu.edu/colleges-schools/engineering/computer-science/computer-science-bs/) and the School of Education (https://catalog.gmu.edu/colleges-schools/education-human-development/school-education/).

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies (https://catalog.gmu.edu/admissions/graduate-policies/) and Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies. For information specific to this accelerated master's program, see Application Requirements and Deadlines (https://cehd.gmu.edu/bachelors-accelerated-masters-program/).

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits, and additional unit-specific criteria.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MEd program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- 3.0 overall GPA
- Completion of specific undergraduate coursework
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following which can be taken as Advanced Standing or Reserve Graduate credit (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) (to be determined by the student and their advisor):

Code	Title	Credits
EDRD 619	Literacy in the Content Areas	3
SEED 522	Foundations of Secondary Education	3
SEED 540	Human Development and Learning: Secondary Education	3
SEED 566	Teaching Computer Science in the Secondary School	3
SEED 676	Advanced Methods of Teaching Computer Science in the Secondary School	3
SEED approved elective		

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies.

English, BA or Creative Writing, BFA/Curriculum and Instruction, Accelerated MEd (Secondary Education English Concentration)

Overview

Highly-qualified Mason undergraduates may be admitted to the bachelor's/accelerated master's option and obtain a BA in English or a BFA in Creative Writing and an MEd in Curriculum and Instruction (Secondary Education English concentration) (https://catalog.gmu.edu/colleges-schools/education-human-development/school-education/curriculum-instruction-med/)in an accelerated time-frame after satisfactory completion of a minimum of 143 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degree for policies related to this program.

This accelerated option is offered jointly by the Department of English and the School of Education (https://catalog.gmu.edu/colleges-schools/education-human-development/school-education/).

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies (https://catalog.gmu.edu/admissions/graduate-policies/) and Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies. For information specific to this accelerated master's program, see Application Requirements and Deadlines (https://cehd.gmu.edu/bachelors-accelerated-masters-program/).

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits, and additional unit-specific criteria.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MEd program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- 3.0 overall GPA
- Completion of specific undergraduate coursework
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following which can be taken as Advanced Standing or Reserve Graduate credit (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) (to be determined by the student and their advisor):

Code	Title	Credits
EDCI 570	Teaching Young Adult Literacy in a Multicultural Setting	3
EDRD 619	Literacy in the Content Areas	3
SEED 522	Foundations of Secondary Education	3
SEED 540	Human Development and Learning: Secondary Education	3
SEED 569	Teaching English in the Secondary School	3
SEED 669	Advanced Methods of Teaching English in the Secondary School	3
SEED approved elective		

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies.

Geology, BS/Curriculum and Instruction, Accelerated MEd (Secondary Education Earth Science Concentration)

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BS in Geology (https://catalog.gmu.edu/colleges-schools/science/physics-astronomy/physics-bs/) and an MEd in Curriculum and Instruction (Secondary Education Earth Science concentration) (https://catalog.gmu.edu/colleges-schools/education-human-development/school-education/curriculum-instruction-med/)in an accelerated time-frame after satisfactory completion of a minimum of 143 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/colleges-schools/education-human-development/school-education/) for policies related to this program.

This accelerated option is offered jointly by the Department of Atmospheric, Oceanic, and Earth Sciences (https://catalog.gmu.edu/colleges-schools/science/atmospheric-oceanic-earth-sciences/) and the School of Education (https://catalog.gmu.edu/colleges-schools/education-human-development/school-education/).

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/#text).

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies (https://catalog.gmu.edu/admissions/graduate-policies/) and Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies. For information specific to this accelerated master's program, see Application Requirements and Deadlines (https://cehd.gmu.edu/bachelors-accelerated-masters-program/).

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits, and additional unit-specific criteria.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MEd program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- 3.0 overall GPA
- Completion of specific undergraduate coursework
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following which can be taken as Advanced Standing or Reserve Graduate credit (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) (to be determined by the student and their advisor):

Code	Title	Credits
EDRD 619	Literacy in the Content Areas	3
EDUC 547	Scientific Inquiry and the Nature of Science	3
SEED 522	Foundations of Secondary Education	3
SEED 540	Human Development and Learning: Secondary Education	3
SEED 573	Teaching Science in the Secondary School	3
SEED 673	Advanced Methods of Teaching Science in the Secondary School	3
SEED approved elective		

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies.

History, BA/Curriculum and Instruction, Accelerated MEd (Secondary Education History and Social Science Concentration)

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's option and obtain a BA in History and an MEd in Curriculum and Instruction (Secondary Education History and Social Science concentration) (https://catalog.gmu.edu/colleges-schools/education-human-development/school-education/curriculum-instruction-med/)in an accelerated time-frame after satisfactory completion of a minimum of 143 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degree for policies related to this program.

This accelerated option is offered jointly by the Department of History and Art History and the School of Education.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies (https://catalog.gmu.edu/admissions/graduate-policies/) and Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies. For information specific to this accelerated master's program, see Application Requirements and Deadlines (https://cehd.gmu.edu/bachelors-accelerated-masters-program/).

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits, and additional unit-specific criteria.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MEd program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- 3.0 overall GPA
- Completion of specific undergraduate coursework
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following which can be taken as Advanced Standing or Reserve Graduate credit (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) (to be determined by the student and their advisor):

Code	Title	Credits
EDRD 619	Literacy in the Content Areas	3
SEED 522	Foundations of Secondary Education	3
SEED 540	Human Development and Learning: Secondary Education	3
SEED 567	Teaching Social Studies in the Secondary School	3
SEED 667	Advanced Methods of Teaching Social Sciences in the Secondary School	3
SEED approved elective		

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies.

Integrative Studies, BA (Social Science for Education Concentration)/Curriculum and Instruction, Accelerated MEd (Secondary Education History and Social Science Concentration)

Overview

Highly-qualified Mason undergraduates may be admitted to the bachelor's/accelerated master's option and obtain a BA in Integrative Studies (concentration in social science for education) and an MEd in Curriculum and Instruction (Secondary Education History and Social Science concentration) (https://catalog.gmu.edu/colleges-schools/education-human-development/school-education/curriculum-instruction-med/)in an accelerated time-frame after satisfactory completion of a minimum of 143 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degree for policies related to this program.

This accelerated option is offered jointly by the School of Integrative Studies and the School of Education.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies (https://catalog.gmu.edu/admissions/graduate-policies/) and Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies. For information specific to this accelerated master's program, see Application Requirements and Deadlines (https://cehd.gmu.edu/bachelors-accelerated-masters-program/).

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits, and additional unit-specific criteria.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MEd program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- 3.0 overall GPA
- Completion of specific undergraduate coursework
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following which can be taken as Advanced Standing or Reserve Graduate credit (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) (to be determined by the student and their advisor):

Code	Title	Credits
EDRD 619	Literacy in the Content Areas	3
SEED 522	Foundations of Secondary Education	3
SEED 540	Human Development and Learning: Secondary Education	3
SEED 567	Teaching Social Studies in the Secondary School	3
SEED 667	Advanced Methods of Teaching Social Sciences in the Secondary School	3
SEED approved elective		

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies.

Mathematics, BA or BS/Curriculum and Instruction, Accelerated MEd, (Secondary Education Mathematics Concentration)

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BA or BS in Mathematics and an MEd in Curriculum and Instruction (Secondary Education Mathematics concentration) (https://catalog.gmu.edu/colleges-schools/education-human-development/school-education/curriculum-instruction-med/)in an accelerated time-frame after satisfactory completion of a minimum of 143 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degree for policies related to this program.

This accelerated option is offered jointly by the Department of Mathematical Sciences and the School of Education.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies (https://catalog.gmu.edu/admissions/graduate-policies/) and Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies. For information specific to this accelerated master's program, see Application Requirements and Deadlines (https://cehd.gmu.edu/bachelors-accelerated-masters-program/).

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits, and additional unit-specific criteria.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MEd program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- 3.0 overall GPA
- Completion of specific undergraduate coursework
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following which can be taken as Advanced Standing or Reserve Graduate credit (https://

catalog.gmu.edu/policies/academic/graduate-policies/#text) (to be determined by the student and their advisor):

Code	Title	Credits
EDRD 619	Literacy in the Content Areas	3
SEED 522	Foundations of Secondary Education	3
SEED 540	Human Development and Learning: Secondary Education	3
SEED 572	Teaching Mathematics in the Secondary School	3
SEED 672	Advanced Methods of Teaching Mathematics in the Secondary School	3
SEED approved elective		

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies.

Physics, BS/Curriculum and Instruction, Accelerated MEd (Secondary Education Physics Concentration)

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BS in Physics and an MEd in Curriculum and Instruction (Secondary Education Physics concentration) (https://catalog.gmu.edu/colleges-schools/education-human-development/school-education/curriculum-instruction-med/)in an accelerated time-frame after satisfactory completion of a minimum of 143 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degrees for policies related to this program.

This accelerated option is offered jointly by the department of Physics and Astronomy and the School of Education.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies (https://catalog.gmu.edu/admissions/graduate-policies/) and Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies. For information specific to this accelerated master's program, see Application Requirements and Deadlines (https://cehd.gmu.edu/bachelors-accelerated-masters-program/).

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits, and additional unit-specific criteria.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MEd program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- 3.0 overall GPA
- Completion of specific undergraduate coursework
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following which can be taken as Advanced Standing or Reserve Graduate credit (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) (to be determined by the student and their advisor):

Code	Title	Credits
EDRD 619	Literacy in the Content Areas	3
EDUC 547	Scientific Inquiry and the Nature of Science	3
SEED 522	Foundations of Secondary Education	3
SEED 540	Human Development and Learning: Secondary Education	3
SEED 573	Teaching Science in the Secondary School	3
SEED 673	Advanced Methods of Teaching Science in the Secondary School	3
SEED approved elective		

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies.

Bachelor's Degree (any)/Curriculum and Instruction, Accelerated MEd (Arabic Foreign Language Education (PK-12 Licensure) Concentration)

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BA or BS in any degree area and an MEd in Curriculum and Instruction (Arabic Foreign Language Education (PK-12 Licensure) concentration) (https://catalog.gmu.edu/colleges-schools/education-human-development/school-education/curriculum-instruction-med/)in an accelerated time-frame after satisfactory completion of a minimum of 144 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degree for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies. For information specific to this accelerated master's program, see Application Requirements and Deadlines (https://cehd.gmu.edu/bachelors-accelerated-masters-program/).

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits and additional unit-specific criteria (see Application Requirements and Deadlines) (https://cehd.gmu.edu/bachelors-accelerated-masters-program/).

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MEd program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- 3.0 overall GPA
- Completion of specific undergraduate coursework
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following which can be taken as Advanced Standing or Reserve Graduate credit (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) (to be determined by the student and their advisor):

Code	Title	Credits
EDCI 516	Bilingualism and Language Acquisition Research	3
EDCI 520	Assessment of Language Learners	3
EDCI 560	Methods of Teaching in Foreign/World Languages	3
EDRD 515	Language and Literacy in Global Contexts	3
EDUC 511	Child and Adolescent Development in Global Contexts	3
EDUC 537	Introduction to Culturally Linguistically Diverse Learners	3

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies.

Bachelor's Degree (any)/Curriculum and Instruction, Accelerated MEd (Chinese Foreign Language Education (PK-12 Licensure) Concentration)

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BA or BS in any degree area and an MEd in Curriculum and Instruction (Chinese Foreign Language Education (PK-12 Licensure) concentration) (https://catalog.gmu.edu/colleges-schools/education-human-development/school-education/curriculum-instruction-med/)in an accelerated time-frame after satisfactory completion of a minimum of 144 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degree for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies. For information specific to this accelerated master's program, see Application Requirements and Deadlines (https://cehd.gmu.edu/bachelors-accelerated-masters-program/).

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits, and additional unit-specific criteria (see Application Requirements and Deadlines) (https://cehd.gmu.edu/bachelors-accelerated-masters-program/).

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MEd program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- 3.0 overall GPA
- Completion of specific undergraduate coursework
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following which can be taken as Advanced Standing or Reserve Graduate credit (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) (to be determined by the student and their advisor):

Code	Title	Credits
EDCI 516	Bilingualism and Language Acquisition Research	3
EDCI 520	Assessment of Language Learners	3
EDCI 560	Methods of Teaching in Foreign/World Languages	3
EDRD 515	Language and Literacy in Global Contexts	3
EDUC 511	Child and Adolescent Development in Global Contexts	3
EDUC 537	Introduction to Culturally Linguistically Diverse Learners	3

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies.

Bachelor's Degree (any)/Curriculum and Instruction, Accelerated MEd (Early Childhood Education for Diverse Learners (Licensure) Concentration)

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BA or BS in any degree area and an MEd in Curriculum and Instruction (Early Childhood Education for Diverse Learners (Licensure) concentration) (https://catalog.gmu.edu/colleges-schools/education-human-development/school-education/curriculum-instruction-med/) in an accelerated time-frame after completion of 144 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degree for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies (https://catalog.gmu.edu/admissions/graduate-policies/) and Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies. For information specific to this accelerated master's program, see Application Requirements and Deadlines (https://cehd.gmu.edu/bachelors-accelerated-masters-program/).

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits, and additional unit-specific criteria (see Application Requirements and Deadlines) (https://cehd.gmu.edu/bachelors-accelerated-masters-program/).

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MEd program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- 3.0 overall GPA
- Completion of specific undergraduate coursework
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following (to be determined by the student and their advisor):

Advanced Standing Courses (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) **(up to 12 credits)**

Code	Title	Credits
ECED 501	Developmental Pathways of Diverse Learners, Birth-Adolescence	3
ECED 502	Foundations of Language and Literacy for Diverse Prekindergarten and Kindergarten Learners	3
ECED 503	Inclusive Curriculum for Young Learners: Planning Instruction and Guidance	3
ECED 504	Engaging Families of Diverse Young Learners	3
ECED 512	Language and Literacy Assessment and Instruction for Diverse Primary Grade Learners	3
ECED 513	Integrating Social Studies Across the Content Areas for Diverse Young Learners	3
ECED 515	Mathematics for Diverse Young Learners	3
ECED 516	Science for Diverse Young Learners	3

ECED approved elective

Reserve Graduate Credit Courses (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) **(up to 6 credits)**

Code	Title	Credits
ECED 504	Engaging Families of Diverse Young Learners	3
ECED 511	Assessment of Diverse Young Learners	3
ECED 512	Language and Literacy Assessment and Instruction for Diverse Primary Grade Learners	3
ECED 513	Integrating Social Studies Across the Content Areas for Diverse Young Learners	3
ECED 515	Mathematics for Diverse Young Learners	3
ECED 516	Science for Diverse Young Learners	3

ECED approved elective

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degree **(**https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7**) policies.**

Bachelor's Degree (any)/Curriculum and Instruction, Accelerated MEd (Early Childhood Education for Diverse Learners (Non-Licensure) Concentration)

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BA or BS in any degree area and an MEd in Curriculum and Instruction (Early Childhood Education for Diverse Learners (Non-Licensure) concentration) (https://catalog.gmu.edu/colleges-schools/education-human-development/school-education/curriculum-instruction-med/) in an accelerated time-frame after completion of 138 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degree for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies (https://catalog.gmu.edu/admissions/graduate-policies/) and Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies. For information specific to this accelerated master's program, see Application Requirements and Deadlines (https://cehd.gmu.edu/bachelors-accelerated-masters-program/).

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits, and additional unit-specific criteria (see Application Requirements and Deadlines) (https://cehd.gmu.edu/bachelors-accelerated-masters-program/).

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MEd program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- 3.0 overall GPA
- Completion of specific undergraduate coursework
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following (to be determined by the student and their advisor):

Advanced Standing Courses **(**https://catalog.gmu.edu/policies/academic/graduate-policies/#text**) (up to 12 credits)**

Code	Title	Credits
ECED 501	Developmental Pathways of Diverse Learners, Birth-Adolescence	3
ECED 502	Foundations of Language and Literacy for Diverse Prekindergarten and Kindergarten Learners	3
ECED 503	Inclusive Curriculum for Young Learners: Planning Instruction and Guidance	3
ECED 504	Engaging Families of Diverse Young Learners	3
ECED 505	Introduction to Early Childhood Special Education	3
ECED 506	Medical and Developmental Aspects of Disabilities of Diverse Young Learners	3
ECED 512	Language and Literacy Assessment and Instruction for Diverse Primary Grade Learners	3
ECED 513	Integrating Social Studies Across the Content Areas for Diverse Young Learners	3
ECED 515	Mathematics for Diverse Young Learners	3
ECED 516	Science for Diverse Young Learners	3
ECED 522	Developing Language, Literacy, and Communication of Diverse Infants and Toddlers	3
ECED 523	Early Intervention for Infants Toddlers with Disabilities: Collaborative Consultative Approaches	3

ECED approved elective

Reserve Graduate Credit Courses **(**https://catalog.gmu.edu/policies/academic/graduate-policies/#text**) (up to 6 credits)**

Code	Title	Credits
ECED 505	Introduction to Early Childhood Special Education	3
ECED 506	Medical and Developmental Aspects of Disabilities of Diverse Young Learners	3
ECED 511	Assessment of Diverse Young Learners	3
ECED 512	Language and Literacy Assessment and Instruction for Diverse Primary Grade Learners	3
ECED 513	Integrating Social Studies Across the Content Areas for Diverse Young Learners	3
ECED 515	Mathematics for Diverse Young Learners	3
ECED 516	Science for Diverse Young Learners	3
ECED 522	Developing Language, Literacy, and Communication of Diverse Infants and Toddlers	3
ECED 523	Early Intervention for Infants Toddlers with Disabilities: Collaborative Consultative Approaches	3
ECED 597	Special Topics in Early Childhood Education	1-3

ECED approved elective

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degree **(**https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7**) policies.**

Bachelor's Degree (any)/Curriculum and Instruction, Accelerated MEd (Elementary Education Concentration)

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BA or BS in any degree area and an MEd in Curriculum and Instruction (Elementary Education concentration) (https://catalog.gmu.edu/colleges-schools/education-human-development/school-education/curriculum-instruction-med/) in an accelerated time-frame after satisfactory completion of 138 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degree for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies (https://catalog.gmu.edu/admissions/graduate-policies/) and Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies. For information specific to this accelerated master's program, see Application Requirements and Deadlines (https://cehd.gmu.edu/bachelors-accelerated-masters-program/).

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits, and additional unit-specific criteria (see Application Requirements and Deadlines) (https://cehd.gmu.edu/bachelors-accelerated-masters-program/).

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MEd program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- 3.0 overall GPA
- Completion of specific undergraduate coursework
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing Courses **(**https://catalog.gmu.edu/policies/academic/graduate-policies/#text**) (up to 12 credits)**

Code	Title	Credits
ELED 542	Foundations of Elementary Education	3
ELED 543	Children, Family, Culture, and Schools, ages 4-12 Years	3
ELED 544	Introduction to Elementary Methods and Management	3
ELED 555	Literacy Teaching and Learning in Diverse Elementary Classrooms I	3

Reserve Graduate Credit Courses **(**https://catalog.gmu.edu/policies/academic/graduate-policies/#text**) (up to 6 credits)**

Code	Title	Credits
ELED 545	Differentiating Elementary Methods and Management	3
ELED 552	Mathematics Methods for the Elementary Classroom	3
ELED 553	Science Methods for the Elementary Classroom	3
ELED 554	Methods of Teaching Social Studies and Integrating Fine Arts in the Elementary Classroom	3
ELED 556	Literacy Teaching and Learning in Diverse Elementary Classrooms II	3

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies.

Bachelor's Degree (any)/Curriculum and Instruction, Accelerated MEd (English to Speakers of Other Languages (ESOL) Education (PK-12 Licensure) Concentration)

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BA or BS in any degree area and an MEd in Curriculum and Instruction (English to Speakers of Other Languages (ESOL) Education (PK-12 Licensure) concentration) (https://catalog.gmu.edu/colleges-schools/education-human-development/school-education/curriculum-instruction-med/) in an accelerated time-frame after satisfactory completion of 144 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degree for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies. For information specific to this accelerated master's program, see Application Requirements

and Deadlines (https://cehd.gmu.edu/bachelors-accelerated-masters-program/).

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits, and additional unit-specific criteria (see Application Requirements and Deadlines) (https://cehd.gmu.edu/bachelors-accelerated-masters-program/).

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MEd program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- 3.0 overall GPA
- Completion of specific undergraduate coursework
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following which can be taken as Advanced Standing or Reserve Graduate credit (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) (to be determined by the student and their advisor):

Code	Title	Credits
EDCI 510	Linguistics for PreK-12 ESOL Teachers	3
EDCI 516	Bilingualism and Language Acquisition Research	3
EDCI 519	Methods of Teaching Culturally and Linguistically Diverse Learners	3
EDRD 515	Language and Literacy in Global Contexts	3
EDUC 511	Child and Adolescent Development in Global Contexts	3
EDUC 537	Introduction to Culturally Linguistically Diverse Learners	3

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies.

Bachelor's Degree (any)/Curriculum and Instruction, Accelerated MEd (English to Speakers of Other Languages (ESOL) Education (PK-12 Non-Licensure) Concentration)

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BA or BS in any degree area and an MEd in Curriculum and Instruction (English to Speakers of Other Languages (ESOL) Education (PK-12 Non-Licensure) concentration) (https://catalog.gmu.edu/colleges-schools/education-human-development/school-education/curriculum-instruction-med/) in an accelerated time-frame after satisfactory completion of 138 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degree for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies. For information specific to this accelerated master's program, see Application Requirements and Deadlines (https://cehd.gmu.edu/bachelors-accelerated-masters-program/).

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits, and additional unit-specific criteria (see Application Requirements and Deadlines) (https://cehd.gmu.edu/bachelors-accelerated-masters-program/).

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MEd program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- 3.0 overall GPA
- Completion of specific undergraduate coursework
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following which can be taken as Advanced Standing or Reserve Graduate credit (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) (to be determined by the student and their advisor):

Code	Title	Credits
EDCI 510	Linguistics for PreK-12 ESOL Teachers	3
EDCI 516	Bilingualism and Language Acquisition Research	3
EDCI 519	Methods of Teaching Culturally and Linguistically Diverse Learners	3
EDRD 515	Language and Literacy in Global Contexts	3
EDUC 511	Child and Adolescent Development in Global Contexts	3
EDUC 537	Introduction to Culturally Linguistically Diverse Learners	3

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies.

Bachelor's Degree (any)/Curriculum and Instruction, Accelerated MEd (French Foreign Language Education (PK-12 Licensure) Concentration)

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BA or BS in any degree area and an MEd in Curriculum and (https://catalog.gmu.edu/colleges-schools/education-human-development/school-education/curriculum-instruction-med/)Instruction Instruction, (French Foreign Language Education (PK-12 Licensure) concentration) in an accelerated time-frame after satisfactory completion of a minimum of 144 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degree for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies. For information specific to this accelerated master's program, see Application Requirements and Deadlines (https://cehd.gmu.edu/bachelors-accelerated-masters-program/).

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits, and additional unit-specific criteria (see Application Requirements and Deadlines).

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MEd program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- 3.0 overall GPA
- Completion of specific undergraduate coursework
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following which can be taken as Advanced Standing or Reserve Graduate credit (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) (to be determined by the student and their advisor):

Code	Title	Credits
EDCI 516	Bilingualism and Language Acquisition Research	3
EDCI 520	Assessment of Language Learners	3
EDCI 560	Methods of Teaching in Foreign/World Languages	3
EDRD 515	Language and Literacy in Global Contexts	3
EDUC 511	Child and Adolescent Development in Global Contexts	3
EDUC 537	Introduction to Culturally Linguistically Diverse Learners	3

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies.

Bachelor's Degree (any)/Curriculum and Instruction, Accelerated MEd (German Foreign Language Education (PK-12 Licensure) Concentration)

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BA or BS in any degree area and an MEd in Curriculum and (https://catalog.gmu.edu/colleges-schools/education-human-development/school-education/curriculum-instruction-med/)Instruction (German Foreign Language Education (PK-12 Licensure) concentration) in an accelerated time-frame after satisfactory completion of 144 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degree for policies related to this program.

Students in an accelerated degree option must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies. For information specific to this accelerated master's program, see Application Requirements and Deadlines (https://cehd.gmu.edu/bachelors-accelerated-masters-program/).

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits, and additional unit-specific criteria (see Application Requirements and Deadlines) (https://cehd.gmu.edu/bachelors-accelerated-masters-program/).

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MEd program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- 3.0 overall GPA
- Completion of specific undergraduate coursework
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following which can be taken as Advanced Standing or Reserve Graduate credit (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) (to be determined by the student and their advisor):

Code	Title	Credits
EDCI 516	Bilingualism and Language Acquisition Research	3
EDCI 520	Assessment of Language Learners	3
EDCI 560	Methods of Teaching in Foreign/World Languages	3
EDRD 515	Language and Literacy in Global Contexts	3
EDUC 511	Child and Adolescent Development in Global Contexts	3
EDUC 537	Introduction to Culturally Linguistically Diverse Learners	3

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies.

Bachelor's Degree (any)/Curriculum and Instruction, Accelerated MEd (Japanese Foreign Language Education (PK-12 Licensure) Concentration)

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BA or BS in any degree area and an MEd in Curriculum and Instruction, (Japanese Foreign Language Education (PK-12 Licensure) concentration) (https://catalog.gmu.edu/colleges-schools/education-human-development/school-education/curriculum-instruction-med/) in an accelerated time-frame after satisfactory completion of 144 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degree for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies. For information specific to this accelerated master's program, see Application Requirements and Deadlines (https://cehd.gmu.edu/bachelors-accelerated-masters-program/).

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits, and additional unit-specific criteria (see Application Requirements and Deadlines) (https://cehd.gmu.edu/bachelors-accelerated-masters-program/).

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MEd program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- 3.0 overall GPA
- Completion of specific undergraduate coursework
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following which can be taken as Advanced Standing or Reserve Graduate credit (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) (to be determined by the student and their advisor):

Code	Title	Credits
EDCI 516	Bilingualism and Language Acquisition Research	3
EDCI 520	Assessment of Language Learners	3
EDCI 560	Methods of Teaching in Foreign/World Languages	3
EDRD 515	Language and Literacy in Global Contexts	3
EDUC 511	Child and Adolescent Development in Global Contexts	3
EDUC 537	Introduction to Culturally Linguistically Diverse Learners	3

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies.

Bachelor's Degree (any)/Curriculum and Instruction, Accelerated MEd (Korean Foreign Language Education (PK-12 Licensure) Concentration)

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BA or BS in any degree area and an MEd in Curriculum and Instruction (Korean Foreign Language

Education (PK-12 Licensure) concentration) (https://catalog.gmu.edu/colleges-schools/education-human-development/school-education/curriculum-instruction-med/) in an accelerated time-frame after satisfactory completion of 144 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degree for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies. For information specific to this accelerated master's program, see Application Requirements and Deadlines (https://cehd.gmu.edu/bachelors-accelerated-masters-program/).

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits, and additional unit-specific criteria (see Application Requirements and Deadlines) (https://cehd.gmu.edu/bachelors-accelerated-masters-program/).

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MEd program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- 3.0 overall GPA
- Completion of specific undergraduate coursework
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following which can be taken as Advanced Standing or Reserve Graduate credit (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) (to be determined by the student and their advisor):

Code	Title	Credits
EDCI 516	Bilingualism and Language Acquisition Research	3
EDCI 520	Assessment of Language Learners	3
EDCI 560	Methods of Teaching in Foreign/World Languages	3
EDRD 515	Language and Literacy in Global Contexts	3
EDUC 511	Child and Adolescent Development in Global Contexts	3
EDUC 537	Introduction to Culturally Linguistically Diverse Learners	3

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies.

Bachelor's Degree (any)/Curriculum and Instruction, Accelerated MEd (Latin Foreign Language Education (PK-12 Licensure) Concentration)

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BA or BS in any degree area and an MEd in Curriculum and Instruction (Latin Foreign Language Education (PK-12 Licensure) concentration) (https://catalog.gmu.edu/colleges-schools/education-human-development/school-education/curriculum-instruction-med/) in an accelerated time-frame after satisfactory completion of 144 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degree for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies. For information specific to this accelerated master's program, see Application Requirements and Deadlines (https://cehd.gmu.edu/bachelors-accelerated-masters-program/).

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits, and additional unit-specific criteria (see Application Requirements and Deadlines) (https://cehd.gmu.edu/bachelors-accelerated-masters-program/).

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MEd program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- 3.0 overall GPA
- Completion of specific undergraduate coursework
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following which can be taken as Advanced Standing or Reserve Graduate credit (https://

catalog.gmu.edu/policies/academic/graduate-policies/#text) (to be determined by the student and their advisor):

Code	Title	Credits
EDCI 516	Bilingualism and Language Acquisition Research	3
EDCI 520	Assessment of Language Learners	3
EDCI 560	Methods of Teaching in Foreign/World Languages	3
EDRD 515	Language and Literacy in Global Contexts	3
EDUC 511	Child and Adolescent Development in Global Contexts	3
EDUC 537	Introduction to Culturally Linguistically Diverse Learners	3

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies.

Bachelor's Degree (any)/Curriculum and Instruction, Accelerated MEd (Spanish Foreign Language Education (PK-12 Licensure) Concentration)

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BA or BS in any degree area and an MEd in Curriculum and Instruction (Spanish Foreign Language Education (PK-12 Licensure) concentration) (https://catalog.gmu.edu/colleges-schools/education-human-development/school-education/curriculum-instruction-med/) in an accelerated time-frame after satisfactory completion of 144 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degree for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies. For information specific to this accelerated master's program, see Application Requirements and Deadlines (https://cehd.gmu.edu/bachelors-accelerated-masters-program/).

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits, and additional unit-specific criteria (see Application Requirements and Deadlines) (https://cehd.gmu.edu/bachelors-accelerated-masters-program/).

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MEd program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- 3.0 overall GPA
- Completion of specific undergraduate coursework
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following which can be taken as Advanced Standing or Reserve Graduate credit (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) (to be determined by the student and their advisor):

Code	Title	Credits
EDCI 516	Bilingualism and Language Acquisition Research	3
EDCI 520	Assessment of Language Learners	3
EDCI 560	Methods of Teaching in Foreign/World Languages	3
EDRD 515	Language and Literacy in Global Contexts	3
EDUC 511	Child and Adolescent Development in Global Contexts	3
EDUC 537	Introduction to Culturally Linguistically Diverse Learners	3

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies.

Early Childhood Education for Diverse Learners Minor

Banner Code: ECDL

Academic Advising

Phone: 703-993-3844
Email: earlyed@gmu.edu
Website: education.gmu.edu/early-childhood/academics/undergraduate-minor-early-childhood-education-diverse-learners

This 15-credit minor provides undergraduate students with background knowledge in Early Childhood Education for Diverse Learners. Completing this minor partially fulfills requirements for licensure in Early Childhood Education, PK-3 and Early Childhood Special Education in Virginia.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 15

Coursework

Code	Title	Credits
ECED 401	Developmental Pathways of Diverse Learners, Birth-Adolescence	3
ECED 402	Foundations of Language and Literacy for Diverse Prekindergarten and Kindergarten Learners	3
ECED 403	Inclusive Curriculum for Young Learners: Planning Instruction and Guidance	3
ECED 405	Introduction to Early Childhood Special Education	3
Select 3 credits from undergraduate ECED courses		3
Total Credits		15

Early Childhood Education for Diverse Learners, BSEd

Banner Code: E1-BSED-ECDL

Phone: 703-993-3844
Email: earlyed@gmu.edu
Website: https://education.gmu.edu/early-childhood/

This bachelor's degree provides students with the opportunity to develop a strong cross-disciplinary foundation as well as specialized knowledge to work with culturally, linguistically, ability, and socioeconomically diverse young children, families, and other professionals. The courses in the major ensure that students engage in a well-rounded, cohesive program of studies that prepares them to be high-quality early childhood educators. Students may select one of the optional teacher licensure concentrations (i.e., Early Childhood Special Education, Early/Primary Education PreK-3, Early Childhood Special Education and Early/Primary Education PreK-3) or a non-licensure sequence to fulfill the requirements for the BSEd in Early Childhood Education for Diverse Learners.

Admissions & Policies

Admissions

Students entering as freshmen with an interest in majoring in Early Childhood Education for Diverse Learners will initially be accepted into the Early Childhood Education for Diverse Learners, BSEd, without concentration.

Four-Year Students

To declare a concentration in Early Childhood Special Education (Licensure), four-year students must:

- complete a minimum of 45 credits
- attain a cumulative GPA of 2.50.

To declare a concentration in Early/Primary Education PreK-3 (Licensure) or and Early/Primary Education PreK-3 (Dual Licensure), four-year students must:

- complete a minimum of 45 credits
- attain a cumulative GPA of 2.50

Degree-Seeking Transfer Students

To declare a concentration in Early Childhood Special Education (Licensure), transfer students must:

- complete a minimum of 45 credits
- earn a cumulative GPA of 2.50 at previous institution or complete 12 credits at Mason with a 2.50 GPA

To declare a concentration in Early/Primary Education PreK-3 (Licensure) or Early/Primary Education PreK-3 (Dual Licensure), transfer students must:

- complete a minimum of 45 credits
- earn a cumulative GPA of 2.50 at previous institution or complete 12 credits at Mason with a 2.50 GPA

Policies

Students in the licensure concentrations must maintain at least a 2.50 GPA and earn a C or better in their program core and concentration coursework. Prior to applying for internships, students in all licensure concentrations, must successfully complete:

- Emergency First Aid, CPR and AED certification or training
- Virginia Communication & Literacy Assessment (VCLA)
- Praxis Core Math, SAT Math or ACT Math

Students enrolled in the Early/Primary Education PreK-3 Licensure or Early/Primary Education PreK-3 (Dual Licensure) concentration must also complete the following:

- Praxis Elementary Education: Multiple Subjects (prior to applying for internship)
- Reading for Virginia Educators: Elementary and Special Education (prior to completing internship)

Licensure testing requirements are determined by the Commonwealth of Virginia and may change at any time. If changes to these requirements occur, students must meet the current testing and licensure requirements as set forth in the legal Code of Virginia.

Requirements

Degree Requirements

Total credits: 120

Mason Core

Code	Title	Credits
Foundation Requirements:		
Written Communication		3
Oral Communication		3
Quantitative Reasoning		3
MATH 106	Quantitative Reasoning (Mason Core) (recommended course)	

Information Technology and Computing		3
Exploration Requirements:		
Arts		3
Global Understanding		3
GGS 101	Major World Regions (Mason Core) (recommended course)	
Literature		3
Natural Science		8
Two lab sciences in different disciplines (recommended)		
Social and Behavioral Sciences		3
Western Civilization/World History		3
Integration Requirement:		
Written Communication		3
ENGH 302	Advanced Composition (Mason Core)	
Writing Intensive		
ECED 411	Assessment of Diverse Young Learners	
Synthesis/Capstone (fulfilled by major requirements)		
Total Credits		38

Program Core Requirements

Code	Title	Credits
ECED 201	Introduction to Early Childhood Education for Diverse Learners	3
ECED 401	Developmental Pathways of Diverse Learners, Birth-Adolescence	3
ECED 402	Foundations of Language and Literacy for Diverse Prekindergarten and Kindergarten Learners	3
ECED 403	Inclusive Curriculum for Young Learners: Planning Instruction and Guidance	3
ECED 404	Engaging Families of Diverse Learners, Birth – Grade 6	3
ECED 411	Assessment of Diverse Young Learners	3
ECED 490	Internship in Early Childhood Education (Mason Core) (12 credits are required)	3-6
ECED 491	Seminar in Early Childhood Education for Diverse Learners	3
Total Credits		33

BSEd without Concentration

Code	Title	Credits
Select 12 credits from the following:		12
ECED 405	Introduction to Early Childhood Special Education	
ECED 406	Medical and Developmental Aspects of Disabilities of Diverse Young Learners	
ECED 412	Language and Literacy Assessment and Instruction for Diverse Primary Grade Learners	
ECED 413	Integrating Social Studies Across the Content Areas for Diverse Young Learners	
ECED 415	Mathematics for Diverse Young Learners	
ECED 416	Science for Diverse Young Learners	
ECED 422	Developing Language, Literacy, and Communication of Diverse Infants and Toddlers	
ECED 423	Early Intervention for Infants Toddlers with Disabilities: Collaborative Consultative Approaches	
Total Credits		12

Electives

Code	Title	Credits
Select an additional 37 credits from any courses.		37
Students are encouraged to pursue a minor to partially fulfill elective requirements (http://catalog.gmu.edu/programs/#filter=filter_29)		
Total Credits		37

Concentration in Early Childhood Special Education (Licensure) (ECLC)

Code	Title	Credits
ECED 405	Introduction to Early Childhood Special Education	3
ECED 406	Medical and Developmental Aspects of Disabilities of Diverse Young Learners	3
ECED 422	Developing Language, Literacy, and Communication of Diverse Infants and Toddlers	3
ECED 423	Early Intervention for Infants Toddlers with Disabilities: Collaborative Consultative Approaches	3
Total Credits		12

Electives

Code	Title	Credits
Select an additional 37 credits from any courses.		37
Students are encouraged to pursue a minor to partially fulfill elective requirements (http://catalog.gmu.edu/programs/#filter=filter_29)		
Total Credits		37

Concentration in Early/Primary Education PreK-3 (Licensure) (EPEL)

Code	Title	Credits
ECED 412	Language and Literacy Assessment and Instruction for Diverse Primary Grade Learners	3
ECED 413	Integrating Social Studies Across the Content Areas for Diverse Young Learners	3
ECED 415	Mathematics for Diverse Young Learners	3
ECED 416	Science for Diverse Young Learners	3
MATH 110	Introductory Probability (Mason Core)	3
or MATH 271	Mathematics for the Elementary School Teachers I	
or MATH course approved by advisor		
Total Credits		15

Electives

Code	Title	Credits
Select an additional 34 credits from any courses.		34
Students are encouraged to pursue a minor to partially fulfill elective requirements (http://catalog.gmu.edu/programs/#filter=filter_29)		
Total Credits		34

Concentration in Early Childhood Special Education and Early/Primary Education PreK-3 (Dual Licensure) (EEDL)

Code	Title	Credits
ECED 405	Introduction to Early Childhood Special Education	3
ECED 406	Medical and Developmental Aspects of Disabilities of Diverse Young Learners	3
ECED 412	Language and Literacy Assessment and Instruction for Diverse Primary Grade Learners	3
ECED 413	Integrating Social Studies Across the Content Areas for Diverse Young Learners	3
ECED 415	Mathematics for Diverse Young Learners	3
ECED 416	Science for Diverse Young Learners	3
ECED 422	Developing Language, Literacy, and Communication of Diverse Infants and Toddlers	3
ECED 423	Early Intervention for Infants Toddlers with Disabilities: Collaborative Consultative Approaches	3
MATH 110	Introductory Probability (Mason Core)	3
or MATH 271	Mathematics for the Elementary School Teachers I	
or MATH course approved by advisor		
Total Credits		27

Electives

Code	Title	Credits
Select an additional 22 credits from any courses.		22
Students are encouraged to pursue a minor to partially fulfill elective requirements (http://catalog.gmu.edu/programs/#filter=filter_29)		
Total Credits		22

4-Year Plan

Bachelor of Science in Education in Early Childhood Education for Diverse Learners Sample Plan of Study

The sample plan below is a recommended sequencing of courses based on pre-requisites and scheduling. This may not fit every student's needs and is a guideline, not a requirement. Students should confirm major requirements with their academic advisor and with PatriotWeb Degree Evaluation to ensure they enroll in the proper courses and are on track to graduate.

Without Concentration

First Year

Fall Semester	Credits	Spring Semester	Credits
UNIV 100	1	Global Understanding -GGS 101 recommended	3
Information Technology and Computing	3	Natural Science with Lab - 2nd discipline	4
Natural Science with Lab - 1st discipline	4	Oral Communication	3
Quantitative Reasoning - Math 106 recommended	3	Western Civilization/ World History	3
Written Communication - ENGH 101	3	Elective (selected in consultation with an ECDL advisor)	3
	14		16

Second Year

Fall Semester	Credits	Spring Semester	Credits
ECED 201	3	Arts	3
Literature - ELED 358 recommended	3	ENGH 302	3
MATH 110 or 271 (or math course approved by advisor)	3	Social/ Behavioral Science	3
Elective (selected in consultation with an ECDL advisor)	3	Elective (selected in consultation with an ECDL advisor)	3
Elective (selected in consultation with an ECDL advisor)	3	Elective (selected in consultation with an ECDL advisor)	3
	15		15

Third Year

Fall Semester	Credits	Spring Semester	Credits
ECED 401	3	ECED 411	3
ECED 402	3	ECED 405, 406, 412, 413, 415, 416, 422, or 423	3
ECED 403	3	ECED 405, 406, 412, 413, 415, 416, 422, or 423	3

ECED 404	3	Elective (selected in consultation with an ECDL advisor)	3
Elective (selected in consultation with an ECDL advisor)	3	Elective (selected in consultation with an ECDL advisor)	3
	15		15

Fourth Year

Fall Semester	Credits	Spring Semester	Credits
ECED 405, 406, 412, 413, 415, 416, 422, or 423	3	ECED 490	12
ECED 405, 406, 412, 413, 415, 416, 422, or 423	3	ECED 491	3
Elective (selected in consultation with an ECDL advisor)	3		
Elective (selected in consultation with an ECDL advisor)	3		
Elective (selected in consultation with an ECDL advisor)	3		
	15		15

Total Credits 120

Early Childhood Special Education Licensure

First Year

Fall Semester	Credits	Spring Semester	Credits
UNIV 100	1	Global Understanding -GGS 101 recommended	3
Information Technology and Computing	3	Natural Science with Lab - 2nd discipline	4
Natural Science with Lab - 1st discipline	4	Oral Communication	3
Quantitative Reasoning - Math 106 recommended	3	Western Civilization/ World History	3
Written Communication - ENGH 101	3	Elective (selected in consultation with an ECDL advisor)	3
	14		16

Second Year

Fall Semester	Credits	Spring Semester	Credits
ECED 201	3	Arts	3
Literature - ELED 358 recommended	3	ENGH 302	3
Elective (selected in consultation with an ECDL advisor)	3	Social/ Behavioral Science	3
Elective (selected in consultation with an ECDL advisor)	3	Elective (selected in consultation with an ECDL advisor)	3
Elective (selected in consultation with an ECDL advisor)	3	Elective (selected in consultation with an ECDL advisor)	3
	15		15

Third Year

Fall Semester	Credits	Spring Semester	Credits
ECED 401	3	ECED 411	3
ECED 402	3	ECED 405	3
ECED 403	3	ECED 406	3
ECED 404	3	Elective (selected in consultation with an ECDL advisor)	3
Elective chosen with advisor	3	Elective (selected in consultation with an ECDL advisor)	3
	15		15

Fourth Year

Fall Semester	Credits	Spring Semester	Credits
ECED 422	3	ECED 490	12
ECED 423	3	ECED 491	3
Elective (selected in consultation with an ECDL advisor)	3		

Elective (selected in consultation with an ECDL advisor)	3		
Elective (selected in consultation with an ECDL advisor)	3		
	15		15

Total Credits 120

Early/Primary Education PreK-3 Licensure

First Year

Fall Semester	Credits	Spring Semester	Credits
UNIV 100	1	Global Understanding -GGS 101 recommended	3
Information Technology and Computing	3	Natural Science with Lab - 2nd discipline	4
Natural Science with Lab - 1st discipline	4	Oral Communication	3
Quantitative Reasoning - Math 106 recommended	3	Western Civilization/ World History	3
Written Communication - ENGH 101	3	Elective (selected in consultation with an ECDL advisor)	3
	14		16

Second Year

Fall Semester	Credits	Spring Semester	Credits
ECED 201	3	Arts	3
Literature - ELED 358 recommended	3	ENGH 302	3
MATH 110 or 271 (or math course approved by advisor)	3	Social/ Behavioral Science	3
Elective (selected in consultation with an ECDL advisor)	3	Elective (selected in consultation with an ECDL advisor)	3
Elective (selected in consultation with an ECDL advisor)	3	Elective (selected in consultation with an ECDL advisor)	3
	15		15

Third Year

Fall Semester	Credits	Spring Semester	Credits
ECED 401	3	ECED 411	3
ECED 402	3	ECED 412	3
ECED 403	3	ECED 413	3
ECED 404	3	Elective (selected in consultation with an ECDL advisor)	3
Elective (selected in consultation with an ECDL advisor)	3	Elective (selected in consultation with an ECDL advisor)	3
	15		15

Fourth Year

Fall Semester	Credits	Spring Semester	Credits
ECED 415	3	ECED 490	12
ECED 416	3	ECED 491	3
Elective (selected in consultation with an ECDL advisor)	3		
Elective (selected in consultation with an ECDL advisor)	3		
Elective (selected in consultation with an ECDL advisor)	3		
	15		15

Total Credits 120

Dual Licensure

First Year

Fall Semester	Credits	Spring Semester	Credits
UNIV 100	1	Global Understanding -GGS 101 recommended	3

Information Technology and Computing	3	Natural Science with Lab - 2nd discipline	4
Natural Science with Lab - 1st discipline	4	Oral Communication	3
Quantitative Reasoning - Math 106 recommended	3	Western Civilization/ World History	3
Written Communication - ENGH 101	3	Elective (selected in consultation with an ECDL advisor)	3
	14		16

Second Year

Fall Semester	Credits	Spring Semester	Credits
ECED 201	3	Arts	3
Literature - ELED 358 recommended	3	ENGH 302	3
MATH 110 or 271 (or math course approved by advisor)	3	Social/ Behavioral Science	3
Elective (selected in consultation with an ECDL advisor)	3	Elective (selected in consultation with an ECDL advisor)	3
Elective (selected in consultation with an ECDL advisor)	3	Elective (selected in consultation with an ECDL advisor)	3
	15		15

Third Year

Fall Semester	Credits	Spring Semester	Credits
ECED 401	3	ECED 405	3
ECED 402	3	ECED 406	3
ECED 403	3	ECED 411	3
ECED 404	3	ECED 412	3
Elective (selected in consultation with an ECDL advisor)	3	ECED 413	3
	15		15

Fourth Year

Fall Semester	Credits	Spring Semester	Credits
ECED 415	3	ECED 490	12
ECED 416	3	ECED 491	3
ECED 422	3		
ECED 423	3		
Elective (selected in consultation with an ECDL advisor)	3		
	15		15

Total Credits 120

Detailed four year plans and degree planning checklists can be found at https://advising.gmu.edu/current-student/majors-at-mason/.

Early Childhood Education (PK-3) Licensure Graduate Certificate

Banner Code: E1-CERG-EPK3

Academic Advising

Phone: 703-993-3844
Email: earlyed@gmu.edu
Website: https://education.gmu.edu/early-childhood/

This certificate offers required coursework for teacher licensure in Early/ Primary Education PreK-3. This certificate prepares individuals to work with children, prekindergarten through third grade, and their families.

Admissions & Policies

Admissions

In addition to the ECED concentration coursework, students must complete specific content area coursework in English, mathematics, science, and the social sciences as well as mandated state/accreditation assessments.

The following courses are prerequisites to admission:

Code	Title	Credits
ECED 401	Developmental Pathways of Diverse Learners, Birth-Adolescence	3
or ECED 501	Developmental Pathways of Diverse Learners, Birth-Adolescence	
ECED 402	Foundations of Language and Literacy for Diverse Prekindergarten and Kindergarten Learners	3
or ECED 502	Foundations of Language and Literacy for Diverse Prekindergarten and Kindergarten Learners	
ECED 403	Inclusive Curriculum for Young Learners: Planning Instruction and Guidance	3
or ECED 503	Inclusive Curriculum for Young Learners: Planning Instruction and Guidance	
ECED 404	Engaging Families of Diverse Learners, Birth – Grade 6	3
or ECED 504	Engaging Families of Diverse Young Learners	

Policies

Students who have completed equivalent graduate or undergraduate coursework prior to enrollment may request that some courses in this certificate be waived. Students who are eligible to waive coursework must complete a minimum of 15 credits to graduate. Students must earn a B- or better in all coursework.

For policies governing all graduate certificates, see AP.6.8 Requirements for Graduate Certificates.

Requirements

Certificate Requirements

Total credits: 24

This certificate may be pursued on a full-or part-time basis.

Coursework

Code	Title	Credits
ECED 511	Assessment of Diverse Young Learners	3
ECED 512	Language and Literacy Assessment and Instruction for Diverse Primary Grade Learners	3
ECED 513	Integrating Social Studies Across the Content Areas for Diverse Young Learners	3
ECED 515	Mathematics for Diverse Young Learners	3
ECED 516	Science for Diverse Young Learners	3
ECED 781	Seminar in Early Childhood Education	3
Select one from the following:		6
ECED 790 & ECED 795	Internship with Diverse Preschool Children and Internship in Kindergarten - Third Grade	
ECED 788	Internship in Early Childhood Education Prekindergarten-Third Grade	
Total Credits		24

Early Childhood Special Education Licensure Graduate Certificate

Banner Code: E1-CERG-SPEC

Academic Advising

Phone: 703-993-3844
Email: earlyed@gmu.edu
Website: https://education.gmu.edu/early-childhood/

This certificate offers required coursework for teacher licensure in Early Childhood Special Education. This certificate prepares individuals to work with children with disabilities, birth through age five, and their families.

Admissions & Policies

Admissions

In addition to the ECED concentration coursework, students must complete mandated state/accreditation assessments.

The following courses are prerequisites for admission:

Code	Title	Credits
ECED 401	Developmental Pathways of Diverse Learners, Birth-Adolescence	3
or ECED 501	Developmental Pathways of Diverse Learners, Birth-Adolescence	
ECED 402	Foundations of Language and Literacy for Diverse Prekindergarten and Kindergarten Learners	3
or ECED 502	Foundations of Language and Literacy for Diverse Prekindergarten and Kindergarten Learners	
ECED 403	Inclusive Curriculum for Young Learners: Planning Instruction and Guidance	3
or ECED 503	Inclusive Curriculum for Young Learners: Planning Instruction and Guidance	
ECED 404	Engaging Families of Diverse Learners, Birth – Grade 6	3
or ECED 504	Engaging Families of Diverse Young Learners	

Policies

Students who have completed graduate or undergraduate coursework equivalent to certificate coursework prior to admission to this program may request that some courses in this certificate be waived. Students who are eligible to waive coursework must complete a minimum of 12 credits to graduate.

A grade of B- or better must be earned in all coursework.

For policies governing all graduate certificates, see AP.6.8 Requirements for Graduate Certificates.

Requirements

Certificate Requirements

Total credits: 24

This certificate may be pursued on a full-or part-time basis.

Coursework

Code	Title	Credits
ECED 505	Introduction to Early Childhood Special Education	3
ECED 506	Medical and Developmental Aspects of Disabilities of Diverse Young Learners	3
ECED 511	Assessment of Diverse Young Learners	3
ECED 522	Developing Language, Literacy, and Communication of Diverse Infants and Toddlers	3

ECED 523	Early Intervention for Infants Toddlers with Disabilities: Collaborative Consultative Approaches	3
ECED 781	Seminar in Early Childhood Education	3
Select one from the following:		6
ECED 791 & ECED 793	Internship with Diverse Infants and Toddlers and Internship in Preschool Early Childhood Special Education	
ECED 789	Internship in Early Childhood Special Education Birth - Five	
Total Credits		24

Education Assessment, Evaluation, and Data Literacy Graduate Certificate

Banner Code: E1-CERG-EAED

Academic Advising

Phone: 703-993-3679
Email: edpsych@gmu.edu
Website: https://education.gmu.edu/educational-psychology/academics/

Available Concentrations

Concentration in Data Literacy

This 12-credit online concentration prepares teachers, building-level and district-level leaders to create, analyze and interpret a variety of student performance assessments in order to improve instruction and student learning. The four carefully-sequenced courses for the certificate focus on developing meaningful teacher-created and classroom-based student assessments, interpreting both informal and formal assessment data, and using those data in making curricular decisions. Practicing teachers and other school leaders have the opportunity to apply assessment and decision-making skills to their own classrooms or schools. Credits earned for the certificate may be applied toward the Educational Psychology, MS.

Concentration in Program Evaluation

This 16-credit concentration prepares individuals seeking evaluation positions in educational organizations, government, and non-government agencies. Grounded in evaluation theory and practice, the program of study includes coursework in qualitative, quantitative, and evaluation methodologies that culminates in an internship. Students will acquire a skill set to engage in program evaluation and an appreciation for the distinct nature of evaluation work. Credits earned for the certificate may be applied toward the Educational Psychology, MS or the PhD in Education based on faculty approval.

Admissions & Policies

Policies

For policies governing all graduate certificates, see AP.6.8 Requirements for Graduate Certificates.

Requirements

Certificate Requirements

Total credits: 12-16

This certificate may be pursued on a full-or part-time basis.

Concentration in Data Literacy (DLIT)

Code	Title	Credits
EDEP 591	Data-Driven Decision Making for Continuous Educational Improvement	3
EDEP 592	Understanding Data in Data-Driven Decision Making	3
EDEP 593	Data-Driven Decision Making: Analysis and Interpretation of Assessment Data	3
EDEP 594	Data-Driven Decision-Making Application in Education Contexts	3
Total Credits		12

Concentration in Program Evaluation (PREV)

Code	Title	Credits
EDRS 590	Education Research	3
or EDRS 810	Problems and Methods in Education Research	
EDRS 620	Quantitative Inquiry in Education	3
or EDRS 811	Quantitative Methods in Educational Research	
EDRS 621	Qualitative Inquiry in Education	3
or EDRS 812	Qualitative Methods in Educational Research	
EDRS 631	Program Evaluation	3
or EDRS 820	Evaluation Methods for Educational Programs and Curricula	
EDRS 680	Advanced Evaluation Methods and Internship	4
or EDRS 880	Advanced Evaluation Methods and Internship	
Total Credits		16

Education Leadership Graduate Certificate

Banner Code: E1-CERG-EDLE

Academic Advising

Phone: 703-993-3633
Email: edleprog@gmu.edu
Website: education.gmu.edu/education-leadership/academics/education-leadership-graduate-certificate

This certificate, a state-approved (Virginia) sequence of courses leading to the Administration and Supervision PreK-12 endorsement area, is designed for educators who already hold a valid teaching license and already have a master's degree from a regionally accredited university. The program emphasizes an understanding of the complexities of change in schools, communities, and organizations. Participants are expected to develop and demonstrate the knowledge, skills, and dispositions necessary to create and maintain learning environments that value diversity, continual knowledge acquisition, instructional

leadership, innovative and ethical decision-making, reflective practice, and successful achievement of all school-aged youth.

This graduate certificate may be pursued on a part-time or full-time basis and may be added as a secondary program of study by current Mason students who meet the admission requirements and are enrolled in non-licensure graduate programs. This certificate option is available to students enrolled in the Education Leadership program and not in the Education Leadership with Special Education Concentration (SELE).

Admissions & Policies

Policies

For policies governing all graduate certificates, see AP.6.8 Requirements for Graduate Certificates.

Requirements

Certificate Requirements

Total credits: 24

This certificate may be pursued on a full-or part-time basis.

Coursework

Code	Title	Credits
EDLE 610	Leading Schools and Communities	3
EDLE 612	Education Law	3
EDLE 614	Managing Financial and Human Resources	3
EDLE 616	Curriculum Development and Evaluation	3
EDLE 618	Supervision and Evaluation of Instruction	3
EDLE 620	Organizational Theory and Leadership	3
EDLE 690	Using Research to Lead School Improvement	3
EDLE 791	Internship in Educational Leadership	3
Total Credits		24

Education Leadership, MEd

Banner Code: E1-MED-EDLE

703-993-3633

edleprog@gmu.edu

https://education.gmu.edu/education-leadership/academics/masters-in-education-education-leadership (https://gse.gmu.edu/education-leadership/academics/masters-in-education-education-leadership/)

https://masononline.gmu.edu/programs/education-leadership-independent-school-leadership-concentration-med/

This 30-credit master's degree prepares candidates for leadership and management positions in a variety of educational settings. The program emphasizes an understanding of the complexities of change in schools, communities, and organizations. Participants are expected to develop and demonstrate the knowledge, skills, and dispositions necessary to create and maintain learning environments that value diversity, continual knowledge acquisition, instructional leadership, innovative and ethical decision making, reflective practice, and successful achievement of all school-aged youth.

Admissions & Policies

Admissions

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions (https://catalog.gmu.edu/admissions/graduate-policies/).

Policies

For policies governing all graduate degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/).

Requirements

Degree Requirements

Total credits: 30

Core Requirements

Code	Title	Credits
EDLE 610	Leading Schools and Communities	3
EDLE 616	Curriculum Development and Evaluation	3
EDLE 618	Supervision and Evaluation of Instruction	3
EDLE 620	Organizational Theory and Leadership	3
EDLE 636	Adult Motivation and Conflict Management in Education Settings: A Case Study Approach	3
EDLE 690	Using Research to Lead School Improvement	3
Total Credits		18

MEd without Concentration

Grades of B- or better are required for licensure.

Code	Title	Credits
EDLE 612	Education Law	3
EDLE 614	Managing Financial and Human Resources	3
EDLE 634	Contemporary Issues in Education Leadership	3
EDLE 791	Internship in Educational Leadership [1]	3
Total Credits		12

[1] The internship is integral to the MEd and provides an opportunity to synthesize and apply the knowledge and practice the skills identified in the Educational Leadership Constituency Consortium Standards through substantial, sustained work in educational settings.

MEd with Concentration in Independent School Leadership (non-licensure) (ISL)

This concentration is a non-licensure path within the Education Leadership program with a focus on the unique leadership and instructional needs of directors, heads of schools, and other

professionals responsible for the growth and management of independent and private schools. Like other candidates in the Education Leadership program, students will develop and demonstrate the knowledge, skills, and dispositions necessary to create and maintain learning environments that value diversity, instructional leadership, innovative and ethical decision-making, reflective practice, and the successful achievement of all students, with an emphasis on the independent school context.

Coursework

Code	Title	Credits
EDLE 613	Education Law for Independent and Nonpublic Schools	3
EDLE 615	Managing Financial and Human Resources for Independent Schools	3
EDLE 635	Governance and the Independent School Boardroom	3
EDLE 792	Internship in Independent School Leadership	3
Total Credits		12

MEd with Concentration in International School Leadership Research (ISLR)

The 30 credit International School Leadership Research (MEd Concentration in Education Leadership) option is a non-licensure path within the Education Leadership program with a focus on the unique leadership and instructional needs of directors, heads of schools, and other professionals responsible for the growth and management of international schools, including IB schools. Students will develop and demonstrate the knowledge, skills, and dispositions necessary to create and maintain learning environments that value diversity, instructional leadership, innovative and ethical decision-making, reflective practice, and the successful achievement of all students, with an emphasis on the international school context and the leadership requirements of International Baccalaureate schools and communities. This concentration within the MEd in Education Leadership meets the International Baccalaureate Organization's standards for both the International Baccalaureate Educator Certificate in Leadership Practice and the International Baccalaureate Educator Certificate in Leadership Research.

Coursework

Code	Title	Credits
EDLE 615	Managing Financial and Human Resources for Independent Schools	3
EDLE 792	Internship in Independent School Leadership	3
EDUC 606	Education and Culture	3
EDUC 628	Curriculum for IB Leadership	3
Total Credits		12

Education Policy Graduate Certificate

Banner Code: E1-CERG-EPOL

Website: https://education.gmu.edu/education-policy/education-policy-graduate-certificate

Overview

The innovative Education Policy Graduate Certificate is designed to meet the needs of students with an interest in improving educational opportunities and student outcomes through federal, state, and local policy. The 15-credit program focuses on the study of education policy, including how decisions are made at various levels of government, how decision makers use educational research and evidence, and how to influence the decision-making process. Open to all students, regardless of their experience level, the program examines pressing challenges facing our education system, from preschool and K-12 through college and beyond, and prepares students to engage effectively with policymakers and stakeholders and to help shape and influence education policy.

The field of education policy needs professionals who can understand and analyze problems, think critically, and come up with creative and pragmatic solutions to address tough challenges in the world of education. Whether interested in pursuing a career in government, the education sector, think tanks, or nonprofit organizations, the Education Policy Graduate Certificate is meant to set students on the path to impacting education policy.

Admissions & Policies

Policies

For policies governing all graduate certificates, see AP.6.8 Requirements for Graduate Certificates.

Requirements

Certificate Requirements

Total Credits: 15

This certificate may be pursued on a part-time basis only.

Coursework

Code	Title	Credits
EDPO 600	History of Education Reform	3
EDPO 601	P-12 Policy Challenges	3
EDPO 602	Higher Education Policy	3
EDPO 603	Conflict and Consensus: Education, Interest Groups and Advocacy	3
EDPO 604	Education Policy Implementation	3
Total Credits		15

Education, PhD

Banner Code: E1-PHD-EDUC

Academic Advising

Phone: 703-993-2011
Email: cehdphd@gmu.edu
Website: https://education.gmu.edu/phd-in-education

This program is designed to advance professional study to develop research-informed expertise in a selected field of professional education. As a program of doctoral study, it emphasizes theory and research as much as it does practice, breadth of study as much as depth, and process as well as knowledge. It seeks to develop both knowledge and the skills useful in educational roles as well as the abilities to analyze and respond to problems in their relationships to various educational concerns.

Admissions & Policies

Admissions

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study. See Graduate Admissions Policies.

Eligibility and Application Requirements

Admission is highly-selective and applicants must fulfill all admission requirements: a minimum of three years of successful experience as a practitioner in an educational setting, baccalaureate and master's (or equivalent) degrees from accredited institutions, demonstrated high intellectual capability and leadership potential, three letters of recommendation and GRE general test scores including the writing assessment.

For more information, call the PhD Office at 703-993-2011. Completed applications must be submitted by January 15 for fall admission, or by October 1 for spring admission. To apply, see Graduate Admissions (https://www2.gmu.edu/admissions-aid/how-apply/graduate/).

Policies

For policies governing all doctoral degrees, see AP.6.10 Requirements for Doctoral Degrees.

Program of Study

A written program of study which lists all courses required to complete the program is used to verify that students have met all requirements at graduation. If changes are made in the program of study after its approval, the changes must be made in writing and submitted to the Office of the University Registrar with the Advancement to Candidacy paperwork.

Reduction of Credit

Students must have a master's degree before being admitted to the PhD. As such, admitted students will receive a reduction of 9 credits.

Requirements

Degree Requirements

Total credits: 75

Core Requirements

General Culture

Code	Title	Credits
EDUC 800	Ways of Knowing [1]	3
or EFHP 860	Critical Perspectives in Exercise, Fitness, and Health Promotion	
Total Credits		3

[1] EFHP 860 is for Kinesiology concentration students only. Other students should select EDUC 800.

Research Methods

Code	Title	Credits
EDRS 810	Problems and Methods in Education Research	3
EDRS 811	Quantitative Methods in Educational Research	3
EDRS 812	Qualitative Methods in Educational Research	3
Select two from the following:		6
EDRS 818	Critical Discourse Analysis in Education Research	
EDRS 820	Evaluation Methods for Educational Programs and Curricula	
EDRS 821	Advanced Applications of Quantitative Methods [1]	
EDRS 822	Advanced Applications of Qualitative Methods	
EDRS 823	Advanced Research Methods in Single Subject/Case Design	
EDRS 824	Mixed Methods Research: Integrating Qualitative and Quantitative Approaches	
EDRS 825	Advanced Research Methods in Self-Study of Professional Practice	
EDRS 826	Qualitative Case Study Methods	
EDRS 827	Introduction to Measurement and Survey Development	
EDRS 828	Item Response Theory	
EDRS 830	Hierarchical Linear Modeling [1]	
EDRS 831	Structural Equation Modeling	
EDRS 832	Document Analysis and Archival Research	
EDRS 833	Participatory Action Research	
EDRS 836	Narrative Inquiry	
EDRS 850	Grounded Theory	
EDRS 897	Special Topics in Research Methods	
Total Credits		15

[1] Students pursuing the Kinesiology Concentration must select these course options.

Reduction of Credits

Code	Title	Credits
Students receive a reduction of 9 credits based on their earned Master's degree.		9
Total Credits		9

Dissertation Proposal and Research

Advancement to Candidacy

Upon successful completion of all coursework and the comprehensive portfolio assessment, students are advanced to candidacy and enroll in EDUC 998 Doctoral Dissertation Proposal. Students enrolled in the Kinesiology Concentration enroll in KINE 998 Doctoral Dissertation Proposal.

Dissertation

Once enrolled in EDUC 998 Doctoral Dissertation Proposal or KINE 998 Doctoral Dissertation Proposal, students must maintain continuous registration in at least 1 credit; once enrolled in EDUC 999 Doctoral Dissertation Research or KINE 999 Doctoral Dissertation Research, students must follow the university continuous registration policy as specified in AP.6.10.6 Dissertation Registration.

Code	Title	Credits
Minimum 12 credits of		12
EDUC 998	Doctoral Dissertation Proposal [1]	
or KINE 998	Doctoral Dissertation Proposal	
EDUC 999	Doctoral Dissertation Research [2]	
or KINE 999	Doctoral Dissertation Research	
Total Credits		12

1. Students must register for 3 credits the first semester enrolled in EDUC 998 Doctoral Dissertation Proposal or KINE 998 Doctoral Dissertation Proposal. Students preparing their proposal must register for 1 credit each semester thereafter until the proposal has been successfully defended.
2. Students must register for 3 or 6 credits the first semester enrolled in EDUC 999 Doctoral Dissertation Research or KINE 999 Doctoral Dissertation Research and must register for at least 1 credit thereafter until all work has been completed including the semester in which the degree is conferred.

PhD without Concentration

All students are required to create electronic portfolios to define academic and professional goals; formulate specific plans to achieve those goals through coursework, research experiences, and field-based activities; demonstrate growth in understanding the specializations and how knowledge in them is advanced through inquiry; synthesize and reflect upon the process and results of learning activities; modify goals and plans as needed based on academic and reflective self-evaluation as well as feedback from the student's Program Advisory Committee and demonstrate readiness to proceed to the dissertation phase of the program.

The first portfolio review must be completed when 18 credits have been completed or before the end of the third semester. The second portfolio review must be scheduled at the completion of 36 credit hours. When students complete the coursework phase of the program, a final meeting is held with the Program Advisory Committee. This meeting is the context for conducting the comprehensive portfolio assessment, a formal evaluation of a student's readiness to proceed to the dissertation phase of the program which is analogous to the traditional doctoral comprehensive exam.

Program Advisory Committee

Students choose a program advisory committee of three George Mason University faculty members prior to the end of their second semester. It is chaired by the student's major advisor who represents the student's primary specialization. One member must represent the student's secondary emphasis. The major functions of this committee include assessing the student's goals, interests and academic needs, approving the program of study, monitoring the student's progress through the program and evaluating the student's three portfolio reviews.

Primary Specialization

Professional specializations include: early childhood education, education leadership, education policy, educational psychology, higher education, international education, learning technologies design research, literacy and reading, mathematics or science education leadership, multilingual/multicultural education, research methodology, science education research, special education, and teaching and teacher education.

Code	Title	Credits
Students select course work based on their area of specialization. They may choose EDUC 994 and EDUC 890 to broaden their professional expertise. These internships must be taken in a setting that differs from the student's work setting, and includes 100 clock hours of work.		18-24
Total Credits		18-24

Secondary Specialization

Code	Title	Credits
Students may develop a secondary specialization from coursework offered within CEHD or coursework offered within other Mason units, in consultation with their advisor. [1]		3-18
Total Credits		3-18

1. In some situations, students can receive a reduction of 9 additional credits from their master's toward fulfillment of the secondary specialization requirement if their master's degree area of study is not the same as their doctoral specialization area and it aligns with their program of study. Students make this decision in consultation with their program advisory committee members. Students who do not receive this additional credit reduction must take at least 12 credits in the secondary specialization area.

Concentration in Kinesiology (KNES)

Kinesiology Core

Code	Title	Credits
EFHP 810	Neuromuscular Responses to Exercise	3
EFHP 811	Motor Learning and Control	3
EFHP 813	Musculoskeletal Biomechanics in Human Movement	3
EFHP 815	Measurement Techniques and Instrumentation	3
EFHP 820	Careers in the Academy Seminar	3
EFHP 825	Data Analytics in Exercise, Fitness, and Health Promotion	3
EFHP 840	Doctoral Seminar in Exercise, Fitness, and Health Promotion	3
EFHP 880	Grant Writing	3
Total Credits		24

Experiential Learning

Code	Title	Credits
KINE 890	Research Experience I	6
KINE 891	Research Experience II	3
EDUC 897	Independent Study for the Doctor of Philosophy in Education	3

or KINE 897	Independent Study	
Total Credits		12

Educational Psychology Minor

Banner Code: EDP

Academic Advising

Phone: 703-993-3679
Email: edpsych@gmu.edu
Website: education.gmu.edu/educational-psychology/academics/

This 19 credit minor is available to all Mason undergraduate students and provides students with a grounding in topics related to human growth and development, cognition, learning and instruction, motivation, measurement, and research methods.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. For policies governing all minors, see AP.5.3.4 Minors.

For policies governing all undergraduate programs, see AP.5 Undergraduate Policies

Requirements

Minor Requirements

Total credits: 19

Required Courses

Code	Title	Credits
EDEP 350	Perspectives on Achievement Motivation (Mason Core)	3
EDUC 302	Human Growth and Development	3
PSYC 312	Educational Psychology	3
PSYC 320	Psychological Tests and Measurements	4
Total Credits		13

Electives

Code	Title	Credits
Select two courses from the following:		6
ECED 401	Developmental Pathways of Diverse Learners, Birth-Adolescence	
PSYC 211	Developmental Psychology (Mason Core)	
PSYC 313	Child Development	
PSYC 314	Adolescent Development	
PSYC 322	Behavior Modification	
PSYC 335	Psychology of Creativity and Innovation	
Total Credits		6

Educational Psychology, MS

Banner Code: E1-MS-EDP

Academic Advising

Phone: 703-993-3679
Email: edpsych@gmu.edu
Website: https://education.gmu.edu/educational-psychology/academics/

This master's program is designed to offer professionals and students the opportunity to apply principles of learning, cognition, and motivation to vital problems in the area of education; develop a solid understanding of research, assessment, and evaluation methodologies; and develop an analytical and scholarly approach to critically assessing theoretical perspectives, research, and practice within and across content domains. By participating in a supportive and collegial environment with faculty from numerous educational disciplines and expertise, students are expected to develop the skills to meet the needs of diverse populations and design and implement effective educational programs appropriate for a broad range of cultural contexts.

Admissions & Policies

Policies

For policies governing all graduate degrees, see AP.6 Graduate Policies.

Requirements

Degree Requirements

Total credits: 30

Students must complete a minimum of 30 credits in one of four concentrations. Each concentration offers students the option of a thesis or a project to fulfill the research requirement.

Concentration in Assessment, Evaluation, and Testing (EDPA)

Coursework

Code	Title	Credits
EDRS 531	Educational and Psychological Measurement	3
Three credits of		3
EDEP 798	Directed Inquiry in Educational Psychology	
or EDEP 799	Thesis in Educational Psychology	
Select two from the following:		6
EDEP 597	Special Topics in Educational Psychology (must register for 3 credits) [1]	
EDRS 630	Educational Assessment	
EDRS 631	Program Evaluation	
Total Credits		12

[1] Topic must focus on research methodology assessment, evaluation, and/or testing.

Educational Psychology Core

Code	Title	Credits
EDEP 550	Theories of Learning and Cognition	3
EDEP 551	Principles of Learner Motivation	3
EDEP 632	Human Development	3
Total Credits		9

Research Methodology Core

Code	Title	Credits
EDRS 590	Education Research	3
EDRS 620	Quantitative Inquiry in Education	3
EDRS 621	Qualitative Inquiry in Education	3
Total Credits		9

Concentration in Learning and Decision-Making in Leadership (EDPD)

Coursework

Code	Title	Credits
EDEP 591	Data-Driven Decision Making for Continuous Educational Improvement	3
EDEP 653	Culture and Intelligence	3
Three credits of		3
EDEP 798	Directed Inquiry in Educational Psychology	
EDRS 531	Educational and Psychological Measurement	3
Total Credits		12

Educational Psychology Core

Code	Title	Credits
EDEP 550	Theories of Learning and Cognition	3
EDEP 551	Principles of Learner Motivation	3
EDEP 632	Human Development	3
Total Credits		9

Research Methodology Core

Code	Title	Credits
EDRS 590	Education Research	3
EDRS 620	Quantitative Inquiry in Education	3
EDRS 621	Qualitative Inquiry in Education	3
Total Credits		9

Concentration in Learning, Cognition, and Motivation (EDPL)

Coursework

Code	Title	Credits
Three credits of		3
EDEP 798	Directed Inquiry in Educational Psychology	
or EDEP 799	Thesis in Educational Psychology	
EDRS 531	Educational and Psychological Measurement	3
Select two from the following:		6
EDEP 597	Special Topics in Educational Psychology (must register for 3 credits) [1]	
EDEP 653	Culture and Intelligence	
EDEP 654	Learning, Motivation, and Self-Regulation	
Total Credits		12

[1] Topic must focus on Learning, Cognition, and Motivation.

Educational Psychology Core

Code	Title	Credits
EDEP 550	Theories of Learning and Cognition	3
EDEP 551	Principles of Learner Motivation	3
EDEP 632	Human Development	3
Total Credits		9

Research Methodology Core

Code	Title	Credits
EDRS 590	Education Research	3
EDRS 620	Quantitative Inquiry in Education	3
EDRS 621	Qualitative Inquiry in Education	3
Total Credits		9

Concentration in Teacher Preparation (EDPT)

Individuals pursuing the Educational Psychology, MS Concentration in Teacher Preparation must be admitted into one of the following teacher licensure certificate programs prior to completion of MS coursework:

- Secondary Education Licensure Graduate Certificate
- Special Education Graduate Certificate (Concentrations in General Curriculum K-12, Adapted Curriculum K-12, or Visual Impairments Licensure PK-12)
- International ESOL/ESL Teacher Education Graduate Certificate, Concentration in ESOL/ESL Special Education

Students apply three courses (9 credits) from the certificate towards the MS degree in educational psychology with the expectation that they will complete the teacher certification program.

Coursework

Code	Title	Credits
Teacher Licensure Certificate Program		
Select three courses (9 credits) from teacher licensure certificate program (see above)		9
Three credits of directed reading/project, or thesis		**3**
EDEP 798	Directed Inquiry in Educational Psychology	
or EDEP 799	Thesis in Educational Psychology	
Total Credits		12

Educational Psychology Core

Code	Title	Credits
EDEP 550	Theories of Learning and Cognition	3
EDEP 551	Principles of Learner Motivation	3
EDUC 672	Human Development and Learning: Secondary Education	3
Total Credits		9

Research Methodology Core

Code	Title	Credits
EDRS 590	Education Research	3
EDRS 620	Quantitative Inquiry in Education	3
EDRS 621	Qualitative Inquiry in Education	3
Total Credits		9

Accelerated Master's

Accelerated Option Requirements

Concentration in Assessment, Evaluation and Testing (EDPA)

Students complete the following courses in their senior year.

Senior				
Fall Semester	**Credits**		**Spring Semester**	**Credits**
EDEP 550		3	EDEP 551	3
EDRS 590		3	EDRS 620	3
		6		6
Total Credits 12				

Concentration in Learning and Decision-Making in Leadership (EDPD)

Students complete the following courses in their senior year.

Senior				
Fall Semester	**Credits**		**Spring Semester**	**Credits**
EDEP 550		3	EDEP 551	3
EDRS 590		3	EDRS 620	3
		6		6
Total Credits 12				

Concentration in Learning, Cognition, and Motivation (EDPL)

Students complete the following courses in their senior year.

Senior				
Fall Semester	**Credits**		**Spring Semester**	**Credits**
EDEP 550		3	EDEP 551	3
EDRS 590		3	EDRS 620	3
		6		6
Total Credits 12				

Bachelor's Degree (any)/Educational Psychology, Accelerated MS (Assessment, Evaluation, and Testing Concentration)

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BA or BS in any degree area and an MS in Educational Psychology (Assessment, Evaluation, and Testing concentration) (https://catalog.gmu.edu/colleges-schools/education-human-development/school-education/educational-psychology-ms/) in an accelerated time-frame after satisfactory completion of a minimum of 138 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/colleges-schools/education-human-development/school-education/) for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/#text).

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies (https://catalog.gmu.edu/admissions/graduate-policies/) and Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies. For information specific to this accelerated master's program, see Application Requirements and Deadlines (https://cehd.gmu.edu/bachelors-accelerated-masters-program/).

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits, and additional unit-specific criteria (see Application Requirements and Deadlines) (https://cehd.gmu.edu/bachelors-accelerated-masters-program/).

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MS program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- 3.0 overall GPA
- Completion of specific undergraduate coursework
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following which can be taken as Advanced Standing or Reserve Graduate credit (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) (to be determined by the student and their advisor):

Code	Title	Credits
EDEP 550	Theories of Learning and Cognition	3
EDEP 551	Principles of Learner Motivation	3
EDEP 632	Human Development	3
EDRS 531	Educational and Psychological Measurement	3
EDRS 590	Education Research	3
EDRS 620	Quantitative Inquiry in Education	3
EDRS 621	Qualitative Inquiry in Education	3

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies.

Bachelor's Degree (any)/Educational Psychology, Accelerated MS (Learning and Decision-Making in Leadership Concentration)

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BA or BS in any degree area and an MS in Educational Psychology (Learning and Decision-Making in Leadership concentration) (https://catalog.gmu.edu/colleges-schools/education-human-development/school-education/educational-psychology-ms/)in an accelerated time-frame after satisfactory completion of a minimum of 138 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/colleges-schools/education-human-development/school-education/) for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/#text).

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies (https://catalog.gmu.edu/admissions/graduate-policies/) and Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies. For information specific to this accelerated master's program, see Application Requirements and Deadlines (https://cehd.gmu.edu/bachelors-accelerated-masters-program/).

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits, and additional unit-specific criteria (see Application Requirements and Deadlines) (https://cehd.gmu.edu/bachelors-accelerated-masters-program/).

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MS program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- 3.0 overall GPA
- Completion of specific undergraduate coursework
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following which can be taken as Advanced Standing or Reserve Graduate credit (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) (to be determined by the student and their advisor):

Code	Title	Credits
EDEP 550	Theories of Learning and Cognition	3
EDEP 551	Principles of Learner Motivation	3
EDEP 632	Human Development	3
EDRS 531	Educational and Psychological Measurement	3
EDRS 590	Education Research	3
EDRS 620	Quantitative Inquiry in Education	3
EDRS 621	Qualitative Inquiry in Education	3

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies.

Bachelor's Degree (any)/Educational Psychology, Accelerated MS (Learning, Cognition, and Motivation Concentration)

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BA or BS in any degree area and an MS in Educational Psychology (Learning, Cognition, and Motivation concentration) (https://catalog.gmu.edu/colleges-schools/education-human-development/school-education/educational-psychology-ms/)in an accelerated time-frame after satisfactory completion of a minimum of 138 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/colleges-schools/education-human-development/school-education/) for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/#text).

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies (https://catalog.gmu.edu/admissions/graduate-policies/) and Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies. For information specific to this accelerated master's program, see Application Requirements and Deadlines (https://cehd.gmu.edu/bachelors-accelerated-masters-program/).

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits, and additional unit-specific criteria (see Application Requirements and Deadlines) (https://cehd.gmu.edu/bachelors-accelerated-masters-program/).

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MS program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- 3.0 overall GPA
- Completion of specific undergraduate coursework
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following which can be taken as Advanced Standing or Reserve Graduate credit (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) (to be determined by the student and their advisor):

Code	Title	Credits
EDEP 550	Theories of Learning and Cognition	3
EDEP 551	Principles of Learner Motivation	3
EDEP 632	Human Development	3
EDRS 531	Educational and Psychological Measurement	3
EDRS 590	Education Research	3
EDRS 620	Quantitative Inquiry in Education	3
EDRS 621	Qualitative Inquiry in Education	3

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies.

Elementary Education, BSEd

Banner Code: E1-BSED-ELED

Academic Advising

vbartush@gmu.edu

Phone: 703-993-3696
Email: elemeduc@gmu.edu
Website: https://education.gmu.edu/elementary-education/

This bachelor's degree provides teacher candidates with the specialized knowledge, skills, and dispositions needed to meet the educational needs of students in grades PreK-6. The robust, well-rounded program of study includes general and content-specific methods courses designed to prepare reflective teachers who are responsive to students' diverse needs and ready to advance the 21st Century classroom. A strong partnership with local PK-6 schools ensures that teacher candidates are immersed in classroom settings with elementary students throughout their teacher preparation program. Graduates recognize and adapt to students' needs, interests and readiness levels through innovative, research-based pedagogical practices.

Admissions & Policies

Admissions

Students interested in majoring in Elementary Education are initially enrolled as BPRE, or Pre-Elementary Education. They must meet certain requirements and successfully complete the appropriate application form to be admitted to the BSEd in Elementary Education.

The requirements for admission to the BSEd in Elementary Education from BPRE status are:

- 2.50 overall GPA
- Within 9 credits of completing the Mason Core requirements
- Complete a Content Area Coursework review

Policies

Students in the BSEd in Elementary Education must maintain at least a 2.50 GPA and earn a C or better in their coursework. Prior to applying for internship, students must successfully complete:

- Emergency First Aid, CPR and AED certification or training
- Virginia Communication & Literacy Assessment (VCLA)
- Praxis Core Math, SAT Math or ACT Math
- Reading for Virginia Educators: Elementary and Special Education
- Praxis Subject Assessment for Elementary Education
- Completion of Content Area Coursework

Licensure testing requirements are determined by the Commonwealth of Virginia and may change at any time. If changes to these requirements occur, students must meet the current testing and licensure requirements as set forth in the legal Code of Virginia.

Termination from Program Policy:

Termination from the major may be imposed as a result of excessive repeating of required courses without achieving the minimum standard, and for other evidence of continued failure to make adequate progress toward completion of the major, including failure to maintain at least a 2.5 cumulative GPA and failure to exhibit professional dispositions (https://cehd.gmu.edu/teacher/professional-disposition/).

A grade of C or higher is required in each of the Elementary Education major courses (see Requirements section in this catalog for list of 17 required major courses). Students will not be permitted to make more than three graded attempts to achieve a C or higher in each course. Once a student has attempted a major course twice unsuccessfully, they must meet with an academic advisor in order to develop a success plan and receive an override to register for the third attempt. Those who do not successfully complete a major course within three attempts will be terminated from the major.

Students have the right to appeal termination from major by following the CEHD academic appeal process (https://cehd.gmu.edu/students/policies-procedures/undergraduate/).

Requirements

Degree Requirements

Total credits: 120

Mason Core

Code	Title	Credits
Foundation Requirements:		
Written Communication		3
ENGH 101	Composition (Mason Core) (recommended course)	
Oral Communication		3
Quantitative Reasoning		3
MATH 272	Mathematics for the Elementary School Teachers II (Mason Core) (recommended course)	
Information Technology and Computing		3
ELED 257	Integrating Technology in PreK-6 (recommended course)	
Exploration Requirements:		
Arts		3
ARTH 101	Introduction to the Visual Arts (Mason Core) (recommended course)	
Global Understanding		3
GGS 101	Major World Regions (Mason Core) (recommended course)	
Literature		3
ELED 258	Children's Literature for Teaching in Diverse Settings (Mason Core) (recommended course)	
Natural Science		7-8
Two lab sciences in different disciplines (recommended)		
Social and Behavioral Sciences		3
EDUC 200	Introduction to Education: Teaching, Learning and Schools (Mason Core) (recommended course)	
Western Civilization/World History		3
Integration Requirement:		
Written Communication		3
ENGH 302	Advanced Composition (Mason Core) (recommended course)	
Synthesis/Capstone		
Total Credits		37-38

Major Requirements

Code	Title	Credits
ELED 242	Foundations of Elementary Education	3
ELED 305	Foundations of Elementary Methods and Management	3
ELED 401	Classroom Management and Instructional Strategies for Diverse Learners	3
ELED 402	Differentiating Elementary Methods and Management	3
ELED 410	Emergent and Early Literacy	3
ELED 411	Reading Development, Processes, Assessment, and Pedagogy	3
ELED 412	Writing Development, Processes and Pedagogy	3
ELED 421	STEM in the Elementary Classroom	3
ELED 443	Children, Family, Culture, and Schools, 4-12 Year Olds	3
ELED 452	Mathematics Methods for the Elementary Classroom	3
ELED 453	Science Methods for the Elementary Classroom	3
ELED 454	Methods of Teaching Social Studies and Integrating Fine Arts in the Elementary Classroom	3
ELED 459	Research and Assessment in Elementary Education	3
ELED 480	Practicum in Elementary Education	3
ELED 490	Internship in Elementary Education (Mason Core)	9
EDUC 301	Educating Diverse and Exceptional Learners	3
Elementary Ed Program Elective (choose one course):		3
ECED 404	Engaging Families of Diverse Learners, Birth – Grade 6	
EDCI 423	Methods for Teaching PK-6 English Learners in Inclusive Classrooms	
ELED 422	Collaboration in PK-6 Inclusive School Settings	
EDSE 241	Characteristics of Students with Disabilities who Access the General Curriculum	
EDSE 353	Individualized Behavior Supports	
Total Credits		57

Electives

Code	Title	Credits
Select 25-26 credits of electives		25-26
Total Credits		25-26

4-Year Plan

Bachelor of Science in Education, Elementary Education Sample Plan of Study

The sample plan below is a recommended sequencing of courses based on pre-requisites and scheduling. This may not fit every student's needs and is a guideline, not a requirement. Students should confirm major requirements with their academic advisor and with PatriotWeb Degree Evaluation to ensure they enroll in the proper courses and are on track to graduate.

First Year

Fall Semester	Credits	Spring Semester	Credits
ENGH 101	3	Western Civilization (HIST 100 or 125)	3

Natural Science with Lab	4	Oral Communication (COMM 100 or 101)	3
Elective (MATH 271 recommended)	3	ELED 258	3
EDUC 200	3	MATH 272	3
Elective (UNIV 100 recommended)	1	Elective	3
	14		15

Second Year

Fall Semester	Credits	Spring Semester	Credits
Natural Science with Lab (choose different discipline)	4	ENGH 302	3
ARTH 101	3	GGS 101	3
IT	3	EDUC 301	3
ELED 242	3	Elective (GOVT 103 recommended)	3
Elective	3	Elective (HIST 121 or HIST 122 recommended)	3
	16		15

Third Year

Fall Semester	Credits	Spring Semester	Credits
ELED 305	3	ELED 401	3
ELED 443	3	ELED 411	3
ELED 454	3	ELED 452	3
ELED 410	3	ELED 453	3
Elective	3	Elem Ed Program Elective	3
	15		15

Fourth Year

Fall Semester	Credits	Spring Semester	Credits
ELED 402	3	ELED 459	3
ELED 412	3	ELED 490	9
ELED 421	3	Elective	3
ELED 480	3		
Elective	3		
	15		15

Total Credits 120

Detailed four year plans and degree planning checklists can be found at https://advising.gmu.edu/current-student/majors-at-mason/.

Gifted Education Graduate Certificate

Banner Code: E1-CERG-EDGE

Academic Advising

Phone: 703-993-3173
Email: astl@gmu.edu
Website: education.gmu.edu/advanced-teaching-studies/academics/gifted-child-education/gifted

This 12-credit graduate certificate is designed for professionals who are interested in working with gifted children. Students completing this certificate fulfill the requirements for the VDOE add-on endorsement in gifted education for currently-licensed teachers.

Admissions & Policies

Policies

For policies governing all graduate certificates, see AP.6.8 Requirements for Graduate Certificates.

Requirements

Certificate Requirements

Total credits: 12

This certificate may be pursued on a full-or part-time basis.

Coursework

Code	Title	Credits
EDCI 621	Introduction to Gifted and Talented Learners	3
EDCI 622	Curriculum and Instructional Strategies for Gifted Learners	3
EDCI 623	Supporting the Social Emotional Needs of Gifted Learners	3
EDCI 624	Advanced Assessment and Evaluation of Gifted Learners	3
Total Credits		12

Health Promotion Minor

Banner Code: HPR

Academic Advising

Phone: 703-993-2060
Email: srht@gmu.edu
Website: https://kinesiology.gmu.edu/health-promotion-minor/

The Health Promotion minor introduces students to the professional activity of specialists within the health promotion field. Coursework involves theory, practical application, and selective coursework to increase health science knowledge and to explore current issues in health promotion. The minor complements majors in Kinesiology, Community Health, Integrative Studies, Communication, and other programs.

This minor is available to all Mason undergraduate students.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 18

Coursework

Code	Title	Credits
HEAL 110	Personal Health	3
HEAL 230	Introduction to Health Behavior (Mason Core)	3
HEAL 372	Health Communication	3
Total Credits		9

Electives

Code	Title	Credits
Select three courses from the following:		9
HEAL 220	Dimensions of Mental Health	
HEAL 310	Drugs and Health	
HEAL 325	Human Sexuality	
HEAL 327	Women's Health	
HEAL 331	Men's Health	
HEAL 351	Relationship Health	
Total Credits		9

Human Development and Family Science Minor (CEHD)

Banner Code: HDFS

Academic Advising

Phone: 703-993-6610
Email: HDFS@gmu.edu
Website: hdfs.gmu.edu/human-development-family-science/minor

This 15-credit interdisciplinary minor is available to all Mason undergraduate students and provides background knowledge in human development and family science, specifically addressing how diverse children and adults develop, adapt, and function within the contexts of their families, communities and society.

This minor is a joint program with coursework selected from both the College of Education and Human Development (CEHD) and the College of Humanities and Social Sciences.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 15

Core Course

Code	Title	Credits
HDFS 200	Individual and Family Development (Mason Core)	3
HDFS 400	Advanced Family Processes (Mason Core)	3
Total Credits		6

Electives

Code	Title	Credits
Select at least one course from each of the two component areas (development and diversity) below		6
A third elective may be selected from any component or with permission of an HDFS advisor		3
Total Credits		9

To reflect the interdisciplinary nature of the HDFS minor, two courses must have prefixes from disciplines outside of your major area of study (e.g., for PSYC majors, two courses must come from CEHD prefixes: ATEP, ECED, EDUC, HEAL, PHED; for ECED majors, two courses must come from CHSS prefixes: ANTH, INTS, PSYC, SOCI).

Development

Code	Title	Credits
Select at least one from the following:		
ECED 401	Developmental Pathways of Diverse Learners, Birth-Adolescence	
EDUC 302	Human Growth and Development	
INTS 312	Images and Experiences of Childhood: Social Construct, Literature, and Film	
INTS 316	Introduction to Childhood Studies (Mason Core)	
INTS 319	Contemporary Youth Studies (Mason Core)	
PSYC 211	Developmental Psychology (Mason Core)	
PSYC 313	Child Development	
PSYC 314	Adolescent Development	
PSYC 415	Psychological Factors in Aging	
SOCI 360	Youth Culture and Society (Mason Core)	

Diversity

Code	Title	Credits
Select at least one from the following:		
ANTH 332	Cross-Cultural Perspectives on Globalization (Mason Core)	
ATEP 205	Cultural Competence	
ECED 405	Introduction to Early Childhood Special Education	
EDUC 203	Disability in American Culture (Mason Core)	
HEAL 350	Interventions for Populations and Communities at Risk	
HDFS 301	The Hospitalized Child and Family	
INTS 320	Construction of Differences: Race, Class, and Gender (Mason Core)	
INTS 336	Poverty, Wealth and Inequality in the US (Mason Core)	
INTS 362	Social Justice and Human Rights (Mason Core)	
PSYC 379	Applied Cross-Cultural Psychology (Mason Core)	
SOCI 308	Race and Ethnicity in a Changing World (Mason Core)	
SOCI 355	Social Inequality (Mason Core)	

Human Development and Family Science, BA (CEHD)

Banner Code: E1-BA-HDFS

Academic Advising

Phone: 703-993-6610
Email: HDFS@gmu.edu
Website: hdfs.gmu.edu/human-development-family-science

This degree prepares its graduates to use family-centered and strengths-based approaches to support the health and well-being of individuals and families in diverse communities. Graduates will have a strong interdisciplinary foundation in the HDFS field and competencies in 10 areas as established by the National Council on Family Relations, including:

- internal dynamics of relationships and families
- human growth and development
- family-and community-based program planning, implementation, and evaluation
- social policies and laws affecting families
- family diversity
- research methodology
- professional ethics as related to the HDFS field

The HDFS curriculum prepares students to effectively engage with families across the lifespan and in a variety of service settings and professions, from early childhood education and care to family law and policy advocacy.

Our program prepares students to critically analyze complex family issues, advocate for families in schools, communities, and in the policy arena, and address social-structural factors contributing to and influencing family functioning, health, and well-being (e.g., poverty and wealth inequality, immigration and illegalization, family homelessness, incarceration, family violence, and discrimination and structural violence such as racism, nationalism, or heterosexism). Students are required to complete a 6-credit internship and integrate research training with service fieldwork. Such an experience is a critical component of HDFS student development and will further prepare our students for graduate education and diverse careers in the human development and family science field.

The HDFS program is a joint academic degree program sponsored by the College of Education and Human Development (CEHD) and the College of Humanities and Social Sciences (CHSS).

Requirements

Degree Requirements

Total credits: 120

Mason Core

Code	Title	Credits
Written Communication		6
Oral Communication		3
Information Technology and Ethics		3
Quantitative Reasoning		3
Literature		3
Arts		3
Western Civilization/World History		3
Social and Behavioral Sciences		3
Global Understanding		3
Natural Science		7
Synthesis		3
Total Credits		40

Additional Requirements for the BA

Code	Title	Credits
One PHIL or one RELI course:		3
Philosophy (PHIL)		
Religious Studies (RELI)		
Social and behavioral sciences course [1]		3
Non-Western culture		3
Proficiency in a foreign language through the intermediate level (coursework or testing to determine proficiency)		0-12
Total Credits		9-21

[1] This requirement is additional to the Mason Core social and behavioral sciences requirement.

Major Requirements

Code	Title	Credits
HDFS 200	Individual and Family Development (Mason Core)	3
HDFS 250	Family Financial Literacy and Resource Management	3

HDFS 300	Individual and Family Services Delivery	3
HDFS 400	Advanced Family Processes (Mason Core)	3
HDFS 401	Family Law and Public Policy [1]	3
HDFS 498	Internship and Analysis in Human Development and Family Science	3
HDFS 499	Advanced Internship and Analysis in Human Development and Family Science	3
INTS 321	Parent-Child Relations (Mason Core)	3
PSYC 211	Developmental Psychology (Mason Core)	3
Select one from the following:		3
SOCI 303	Methods and Logic of Inquiry	
PSYC 301	Research Methods in Psychology	
INTS 434	Research for Social Change	
Total Credits		30

[1] Fulfills writing intensive requirement (https://catalog.gmu.edu/archives/2019-2020/mason-core/#wi).

Code	Title	Credits
Major Elective Choices		**12**
Elective choices follow career and professional interests. Elective courses are suggested by advisors and mentors and approved by the Academic Program Coordinator. See below for areas of focus.		
Families and Individuals Across the Life Span		
BIOL 124	Human Anatomy and Physiology	
COMM 334	Family and Health Communication	
CRIM 302	Delinquency and the Juvenile Justice System	
CRIM 405	Law and Justice around the World (Mason Core)	
ECED 402	Foundations of Language and Literacy for Diverse Prekindergarten and Kindergarten Learners	
ECED 403	Inclusive Curriculum for Young Learners: Planning Instruction and Guidance	
ECED 405	Introduction to Early Childhood Special Education	
ECED 406	Medical and Developmental Aspects of Disabilities of Diverse Young Learners	
ECED 422	Developing Language, Literacy, and Communication of Diverse Infants and Toddlers	
ECED 423	Early Intervention for Infants Toddlers with Disabilities: Collaborative Consultative Approaches	
EDUC 203	Disability in American Culture (Mason Core)	
EDRD 301	Facilitating Literacy in School or Community Settings	
ELED 258	Children's Literature for Teaching in Diverse Settings (Mason Core)	
GCH 480	Health Maintenance and Health Aspects of Aging	
HAP 301	Health Care Delivery in the United States	
HAP 403	Assisted Living/Senior Housing Management and Philosophy	
HAP 445	Introduction to Health Services Research	
HDFS 301	The Hospitalized Child and Family	
HEAL 220	Dimensions of Mental Health	
HEAL 310	Drugs and Health	
HEAL 327	Women's Health	
HEAL 331	Men's Health	
HEAL 351	Relationship Health	
HEAL 372	Health Communication	
HHS 432	Healthy Aging	
INTS 310	Violence and Gender	
INTS 312	Images and Experiences of Childhood: Social Construct, Literature, and Film	
INTS 314	Conflict, Trauma and Healing	
INTS 316	Introduction to Childhood Studies (Mason Core)	
INTS 317	Issues in Family Relationships (Mason Core)	
INTS 319	Contemporary Youth Studies (Mason Core)	
INTS 405	Women and Leadership	
INTS 410	Contemporary Health Issues	
INTS 436	Social Justice Education (Mason Core)	
INTS 440	Death, Dying, and Decision Making	
NUTR 295	Introduction to Nutrition (Mason Core)	
PSYC 231	Social Psychology (Mason Core)	
PSYC 304	Principles of Learning	
PSYC 313	Child Development	
PSYC 314	Adolescent Development	
PSYC 317	Cognitive Psychology	
PSYC 362	Psychology of Gender	
PSYC 379	Applied Cross-Cultural Psychology (Mason Core)	
PSYC 414	Behavior Disorders of Childhood	
PSYC 415	Psychological Factors in Aging	
PSYC 418	Death, Dying, and Grieving	
PSYC 466	Psychology of Intimate Relationships	
SOCI 302	Sociology of Delinquency	
SOCI 308	Race and Ethnicity in a Changing World (Mason Core)	
SOCI 309	Marriage, Families, and Intimate Life	
SOCI 310	Sociology of Deviance	
SOCI 315	Contemporary Gender Relations (Mason Core)	
SOCI 360	Youth Culture and Society (Mason Core)	
SOCI 390	Sociology of Health, Illness, and Disability	
SOCW 415	Child and Family Welfare	
SOCW 435	Introduction to Gerontology	
WMST 300	Current Issues in Women and Gender Studies	
WMST 307	Women and Work	
Family Advocacy		
COMM 334	Family and Health Communication	

EDUC 203	Disability in American Culture (Mason Core)
GCH 300	Introduction to Public Health
GCH 310	Health Behavior Theories
GCH 332	Health and Disease
GCH 350	Health Promotion and Education
GCH 445	Social Determinants of Health
HAP 301	Health Care Delivery in the United States
HAP 445	Introduction to Health Services Research
HEAL 110	Personal Health
HEAL 220	Dimensions of Mental Health
HEAL 230	Introduction to Health Behavior (Mason Core)
HEAL 310	Drugs and Health
HEAL 325	Human Sexuality
HEAL 327	Women's Health
HEAL 331	Men's Health
HEAL 351	Relationship Health
HEAL 372	Health Communication
INTS 314	Conflict, Trauma and Healing
INTS 317	Issues in Family Relationships (Mason Core)
INTS 410	Contemporary Health Issues
INTS 440	Death, Dying, and Decision Making
NUTR 422	Nutrition throughout the Life Cycle
PSYC 379	Applied Cross-Cultural Psychology (Mason Core)
PSYC 418	Death, Dying, and Grieving
PSYC 466	Psychology of Intimate Relationships
SOCI 308	Race and Ethnicity in a Changing World (Mason Core)
SOCI 309	Marriage, Families, and Intimate Life
SOCI 355	Social Inequality (Mason Core)
SOCI 390	Sociology of Health, Illness, and Disability
WMST 300	Current Issues in Women and Gender Studies
Research and Policy	
CRIM 220	Introduction to Law and Society
CRIM 405	Law and Justice around the World (Mason Core)
GCH 376	Health Ethics, Leadership, and Advocacy
GOVT 301	Public Law and the Judicial Process
GOVT 318	Interest Groups, Lobbying, and the Political Process
GOVT 353	Social Entrepreneurship
GOVT 364	Public Policy Making
GOVT 366	Public Policy Analysis
GOVT 407	Law and Society
GOVT 414	Politics of Race and Gender
GOVT 427	Feminist Political Thought
GOVT 445	Human Rights
HAP 301	Health Care Delivery in the United States
HAP 312	Healthcare Law
HAP 442	Introduction to Health Care Politics and Policy
HAP 445	Introduction to Health Services Research
INTS 317	Issues in Family Relationships (Mason Core)
INTS 337	Social Justice Consciousness and Action
INTS 362	Social Justice and Human Rights (Mason Core)
INTS 405	Women and Leadership
PSYC 362	Psychology of Gender
PSYC 379	Applied Cross-Cultural Psychology (Mason Core)
PSYC 466	Psychology of Intimate Relationships
SOCI 308	Race and Ethnicity in a Changing World (Mason Core)
SOCI 309	Marriage, Families, and Intimate Life
SOCI 312	Qualitative Research Methods
SOCI 315	Contemporary Gender Relations (Mason Core)
SOCI 355	Social Inequality (Mason Core)
SOCW 380	Changing Social Policies and Systems
SOCW 400	Legal and Ethical Issues in Human Services
STAT 250	Introductory Statistics I (Mason Core)
STAT 350	Introductory Statistics II

Electives

Code	Title	Credits
Students choose additional elective courses.		17-29
Total Credits		17-29

4-Year Plan

Bachelor of Arts in Human Development and Family Science Sample Plan of Study

The sample plan below is a recommended sequencing of courses based on pre-requisites and scheduling. This may not fit every student's needs and is a guideline, not a requirement. Students should confirm major requirements with their academic advisor and with PatriotWeb Degree Evaluation to ensure they enroll in the proper courses and are on track to graduate.

First Year

Fall Semester	Credits	Spring Semester	Credits
HDFS 200	3	PSYC 211	3
Mason Core (ENGH or COMM)	3	Mason Core (World History or Western Civilization)	3
Mason Core (Quantitative Reasoning)	3	Foreign Language Intermediate Course I (3) or EDSE 116 (4)	3-4

Foreign Language Introduction Course (6) or EDSE 115 (4)	4-6	Mason Core (Natural Science Non Lab)	3
UNIV 100	1	Mason Core (ENGH or COMM)	3
	14-16		15-16

Second Year

Fall Semester	Credits	Spring Semester	Credits
HDFS 250	3	INTS 321	3
HDFS Major Elective	3	HDFS Major Elective	3
Mason Core (Arts)	3	Mason Core (Literature)	3
Mason Core (Natural Science with Lab)	4	Mason Core (Information Technology)	3
Foreign Language Intermediate Course II or EDSE 219	4	Mason Core (Philosophy or Religion)	3
	17		15

Third Year

Fall Semester	Credits	Spring Semester	Credits
HDFS 300	3	SOCI 303 or INTS 434	3-4
HDFS Major Elective	3	HDFS Major Elective	3
Mason Core (English 302)	3	Mason Core (Non-Western Culture)	3
Mason Core (Global Understanding)	3	Elective	3
Elective	3	Elective	3
	15		15-16

Fourth Year

Fall Semester	Credits	Spring Semester	Credits
HDFS 400	3	HDFS 401	3
HDFS 498	3	HDFS 499	3
Elective	3	Elective	3
Elective	3	Elective	3
Elective	3	Elective	3
	15		15

Total Credits 121-125

Detailed four year plans and degree planning checklists can be found at https://advising.gmu.edu/current-student/majors-at-mason/.

International ESOL/ESL Teacher Education Graduate Certificate

Banner Code: E1-CERG-IETE

Academic Advising

Phone: 703-993-3173
Email: TCLDEL@gmu.edu

Available Concentrations

Concentration in ESOL/ESL Special Education

This concentration offers coursework for students and professionals seeking crossover training in ESL/ESOL and special education.

Concentration in International Special Education (PK-12)

This concentration is designed for pre-service and in-service international teachers and educators who desire additional training in special education. All coursework may be applied to the MEd in Special Education and will count towards Virginia licensure in special education K-12.

Concentration in PK-12 for Practitioners

This concentration prepares educators for both domestic and international teaching assignments working with culturally and linguistically-diverse learners. It provides courses for licensed teachers to earn an add-on endorsement in English as a second language (ESL) PK-12, also known as English for speakers of other languages (ESOL). Candidates whose first language is not English may be required to pass an oral and written proficiency assessment in English to meet state licensure requirements and national professional standards.

Admissions & Policies

Policies

For policies governing all graduate certificates, see AP.6.8 Requirements for Graduate Certificates.

Requirements

Certificate Requirements

Total credits: 15-21

This certificate may be pursued on a full-or part-time basis.

Students pursuing this graduate certificate may choose from any of the following concentrations:

Concentration in ESOL/ESL Special Education (EESE)

This concentration may only be pursued on part-time basis.

Code	Title	Credits
Coursework		
EDCI 516	Bilingualism and Language Acquisition Research	3

EDCI 519	Methods of Teaching Culturally and Linguistically Diverse Learners	3
EDCI 520	Assessment of Language Learners	3
EDSE 501	Introduction to Special Education	3
or EDSE 540	Characteristics of Students with Disabilities who Access the General Curriculum	
EDSE 503	Language Development and Reading	3
Select one from the following:		3
EDSE 628	Elementary Reading, Curriculum, Strategies for Students Who Access the General Education Curriculum	
EDSE 629	Secondary Curriculum and Strategies for Students with Disabilities who Access the General Curriculum	
Total Credits		18

Concentration in International Special Education (PK-12) (ISED)

This concentration may only be pursued on a part-time basis.

Students must earn grades of B or higher in all coursework. Most coursework has some field experience component.

Code	Title	Credits
Coursework		
EDCI 776	Consultation and Collaboration in Diverse K-12 Settings	3
EDSE 501	Introduction to Special Education	3
EDSE 502	Classroom Management and Applied Behavior Analysis	3
EDSE 540	Characteristics of Students with Disabilities who Access the General Curriculum	3
EDSE 627	Assessment	3
Total Credits		15

Concentration in PK-12 for Practitioners (PK12)

The concentration may be pursued on a full-time or part-time basis.

Students must earn a B or higher in all coursework.

Code	Title	Credits
Coursework		
EDCI 510	Linguistics for PreK-12 ESOL Teachers	3
EDCI 516	Bilingualism and Language Acquisition Research	3
EDCI 519	Methods of Teaching Culturally and Linguistically Diverse Learners	3
EDCI 520	Assessment of Language Learners	3
EDRD 515	Language and Literacy in Global Contexts	3
EDRD 610	Content Literacy for English Language Learners, PK-12	3
EDUC 537	Introduction to Culturally Linguistically Diverse Learners	3
Total Credits		21

Learning Design and Technology, MS

Banner Code: E1-MS-LDTC

Academic Advising

Phone: 703-993-3798
Email: LearnTech@gmu.edu
Website: learntech.gmu.edu

This master's program is designed to equip students in various industry contexts to work collaboratively with business leaders and subject matter experts to identify opportunities and recommend solutions to address learning needs; apply new and emerging technologies to design, develop, and implement innovative solutions to learning and performance problems; and monitor and evaluate the effectiveness of learning interventions using metrics, measures and analytics that align with business objectives. Students will be able to perform these functions individually and as part of interdisciplinary design teams using a variety of methodologies, learning technologies and digital courseware development packages.

Admissions & Policies

Admissions

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study. See Graduate Admissions Policies.

Policies

For policies governing all graduate degrees, see AP.6 Graduate Policies.

Requirements

Degree Requirements

Total credits: 30

Core Coursework

Code	Title	Credits
EDIT 601	Instructional Design and Technology (IDT) Portfolio	1
EDIT 701	Advanced Instructional Design and Technology (IDT) Portfolio	1
EDIT 704	Instructional Technology Foundations and Theories of Learning	3
EDIT 705	Instructional Design	3
EDIT 706	Business of Learning Design and Technologies	3
EDIT 730	Advanced Instructional Design	3
EDIT 732	Analysis and Design of Technology-Based Learning Environments	3
EDIT 751	Overview of Learning Analytics and Big Data	3

EDIT 752	Design and Implementation of Technology-based Learning Environments	3
Total Credits		23

Electives

Code	Title	Credits
Select 7 credits from the following:		7
EDIT 526	Web Accessibility and Design	
EDIT 530	Scripting and Programming	
EDIT 571	Visual Design and Applications	
EDIT 572	Digital Audio/Video Design and Applications	
EDIT 573	Project Management	
EDIT 574	Social Media and Digital Collaboration Applications	
EDIT 575	e-Learning Design Applications	
EDIT 576	Mobile Learning and Applications	
EDIT 590	Educational Research in Technology	
EDIT 611	Innovations in e-Learning	
EDIT 710	Online Teaching Essentials	
EDIT 772	Virtual Worlds, Augmented Reality, and Gaming Applications	
EDIT 773	Human Computer Interface Design for Teaching and Learning	
Total Credits		7

Learning Technologies Graduate Certificate

Banner Code: E1-CERG-LTCH

Academic Advising

Phone: 703-993-3798
Email: LearnTech@gmu.edu
Website: learntech.gmu.edu

Available Concentrations

There are three available concentrations, two of which meet the needs of K-12 educators interested in teaching in blended as well as fully online learning environments, and one focused on learning designers working in industry, government, and the non-profit sector. All three concentrations are offered fully online.

Concentration in Blended and Online Learning in Schools

This concentration meets the needs of K-12 educators interested in teaching in blended as well as fully online learning environments. The concentration is offered fully online.

Concentration in Designing Digital Learning in Schools

This concentration is offered to practicing teachers who wish to gain the necessary knowledge and skills for integrating digital learning and K–12 curricular knowledge outcomes. The concentration is framed by four learning outcomes: investigation of the theory and practice of digital learning, connection of digital learning and knowledge outcomes, use of design principles and processes to inform practice, and knowledge of a range of technologies appropriate for PreK-12 learners.

Concentration in E-Learning

This concentration provides professionals with specialized knowledge in instructional design and e-learning practices that utilize current and emerging technologies to meet education and training goals in communities, government agencies, and corporate settings. Courses are offered totally online.

Admissions & Policies

Policies

For policies governing all graduate certificates, see AP.6.8 Requirements for Graduate Certificates.

Requirements

Certificate Requirements

Total credits: 15-18

This certificate may be pursued on a full-or part-time basis.

Students pursuing this graduate certificate may choose from any of the following concentrations:

Concentration in Blended and Online Learning in Schools (BOLS)

Total credits: 15

This concentration may be pursued on a part-time basis only.

Coursework

Code	Title	Credits
EDIT 760	Blended and Online Teachers and Learners	1
EDIT 761	Models of Blended and Online Learning	2
EDIT 763	Tools for K-12 Blended and Online Learning	2
EDIT 767	Designing K-12 Blended and Online Learning	3
EDIT 768	K-12 Online Design I	1
EDIT 791	Project Development Practicum I (6 credits are required)	6
Total Credits		15

Concentration in Designing Digital Learning in Schools (DDLS)

Total credits: 18

This concentration may be pursued on a part-time basis only.

Coursework

Code	Title	Credits
EDIT 780	Principles of School-Based Design	3
EDIT 781	Designing for Information Using	3
EDIT 782	Designing for Literacy	3

EDIT 783	Designing for Problem Solving	3
EDIT 784	Designing for Community Participation	3
EDIT 787	Teacher Leadership and Advocacy for Digital Learning	3
Total Credits		18

Concentration in E-Learning (ELRN)

Total credits: 15

This concentration may be pursued on a full-time or part-time basis.

Coursework

Code	Title	Credits
EDIT 611	Innovations in e-Learning	3
EDIT 705	Instructional Design	3
EDIT 706	Business of Learning Design and Technologies	3
Total Credits		9

Electives

E-Learning electives are offered for variable credit each semester and cover industry-standard commercial and open source software tools.

Code	Title	Credits
Select 6 credits from the following:		6
EDIT 526	Web Accessibility and Design	
EDIT 530	Scripting and Programming	
EDIT 571	Visual Design and Applications	
EDIT 572	Digital Audio/Video Design and Applications	
EDIT 573	Project Management	
EDIT 574	Social Media and Digital Collaboration Applications	
EDIT 575	e-Learning Design Applications	
EDIT 576	Mobile Learning and Applications	
EDIT 710	Online Teaching Essentials	
EDIT 772	Virtual Worlds, Augmented Reality, and Gaming Applications	
Total Credits		6

Literacy/Reading Instruction Graduate Certificate

Banner Code: E1-CERG-LRIN

Reading Specialist (K-12)

703-993-7611
Email: literacy@gmu.edu
Website: https://education.gmu.edu/literacy-and-reading/academics/literacy-reading-specialist-graduate-certificate (https://education.gmu.edu/literacy-and-reading/academics/literacy-reading-specialist-graduate-certificate/)

Literacy Coaching

703-993-7611
Email: literacy@gmu.edu
Website: https://education.gmu.edu/literacy-and-reading/academics/literacy-coaching-graduate-certificate (https://education.gmu.edu/literacy-and-reading/academics/literacy-coaching-graduate-certificate/)

The Literacy/Reading Instruction Graduate Certificate offers coursework to prepare teachers who already hold a master's degree to serve as literacy leaders, reading specialists, or literacy coaches in K-12 settings.

Available Concentrations

Concentration in Reading Specialist (K-12)

The Reading Specialist (K-12) concentration is designed for teachers who already have a master's degree and are interested in developing the expertise needed to serve as literacy leaders. Coursework helps teachers develop an in-depth understanding of literacy development across the lifespan, instructional and assessment strategies for individuals and groups of students, and provides preparation as a Reading Specialist. Successful completion of this state-approved sequence of courses can lead to eligibility for the K-12 Reading Specialist license in Virginia. Additional state requirements for the license include holding a master's degree, having an initial teaching license, earning a satisfactory score on the Reading for Virginia Educators: Reading Specialist exam, and having at least three years of teaching experience under contract.

Concentration in Literacy Coaching

The Literacy Coaching concentration is designed for current Reading Specialists or others with a strong background in literacy who want to more effectively support teachers' professional learning, and ultimately student achievement, through literacy coaching. Coursework provides an in-depth understanding of adult learning, effective professional development techniques, strategies for supporting collaboration and communication, using data to foster change, ways to more effectively use technology when working with teachers, and issues of diversity and equity in literacy instruction.

Admissions & Policies

Admissions

Students enrolling in the Literacy Coaching concentration must hold either a Master's degree in Literacy (or closely-related field) or license/endorsement as a Reading Specialist.

Policies

For policies governing all graduate certificates, see AP.6.8 Requirements for Graduate Certificates.

Requirements

Certificate Requirements

Total credits: 12-21

This certificate may be pursued on a part-time basis only.

Concentration in Reading Specialist (K-12) (RSPC)

Coursework

Students enrolled in this program must earn a B- or higher in all coursework.

Code	Title	Credits
EDRD 630	Literacy Foundations and Instruction for Diverse Populations: Birth through Middle Childhood	3
EDRD 631	Literacy Foundations and Instruction for Diverse Populations: Adolescence Through Adulthood	3
EDRD 632	Literacy Assessments and Interventions for Groups	3
EDRD 633	Literacy Assessments and Interventions for Individuals [1]	3
EDRD 634	School-Based Leadership in Literacy	3
EDRD 635	School-Based Inquiry in Literacy	3
EDRD 637	Supervised Literacy Practicum [1]	3
Total Credits		21

[1] EDRD 633 and EDRD 637 must be taken concurrently.

Concentration in Literacy Coaching (LITC)

Code	Title	Credits
EDRD 680	Foundations of Coaching and Fostering Professional Learning	3
EDRD 681	Collaboration and Communication in Literacy Coaching	3
EDRD 682	Creating Change through Data-Oriented Coaching	3
EDRD 683	Trends and Issues in Literacy Instruction and Literacy Coaching	3
Total Credits		12

Mild Disabilities Minor

Banner Code: MDIS

Academic Advising

Phone: 703-993-3670
Email: speced@gmu.edu
Website: https://education.gmu.edu/special-education/teacher-licensure/general-curriculum#general

This minor provides undergraduate students with background knowledge in teaching students with mild disabilities. Completing this minor partially fulfills requirements for licensure in Special Education in Virginia.

Admissions & Policies

Policies

At least eight credits must be unique to this minor and may not be used to fulfill requirements of the student's major, concentration, an undergraduate certificate, or another minor. Students must complete all coursework with a minimum GPA of 2.00. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 15

Coursework

Code	Title	Credits
EDSE 201	Introduction to Special Education	3
EDSE 241	Characteristics of Students with Disabilities who Access the General Curriculum	3
EDSE 251	Classroom Management and Positive Behavior Supports	3
EDSE 341	Language Acquisition and Reading and Writing Development	3
EDSE 441	Instructional Strategies for Reading and Writing	3
Total Credits		15

Physical Education, BSEd

Banner Code: E1-BSED-PHED

Academic Advising

Phone: 703-993-2096
Email: phed@gmu.edu
Website: https://education.gmu.edu/health-and-physical-education/

Overview

Completing this degree fulfills requirements for licensure in Health and Physical Education (PK-12) in Virginia. Students complete a student teaching experience in their final semester.

Admissions & Policies

Admissions

Four-Year Students

Students entering as freshmen with an interest in majoring in physical education will initially be accepted with BPRE status (Pre-Bachelor in Health and Physical Education). Students must successfully complete a minimum of 45 credits and attain a cumulative GPA of 2.50 to apply to the BSED in Physical Education Program. In addition:

- Recommended: submit passing score of 150 for the Praxis Core Academic Skills for Educators in Math (5732) and 470 composite score on VCLA Reading and Writing or passing scores on approved substitute tests
- have earned passing grades in
  - BIOL 124 Human Anatomy and Physiology
  - BIOL 125 Human Anatomy and Physiology
  - PHED 202 Teaching Skillful Movement C or better
- have earned at least 10 professional points (https://rht.gmu.edu/health-and-physical-education/professional-development-plan/).

Degree-Seeking Transfer Students

Transfer students can apply for BSEd status by having:

- earned a minimum of 45 credits from their previous institution with a cumulative GPA of 2.50 or by completing 12 credits at Mason with a minimum of a 2.50 GPA;
- Recommended passing scores of 150 for the Praxis Core Academic Skills for Educators in Math (5732) and 470 composite score on VCLA Reading and Writing or passing scores on approved substitute tests.
- have earned passing grades in
  - BIOL 124 Human Anatomy and Physiology
  - BIOL 125 Human Anatomy and Physiology
  - PHED 202 Teaching Skillful Movement C or better
- earned at least 10 professional points (https://rht.gmu.edu/health-and-physical-education/professional-development-plan/).

Policies

For policies governing all undergraduate degrees, see the AP.5 Undergraduate Policies section of the catalog.

Student Teaching Internship

To enroll in PHED 415 Student Teaching in Physical Education (Mason Core), physical education majors must:

- have a minimum 2.50 GPA in the last 60 credits of coursework
- have passed and electronically submitted test scores for the VCLA and PRAXIS II exams to George Mason University and provide a paper copy of the test scores to the internship coordinator
- have satisfactorily completed all required Mason core and professional concentration courses
- have successfully completed an emergency First Aid, CPR and AED certification or training.

The application must be completed one full semester before taking PHED 415 Student Teaching in Physical Education (Mason Core). Application deadlines are listed below and forms are located online (http://rht.gmu.edu/programs/phed/student_teaching/).

Application Deadlines

- Fall Semester—February 1
- Spring Semester—September 1

Requirements

Degree Requirements

Total credits: 120

Mason Core

Code	Title	Credits
Written Communication		6
Oral Communication		3
Information Technology		3
Quantitative Reasoning		3
MATH 106	Quantitative Reasoning (Mason Core) (recommended course)	
Literature		3
Arts		3
Western Civilization/World History		3
Social and Behavioral Sciences		3
Global Understanding		3
Natural Science:		
BIOL 124	Human Anatomy and Physiology	4
BIOL 125	Human Anatomy and Physiology	4
Synthesis/Capstone [1]		
Total Credits		38

[1] Fulfilled by PHED 415 Student Teaching in Physical Education (Mason Core), listed below in professional sequence.

Professional Sequence

Note: Students are not permitted to enroll in HEAL 405 Teaching Methods in Health Education (K-12), PHED 308 Adapted Physical Education, PHED 403 Elementary School Instruction in Physical Education, PHED 404 Middle and High School Instruction in Physical Education, and PHED 415 Student Teaching in Physical Education (Mason Core), until they have met all BSEd application requirements.

Code	Title	Credits
ATEP 300	Functional Anatomy	3
EDRD 300	Literacy and Curriculum Integration	3
EDUC 302	Human Growth and Development	3
HEAL 110	Personal Health	3
HEAL 200	School and Community Safety	1
HEAL 250	Introduction to School Health	3
HEAL 405	Teaching Methods in Health Education (K-12) [1]	3
KINE 310	Exercise Physiology I	3
PHED 202	Teaching Skillful Movement [1]	3
PHED 218	Technology in Health and Physical Education	3
PHED 273	Net and Target Games	3
PHED 274	Dance and Educational Gymnastics	3
PHED 275	Field and Invasion Games	3
PHED 276	Health-Related Fitness Education	3
PHED 306	Psychomotor Learning	3
PHED 308	Adapted Physical Education [1]	3
PHED 320	Student Assessment in Health and Physical Education	3
PHED 340	Social and Cultural Issues in Physical Education (Satisfies the university Writing Intensive requirement)	3
PHED 403	Elementary School Instruction in Physical Education [1]	3
PHED 404	Middle and High School Instruction in Physical Education [1]	3
PHED 415	Student Teaching in Physical Education (Mason Core) [2]	12
PRLS 316	Leadership and Outdoor Education	3
Select 9 credits in electives.		9
Total Credits		82

1 Requires a grade of C or better.

2 Students must complete student teaching (PHED 415 Student Teaching in Physical Education (Mason Core) within 5 years of completing PHED 202 Teaching Skillful Movement. If more than five years has lapsed from taking PHED 202 Teaching Skillful Movement and student teaching (PHED 415 Student Teaching in Physical Education (Mason Core), students will have to retake this foundational course before they can student-teach.

Professional Development and Fitness Requirement

Students must earn at least 10 professional development points (https://rht.gmu.edu/health-and-physical-education/professional-development-plan/) to achieve BSEd status and 20 additional points to apply for student teaching. Professional development points may be earned by attending or volunteering at various events and activities.

Additionally, students will be expected to achieve and maintain the healthy zone of health related fitness as measured by FitnessGram® throughout their program. Accommodations will be made for students with documented physical disabilities.

Psychology, MA (CEHD)

Banner Code: E1-MA-PSYC

Academic Advising

Phone: 703-993-5127
Email: nbeadles@gmu.edu
Website: education.gmu.edu/school-psychology/

The School Psychology program which consists of the MA in Psychology, concentration in School Psychology and the School Psychology Graduate Certificate, is committed to preparing graduate students to practice psychology in educational and clinical settings that serve children, adolescents, and their families. The program is approved by the School Psychology Training Programs of the National Association of School Psychologists (NASP). Students who successfully complete the concentration and the certificate will be eligible for licensure in Virginia by the state Board of Education and certification or licensure in other states as a school psychologist.

Admissions & Policies

Admissions

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions. Fifteen credits of undergraduate psychology courses are required (General, Statistics, Research Methods/Experimental, Abnormal, and Developmental).

Policies

For policies governing all graduate degrees, see Graduate Policies.

With the approval of the academic program coordinator, division director and CEHD Office of Student and Academic Affairs, a maximum of 21 credits may be reduced based on a previously-conferred graduate degree.

Requirements

Degree Requirements

Total credits: 44

Concentration in School Psychology (SCH)

Coursework

Code	Title	Credits
EDCD 525	Advanced Human Growth and Development	3
EDCD 603	Counseling Theories and Practice	3
Choose one from the following:		3
EDCD 606	Counseling Children and Adolescents	
EDCD 608	Group Processes and Analyses	
SPSY 692	Counseling in the Schools	
EDRD 629	Literacy Foundations and Instruction for School Psychologists	3
EDRS 590	Education Research	3
EDRS 620	Quantitative Inquiry in Education	3
SPSY 617	Child Psychopathology	3
SPSY 619	Consultation and Applied Behavioral Analysis	3
SPSY 671	Role and Function of the School Psychologist	3
SPSY 672	Schools as Systems Practicum in School Psychology	3
SPSY 709	Cognitive Assessment	4
SPSY 710	Social, Emotional, and Behavioral Assessment	4
SPSY 750	Cognitive Assessment Practicum	3
SPSY 773	Prevention, Intervention, and Consultation in Schools	3
Total Credits		44

Research Methods Graduate Certificate

Banner Code: E1-CERG-RESM

Academic Advising

Phone: 703-993-2011
Email: cehdphd@gmu.edu
Website: https://education.gmu.edu/research-methodology/qualitative-research

Certificate with Concentration in Qualitative Research

This concentration provides supplemental preparation for qualitative researchers in higher education and policy organizations. Coursework is interdisciplinary and will provide theoretical and applied research training across case study, ethnography, grounded theory, mixed methods, narrative inquiry, and participatory action research.

Admissions & Policies

Admissions

Applicants must have a conferred Master's degree from a regionally-accredited institution prior to enrollment.

Policies

For policies governing all graduate certificates, see AP.6.8 Requirements for Graduate Certificates.

Requirements

Certificate Requirements

Total credits: 18

This certificate may be pursued on a part-time basis only.

Concentration in Qualitative Research (QR)

Coursework

Code	Title	Credits
EDRS 812	Qualitative Methods in Educational Research	3
EDRS 822	Advanced Applications of Qualitative Methods	3
EDRS 895	Qualitative Methods Capstone Project	3
Total Credits		9

Electives

Code	Title	Credits
Select 9 credits from the following:		9
EDRS 818	Critical Discourse Analysis in Education Research	
EDRS 824	Mixed Methods Research: Integrating Qualitative and Quantitative Approaches	
EDRS 825	Advanced Research Methods in Self-Study of Professional Practice	
EDRS 826	Qualitative Case Study Methods	
EDRS 832	Document Analysis and Archival Research	
EDRS 833	Participatory Action Research	
EDRS 836	Narrative Inquiry	
EDRS 850	Grounded Theory	
EDRS 897	Special Topics in Research Methods	
Total Credits		9

School Psychology Graduate Certificate

Banner Code: E1-CERG-SCH

Academic Advising

Phone: 703-993-5127
Email: nbeadles@gmu.edu
Website: https://education.gmu.edu/school-psychology/

The School Psychology program which consists of the MA in Psychology, Concentration in School Psychology and the School Psychology Graduate Certificate, is committed to preparing graduate students to practice psychology in educational and clinical settings that serve children, adolescents, and their families. The program is approved by the School Psychology Training Programs of the National Association of School Psychologists (NASP). Students who successfully complete the concentration and the certificate will be eligible for licensure in Virginia by the state Board of Education and certification or licensure in other states as a school psychologist.

Admissions & Policies

Policies

Students who are eligible to waive coursework must complete a minimum of 15 credits in residency to graduate.

For policies governing all graduate certificates, see AP.6.8 Requirements for Graduate Certificates.

Requirements

Certificate Requirements

Total credits: 22

This certificate may be pursued on a full-time basis only.

Coursework

Code	Title	Credits
SPSY 722	Advanced Child Assessment	4
SPSY 751	Advanced Assessment Practicum in School Psychology I	3
SPSY 752	Advanced Assessment Practicum in School Psychology II	3
SPSY 753	Multiculturalism in Schools	3
6 Internship credits of		6
SPSY 790	School Psychology Internship [1]	
SPSY 792	Prevention Intervention Consultation Practicum	3
Total Credits		22

[1] Students must register for at least 3 credits in each of 2 consecutive semesters.

Secondary Education - Biology (6-12) Undergraduate Certificate

Banner Code: E1-CERB-SEEB

Academic Advising

Phone: 703-993-3696
Email: seed@gmu.edu
Website: education.gmu.edu/secondary-education-6-12/academics/secondary-education-biology-undergraduate-certificate

This 23-credit certificate is available only to students pursuing a BA (https://catalog.gmu.edu/colleges-schools/science/biology/biology-ba/)or BS (https://catalog.gmu.edu/colleges-schools/science/biology/biology-bs/) in Biology. Students who complete both the BA (https://catalog.gmu.edu/colleges-schools/science/biology/biology-ba/)or BS (https://catalog.gmu.edu/colleges-schools/science/biology/biology-bs/) in Biology and this certificate will be considered *Virginia state-approved educator preparation program completers* and will be eligible for recommendation for an initial VA teaching license in Secondary Education (6-12) Biology.

Admissions & Policies

Admissions

Students applying for this undergraduate certificate as a secondary program must have satisfied the following requirements:

- enrolled in the BA or BS in Biology program
- a minimum cumulative GPA of 3.00
- an official College of Education and Human Development review of discipline-specific content competencies coursework
  (note: a minimum grade of C (2.00) must have been attained in such coursework completed at Mason).
  See website (https://cehd.gmu.edu/teacher/think-you-want-to-be-a-teacher/) for more information on the admissions process.

Policies

Prior to application for internship, students are required to complete all discipline-specific content competency (https://cehd.gmu.edu/endorse/) requirements, pass licensure assessments, and have earned a grade of B (3.00) or better in all licensure coursework.

Requirements

Certificate Requirements

Total credits: 23

This certificate may be pursued on a full-or part-time basis.

Teacher Licensure Coursework

Code	Title	Credits
EDRD 419	Literacy in the Content Areas	3
SEED 422	Foundations of Secondary Education	3
SEED 440	Human Development, Learning, and Teaching	3
SEED 473	Teaching Science in the Secondary School	3
SEED 483	Advanced Methods of Teaching Science in Secondary School	3
SEED 491	Internship Seminar in Secondary Teaching	2
SEED 494	Internship: Secondary Education Science (Mason Core)	6
Total Credits		23

Secondary Education - Chemistry (6-12) Undergraduate Certificate

Banner Code: E1-CERB-SEEC

Phone: 703-993-3696
Email: seed@gmu.edu
Website: education.gmu.edu/secondary-education-6-12/academics/secondary-education-chemistry-undergraduate-certificate

This 23-credit certificate is available only to students pursuing a BA (https://catalog.gmu.edu/colleges-schools/science/chemistry-biochemistry/chemistry-ba/)or BS (https://catalog.gmu.edu/colleges-schools/science/chemistry-biochemistry/chemistry-bs/) in Chemistry. Students who complete both the BA (https://catalog.gmu.edu/colleges-schools/science/chemistry-biochemistry/chemistry-ba/)or BS (https://catalog.gmu.edu/colleges-schools/science/chemistry-biochemistry/chemistry-bs/) in Chemistry and this certificate will be considered *Virginia state-approved educator preparation program completers* and will be eligible for recommendation for an initial VA teaching license in Secondary Education (6-12) Chemistry.

Admissions & Policies

Admissions

Students applying for this undergraduate certificate as a secondary program must have satisfied the following requirements:

- enrolled in the BA or BS in Chemistry program
- a minimum cumulative GPA of 3.00
- an official College of Education and Human Development review of discipline-specific content competencies coursework
  (note: a minimum grade of C (2.00) must have been attained in such coursework completed at Mason).
  See website (https://cehd.gmu.edu/teacher/think-you-want-to-be-a-teacher/) for more information on the admissions process.

Policies

Prior to application for internship, students are required to complete all discipline-specific content competency (https://cehd.gmu.edu/endorse/) requirements, pass licensure assessments, and have earned a grade of B (3.00) or better in all licensure coursework.

Requirements

Certificate Requirements

Total credits: 23

This certificate may be pursued on a full-or part-time basis.

Teacher Licensure Coursework

Code	Title	Credits
EDRD 419	Literacy in the Content Areas	3
SEED 422	Foundations of Secondary Education	3
SEED 440	Human Development, Learning, and Teaching	3

SEED 473	Teaching Science in the Secondary School	3
SEED 483	Advanced Methods of Teaching Science in Secondary School	3
SEED 491	Internship Seminar in Secondary Teaching	2
SEED 494	Internship: Secondary Education Science (Mason Core)	6
Total Credits		23

Secondary Education - Computer Science (6-12) Undergraduate Certificate

Banner Code: E1-CERB-SEEO

Academic Advising

Phone: 703-993-3696
Email: seed@gmu.edu
Website: education.gmu.edu/secondary-education-6-12/academics/

This 23-credit certificate is available only to students pursuing a BS in Computer Science (https://catalog.gmu.edu/colleges-schools/engineering/computer-science/computer-science-bs/). Students who complete both the BS in Computer Science (https://catalog.gmu.edu/colleges-schools/engineering/computer-science/computer-science-bs/) and this certificate will be considered Virginia state-approved educator preparation program completers and will be eligible for recommendation for an initial VA teaching license in Secondary Education (6-12) Computer Science.

Admissions & Policies

Admissions

Students applying for this undergraduate certificate as a secondary program must have satisfied the following requirements:

- enrolled in the BS in Computer Science program
- a minimum cumulative GPA of 3.00
- an official College of Education and Human Development review of discipline-specific content competencies coursework

(note: a minimum grade of C (2.00) must have been attained in such coursework completed at Mason).

See website (https://cehd.gmu.edu/teacher/think-you-want-to-be-a-teacher/) for more information on the admissions process.

Policies

Prior to application for internship, students are required to complete all discipline-specific content competency (https://cehd.gmu.edu/endorse/) requirements, pass licensure assessments, and have earned a grade of B (3.00) or better in all licensure coursework.

Requirements

Certificate Requirements

Total credits: 23

This certificate may be pursued on a full-or part-time basis.

Teacher Licensure Coursework

Code	Title	Credits
EDRD 419	Literacy in the Content Areas	3
SEED 422	Foundations of Secondary Education	3
SEED 440	Human Development, Learning, and Teaching	3
SEED 466	Teaching Computer Science in Secondary School	3
SEED 476	Advanced Methods of Teaching Computer Science in the Secondary School	3
SEED 491	Internship Seminar in Secondary Teaching	2
SEED 496	Internship: Secondary Education Computer Science (Mason Core)	6
Total Credits		23

Secondary Education - Earth Science (6-12) Undergraduate Certificate

Banner Code: E1-CERB-SEES

Academic Advising

Phone: 703-993-3696
Email: seed@gmu.edu
Website: education.gmu.edu/secondary-education-6-12/academics/secondary-education-earth-science-undergraduate-certificate

This 23 credit certificate is available only to students pursuing a BS in Earth Science (https://catalog.gmu.edu/colleges-schools/science/atmospheric-oceanic-earth-sciences/earth-science-bs/). Students who complete both the BS in Earth Science (https://catalog.gmu.edu/colleges-schools/science/atmospheric-oceanic-earth-sciences/earth-science-bs/) and this certificate will be considered *Virginia state-approved educator preparation program completers* and will be eligible for recommendation for an initial VA teaching license in Secondary Education (6-12) Earth Science.

Admissions & Policies

Admissions

Students applying for this undergraduate certificate as a secondary program must have satisfied the following requirements:

- enrolled in the BS in Earth Science program
- a minimum cumulative GPA of 3.00
- an official College of Education and Human Development review of discipline-specific content competencies coursework

(note: a minimum grade of C (2.00) must have been attained in such coursework completed at Mason).
See website (https://cehd.gmu.edu/teacher/think-you-want-to-be-a-teacher/) for more information on the admissions process.

Policies

Prior to application for internship, students are required to complete all discipline-specific content competency (https://cehd.gmu.edu/endorse/) requirements, pass licensure assessments, and have earned a grade of B (3.00) or better in all licensure coursework.

Requirements

Certificate Requirements

Total credits: 23

This certificate may be pursued on a full-or part-time basis.

Teacher Licensure Coursework

Code	Title	Credits
EDRD 419	Literacy in the Content Areas	3
SEED 422	Foundations of Secondary Education	3
SEED 440	Human Development, Learning, and Teaching	3
SEED 473	Teaching Science in the Secondary School	3
SEED 483	Advanced Methods of Teaching Science in Secondary School	3
SEED 491	Internship Seminar in Secondary Teaching	2
SEED 494	Internship: Secondary Education Science (Mason Core)	6
Total Credits		23

Secondary Education - English (6-12) Undergraduate Certificate

Banner Code: E1-CERB-SEEN

Academic Advising

Phone: 703-993-3696
Email: seed@gmu.edu
Website: education.gmu.edu/secondary-education-6-12/academics/secondary-education-english-undergraduate-certificate

This 23-credit certificate is available only to students pursuing a BA in English (https://catalog.gmu.edu/colleges-schools/humanities-social-sciences/english/english-ba/). Students who complete both the BA in English (https://catalog.gmu.edu/colleges-schools/humanities-social-sciences/english/english-ba/) and this certificate will be considered *Virginia state-approved educator preparation program completers* and will be eligible for recommendation for an initial VA teaching license in Secondary Education (6-12) English.

Admissions & Policies

Admissions

Students applying for this undergraduate certificate as a secondary program must have satisfied the following requirements:

- enrolled in the BA in English program
- a minimum cumulative GPA of 3.00
- an official College of Education and Human Development review of discipline-specific content competencies coursework
  (note: a minimum grade of C (2.00) must have been attained in such coursework completed at Mason).
  See website (https://cehd.gmu.edu/teacher/think-you-want-to-be-a-teacher/) for more information on the admissions process.

Policies

Prior to application for internship, students are required to complete all discipline-specific content competency (https://cehd.gmu.edu/endorse/) requirements, pass licensure assessments, and have earned a grade of B (3.00) or better in all licensure coursework.

Requirements

Certificate Requirements

Total credits: 23

This certificate may be pursued on a full-or part-time basis.

Teacher Licensure Coursework

Code	Title	Credits
EDRD 419	Literacy in the Content Areas	3
SEED 422	Foundations of Secondary Education	3
SEED 440	Human Development, Learning, and Teaching	3
SEED 469	Teaching English in Secondary School	3
SEED 479	Advanced Methods of Teaching English in the Secondary School	3
SEED 491	Internship Seminar in Secondary Teaching	2
SEED 492	Internship: Secondary Education English (Mason Core)	6
Total Credits		23

Secondary Education - Mathematics (6-12) Undergraduate Certificate

Banner Code: E1-CERB-SEEM

Academic Advising

Phone: 703-993-3696
Email: seed@gmu.edu
Website: education.gmu.edu/secondary-education-6-12/academics/secondary-education-mathematics-undergraduate-certificate

This 23-credit certificate is available only to students pursuing a BA (https://catalog.gmu.edu/colleges-schools/science/mathematical-sciences/mathematics-ba/)or BS (https://catalog.gmu.edu/colleges-schools/science/mathematical-sciences/mathematics-bs/) in Mathematics. Students who complete both the BA (https://catalog.gmu.edu/colleges-schools/science/mathematical-sciences/mathematics-ba/)or BS (https://catalog.gmu.edu/colleges-schools/science/mathematical-sciences/mathematics-bs/) in Mathematics and this certificate will be considered *Virginia state-approved educator preparation program completers* and will be eligible for recommendation for an initial VA teaching license in Secondary Education (6-12) Mathematics.

Admissions & Policies

Admissions

Students applying for this undergraduate certificate as a secondary program must have satisfied the following requirements:

- Students must have satisfied the following requirements:
- enrolled in the BA or BS in Mathematics program
- a minimum cumulative GPA of 3.00
- an official College of Education and Human Development review of discipline-specific content competencies coursework
  (note: a minimum grade of C (2.00) must have been attained in such coursework completed at Mason).
  See website (https://cehd.gmu.edu/teacher/think-you-want-to-be-a-teacher/) for more information on the admissions process.

Policies

Prior to application for internship, students are required to complete all discipline-specific content competency (https://cehd.gmu.edu/endorse/) requirements, pass licensure assessments, and have earned a grade of B (3.00) or better in all licensure coursework.

Requirements

Certificate Requirements

Total credits: 23

This certificate may be pursued on a full-or part-time basis.

Teacher Licensure Coursework

Code	Title	Credits
EDRD 419	Literacy in the Content Areas	3
SEED 372	Teaching Mathematics in the Secondary School	3
SEED 422	Foundations of Secondary Education	3
SEED 440	Human Development, Learning, and Teaching	3
SEED 472	Advanced Methods for Teaching Mathematics in the Secondary School	3
SEED 491	Internship Seminar in Secondary Teaching	2
SEED 493	Internship: Secondary Education Math (Mason Core)	6
Total Credits		23

Secondary Education - Physics (6-12) Undergraduate Certificate

Banner Code: E1-CERB-SEEP

Acadenic Advising

Phone: 703-993-3696
Email: seed@gmu.edu
Website: education.gmu.edu/secondary-education-6-12/academics/secondary-education-physics-undergraduate-certificate

This 23-credit certificate is available only to students pursuing a BS in Physics (https://catalog.gmu.edu/colleges-schools/science/physics-astronomy/physics-bs/). Students who complete both the BS in Physics (https://catalog.gmu.edu/colleges-schools/science/physics-astronomy/physics-bs/) and this certificate will be considered *Virginia state-approved educator preparation program completers* and will be eligible for recommendation for an initial VA teaching license in Secondary Education (6-12) Physics.

Admissions & Policies

Admissions

Students applying for this undergraduate certificate as a secondary program must have satisfied the following requirements:

- enrolled in the BS in Physics program
- a minimum cumulative GPA of 3.00
- an official College of Education and Human Development review of discipline-specific content competencies coursework
  (note: a minimum grade of C (2.00) must have been attained in such coursework completed at Mason).
  See website (https://cehd.gmu.edu/teacher/think-you-want-to-be-a-teacher/) for more information on the admissions process.

Policies

Prior to application for internship, students are required to complete all discipline-specific content competency (https://cehd.gmu.edu/endorse/) requirements, pass licensure assessments, and have earned a grade of B (3.00) or better in all licensure coursework.

Requirements

Certificate Requirements

Total credits: 23

This certificate may be pursued on a full-or part-time basis.

Teacher Licensure Coursework

Code	Title	Credits
EDRD 419	Literacy in the Content Areas	3
SEED 422	Foundations of Secondary Education	3
SEED 440	Human Development, Learning, and Teaching	3
SEED 473	Teaching Science in the Secondary School	3
SEED 483	Advanced Methods of Teaching Science in Secondary School	3
SEED 491	Internship Seminar in Secondary Teaching	2
SEED 494	Internship: Secondary Education Science (Mason Core)	6
Total Credits		23

Secondary Education Licensure Graduate Certificate

Banner Code: E1-CERG-SELC

Phone: 703-993-3696
Email: seed@gmu.edu
Website: https://education.gmu.edu/secondary-education-6-12/academics/licensure-graduate-certificate

This 23-credit certificate offers coursework towards Virginia teacher licensure to students enrolled in non-licensure graduate programs at Mason or those who already have a master's degree.

Admissions & Policies

Admissions

Students must have satisfied the following requirements:

- a minimum cumulative GPA of 3.00
- an official College of Education and Human Development review of discipline-specific content competencies coursework (note: a minimum grade of C must have been attained in such coursework completed at Mason)
- two letters of recommendation from former or current employers or university professors, targeting work experiences and academic abilities
- resume
- goal statement (750-1000 words) that addresses the reasons for choosing this program.

See website (https://cehd.gmu.edu/teacher/think-you-want-to-be-a-teacher/) for more information on the admissions process.

Policies

Prior to application for internship, students are required to complete all discipline-specific content competency (https://cehd.gmu.edu/endorse/) requirements.

For policies governing all graduate certificates, see AP.6.8 Requirements for Graduate Certificates.

Requirements

Certificate Requirements

Total credits: 23

This certificate may be pursued on a full-or part-time basis.

Students enrolled in this program must earn a B or higher in all coursework.

Core Courses

Code	Title	Credits
EDRD 619	Literacy in the Content Areas	3
SEED 522	Foundations of Secondary Education	3
SEED 540	Human Development and Learning: Secondary Education	3
SEED 791	Internship Seminar in Secondary Teaching	2
Total Credits		11

Curriculum and Methods Courses

Code	Title	Credits
Select one content course specific to your program from the following:		3
SEED 566	Teaching Computer Science in the Secondary School	
SEED 567	Teaching Social Studies in the Secondary School	
SEED 569	Teaching English in the Secondary School	
SEED 572	Teaching Mathematics in the Secondary School	
SEED 573	Teaching Science in the Secondary School	
Total Credits		3

Advanced Curriculum and Methods Courses

Code	Title	Credits
Select one content course specific to your program from the following:		3
SEED 667	Advanced Methods of Teaching Social Sciences in the Secondary School	
SEED 669	Advanced Methods of Teaching English in the Secondary School	
SEED 672	Advanced Methods of Teaching Mathematics in the Secondary School	
SEED 673	Advanced Methods of Teaching Science in the Secondary School	
SEED 676	Advanced Methods of Teaching Computer Science in the Secondary School	
Total Credits		3

Internship Courses

Code	Title	Credits
Select one content course specific to your program from the following:		6
SEED 792	Internship: Secondary Education English	
SEED 793	Internship: Secondary Education Math	
SEED 794	Internship: Secondary Education Science	
SEED 795	Internship: Secondary Education Social Studies	
SEED 796	Internship: Secondary Education Computer Science	
Total Credits		6

Severe Disabilities Minor

Banner Code: SPSD

Academic Advising

Phone: 703-993-3670
Email: speced@gmu.edu
Website: https://education.gmu.edu/special-education/teacher-licensure/adapted-curriculum#adapted

This minor provides undergraduate students with background knowledge in teaching students with severe disabilities. Completing this minor partially fulfills requirements for licensure in Special Education in Virginia.

Admissions & Policies

Policies

At least eight credits must be unique to this minor and may not be used to fulfill requirements of the student's major, concentration, an undergraduate certificate, or another minor. Students must complete all coursework with a minimum GPA of 2.00. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 15

Coursework

Code	Title	Credits
EDSE 201	Introduction to Special Education	3
EDSE 251	Classroom Management and Positive Behavior Supports	3
EDSE 361	Characteristics of Students with Severe Disabilities	3
EDSE 362	Communication with Severe Disabilities	3
EDSE 469	Individualized Supports and Specialized Care of Students with Severe Disabilities	3
Total Credits		15

Special Education Graduate Certificate

Banner Code: E1-CERG-EDSE

Adapted Curriculum K-12

Phone: 703-993-3670
Email: speced@gmu.edu
Website: https://education.gmu.edu/special-education/teacher-licensure/adapted-curriculum (https://gse.gmu.edu/special-education/teacher-licensure/adapted-curriculum/)

General Curriculum (K-12)

Phone: 703-993-3670
Email: speced@gmu.edu
Website: https://education.gmu.edu/special-education/teacher-licensure/general-curriculum (https://gse.gmu.edu/special-education/teacher-licensure/general-curriculum/)

Visual Impairments Licensure (PK-12)

Phone: 703-993-3670
Email: speced@gmu.edu
Website: https://education.gmu.edu/special-education/teacher-licensure/visual-impairments (https://gse.gmu.edu/special-education/teacher-licensure/visual-impairments/)

Available Concentrations

Concentration in Adapted Curriculum (K-12)

This 36-credit concentration offers required coursework for Virginia teacher licensure in Special Education: Adapted Curriculum. This concentration prepares individuals to work with students who have severe disabilities and who require significant support and specialized instruction to make progress in communication skills, reading, math, and life skills.

Concentration in General Curriculum (K-12)

This 33-credit concentration offers required coursework for Virginia teacher licensure to individuals who will be working with students with disabilities who access the general curriculum. The concentration prepares individuals to work with students with disabilities who take Standards of Learning tests (SOLs).

Concentration in Visual Impairments Licensure (PK-12)

This 35-credit concentration provides teacher candidates with the tools they need to work with students who are blind and visually impaired, including those who have multiple disabilities and diverse learner characteristics. Candidates will gain skills and knowledge to support students in a variety of settings, including general and special education, in core content, and the Expanded Core Curriculum. This concentration is designed for candidates seeking Virginia initial teacher licensure in visual impairments (PK–12).

Admissions & Policies

Policies

Students who have completed graduate or undergraduate coursework equivalent to certificate coursework prior to admission to this program may request that some courses in this certificate be waived. Students who are eligible to waive coursework must complete a minimum of 15 credits to graduate. Students must earn a B- or better in all coursework.

For policies governing all graduate certificates, see AP.6.8 Requirements for Graduate Certificates.

Requirements

Certificate Requirements

Total credits: 33-36

This certificate may be pursued on a full-or part-time basis.

Students pursuing this graduate certificate may choose from any of the following concentrations:

Concentration in Adapted Curriculum (K-12) (ADCU)

Code	Title	Credits
Coursework		
EDSE 501	Introduction to Special Education	3
EDSE 531	Transition and Community-Based Instruction	3
EDSE 532	Positive Behavior Supports	3
EDSE 533	Assessment and Program Planning for Adapted Curriculum	3
EDSE 534	Communication and Severe Disabilities	3
EDSE 547	Characteristics of Students with Severe Disabilities	3
EDSE 557	Foundations of Language and Literacy for Diverse Learners	3
EDSE 661	Curriculum and Methods: Severe Disabilities	3
EDSE 663	Collaborative Teamwork to Support Students with Significant Disabilities	3
EDSE 669	Individualized Supports and Specialized Care of Students with Severe Disabilities	3
6 credits of Internship		6
EDSE 784	Internship: Adapted Curriculum	
Total Credits		36

Concentration in General Curriculum (K-12) (GECU)

Code	Title	Credits
Coursework		
EDSE 501	Introduction to Special Education	3
EDSE 502	Classroom Management and Applied Behavior Analysis	3
EDSE 503	Language Development and Reading	3
EDSE 540	Characteristics of Students with Disabilities who Access the General Curriculum	3
EDSE 544	Adapted Instructional Methods and Transition for Secondary Learners	3
EDSE 627	Assessment	3
EDSE 628	Elementary Reading, Curriculum, Strategies for Students Who Access the General Education Curriculum	3
EDSE 629	Secondary Curriculum and Strategies for Students with Disabilities who Access the General Curriculum	3
EDSE 662	Consultation and Collaboration	3
Six credits of		6
EDSE 783	Internship: Special Education in General Curriculum [1]	
Total Credits		33

[1] Must complete two 3-credit internships: one elementary placement and one secondary placement.

Concentration in Visual Impairments Licensure (PK-12) (VILI)

Code	Title	Credits
Coursework		
EDAT 522	Assistive Technology for Individuals with Sensory Impairments	3
EDSE 511	Characteristics of Students with Visual Impairments	3
EDSE 512	Braille Code	3
EDSE 513	Medical and Educational Implications of Visual Impairments	3
EDSE 514	Orientation and Mobility for Students with Visual Impairments	2
EDSE 518	Curriculum and Assessment of Students with Visual Impairments	3
EDSE 532	Positive Behavior Supports	3
EDSE 613	Teaching Methods for Students with Visual Impairments	3
EDSE 616	Braille Reading and Writing	3
EDSE 663	Collaborative Teamwork to Support Students with Significant Disabilities	3
EDSE 785	Internship: Visual Impairment (must complete six credits)	2-6
Total Credits		35

Special Education Leadership Graduate Certificate

Banner Code: E1-CERG-SELE

Academic Advising

Phone: 703-993-3670
Email: speced@gmu.edu
Website: education.gmu.edu/special-education/professional-studies/special-education-leadership

This certificate provides training for educators who administer program implementation efforts for learners with exceptional needs. It is designed for those who have an interest in becoming special education directors, program coordinators, school building administrators, department chairs, or lead teachers; however, opportunities beyond special education also exist.

This graduate certificate is a cohort-only program in which students begin and end the program together as a group. It may only be pursued on a part-time basis.

Admissions & Policies

Policies

For policies governing all graduate certificates, see AP.6.8 Requirements for Graduate Certificates.

Requirements

Certificate Requirements

Total credits: 15

This certificate may be pursued on a part-time basis only.

Coursework

Code	Title	Credits
EDSE 701	Legal Issues and Special Populations	3
EDSE 702		3
EDSE 703		3
EDSE 743	Leadership in Special Education Administration	3
EDSE 744	Current Issues in Special Education	3
Total Credits		15

Special Education, BSEd

Banner Code: E1-BSED-EDSE

Phone: 703-993-3670
Email: speced@gmu.edu
Website: https://education.gmu.edu/special-education/degree-options

This bachelor's degree is designed to prepare both educators for the classroom and individuals working in a special education context outside of the classroom with the specialized skills and content knowledge needed to support the needs of individuals with disabilities. Students may focus their program on a specific area in the field by completing a teacher licensure concentration (i.e., Teaching Students with Disabilities who Access the General Curriculum K-12, Teaching Students with Disabilities who Access the Adapted Curriculum K-12, Teaching Students with Blindness and Visual Impairments PK-12) or a non-licensure sequence to fulfill the requirements for the BSEd in Special Education degree program.

Admissions & Policies

Admissions

Students with an interest in majoring in Special Education will initially be accepted into the Special Education, BSEd, without concentration.

Four-Year Students

To declare a concentration in General K-12 Licensure, Adapted K-12 Licensure, or Blindness and Visual Impairments PK-12 Licensure, four-year students must:

- complete a minimum of 45 credits
- attain a cumulative GPA of 2.50

Degree-Seeking Transfer Students

To declare a concentration in General K-12 Licensure, Adapted K-12 Licensure, or Blindness and Visual Impairments PK-12 Licensure, transfer students must:

- complete a minimum of 45 credits
- earn either a cumulative GPA of 2.50 from their previous institution or a minimum of a 2.50 GPA of at least 12 credits at Mason

Policies

Students in the licensure concentrations must maintain at least a 2.50 GPA and earn a C or better in their program core and concentration coursework. Prior to applying for internships students in all licensure concentrations, must successfully complete:

- Emergency First Aid, CPR and AED certification or training.
- Virginia Communication & Literacy Assessment (VCLA)
- Praxis Core Math, SAT Math or ACT Math

Students enrolled in the General K-12 Licensure concentration must also complete:

- Reading for Virginia Educators: Elementary and Special Education

Students enrolled in the Blindness and Visual Impairments PK-12 Licensure concentration must also complete:

- Praxis II: Braille Proficiency
- Reading for Virginia Educators: Elementary and Special Education

Licensure testing requirements are determined by the Commonwealth of Virginia and may change at any time. If changes to these requirements occur, students must meet the current testing and licensure requirements as set forth in the legal Code of Virginia.

Requirements

Degree Requirements

Total credits: 120

Mason Core

Code	Title	Credits
Foundation Requirements:		
Written Communication		3

ENGH 101	Composition (Mason Core) (recommended course)	
Oral Communication		3
Quantitative Reasoning		3
Information Technology and Computing		3
Exploration Requirements:		
Arts		3
Global Understanding		3
Literature		3
Natural Science		7
Social and Behavioral Sciences		3
Western Civilization/World History		3
Integration Requirement:		
Written Communication		3
ENGH 302	Advanced Composition (Mason Core)	
Writing Intensive (fulfilled by major requirements)		
Synthesis/Capstone (fulfilled by major requirements)		
Total Credits		37

Program Core Requirements

Code	Title	Credits
EDUC 200	Introduction to Education: Teaching, Learning and Schools (Mason Core)	3
EDUC 302	Human Growth and Development	3
or PSYC 211	Developmental Psychology (Mason Core)	
EDSE 201	Introduction to Special Education	3
EDSE 251	Classroom Management and Positive Behavior Supports	3
EDSE 351	Technology Integration for Specialized Instruction	3
EDSE 352	Assessment	3
EDSE 353	Individualized Behavior Supports	3
EDSE 354	Consultation and Collaboration	3
EDSE 381	Exploratory Field Experience in Special Education	3
EDSE 451	Transition and Self-Determination	3
EDSE 452	Intersectionality and Disability	3
EDSE 481	Internship: Professional Services (Mason Core) [1]	12
or EDSE 482	Internship: General Curriculum (Mason Core)	
or EDSE 483	Internship: Adapted (Severe Disabilities)	
or EDSE 484	Internship: Blindness and Visual Impairments	
Total Credits		45

[1] Students enrolled in the BSEd without concentration must successfully complete EDSE 481 Internship: Professional Services (Mason Core). EDSE 482 Internship: General Curriculum (Mason Core) is required for students in the General K12 concentration. EDSE 483 Internship: Adapted (Severe Disabilities) (Mason Core) is required for students in the Adapted K-12 concentration. EDSE 484 Internship: Blindness and Visual Impairments (Mason Core) is required for students in the Blindness and Visual Impairments concentration.

BSEd in Special Education without Concentration

Students who do not select an optional concentration must complete the special education core and select at least 15 credits from the special education offerings below (NOTE: A minimum of 45 upper-level credits in the major is required):

Code	Title	Credits
Select 15 credits from the following:		15
EDSE 203	Disability in American Culture (Mason Core)	
EDSE 204	Disability in a Global Society (Mason Core)	
EDSE 241	Characteristics of Students with Disabilities who Access the General Curriculum	
EDSE 311	Characteristics of Students with Blindness and Visual Impairments	
EDSE 341	Language Acquisition and Reading and Writing Development	
EDSE 361	Characteristics of Students with Severe Disabilities	
EDSE 362	Communication with Severe Disabilities	
EDSE 410	Deaf History	
EDSE 412	Braille Code	
EDSE 413	Medical and Educational Implications of Blindness and Visual Impairments	
EDSE 414	Orientation and Mobility for Students with Blindness and Visual Impairments	
EDSE 417	Teaching Methods for Students with Blindness and Visual Impairments	
EDSE 418	Curriculum and Assessment of Students with Blindness and Visual Impairments	
EDSE 419	Braille Reading and Writing	
EDSE 420	Deaf Culture	
EDSE 441	Instructional Strategies for Reading and Writing	
EDSE 443	Instructional Strategies for Math	
EDSE 463	Curriculum and Methods in Severe Disabilities	
EDSE 467	Foundations of Language and Literacy for Individuals with Severe Disabilities	
EDSE 469	Individualized Supports and Specialized Care of Students with Severe Disabilities	
EDAT 422	Assistive Technology for Individuals with Sensory Impairments	
EDSE 481	Internship: Professional Services (Mason Core) (credits included in Major Requirements)	
Total Credits		15

Electives

Code	Title	Credits
Select an additional 23 credits from any courses.		23
Total Credits		23

Concentration in General K-12 Licensure (GLIC)

Code	Title	Credits
EDSE 241	Characteristics of Students with Disabilities who Access the General Curriculum	3
EDSE 341	Language Acquisition and Reading and Writing Development	3
EDSE 441	Instructional Strategies for Reading and Writing	3
EDSE 443	Instructional Strategies for Math	3
EDSE 445	Clinical Practice and Seminar 1: General	2
EDSE 446	Clinical Practice and Seminar 2: General	2
EDSE 482	Internship: General Curriculum (Mason Core) (credits included in Major Requirements)	12
Total Credits		28

Electives

Code	Title	Credits
Select an additional 22 credits from any courses.		22
Total Credits		22

Concentration in Adapted K-12 Licensure (ALIC)

Code	Title	Credits
EDSE 361	Characteristics of Students with Severe Disabilities	3
EDSE 362	Communication with Severe Disabilities	3
EDSE 463	Curriculum and Methods in Severe Disabilities	3
EDSE 465	Clinical Practice and Seminar 1: Adapted (Severe Disabilities)	2
EDSE 466	Clinical Practice and Seminar 2: Adapted (Severe Disabilities)	2
EDSE 467	Foundations of Language and Literacy for Individuals with Severe Disabilities	3
EDSE 469	Individualized Supports and Specialized Care of Students with Severe Disabilities	3
EDSE 483	Internship: Adapted (Severe Disabilities) (Mason Core) (credits included in Major Requirements)	12
Total Credits		31

Electives

Code	Title	Credits
Select an additional 19 credits from any courses.		19
Total Credits		19

Concentration in Blindness and Visual Impairments PK-12 Licensure (BVI)

Code	Title	Credits
EDSE 311	Characteristics of Students with Blindness and Visual Impairments	3
EDSE 341	Language Acquisition and Reading and Writing Development	3
EDSE 412	Braille Code	3
EDSE 413	Medical and Educational Implications of Blindness and Visual Impairments	3
EDSE 414	Orientation and Mobility for Students with Blindness and Visual Impairments	2
EDSE 417	Teaching Methods for Students with Blindness and Visual Impairments	3
EDSE 418	Curriculum and Assessment of Students with Blindness and Visual Impairments	3
EDSE 419	Braille Reading and Writing	3
EDAT 422	Assistive Technology for Individuals with Sensory Impairments	3
EDSE 484	Internship: Blindness and Visual Impairments (Mason Core) (credits included in Major Requirements)	12
Total Credits		38

Electives

Code	Title	Credits
Select an additional 12 credits from any course.		12
Total Credits		12

4-Year Plan

Bachelor of Science in Education, Special Education Sample Plan of Study

The sample plan below is a recommended sequencing of courses based on pre-requisites and scheduling. This may not fit every student's needs and is a guideline, not a requirement. Students should confirm major requirements with their academic advisor and with PatriotWeb Degree Evaluation to ensure they enroll in the proper courses and are on track to graduate.

BSEd in Special Education without Concentration

First Year

Fall Semester	Credits	Spring Semester	Credits
Mason Core/ Electives	15	Mason Core/ Electives	15
	15		15

Second Year

Fall Semester	Credits	Spring Semester	Credits
EDSE 201	3	EDSE 251	3
EDUC 200	3	PSYC 211	3
Mason Core/ Electives	9	Mason Core/ Electives	9
	15		15

Third Year

Fall Semester	Credits	Spring Semester	Credits
EDSE 352	3	EDSE 353	3
EDSE 381	3	EDSE 354	3
Electives in the major	3	Electives in the major	6

General Electives	6	General Electives	3
	15		15

Fourth Year

Fall Semester	Credits	Spring Semester	Credits
EDSE 451	3	EDSE 481	12
EDSE 452	3	EDSE 351	3
Electives in the major	6		
General Electives	3		
	15		15

Total Credits 120

Detailed four year plans and degree planning checklists can be found at https://advising.gmu.edu/current-student/majors-at-mason/.

Concentration in General K-12 Licensure

First Year

Fall Semester	Credits	Spring Semester	Credits
Mason Core/ Electives	15	Mason Core/ Electives	15
	15		15

Second Year

Fall Semester	Credits	Spring Semester	Credits
EDSE 201	3	EDSE 241	3
EDUC 200	3	EDSE 251	3
Mason Core/ Electives	9	PSYC 211 or EDUC 302	3
		Mason Core/ Electives	6
	15		15

Third Year

Fall Semester	Credits	Spring Semester	Credits
EDSE 341	3	EDSE 353	3
EDSE 352	3	EDSE 354	3
EDSE 381	3	EDSE 441	3
General Electives	6	EDSE 445	2
		General Electives	4
	15		15

Fourth Year

Fall Semester	Credits	Spring Semester	Credits
EDSE 443	3	EDSE 482	12
EDSE 446	2	EDSE 351	3
EDSE 451	3		
EDSE 452	3		
General Electives	4		
	15		15

Total Credits 120

Detailed four year plans and degree planning checklists can be found at https://advising.gmu.edu/current-student/majors-at-mason/.

Concentration in Adapted K-12 Licensure

First Year

Fall Semester	Credits	Spring Semester	Credits
Mason Core/ Electives	15	Mason Core/ Electives	15
	15		15

Second Year

Fall Semester	Credits	Spring Semester	Credits
EDSE 201	3	EDSE 251	3
EDUC 200	3	PSYC 211 or EDUC 302	3
Mason Core/ Electives	9	EDSE 361	3
		Mason Core/ Electives	6
	15		15

Third Year

Fall Semester	Credits	Spring Semester	Credits
EDSE 352	3	EDSE 353	3
EDSE 362	3	EDSE 354	3
EDSE 381	3	EDSE 463	3
General Electives	6	EDSE 465	2
		General Electives	4
	15		15

Fourth Year

Fall Semester	Credits	Spring Semester	Credits
EDSE 451	3	EDSE 483	12
EDSE 466	2	EDSE 351	3
EDSE 467	3		
EDSE 452	3		
EDSE 469	3		
General Electives	1		
	15		15

Total Credits 120

Detailed four year plans and degree planning checklists can be found at https://advising.gmu.edu/current-student/majors-at-mason/.

Concentration in Blindness and Visual Impairments PK-12 Licensure

First Year

	Fall Credits Semester		Spring Credits Semester	
	Mason Core/ Electives	15	Mason Core/ Electives	15
		15		15

Second Year

Summer Credits Semester One		Fall Credits Semester		Spring Credits Semester	
EDSE 414	2	EDSE 201	3	EDSE 251	3
		EDUC 20	3	PSYC 21 or EDUC 302	3
		Mason Core/ Electives	7	EDSE 311	3
				Mason Core/ Electives	6
	2		13		15

Third Year

	Fall Credits Semester		Spring Credits Semester		Summer Credits Semester Two	
	EDSE 341	3	EDSE 353	3	EDSE 417	3
	EDSE 35	3	EDSE 35	3		
	EDSE 381	3	EDSE 418	3		
	EDSE 41	3	EDSE 41	3		
			General Electives	3		
		12		15		3

Fourth Year

	Fall Credits Semester		Spring Credits Semester	
	EDSE 413	3	EDSE 484	12
	EDAT 42	3	EDSE 35	3
	EDSE 451	3		
	EDSE 45	3		
	General Electives	3		
		15		15

Total Credits 120

Detailed four year plans and degree planning checklists can be found at https://advising.gmu.edu/current-student/majors-at-mason/.

Special Education, MEd

Banner Code: E1-MED-EDSE

Academic Advising

Phone: 703-993-3670
Email: speced@gmu.edu
Website: https://education.gmu.edu/special-education/professional-advancement/special-education-med (https://education.gmu.edu/special-education/professional-advancement/special-education-med/) (https://education.gmu.edu/special-education/professional-studies/special-education-med/)

Early Childhood Special Education

Phone: 703-993-3844
Email: earlyed@gmu.edu
Website: https://education.gmu.edu/early-childhood/academics/

This master's degree is designed to prepare both educators for the classroom and individuals working in a special education context outside of the classroom with the specialized skills and content knowledge needed to support the needs of individuals with disabilities. Students may focus their program on a specific area in the field by completing a licensure or non-licensure certificate program in conjunction with the MEd and using certificate coursework to fulfill the elective credits for the MEd degree program.

Requirements

Degree Requirements

Total credits: 30-36

MEd Coursework (without concentration)

Code	Title	Credits
EDSE 501	Introduction to Special Education	3
Select one from the following:		3
EDSE 503	Language Development and Reading	
EDSE 557	Foundations of Language and Literacy for Diverse Learners	
EDSE 625	Applied Behavior Analysis: Verbal Behavior	
EDSE 636	Supporting Communication and Literacy for Individuals with Autism	
EDSE 517	Computer Applications for Special Populations	3
EDSE 590	Special Education Research	3
Select one from the following:		3
EDSE 637	Autism Across the Lifespan: Collaboration with Critical Partners	
EDSE 662	Consultation and Collaboration	
EDSE 663	Collaborative Teamwork to Support Students with Significant Disabilities	
EDSE 664	Ethical and Professional Conduct for Behavior Analysis	
Electives		15
	Select from graduate EDAT courses	

Select from graduate EDSE courses	
Total Credits	30

MEd with concentration in Early Childhood Special Education (Non-licensure) (SPEC)

This concentration is for professionals who already hold an early childhood special education teacher license or are interested in working in an early childhood special education context outside the classroom. Students who wish to seek early childhood education licensure are advised to consider completing the Early Childhood Special Education Licensure graduate certificate program in conjunction with the MEd. Students may use their certificate coursework to fulfill the elective credits for the MEd degree program.

Coursework

Code	Title	Credits
ECED 503	Inclusive Curriculum for Young Learners: Planning Instruction and Guidance	3
ECED 505	Introduction to Early Childhood Special Education	3
ECED 506	Medical and Developmental Aspects of Disabilities of Diverse Young Learners	3
ECED 522	Developing Language, Literacy, and Communication of Diverse Infants and Toddlers	3
Choose one of the following:		3
ECED 601	Frameworks for Early Childhood Education	
ECED 685	Applied and Teacher Research in Early Childhood Education	
ECED 691	Policy Perspectives in Early Childhood Education	
Electives		15
Select 15 credits from graduate ECED courses or courses approved by an academic advisor		
Total Credits		30

MEd with concentration in Early Childhood Special Education Licensure (SPCL)

This 36-credit concentration offers required coursework for teacher licensure in Early Childhood Special Education. Students who have completed graduate or undergraduate coursework equivalent to concentration coursework prior to admission to this program may request that some courses in this concentration be waived. Students who are eligible to waive coursework must complete a minimum of 30 graduate-level credits to graduate. A grade of B- or better must be earned in all coursework.

In addition to the ECED concentration coursework, students must complete mandated state/accreditation assessments.

Coursework

Code	Title	Credits
ECED 501	Developmental Pathways of Diverse Learners, Birth-Adolescence	3
ECED 502	Foundations of Language and Literacy for Diverse Prekindergarten and Kindergarten Learners	3
ECED 503	Inclusive Curriculum for Young Learners: Planning Instruction and Guidance	3
ECED 504	Engaging Families of Diverse Young Learners	3
ECED 505	Introduction to Early Childhood Special Education	3
ECED 506	Medical and Developmental Aspects of Disabilities of Diverse Young Learners	3
ECED 511	Assessment of Diverse Young Learners	3
ECED 522	Developing Language, Literacy, and Communication of Diverse Infants and Toddlers	3
ECED 523	Early Intervention for Infants Toddlers with Disabilities: Collaborative Consultative Approaches	3
ECED 781	Seminar in Early Childhood Education	3
ECED 789	Internship in Early Childhood Special Education Birth - Five	6
Total Credits		36

Accelerated Master's

Bachelor's Degree (any)/Special Education, Accelerated MEd

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BA or BS in any degree area and an MEd in Special Education (https://catalog.gmu.edu/colleges-schools/education-human-development/school-education/special-education-med/#text)in an accelerated time-frame after satisfactory completion of a minimum of 138 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/colleges-schools/education-human-development/school-education/) for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/#text).

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies (https://catalog.gmu.edu/admissions/graduate-policies/) and Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies. For information specific to this accelerated master's program, see Application Requirements and Deadlines (https://cehd.gmu.edu/bachelors-accelerated-masters-program/).

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits, and additional unit-specific criteria (see Application Requirements and Deadlines) (https://cehd.gmu.edu/bachelors-accelerated-masters-program/).

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MEd program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- 3.0 overall GPA
- Completion of specific undergraduate coursework
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following which can be taken as Advanced Standing or Reserve Graduate credit (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) (to be determined by the student and their advisor):

Code	Title	Credits
EDSE 501	Introduction to Special Education	3
EDSE 517	Computer Applications for Special Populations	3
Select one from the following:		3
EDSE 503	Language Development and Reading	
EDSE 557	Foundations of Language and Literacy for Diverse Learners	
EDSE 625	Applied Behavior Analysis: Verbal Behavior	
EDSE approved elective		

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies.

Bachelor's Degree (any)/Special Education, Accelerated MEd (Early Childhood Special Education (Licensure) Concentration)

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BA or BS in any degree area and an MEd in Special Education (Early Childhood Special Education (Licensure) concentration) (https://catalog.gmu.edu/colleges-schools/education-human-development/school-education/special-education-med/#text)in an accelerated time-frame after satisfactory completion of a minimum of 144 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/colleges-schools/education-human-development/school-education/) for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/#text).

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies (https://catalog.gmu.edu/admissions/graduate-policies/) and Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies. For information specific to this accelerated master's program, see Application Requirements and Deadlines (https://cehd.gmu.edu/bachelors-accelerated-masters-program/).

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits, and additional unit-specific criteria (see Application Requirements and Deadlines) (https://cehd.gmu.edu/bachelors-accelerated-masters-program/).

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MEd program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- 3.0 overall GPA
- Completion of specific undergraduate coursework
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following (to be determined by the student and their advisor):

Advanced Standing Courses (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) **(up to 12 credits)**

Code	Title	Credits
ECED 501	Developmental Pathways of Diverse Learners, Birth-Adolescence	3
ECED 502	Foundations of Language and Literacy for Diverse Prekindergarten and Kindergarten Learners	3
ECED 503	Inclusive Curriculum for Young Learners: Planning Instruction and Guidance	3
ECED 504	Engaging Families of Diverse Young Learners	3
ECED 505	Introduction to Early Childhood Special Education	3
ECED 506	Medical and Developmental Aspects of Disabilities of Diverse Young Learners	3
ECED 522	Developing Language, Literacy, and Communication of Diverse Infants and Toddlers	3

ECED 523	Early Intervention for Infants Toddlers with Disabilities: Collaborative Consultative Approaches	3

ECED approved elective

Reserve Graduate Credit Courses (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) **(up to 6 credits)**

Code	Title	Credits
ECED 502	Foundations of Language and Literacy for Diverse Prekindergarten and Kindergarten Learners	3
ECED 505	Introduction to Early Childhood Special Education	3
ECED 506	Medical and Developmental Aspects of Disabilities of Diverse Young Learners	3
ECED 511	Assessment of Diverse Young Learners	3
ECED 522	Developing Language, Literacy, and Communication of Diverse Infants and Toddlers	3
ECED 523	Early Intervention for Infants Toddlers with Disabilities: Collaborative Consultative Approaches	3

ECED approved elective

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies.

Bachelor's Degree (any)/Special Education, Accelerated MEd (Early Childhood Special Education (Non-Licensure) Concentration)

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BA or BS in any degree area and an MEd in Special Education (Early Childhood Special Education (Non-Licensure) concentration) (https://catalog.gmu.edu/colleges-schools/education-human-development/school-education/special-education-med/#text)in an accelerated time-frame after satisfactory completion of a minimum of 138 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/colleges-schools/education-human-development/school-education/) for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/#text).

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies (https://catalog.gmu.edu/admissions/graduate-policies/) and Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies. For information specific to this accelerated master's program, see Application Requirements and Deadlines (https://cehd.gmu.edu/bachelors-accelerated-masters-program/).

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits, and additional unit-specific criteria (see Application Requirements and Deadlines) (https://cehd.gmu.edu/bachelors-accelerated-masters-program/).

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MEd program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- 3.0 overall GPA
- Completion of specific undergraduate coursework
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following (to be determined by the student and their advisor):

Advanced Standing Courses (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) **(up to 12 credits)**

Code	Title	Credits
ECED 501	Developmental Pathways of Diverse Learners, Birth-Adolescence	3
ECED 502	Foundations of Language and Literacy for Diverse Prekindergarten and Kindergarten Learners	3
ECED 503	Inclusive Curriculum for Young Learners: Planning Instruction and Guidance	3
ECED 504	Engaging Families of Diverse Young Learners	3
ECED 505	Introduction to Early Childhood Special Education	3
ECED 506	Medical and Developmental Aspects of Disabilities of Diverse Young Learners	3
ECED 522	Developing Language, Literacy, and Communication of Diverse Infants and Toddlers	3
ECED 523	Early Intervention for Infants Toddlers with Disabilities: Collaborative Consultative Approaches	3

ECED approved elective

Reserve Graduate Credit Courses (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) (up to 6 credits)

Code	Title	Credits
ECED 502	Foundations of Language and Literacy for Diverse Prekindergarten and Kindergarten Learners	3

ECED 505	Introduction to Early Childhood Special Education	3
ECED 506	Medical and Developmental Aspects of Disabilities of Diverse Young Learners	3
ECED 511	Assessment of Diverse Young Learners	3
ECED 522	Developing Language, Literacy, and Communication of Diverse Infants and Toddlers	3
ECED 523	Early Intervention for Infants Toddlers with Disabilities: Collaborative Consultative Approaches	3
ECED 597	Special Topics in Early Childhood Education	1-3
ECED approved elective		

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies.

Specialized Reading Instruction for Students with Specific Learning Disabilities Graduate Certificate

Banner Code: E1-CERG-SPRI

Academic Advising

Phone: 703-993-3670
Email: speced@gmu.edu
Website: https://education.gmu.edu/special-education/professional-advancement/specialized-reading-instruction

This 15-credit non-licensure certificate enables educators to develop a deep level of knowledge in development, difficulties, assessment, instruction and progress monitoring for students with specific learning disabilities.

This program is available in a cohort format only and can be offered in conjunction with school agencies wishing to further the skills of their teachers in this area. The certificate may be pursued on a part-time basis only.

Admissions & Policies

Policies

For policies governing all graduate certificates, see AP.6.8 Requirements for Graduate Certificates.

Requirements

Certificate Requirements

Total credits: 15

This certificate may be pursued on a part-time basis only.

Coursework

Code	Title	Credits
EDSE 562	Foundations of Reading Instruction for Students with Specific Learning Disabilities	3
EDSE 563	Language Structure and Literacy Development for Students with Specific Learning Disabilities	3
EDSE 564	Phonology, Phonics, and Fluency for Students with Specific Learning Disabilities	3
EDSE 565	Vocabulary, Comprehension, and Written Expression for Students with Specific Learning Disabilities	3
EDSE 567	Practicum for Specialized Reading Instruction for Students with Specific Learning Disabilities	3
Total Credits		15

Visual Impairment and Blindness Minor

Banner Code: VISB

Academic Advising

Phone: 703-993-3670
Email: speced@gmu.edu
Website: https://education.gmu.edu/special-education/teacher-licensure/visual-impairments#visual

This minor provides undergraduate students with background knowledge in teaching students with visual impairments. Completing this minor partially fulfills requirements for licensure in Special Education in Virginia.

Admissions & Policies

Policies

At least eight credits must be unique to this minor and may not be used to fulfill requirements of the student's major, concentration, an undergraduate certificate, or another minor. Students must complete all coursework with a minimum GPA of 2.00. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 15

Coursework

Code	Title	Credits
EDAT 422	Assistive Technology for Individuals with Sensory Impairments	3
EDSE 201	Introduction to Special Education	3
EDSE 311	Characteristics of Students with Blindness and Visual Impairments	3

EDSE 412	Braille Code	3
EDSE 418	Curriculum and Assessment of Students with Blindness and Visual Impairments	3
Total Credits		15

School of Kinesiology

Website: https://kinesiology.gmu.edu/

Overview

The School of Kinesiology (SOK) offers one doctoral concentration, two master's degrees, one graduate certificate, one bachelor's/accelerated master's program, one undergraduate degree and one minor. The SOK strives to develop a global reputation for delivering exceptional instruction, conducting research of consequence, and providing service to the community to enhance overall societal well-being. The SOK educates high-quality professionals through a variety of innovative experiential learning opportunities to improve the physical performance, health, and well-being of the community across the lifespan. This is done by fostering interdisciplinary collaboration and using evidence- based practices to develop professional leaders.

Graduate Programs

The PhD in Education with a Kinesiology concentration cultivates research-based educators and practitioners to be critical thinkers and apply evidence-based (research-based) practice principles to preserve and enhance human movement in all settings and populations, promote optimal health and enhanced quality of life through physical activity, and provide rewarding learning experiences, through the conduct and dissemination of exemplary scholarship and preparation of professionals committed to service.

The MS in Athletic Training (MSAT) is a professional, entry-level program that prepares students to become certified athletic trainers with the clinical knowledge, skills, and professional attitudes that will enable them to deliver health care effectively to diverse patients in a variety of clinical settings, with an emphasis on the pediatric population. The MSAT is accredited by the Commission on Accreditation of Athletic Training Education (CAATE).

The MS in Kinesiology provides students with an evidence-based approach to the study of Kinesiology, becoming data scientists who collect, analyze, interpret and present data regarding human movement. Graduates fill positions such as sport scientists, biomechanical and physiology researchers, clinical exercise physiologists and directors of strength and conditioning.

Bachelor's Degree

The BS in Kinesiology is accredited by the Commission on Accreditation of Allied Health Education Programs (CAAHEP. American College of Sports Medicine sponsored) and holds national program recognition status from the National Strength and Conditioning Association (NSCA-ERP). Students are exposed to a multidisciplinary, evidence-based approach to the study of human movement, utilizing classroom, laboratory, and experiential learning environments. Emphasis is placed upon the development of future professionals with strong scientific knowledge in health, wellness, and performance across the lifespan.

Faculty

School Faculty

Professors

Ambegaonkar, A. Caswell, S. Caswell, M. Jones

Associate Professors

Cortes, Fyock, Martin, McDowell, Stroiney, Robison

Assistant Professors

Andre, Lacayo

Programs

- Athletic Training, MS
- Kinesiology Minor
- Kinesiology, BS
- Kinesiology, MS
- Tactical Athlete Strength, Conditioning and Injury Prevention Graduate Certificate

Athletic Training, MS

Banner Code: E1-MS-ATT

Academic Advising

Phone: 703-993-9914
Email: msat@gmu.edu
Website: https://kinesiology.gmu.edu/athletic-training/masters-in-athletic-training-msat

This is a professional preparation program for aspiring athletic training healthcare professionals.

The program provides students with a strong foundation of the competencies and proficiencies (knowledge, skills and attitudes) and educational clinical experiences that comply with the Commission on Accreditation of Athletic Training Education (CAATE) standards for professional athletic trainer preparation. Because of increasing employment opportunities in youth athletic leagues and school settings, students also engage in pediatric sports medicine coursework to address the special needs of this patient population. Students will deliver care to diverse patient populations at a variety of clinical practicum education sites.

Successfully completing the program will prepare a student to become a nationally certified, athletic training Board of Certification (BOC®), Virginia Board of Medicine licensed athletic trainer.

Admissions & Policies

Admissions

Application Requirements

- Completed Application for Graduate Study or Application through ATCAS
- GRE is optional

- Personal goals statement (up to 500 words), covering the following items: academic and occupational background, the development of your interest in athletic training, reasons for wanting to enter this program, qualities you possess which will enhance functioning as an athletic trainer, career objective(s)
- Two recommendations from professional references
- Proof of current Emergency Cardiac Care (CPR/AED) Certification at the level of Healthcare Professional
- Grade of "C" or better in the following courses:

Code	Title	Credits
Anatomy and Physiology		6-8
Exercise Physiology		3
Research Methods		3
Basic Nutrition		3
Medical Terminology		3
Biology		3
Chemistry		3
Physics		3
Psychology		3
Statistics		3

Policies

For policies governing all graduate degrees, see AP.6 Graduate Policies.

Requirements

Degree Requirements

Total credits: 65

All courses should be taken at Mason. Transfer credit requests will be evaluated on an individual basis. Students wanting to transfer courses into the MSAT must meet with the MSAT program director to engage in an evaluation of courses. Course transfers are at the discretion of the program.

The MSAT requires a grade of B or higher in all MSAT required coursework. In the first nine credits of the program, one course with a grade of B- or C may be allowed. Students must maintain current Health Care Provider Emergency Cardiac Care (ECC) and First Aid certifications.

MS Core Coursework

Code	Title	Credits
ATEP 510	Advanced Functional Anatomy	3
ATEP 520	Therapeutic Interventions Foundations	3
ATEP 525	Athletic Training Foundations	3
Total Credits		9

Professional Phase

Code	Title	Credits
ATEP 530	Emergency Procedures for Athletic Trainers	3
ATEP 540	Lower Body Physical Assessment	3
ATEP 545	Athletic Training Clinical Techniques 1	3
ATEP 550	Lower Body Therapeutic Interventions	3
ATEP 555	Athletic Training Clinical Techniques 2	3
ATEP 560	Upper Body Therapeutic Interventions	3
ATEP 565	Athletic Training Clinical Techniques 4	3
ATEP 570	Upper Body Physical Assessment	3
ATEP 575	Athletic Training Clinical Techniques 3	3
ATEP 600	Pathopharmacology	3
ATEP 650	Administration and Management in Athletic Training	3
ATEP 660	Pediatric Sports Medicine	3
ATEP 670	Post Rehabilitative Therapeutic Interventions	2
ATEP 680	Athletic Training Research	3
Total Credits		41

Practicum

Code	Title	Credits
ATEP 566	Athletic Training Practicum 1 (high school/university; 150 hours)	2
ATEP 656	Athletic Training Practicum 2 (rehabilitation clinic; 75 hours)	1
ATEP 667	Athletic Training Practicum 3 (pre-season; 150 hours)	2
ATEP 676	Athletic Training Practicum 4 (university/ high school; 300 hours)	4
ATEP 686	Athletic Training Practicum 5 (450-600 hours)	6
Total Credits		15

Special Requirements

Fees and Expenses

ATEP course fees are published on the Mason Student Accounts website (https://studentaccounts.gmu.edu/tuition-fees/) (see College of Education and Human Development Courses Fees). All tuition and fees are handled through the Student Accounts Office (https://studentaccounts.gmu.edu/). For additional information on housing, transportation, and other costs please see the Admissions Paying for College website. (https://www2.gmu.edu/admissions-aid/paying-college/)

Technical Standards

After admission to the MSAT, students must submit a technical standards certification statement, located on the MSAT website, indicating that they have read, understand, and can meet the technical standards for athletic training students, either with or without accommodation. These standards outline the essential functional tasks that students must be able to perform to enroll in and complete the program. Students requiring special accommodations are encouraged to contact the Office of Disability Services (http://ds.gmu.edu/).

Health Examinations and Certifications

Athletic training students are required to have evidence of completion of the three hepatitis B immunizations, a titer report indicating positive immunity, or a signed waiver. Students choosing not to complete hepatitis B immunizations will be required to sign a declination waiver. Some practicum sites require proof of tuberculosis screening in accordance with current U.S. Public Health Service recommendations. Students will be responsible for any costs associated with such screenings. All MSAT students must complete annual blood-borne

pathogens and infectious disease exposure training offered in the practicum courses. All students must have proof of current Emergency Cardiac Care (CPR/AED Certification at the level of a Healthcare Professional (e.g. American Heart Association's Basic Life Support for Healthcare Professionals, the Emergency Care & Safety Institute (ECSI)) and First Aid Certification. For additional information about MSAT academic policies and procedures refer to the MSAT website (https://kinesiology.gmu.edu/athletic-training/masters-in-athletic-training-msat/) and individual course syllabi.

Background Check

Students will be required to undergo a criminal background check at the student's expense, upon admission to the MSAT. Most practicum sites require an additional background check before engaging in patient treatment. These may also be at the student's expense, and the cost may vary. The Clinical Education Coordinator will provide instructions to complete the background check. If a criminal background check fails to meet the requirements of a student's assigned practicum site, the student will be withdrawn from the practicum site and if a new site cannot be found due to failing the criminal background check the student will be prohibited from completion of the MSAT curriculum. Students are encouraged to disclose any criminal background incidences to the MSAT Director and Clinical Education Coordinator prior to beginning the MSAT program, to determine if the incidence(s) might be detrimental to placement at a practicum site.

Transportation Responsibilities

It is the responsibility of the MSAT student to arrange transportation to and from their assigned practicum course sites. It is recommended that students have personal transportation. A limited number of sites are accessible via public transportation. In the case that a practicum site is not accessible by public transportation and the student does not have a car, it is suggested the student take public transportation as far as possible and then take a taxi to the site. The student is responsible for all transportation fees including but not limited to gas, parking, bus, metro, taxi and other transportation expenses. Students that have financial difficulty are encouraged to meet with a financial aid advisor to seek additional assistance.

Summer Courses

Students are required to engage in MSAT summer courses on-line and face-to-face on campus. Housing and travel arrangements are the responsibility of the student.

Kinesiology Minor

Banner Code: KNES

Academic Advising

Phone: 703-993-5261
Website: https://kinesiology.gmu.edu/kinesiology/minor/

This 18-credit minor in kinesiology compliments many other majors at the University, especially those focusing on the health sciences. Students who minor in kinesiology will gain a base knowledge of human movement and the factors which affect it. Along with required courses, students will be able to select nine credits of electives that will best suit their interests.

Admissions & Policies

Admissions

This minor is available to all Mason undergraduate students except those earning a BS in Kinesiology.

Policies

Eight credits of coursework must be unique to the minor and may not be used to fulfill requirements of the student's major, concentration, an undergraduate certificate, or another minor. Students must complete all coursework with a minimum GPA of 2.00. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 18

Required Courses

Code	Title	Credits
ATEP 300	Functional Anatomy	3
KINE 200	Methods of Exercise Instruction	3
KINE 310	Exercise Physiology I	3
Total Credits		9

Electives

Code	Title	Credits
Select three courses from the following:		9
KINE 100	Introduction to Kinesiology	
KINE 250	Endurance Sport Program Design	
KINE 320	Principles of Human Nutrition	
KINE 350	Exercise Prescription and Programming	
KINE 360	Strength Training: Concepts and Applications	
KINE 370	Exercise Testing and Evaluation	
KINE 380	Exercise Prescription and Programming for Special Populations	
KINE 400	Biomechanics	
KINE 410	Exercise Physiology II	
KINE 420	Sport and Exercise Nutrition	
SPMT 320	Psychology of Sport	
Total Credits		9

Kinesiology, BS

Banner Code: E1-BS-KNES

Academic Advising

Phone: 703-993-5261
Website: https://kinesiology.gmu.edu/kinesiology/kinesiology-degree-requirements

This degree in kinesiology is a demanding science-based program designed to prepare students for a career in clinical exercise, coaching, corporate fitness, exercise and sport psychology, medical and exercise equipment sales, personal training, sport and exercise nutrition, sport science, or wellness/fitness management. The Kinesiology (KINE) program provides students with a strong science foundation for post-graduate specialized study in kinesiology or professional schools (e.g., chiropractic, medical, physical therapy). The KINE program has a comprehensive approach to the study of human movement. Three separate internship experiences totaling 700 hours provide KINE students with the opportunity to apply evidence-based knowledge and its practical application in general fitness, clinical and sports performance settings.

The KINE degree is designed to assist students in their preparation for nationally-recognized certifications, specifically those offered by the American College of Sports Medicine (ACSM) and the National Strength and Conditioning Association (NSCA). See Admissions and Policies for details.

Admissions & Policies

Policies

Certification

Students are required to challenge either the ACSM-Certified Exercise Physiologist (EP-C) or the NSCA-Certified Strength and Conditioning Specialist (CSCS) exam by the 7th week of the semester in which they are enrolled in KINE 490 Kinesiology Internship III (Mason Core). All exam registration fees are the responsibility of the student. Scores must be reported to the KINE Internship Coordinator before students can receive credit for KINE 490 Kinesiology Internship III (Mason Core).

GPA and Grading

Students are required to maintain a minimum cumulative GPA of 2.5 each semester and to receive a grade of C or better in all major coursework (BIOL 124 Human Anatomy and Physiology, BIOL 125 Human Anatomy and Physiology, STAT 250 Introductory Statistics I (Mason Core), as well as all Professional Sequence courses). Failure to do so will result in probation or termination from the KINE program. The Kinesiology Academic Advisor is available to assist KINE students with course registration and academic plans. It is expected that KINE students will meet with their Academic Advisor each semester that they are enrolled at GMU.

Requirements

Degree Requirements

Total credits: 120

Mason Core

Code	Title	Credits
Written Communication		6
Oral Communication		3
Information Technology		3
Quantitative Reasoning:		
STAT 250	Introductory Statistics I (Mason Core)	3
Literature		3
Arts		3
Western Civilization/World History		3
Social and Behavioral Sciences		3
Global Understanding		3
Natural Science:		
BIOL 124	Human Anatomy and Physiology	4
BIOL 125	Human Anatomy and Physiology	4
Synthesis/Capstone [1]		
Total Credits		38

[1] Fulfilled by KINE 490 Kinesiology Internship III (Mason Core), listed in professional sequence below.

Professional Sequence

Code	Title	Credits
ATEP 120	First Aid and Emergency Care	2
ATEP 300	Functional Anatomy	3
HEAL 110	Personal Health	3
KINE 100	Introduction to Kinesiology	3
KINE 200	Methods of Exercise Instruction	3
KINE 310	Exercise Physiology I	3
KINE 320	Principles of Human Nutrition	3
KINE 330	Seminar in Kinesiology	3
KINE 341	Kinesiology Internship I	3
KINE 350	Exercise Prescription and Programming	3
KINE 360	Strength Training: Concepts and Applications	3
KINE 370	Exercise Testing and Evaluation	3
KINE 380	Exercise Prescription and Programming for Special Populations	3
KINE 400	Biomechanics	3
KINE 410	Exercise Physiology II	3
KINE 420	Sport and Exercise Nutrition	3
KINE 441	Kinesiology Internship II	3
KINE 450	Research Methods (fulfills writing intensive requirement)	3
KINE 490	Kinesiology Internship III (Mason Core)	12
SPMT 320	Psychology of Sport	3
Total Credits		68

Electives

Code	Title	Credits
Select an additional 14 credits from any of the courses in the university catalog.		14
Electives		
Total Credits		14

Special Requirements

Fees and Expenses

All KINE courses have a per credit fee of $15. Fees cover the following:

- laboratory supplies and equipment
- clinical supplies
- internship attire

Technical Standards

This degree is academically-rigorous with a significant experiential learning component, which places specific demands and requirements on its students. After admission into the KINE program, students must submit a technical standards certification statement indicating that they have read, understand, and can meet the technical standards for KINE students, either with or without accommodation. These standards outline the essential functional tasks that students must be able to perform to enroll in and complete the program. Students requiring special accommodations are encouraged to contact the Office of Disability Services (http://ds.gmu.edu/).

Health Examinations and Certifications

KINE students are required to obtain a health examination and immunizations before beginning the internship phase of the program. Evidence of completion of the three hepatitis B immunizations and proof of tuberculosis screening in accordance with current U.S. Public Health Service recommendations must be provided. Costs associated with said screenings are to be assumed by the KINE student. Those who choose not to complete hepatitis B immunizations will be required to sign a declination waiver. All students must have Emergency Cardiac Care (CPR, AED) and First Aid certifications before entering their first internship experience and must maintain these certifications through the remainder of the KINE degree program.

Background Check

Students may be required to undergo a criminal background check prior to the first internship experience. Students must assume the risk that classes may be deferred and their program delayed due to the individual severity of notations on such a check and review by individual agencies. Students are encouraged to disclose any criminal background incidences to the KINE Program Coordinator prior to internship placement.

4-Year Plan

Bachelor of Science in Kinesiology Sample Plan of Study

The sample plan below is a recommended sequencing of courses based on pre-requisites and scheduling. This may not fit every student's needs and is a guideline, not a requirement. Students should confirm major requirements with their academic advisor and with PatriotWeb Degree Evaluation to ensure they enroll in the proper courses and are on track to graduate.

(To be supplemented by Mason Core and Electives)

First Year

Fall Semester	Credits	Spring Semester	Credits
BIOL 124	4	ATEP 300	3
HEAL 110	3	BIOL 125	4
KINE 100	3		
	10		7

Second Year

Fall Semester	Credits	Spring Semester	Credits
KINE 320	3	KINE 200	3
KINE 310	3	KINE 370	3
		SPMT 320	3
	6		9

Third Year

Fall Semester	Credits	Spring Semester	Credits
KINE 330	3	KINE 341	3
KINE 350	3	KINE 360	3
ATEP 120	2	KINE 380	3
		STAT 250	3
	8		12

Fourth Year

Fall Semester	Credits	Spring Semester	Credits
KINE 400	3	KINE 490	12
KINE 410	3		
KINE 420	3		
KINE 441	3		
KINE 450	3		
	15		12

Total Credits 79

Detailed four year plans and degree planning checklists can be found at https://advising.gmu.edu/current-student/majors-at-mason/.

Kinesiology, MS

Banner Code: E1-MS-KNES

Academic Advising

Phone: 703-993-7607
Email: jmarti38@gmu.edu
Website: https://kinesiology.gmu.edu/kinesiology/ms-kinesiology

Kinesiology is a multi-dimensional field that includes specialized areas such as biomechanics, exercise physiology, motor behavior, athletic training, and sports medicine. The purpose of the MS in Kinesiology is to produce graduates who are movement and exercise specialists. The program uses an evidence-based approach that provides an advanced understanding of scientific evidence and research methods that addresses physical activity related aspects of general well-being, chronic disease, and human performance. Students learn how to become data scientists who collect, analyze, interpret and present data regarding human movement. Our students gain hands on experience using state of the art technology located in the SMART Lab (https://smartlab.gmu.edu/).

Graduates are able to work in private and government sectors which may be characterized as clinical, athletic, and military environments. Our graduates fill positions such as sport scientists, biomechanical and physiology researchers, clinical exercise physiologists, and directors of strength and conditioning.

Admissions & Policies

Policies

For policies governing all graduate degrees, see AP.6 Graduate Policies.

Requirements

Total credits: 36

Core Coursework

Code	Title	Credits
KINE 600	Scientific Foundation of Applied Kinesiology	3
KINE 601	Advanced Exercise Physiology	3
KINE 602	Movement and Fitness Assessment	3
KINE 605	Research Methods in Kinesiology	3
KINE 615	Advanced Technology to Measure Human Movement	3
KINE 798	Directed Inquiry	3
or KINE 799	Thesis	
Total Credits		18

Electives

Code	Title	Credits
Select 18 credits from the following: [1]		18
KINE 500	Special Topics	
KINE 501	Independent Study	
KINE 506	Exercise Psychology	
KINE 603	Applied Biomechanics	
KINE 604	Motor Control and Learning	
KINE 606	Applied Sport and Exercise Nutrition	
KINE 607	Exercise Programming: Movement Selection and Progression	
KINE 608	Data Science in Kinesiology	
KINE 609	Applied Strength and Conditioning Programming	
KINE 610	Corrective and Preventative Exercise Techniques	
Total Credits		18

[1] Students may take up to six credits of coursework offered by other programs with permission.

Accelerated Master's

Bachelor's Degree (any)/Kinesiology, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BS or BA in any degree area and an MS in Kinesiology (https://catalog.gmu.edu/colleges-schools/education-human-development/school-kinesiology/kinesiology-ms/#text) in an accelerated time-frame after satisfactory completion of a minimum of 144 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/colleges-schools/education-human-development/school-education/) for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/#text).

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies (https://catalog.gmu.edu/admissions/graduate-policies/) and Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies. For information specific to this accelerated master's program, see Application Requirements and Deadlines (https://cehd.gmu.edu/bachelors-accelerated-masters-program/).

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits, and additional unit-specific criteria (see Application Requirements and Deadlines) (https://cehd.gmu.edu/bachelors-accelerated-masters-program/).

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MS program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- 3.0 overall GPA
- 3.0 content area GPA
- Completion of specific undergraduate coursework
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following which can be taken as Advanced Standing or Reserve Graduate credit (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) (to be determined by the student and their advisor):

Code	Title	Credits
KINE 600	Scientific Foundation of Applied Kinesiology	3
KINE 601	Advanced Exercise Physiology	3
KINE 602	Movement and Fitness Assessment	3
KINE 603	Applied Biomechanics	3
KINE 604	Motor Control and Learning	3
KINE 605	Research Methods in Kinesiology	3

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies.

Tactical Athlete Strength, Conditioning and Injury Prevention Graduate Certificate

Banner Code: E1-CERG-TSCI

Phone: 703-993-7607
Email: jmarti38@gmu.edu
Website: kinesiology.gmu.edu/kinesiology/graduate-certificate

The term Tactical Athlete (TA) can refer to firefighters, police officers, emergency medical personnel, and soldiers in all branches of the military. The unique physical requirements of the TA require high levels of fitness and the ability to perform strenuous tasks with little to no warning. For all TA fields, fitness testing, fitness, and injury prevention are inherently part of the culture. The United States Bureau of Labor reports average to above average growth of firefighters, police, and military occupations over the next decade. According to data from 2015 there are 1.1 million (345,000 career, 815,000 volunteer) firefighters, over 800,000 police officers, and more than 1.2 million active duty military in the US.

The Tactical Athlete Strength, Conditioning and Injury Prevention Graduate Certificate features a 6 course, 18 credit, 100% online curriculum. The mission of the certificate program is to provide graduates with foundational knowledge, skills and abilities to become leaders in tactical strength, conditioning and injury prevention. The curriculum covers content focused on improving the health, fitness and resiliency of emergency responders (i.e. Tactical Athletes). Upon graduation students will be prepared for a variety of positions (Strength and Conditioning Coach, Athletic Trainer, Health and Fitness Coordinator) or to pursue a graduate degree.

Admissions & Policies

Admissions

Application Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions. For specific information about this program, see Graduate Application Deadlines and Requirements on the College website (https://kinesiology.gmu.edu/prospective-students/apply-to-cehd/deadlines/).

Policies

For policies governing all graduate certificates, see AP.6.8 Requirements for Graduate Certificates

Requirements

Certificate Requirements

Total credits: 18

This certificate may be pursued on a part-time basis only.

Required Courses

Code	Title	Credits
ATEP 510	Advanced Functional Anatomy	3
KINE 601	Advanced Exercise Physiology	3
KINE 602	Movement and Fitness Assessment	3
KINE 603	Applied Biomechanics	3
KINE 609	Applied Strength and Conditioning Programming	3
KINE 610	Corrective and Preventative Exercise Techniques	3
Total Credits		18

School of Sport, Recreation and Tourism Management

Website: https://srtm.gmu.edu/

Overview

The School of Sport, Recreation and Tourism Management (SRTM) offers one master's degree, one graduate certificate, one bachelor's/accelerated master's program, two undergraduate programs, one undergraduate certificate, five minors, and six interdisciplinary minors with other units.

Graduate Programs

The MS in Sport and Recreation Studies meets the growing need for professionals and academics through concentrations in the areas of Recreation Administration, Sport and Leisure Studies, Sport Management, and Individualized Study in Sport, Recreation and Tourism.

Graduate certificates are available in International Sport Management and Sports Coaching.

Undergraduate Programs

The BS in Health, Fitness, and Recreation Resources, with concentrations in Sport Management, Parks and Outdoor Recreation, and Therapeutic Recreation provide professional preparation in these exciting growth areas. Sport Management prepares capable graduates able to apply creative communication, leadership, and managerial skills in an array of positions in the $1.3 trillion sport sector, including sales, marketing, public relations, operations, facilities, and event management. The Parks and Outdoor Recreation and Therapeutic Recreation concentrations are accredited by the Council on Accreditation for Parks, Recreation, Tourism, and Related Professions (COAPRT), and prepare students for supervisory and management careers in private and public parks and recreation systems (clinical and community). Therapeutic Recreation graduates implement interventions and rehabilitation activities to enhance the quality of life for special populations. Parks and Outdoor Recreation graduates plan and implement community recreation programs, lead outdoor activities, and manage the uses of natural and cultural resources.

The BS in Tourism and Events Management degree prepares students to become future managers and leaders in one of the world's largest and most diverse industries: tourism, events and hospitality. Our Tourism and Events Management (TEM) major focuses on the management,

planning, implementation, marketing, and evaluation of tourism, events and hospitality businesses.

Minors

SRTM offers minors in sport coaching, sport management, tourism and events management, hospitality management and recreation management.

Interdisciplinary Minors

In addition to school-based minors, the SRTM offers several minors in interdisciplinary areas of study. These minors require coursework from two or more disciplines and are administered by inter-unit faculty groups. The minors include:

Event Technical Production

The Event Technical Production Minor is offered jointly by the School of Sport, Recreation and Tourism Management and the School of Theater in the College of Visual and Performing Arts. Students will learn how to plan, manage and execute live events and presentations.

Sport Analytics

The Sports Analytics Minor is offered jointly by the School of Sport, Recreation and Tourism Management, School of Business, College of Science, and Volgenau School of Engineering.

Sport and American Culture

The Sport and American Culture Minor is offered jointly by the School of Sport, Recreation and Tourism Management and Department of History and Art History. Students will learn about sport and its interconnection with other societal institutions.

Sport and Computer Game Design

The Sport and Computer Game Design Minor is offered jointly by the School of Sport, Recreation and Tourism Management and the Computer Game Design Program in the College of Visual and Performing Arts. This minor provides a combined introductory look at both the sports and computer game industries.

Sport and Conflict Resolution

The Sport and Conflict Resolution Minor offered by the School of Sport, Recreation and Tourism Management and the Jimmy and Rosalynn Carter School for Peace and Conflict Resolution.

Sport Communication

The Sport Communication Minor is offered jointly by the School of Sport, Recreation and Tourism Management and the Department of Communication.

Faculty

School Faculty

Professors

R. Baker, Brayley, Chalip, Daniels, Green, M. Jones

Associate Professors

Aidoo, Esherick, Jin, Kozlowski, Lee, McDowell, M. Park, P. Rodgers, Slocum, Wiggins

Assistant Professors

Aylsworth

Instructors

Casserly, P. Gilbert, T. Jones

Programs

- Coaching Minor
- Event Technical Production Minor (CEHD)
- Food and Beverage Management Undergraduate Certificate
- Health, Fitness, and Recreation Resources, BS
- Hospitality Management Minor
- Recreation Management Minor
- Sport Communication Minor (CEHD)
- Sport Management Graduate Certificate
- Sport Management Minor
- Sport and American Culture Minor (CEHD)
- Sport and Computer Game Design Minor (CEHD)
- Sport and Conflict Resolution Minor (CEHD)
- Sport and Recreation Studies, MS
- Sports Analytics Minor (CEHD)
- Tourism and Events Management Minor
- Tourism and Events Management, BS

Coaching Minor

Banner Code: COCH

Academic Advising

Phone: 703-993-5200
Email: srht@gmu.edu
Website: srtm.gmu.edu/sport-management/degree-options/coaching-minor

This minor has been designed for Mason students interested in the coaching profession at all age and ability levels, including future high school teachers who also want to coach. With this selection of courses, students will be introduced to foundational concepts in sport psychology, philosophy, pedagogy, nutrition, athletic training and physiology as well as important sport industry business concepts. Coaching minors will complete their work with a field experience in sport coaching.

This minor is available to all Mason undergraduate students.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 18

Coursework

Code	Title	Credits
ATEP 203	Prevention, Recognition, and Management of Athletic and Fitness Related Injuries	3
PHED 306	Psychomotor Learning	3
SPMT 201	Introduction to Sport Management	3
SPMT 210	Foundations of Sport Coaching	3
SPMT 320	Psychology of Sport	3
SPMT 341	Field Experience in Sport Coaching	3
Total Credits		18

Event Technical Production Minor (CEHD)

Banner Code: EVTP

Academic Advising

Phone: 703-993-6079
Email: theater@gmu.edu
Website: https://srtm.gmu.edu/tourism-and-events-management/degree-options/event-technical-production-minor

This minor is offered jointly with the College of Visual and Performing Arts (School of Theater).

This minor, available to all Mason undergraduate students, offers the opportunity to study special event management and event technologies, design and production for installations and special events. Students will gain insights into industry standards and practices regarding planning, managing, and executing live events and presentations. The required courses in this minor provide students with a foundational overview of management and production. Students can complement that knowledge with specific electives that meet their individual interests in events and areas of design and technology.

Admissions & Policies

Policies

University policy states that students must earn 8 distinct credits that are not used for their major toward their minor, with a minimum grade of 2.00 earned in all courses applied to the minor. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 18

Coursework

Code	Title	Credits
THR 230	Fundamentals of Production (Mason Core)	3
THR 313	Event Technical Production	3
or TOUR 313	Event Technical Production	
TOUR 220	Introduction to Event Management	3
TOUR 355	Event Logistics	3
Select 6 credits from the following:		6
THR 201	Stage Management	
THR 314	Lighting Stagecraft	
THR 315	Sound Engineering	
THR 333	Scenic Design	
THR 336	Technical Direction	
THR 343	Costume Technology	
TOUR 221	Event Implementation and Evaluation	
PRLS 310	Program Planning and Evaluation	
THR 490	Special Topics in Theater	
Or other course by permission of Director.		
Total Credits		18

Food and Beverage Management Undergraduate Certificate

Banner Code: E1-CERU-FBM

Academic Advising

Phone: 703-993-5200
Email: srht@gmu.edu
Website: https://srtm.gmu.edu/tourism-and-events-management/degree-options/food-and-beverage-certificate

This certificate provides students the opportunity to prepare for a career in a variety of food and beverage operations, including hospitality, restaurants, and institutional (e.g. schools, hospitals) food service management. The required courses provide exposure to the core business functions needed to succeed in the food and beverage industry.

Admissions & Policies

Admissions

University-wide admissions policies can be found in Undergraduate Admissions Policies.

To apply for this program, please complete the George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now/).

Policies

For policies governing all undergraduate programs, see AP.5 Undergraduate Policies.

Requirements

formerly (E1-CERB-FBM)

Certificate Requirements

Total credits: 18

This certificate may be pursued on a part-time basis only.

Coursework

Code	Title	Credits
TOUR 230	Introduction to Hospitality Management	3
TOUR 310	Food and Beverage Management	3
TOUR 445	Restaurant Management	3
NUTR 295	Introduction to Nutrition (Mason Core)	3
NUTR 315	Fundamentals of Cooking	3
NUTR 410	Introduction to Food Safety and Defense	3
Total Credits		18

Health, Fitness, and Recreation Resources, BS

Banner Code: E1-BS-HFRR

Academic Advising

Parks and Outdoor Recreation Concentration
Phone: 703-993-9923
Fairfax campus: 213 Krug Hall
Website: https://srtm.gmu.edu/recreation-management/parks-outdoor-recreation (https://srtm.gmu.edu/recreation-management/parks-outdoor-recreation/)

Therapeutic Recreation Concentration
Phone: 703-993-9923
Fairfax campus: 213 Krug Hall
Website: https://srtm.gmu.edu/recreation-management/therapeutic-recreation-concentration (https://srtm.gmu.edu/recreation-management/therapeutic-recreation-concentration/)

Sport Management Concentration
Phone: 703-993-5200
Email: mgnoleba@gmu.edu
Fairfax campus: 213B Krug Hall
Website: https://srtm.gmu.edu/sport-management/degree-options/degree-requirements (https://srtm.gmu.edu/sport-management/degree-options/degree-requirements/)

This 120-credit degree allows students to specialize in one of three varied concentrations:

- Concentration in Parks and Outdoor Recreation (Green Leaf program)
- Concentration in Sport Management
- Concentration in Therapeutic Recreation

Admissions & Policies

Policies

For policies governing all undergraduate degrees, see Academic Policies. Students should also review Mason Core requirements.

Internship Application

The internship is a 12-credit capstone course taken at the end of a student's academic program. Students must have earned 90 credit hours and met the specific prerequisites for their concentration to be eligible for the internship (see PRLS 490 Recreation Management Internship (Mason Core), and SPMT 490 Internship (Mason Core). The internship is designed to be a capstone experience for each student in his or her specific concentration area.

The internship process begins with a mandatory meeting hosted by the internship coordinator. During the preliminary phase students will develop learning goals and consult with faculty on viable internship sites. Once the internship site has been selected, the student must complete 400 hours of an applied experience in their field of study for Sport Management and Parks and Outdoor Recreation. Therapeutic Recreation (TR) requires a 560-hour, sixteen consecutive week field placement experience in therapeutic recreation services under a certified therapeutic recreation therapist (CTRS) using the therapeutic recreation process.

Throughout the internship for all programs, the student will be monitored by a site supervisor (CTRS for therapeutic recreation), as well as a university supervisor, to facilitate a meaningful experience.

Requirements

Degree Requirements

Total credits: 120

This is a Green Leaf program.

Concentration in Parks and Outdoor Recreation (POR)

This concentration within the Recreation Management program explores the contribution of recreation and parks to public well-being and quality of life. The curriculum includes courses in natural resources management, outdoor recreation programming, and environmental education. The Recreation Management program is accredited by the Council on Accreditation of Parks, Recreation, Tourism and Related Professions. Graduates of this career ready program are employed in national, state, and local recreation and park agencies, non-profit organizations, and private and commercial operations. Students complete both a supervised practicum and internship in professional settings.

Mason Core

Code	Title	Credits
Written Communication		6
Oral Communication		3
Information Technology		3
Quantitative Reasoning:		
STAT 250	Introductory Statistics I (Mason Core)	3
Literature		3

Arts	3
Western Civilization/World History	3
Social and Behavioral Sciences	3
Global Understanding	3
Natural Science	8
Synthesis/Capstone [1]	
Total Credits	38

[1] Met by PRLS 490 Recreation Management Internship (Mason Core), a program requirement

Professional Sequence

Code	Title	Credits
ATEP 120	First Aid and Emergency Care	2
PRLS 210	Introduction to Recreation and Leisure	3
PRLS 241	Practicum	3
PRLS 300	People with Nature	3
PRLS 302	Park Management and Operations	3
PRLS 310	Program Planning and Evaluation	3
PRLS 316	Leadership and Outdoor Education	3
PRLS 317	Social Psychology of Play and Recreation	3
PRLS 323	Program Leadership and Evaluation	3
PRLS 327	Foundations of Therapeutic Recreation	3
PRLS 362	Cultural and Environmental Interpretation	3
PRLS 402	Human Behavior in Natural Environments	3
PRLS 405	Planning and Operation of Recreation Facilities	3
PRLS 410	Administration of SRT Organizations I	3
PRLS 411	Administration of SRT Organizations II	3
PRLS 460	Sport and Recreation Law	3
PRLS 490	Recreation Management Internship (Mason Core)	12
PRLS 501	Introduction to Natural Resources Law	3
SRST 200	History of Sport and Leisure in America	3
SRST 450	Research Methods (Satisfies the university Writing Intensive requirement)	3
Total Credits		68

Electives

Code	Title	Credits
Select an additional 14 credits from:		14
Any course, including Physical Activity for Lifetime Wellness courses		
Or a minor (http://catalog.gmu.edu/programs/#filter=filter_29)		
Total Credits		14

Concentration in Sport Management (SPMT)

This concentration enhances the professional development of liberal arts-educated students, thereby preparing them to assume entry-level managerial positions in the multi-billion dollar sport industry, including private enterprises, government or public employment sectors, nonprofit or voluntary agencies, and commercial sport ventures. Preparation in sport marketing, sales, finance, ethics, sport communications, economics, law, operations, planning, and program leadership fosters the skills that enhance students' acquisition and advancement in sport management careers. An integral part of the program is the opportunity to complete two field experiences in sport organizations: a part-time practicum and a full-time internship.

Mason Core

Code	Title	Credits
Written Communication		6
Oral Communication		3
Information Technology		3
Quantitative Reasoning:		
STAT 250	Introductory Statistics I (Mason Core)	3
Literature		3
Arts		3
Western Civilization/World History		3
Social and Behavioral Sciences		3
Global Understanding		3
Natural Science		7
Synthesis/Capstone [1]		
Total Credits		37

[1] Met by SPMT 490 Internship (Mason Core), a program requirement

Professional Sequence

Code	Title	Credits
SPMT 201	Introduction to Sport Management	3
SPMT 241	Practicum	3
SPMT 302	Philosophical and Ethical Dimensions of Sport	3
SPMT 304	Sport, Culture, and Society	3
SPMT 405	Sport Venues and Events	3
SPMT 412	Sport Marketing and Sales	3
SPMT 420	Economics and Finance in the Sport Industry	3
SPMT 430	Sport Communication	3
SPMT 440	Global Perspectives in Sport	3
SPMT 455	Governance and Policy in Sport Organizations	3
SPMT 462	Sport Business Law	3
or PRLS 460	Sport and Recreation Law	
SPMT 470	Strategic Management and Leadership in Sport Organizations	3
SPMT 475	Sport Management Professional Development Seminar	3
SPMT 490	Internship (Mason Core)	12
SRST 200	History of Sport and Leisure in America	3
SRST 450	Research Methods	3
Total Credits		57

Guided Electives

Code	Title	Credits
Select 9 credits from the following:		9
SPMT courses		
SRST courses		

SPMT 480	Special Topics in Sport Management	
Total Credits		9

Electives

Code	Title	Credits
Select an additional 17 credits from any course.		17
Total Credits		17

Concentration in Therapeutic Recreation (TR)

This concentration within the Recreation Management program teaches a holistic approach to the treatment for people with disabilities across the lifespan. Completion of the therapeutic recreation (TR) foundation, issues, processes, programming and assessment courses to name a few, as well as an internship supervised by a Certified Therapeutic Recreation Specialist (CTRS), prepares graduating seniors to sit for the national exam sponsored by the National Council for Therapeutic Recreation Certification (http://nctrc.org/) and become a CTRS. The Recreation Management program is accredited by the Council on Accreditation of Parks, Recreation, Tourism and Related Professions. Graduates find employment in clinical and community settings; senior and adult health care; non-profit organizations; and schools.

Mason Core

Code	Title	Credits
Written Communication		6
Oral Communication		3
Information Technology		3
Quantitative Reasoning:		
STAT 250	Introductory Statistics I (Mason Core)	3
Literature		3
Arts		3
Western Civilization/World History		3
Social and Behavioral Sciences:		
PSYC 100	Basic Concepts in Psychology (Mason Core)	3
Global Understanding		3
Natural Science:		
BIOL 124	Human Anatomy and Physiology	4
BIOL 125	Human Anatomy and Physiology	4
Synthesis/Capstone [1]		
Total Credits		38

[1] Met by PRLS 490 Recreation Management Internship (Mason Core), a program requirement

Professional Sequence

Code	Title	Credits
ATEP 120	First Aid and Emergency Care	2
KINE 450	Research Methods (Satisfies the university Writing Intensive requirement)	3
PRLS 210	Introduction to Recreation and Leisure	3
PRLS 241	Practicum	3
PRLS 310	Program Planning and Evaluation	3
PRLS 316	Leadership and Outdoor Education	3
PRLS 317	Social Psychology of Play and Recreation	3
PRLS 323	Program Leadership and Evaluation	3
PRLS 327	Foundations of Therapeutic Recreation	3
PRLS 405	Planning and Operation of Recreation Facilities	3
PRLS 410	Administration of SRT Organizations I	3
PRLS 411	Administration of SRT Organizations II	3
PRLS 416	Trends and Programming Assessment in Therapeutic Recreation	3
PRLS 417	Processes, Techniques and Supervision in Therapeutic Recreation	3
PRLS 418	Assessment in Therapeutic Recreation	3
PRLS 460	Sport and Recreation Law	3
PRLS 490	Recreation Management Internship (Mason Core)	12
PRLS 503	Administration and Disability Rights in Therapeutic Recreation	3
PSYC 211	Developmental Psychology (Mason Core)	3
PSYC 325	Abnormal Psychology	3
SRST 200	History of Sport and Leisure in America	3
Total Credits		71

Electives

Code	Title	Credits
Select an additional 11 credits from any course, including:		11
Physical Activity for Lifetime Wellness courses		
ATEP 201	Medical and Scientific Terminology	
Minor in Psychology		
Total Credits		11

4-Year Plan

Bachelor of Science in Health, Fitness, and Recreation Resources Sample Plan of Study

The sample plan below is a recommended sequencing of courses based on pre-requisites and scheduling. This may not fit every student's needs and is a guideline, not a requirement. Students should confirm major requirements with their academic advisor and with PatriotWeb Degree Evaluation to ensure they enroll in the proper courses and are on track to graduate.

Concentration in Parks and Outdoor Recreation

(To be supplemented by Mason Core and Electives)

First Year

Fall Semester	Credits	Spring Semester	Credits
PRLS 210	3	ATEP 120	2
SRST 200	3		
	6		2

Second Year

Fall Semester	Credits	Spring Semester	Credits
PRLS 300	3	PRLS 241	3
PRLS 310	3	PRLS 317	3

PRLS 316	3	PRLS 327	3
		PRLS 323	3
	9		12

Third Year

Fall Semester	Credits	Spring Semester	Credits
PRLS 302	3	PRLS 402	3
PRLS 405	3	SRST 450	3
PRLS 410	3	PRLS 460	3
STAT 250	3	PRLS 362	3
	12		12

Fourth Year

Fall Semester	Credits	Spring Semester	Credits
PRLS 411	3	PRLS 490	12
PRLS 501	3		
	6		12

Total Credits 71

Detailed four year plans and degree planning checklists can be found at https://advising.gmu.edu/current-student/majors-at-mason/.

Concentration in Sport Management

(To be supplemented by Mason Core and Electives)

First Year

Fall Semester	Credits	Spring Semester	Credits
SPMT 201	3	SRST 200	3
	3		3

Second Year

Fall Semester	Credits	Spring Semester	Credits
SPMT 302	3	SPMT 241	3
SPMT 304	3	SPMT Guided Elective 2	3
SPMT Guided Elective 1	3	STAT 250	3
	9		9

Third Year

Fall Semester	Credits	Spring Semester	Credits
SPMT 405	3	SPMT 440	3
SPMT 412	3	SRST 450	3
SPMT 420	3	SPMT 455	3
SPMT 430	3	SPMT Guided Elective 3	3
	12		12

Fourth Year

Fall Semester	Credits	Spring Semester	Credits
SPMT 470	3	SPMT 490	12
SPMT 462 or PRLS 460	3		
SPMT 475	3		
	9		12

Total Credits 69

Detailed four year plans and degree planning checklists can be found at https://advising.gmu.edu/current-student/majors-at-mason/.

Concentration in Therapeutic Recreation

(To be supplemented by Mason Core and Electives)

First Year

Fall Semester	Credits	Spring Semester	Credits
PRLS 210	3	BIOL 124	4
PSYC 100	3	PRLS 327	3
SRST 200	3	PSYC 211	3
	9		10

Second Year

Fall Semester	Credits	Spring Semester	Credits
ATEP 120	2	PRLS 241	3
BIOL 125	4	PRLS 323	3
PRLS 310	3	PRLS 317	3
PRLS 416	3	PRLS 417	3
	12		12

Third Year

Fall Semester	Credits	Spring Semester	Credits
PRLS 316	3	PRLS 418	3
PRLS 410	3	PRLS 460	3
PSYC 325	3	STAT 250	3
	9		9

Fourth Year

Fall Semester	Credits	Spring Semester	Credits
PRLS 405	3	PRLS 490	12
PRLS 411	3		
KINE 450	3		
PRLS 503	3		
	12		12

Total Credits 85

Detailed four year plans and degree planning checklists can be found at https://advising.gmu.edu/current-student/majors-at-mason/.

Accelerated Master's

Bachelor's Degree (any)/Sport and Recreation Studies, Accelerated MS

Overview

Qualified Mason undergraduates may be admitted to a bachelor's/accelerated master's program and obtain a BA or BS in any degree area and a MS in Sport and Recreation Studies (https://catalog.gmu.edu/

colleges-schools/education-human-development/school-sport-recreation-tourism-management/sport-recreation-studies-ms/).

See AP.6.7 Bachelor's/Accelerated Master's Degree for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/#text).

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies (https://catalog.gmu.edu/admissions/graduate-policies/) and Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies. For information specific to this accelerated master's program, see Application Requirements and Deadlines (https://cehd.gmu.edu/bachelors-accelerated-masters-program/).

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits, and additional unit-specific criteria.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MS program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- 3.0 overall GPA
- Completion of specific undergraduate coursework
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following which can be taken as Advanced Standing or Reserve Graduate credit (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) (to be determined by the student and their advisor):

Code	Title	Credits
PRLS 501	Introduction to Natural Resources Law	3
PRLS 613	Strategic Leadership in Recreation Administration	3
SPMT 551	Sport in the Global Marketplace	3
SPMT 611	Sport Marketing and Sales	3
SPMT 612	Economics and Financial Management in the Sport Industry	3
SPMT 613	Strategic Leadership in Sport Organizations	3
SPMT 614	Legal Issues in Sport	3
SPMT 616	Sport Operations, Venues, and Event Management	3
SRST 598	Special Topics	1-6
SRST 606	Foundations of Sport and Recreation Studies	3

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies.

Bachelor's Degree (selected)/ Environmental Science and Policy, Accelerated MS

Overview

This bachelor's/accelerated master's degree program allows academically strong undergraduates with a commitment to advance their education to obtain a Green Leaf-designated bachelor's degree and the Environmental Science and Policy, MS (https://catalog.gmu.edu/colleges-schools/science/environmental-policy/environmental-science-policy-ms/) degrees within an accelerated timeframe. Upon completion of this 141 credit accelerated program, students will be exceptionally well prepared for entry into their careers or into a doctoral program in the field or in a related discipline.

Students are eligible to apply for this accelerated program once they have earned at least 60 undergraduate credits and can enroll in up to 18 credits of graduate coursework after successfully completing 75 undergraduate credits. This flexibility makes it possible for students to complete a bachelor's and a master's in five years.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies. For more information on undergraduates enrolling in graduate courses, see AP.1.4.4 Graduate Course Enrollment by Undergraduates (https://catalog.gmu.edu/policies/academic/registration-attendance/#text).

Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in the Graduate Admission Policies section of this catalog.

Important application information and processes for this accelerated master's program can be found here (https://www2.gmu.edu/admissions-aid/how-apply/accelerated-masters/).

The GRE exam is not required for this accelerated master's program.

Students should submit three letters of recommendation (at least one from a former professor or someone with a PhD), a recent resume, a statement of interest/research goals and interests (including information on the candidate's proposed MS research), and a letter from their advisor (see Graduate Advisor section below) stating that the advisor agrees to take on the candidate as an MS student, how the candidate would be a good fit for them and why candidate's research topic would be suitable.

Students with an overall GPA of at least 3.20 who are pursuing any Green Leaf-designated major or minor may apply to this accelerated master's program after completing two semesters of chemistry (including CHEM 211 General Chemistry I (Mason Core) and CHEM 212

General Chemistry II (Mason Core) and three semesters of biology, including a course in ecology, or the equivalent, for example:

Code	Title	Credits
Select one of the following options:		13
Option 1:		
BIOL 213	Cell Structure and Function (Mason Core)	
BIOL 214	Biostatistics for Biology Majors	
BIOL 308	Foundations of Ecology and Evolution	
Option 2:		
EVPP 210	Environmental Biology: Molecules and Cells	
EVPP 301	Environmental Science: Biological Diversity and Ecosystems	
EVPP 302	Environmental Science: Biomes and Human Dimensions	
EVPP 305	Environmental Microbiology Essentials	
EVPP 306	Environmental Microbiology Essentials Laboratory	
Option 3:		
CONS 401	Conservation Theory	
CONS 402	Applied Conservation	
6 credits of BIOL or CONS electives		

Graduate Advisor

By at least the beginning of their senior year, students should seek out a faculty member in the Department of Environmental Science and Policy who is willing to serve as their advisor. This advisor will aid the student in choosing the appropriate graduate courses to take and help to prepare the student for graduate studies. Admission into a research-oriented master's concentration is dependent upon securing the agreement of a faculty advisor. Faculty from a variety of departments and colleges at George Mason University (called "program faculty") can serve as master's advisors. Potential students are encouraged to speak with the graduate program coordinator in the department to obtain guidance on this issue.

Accelerated Option Requirements

After the completion of 75 undergraduate credits, students may complete 3 to 12 credits of graduate coursework that can apply to both the undergraduate and graduate degrees.

In addition to applying to graduate from the undergraduate program, students in the accelerated program must submit a bachelor's/accelerated master's transition form (available from the Office of the University Registrar (https://registrar.gmu.edu/forms/)) to the College of Science's Office of Academic and Student Affairs (https://cos.gmu.edu/about/contact-us/) by the last day to add classes of their final undergraduate semester. Students should enroll for courses in the master's program in the fall or spring semester immediately following conferral of the bachelor's degree, but should contact an advisor if they would like to defer up to one semester.

Students must maintain an overall GPA of 3.00 or higher in all graduate coursework and should consult with their faculty advisor to coordinate their academic goals.

Reserve Graduate Credits

Accelerated master's students may also take up to 6 graduate credits as reserve graduate credits. These credits do not apply to the undergraduate degree, but will reduce the master's degree by up to 6 credits. With 12 graduate credits counted toward the undergraduate degree plus the maximum 6 reserve graduate credits, the credits necessary for the graduate degree can be reduced by up to 18.

Graduate Course Suggestions

The following list of suggested courses is provided for general reference. To ensure an efficient route to graduation and post-graduation readiness, students are strongly encouraged to meet with an advisor before registering for graduate-level courses.

Code	Title	Credits
EVPP 518	Conservation Biology	3
EVPP 529	Environmental Science Communication	3
EVPP 621	Overview of Biodiversity Conservation	3
EVPP 635	Environment and Society	3

Hospitality Management Minor

Banner Code: HPTM

Academic Advising

Phone: 703-993-5200
Email: srht@gmu.edu
Website: https://srtm.gmu.edu/tourism-and-events-management/degree-options/hospitality-managment-minor

This 15-credit minor helps students hone skills related to service industry, specifically focusing on hotel management.

Admissions & Policies

Admissions

The Hospitality Management minor is open to all Mason undergraduate students except for those enrolled in the Hospitality Management Concentration in the BS in Tourism and Events Management.

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 15

Required Courses

Code	Title	Credits
TOUR 230	Introduction to Hospitality Management	3
TOUR 301	Hotel Management	3
TOUR 310	Food and Beverage Management	3
Total Credits		9

Electives

Code	Title	Credits
Select two courses from the following:		6
TOUR 320	Hospitality, Tourism and Event Management Information Systems	
TOUR 330	Resort Management	
TOUR 460	Hospitality Facilities Operations	
Total Credits		6

Recreation Management Minor

Banner Code: RMGT

Academic Advising

213C Krug Hall
Fairfax Campus

228C Katherine G Johnson Hall
Prince William Campus

Phone: 703-993-5261
Website: https://srtm.gmu.edu/recreation-management/recreation-management-minor/

Admissions & Policies

Admissions

This minor (including a practicum) is available to all Mason undergraduate students, with the exception of those enrolled in the Health, Fitness, and Recreation Resources, BS with a concentration in either Parks and Outdoor Recreation or Therapeutic Recreation.

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 18

Coursework

All required 200 and 300 PRLS courses must be completed first.

Code	Title	Credits
PRLS 210	Introduction to Recreation and Leisure	3
PRLS 241	Practicum [1]	3
PRLS 310	Program Planning and Evaluation	3
or PRLS 220	Experiential Education Theory and Application	
PRLS 316	Leadership and Outdoor Education	3
PRLS 327	Foundations of Therapeutic Recreation	3
PRLS 410	Administration of SRT Organizations I [1]	3
Total Credits		18

[1] PRLS 241 Practicum and PRLS 410 Administration of SRT Organizations I may be taken concurrently.

Sport and American Culture Minor (CEHD)

Banner Code: SAMC

Academic Advising

Phone: 703-993-1250
Email: histarth@gmu.edu
Website: https://srtm.gmu.edu/sport-management/degree-options/sport-and-american-culture-undergraduate-minor/

This interdisciplinary minor is offered jointly by the School of Sport, Recreation and Tourism Management and the Department of History and Art History. This minor is for students who want to immerse themselves in the study of sport, sociology, and history. Students must take two required and four elective courses (two from Sport Management and two from History).

Admissions & Policies

Admissions

This minor is available to all Mason undergraduate students.

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 18

Coursework

Code	Title	Credits
HIST 341	History of Sport in the United States	3
SPMT 304	Sport, Culture, and Society	3
Total Credits		6

Electives (Sport Management)

Code	Title	Credits
Select two courses from the following:		6
SPMT 318	Diversity and Inclusion Issues in Sport	
SPMT 321	America Through Baseball	
SPMT 322	Football and American Culture	
SPMT 323	America and the Modern Olympics	
Total Credits		6

Electives (History)

Code	Title	Credits
HIST 339	History of Baseball	3
HIST 340	Basketball and the American Experience	3
Total Credits		6

Sport and Computer Game Design Minor (CEHD)

Banner Code: SCGD

Academic Advising

Phone: 703-993-5200
Email: srht@gmu.edu
Website: https://srtm.gmu.edu/sport-management/degree-options/sport-and-computer-game-design

This minor is offered jointly with Computer Game Design.

It offers academic preparation in an industry that has seen rapid expansion in the sale, design, and production of sport-related games around the world. The required courses provide students with a foundational overview of the sports industry, the sport management academic discipline, and computer game design. Students can complement that knowledge with the selection of courses in these two disciplines that meet their individual interests.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 18

Required Courses

Code	Title	Credits
GAME 210	Basic Game Design	3
SPMT 201	Introduction to Sport Management	3
Total Credits		6

Electives

Code	Title	Credits
Select four courses (at least one in each discipline) from the following:		12
GAME 230	History of Computer Game Design	
GAME 231	Computer Animation for Games	
GAME 232	Online and Mobile Gaming	
GAME 250	Music for Film and Video	
GAME 310	Game Design Studio	
GAME 330	Computer Game Platform Analysis	
SPMT 304	Sport, Culture, and Society	
SPMT 320	Psychology of Sport	
SPMT 405	Sport Venues and Events	
SPMT 412	Sport Marketing and Sales	
SPMT 420	Economics and Finance in the Sport Industry	
SPMT 455	Governance and Policy in Sport Organizations	
Total Credits		12

Sport and Conflict Resolution Minor (CEHD)

Banner Code: SCNR

Phone: 703-993-4165
Email: ugradcar@gmu.edu
Website: https://srtm.gmu.edu/sport-management/degree-options/sport-and-conflict-resolution-minor

There has been a real growth in the establishment of non-profit organizations that use 'sport for development', sport to bring diverse communities together and also 'sport for peace' organizations in high conflict areas of the world. This minor will help prepare students to work for organizations dedicated to using sports for development, community building and peace. It provides students with a cross section of courses in sports management and conflict resolution. Courses in sports management frame the sports industry in a philosophical, ethical, cultural and business context. Conflict resolution courses will introduce students to foundational concepts in the study of human conflict, the analysis of conflict and problem solving techniques for helping to resolve conflict.

This is an interdisciplinary minor offered by the Jimmy and Rosalynn Carter School for Peace and Conflict Resolution and the School of Sport, Recreation and Tourism Management.

Admissions & Policies

Admissions

This minor is available to all Mason undergraduate students.

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 18

Required Courses

Code	Title	Credits
SPMT 201	Introduction to Sport Management	3
SPMT 302	Philosophical and Ethical Dimensions of Sport	3
SPMT 304	Sport, Culture, and Society	3
CONF 101	Conflict and Our World (Mason Core)	3
CONF 300	Conflict Resolution Techniques and Practice	3
Total Credits		15

Elective Courses

Code	Title	Credits
Choose one of the following:		3
CONF 302	Culture, Identity, and Conflict	
CONF 435	Building Peace in Divided Societies	
Total Credits		3

Sport and Recreation Studies, MS

Banner Code: E1-MS-SRST

Academic Advising

Phone: 703-993-2060
Email: gradrht@gmu.edu
Website: https://srtm.gmu.edu/sport-recreation-studies/degree-options/

The MS in Sport and Recreation Studies meets the growing need for professionals and academics through concentrations in the areas of Recreation Administration, Sport and Leisure Studies, Sport Management, and Individualized Study in Sport, Recreation, and Tourism.

The Sport Management Graduate Certificate (https://catalog.gmu.edu/colleges-schools/education-human-development/school-sport-recreation-tourism-management/sport-management-graduate-certificate/) with concentrations in Sport Coaching and International Sport Management may be taken in conjunction with the MS SRST degree or as a standalone option.

Admissions & Policies

Admissions

Application Requirements

In addition to fulfilling admission requirements for graduate study as specified in Graduate Admissions, applicants must have successfully completed an undergraduate course in statistics.

Policies

For policies governing all graduate degrees, see AP .6 Graduate Policies.

Requirements

Degree Requirements

Total credits: 30

MS Core Coursework

Students are required to take a set of four courses that will provide grounding in historical and socio-cultural foundations, research methods and statistics, ethical and legal issues, and leadership perspectives. In addition, all students will complete a seminar, and either a capstone thesis or project/internship specific to their concentration.

Code	Title	Credits
SRST 606	Foundations of Sport and Recreation Studies	3
SPMT 613	Strategic Leadership in Sport Organizations	3
or PRLS 613	Strategic Leadership in Recreation Administration	
SPMT 614	Legal Issues in Sport	3
or PRLS 501	Introduction to Natural Resources Law	
SRST 623	Research Design and Statistical Reasoning	3
SRST 796	Seminar in Sport and Recreation Studies	1
Select 5 credits from the following:		5
SRST 798	Master's Project/Internship	
SRST 595 & SRST 799	Thesis Preparation and Master's Thesis	
Total Credits		18

Concentration in Recreation Administration (RADM)

Code	Title	Credits
Coursework		
PRLS 610	Recreation Administration and Planning	3
PRLS 611	Social Psychology of Leisure	3
Select 6 credits from the following: [1]		6
PRLS 531	Natural Resources Recreation Planning	
PRLS 533	Visitor Services	
PRLS 601	History of Leisure and Sport in American Society	
PRLS 612	Philosophy of Leisure and Sport	
SRST 598	Special Topics (must register for 3 credits)	
Total Credits		12

[1] Additional courses may be selected as electives with advisor approval

Concentration in Sport and Leisure Studies (SPLS)

Code	Title	Credits
Coursework		
PRLS 601	History of Leisure and Sport in American Society	3
PRLS 612	Philosophy of Leisure and Sport	3
Select 6 credits from the following: [1]		6
PRLS 611	Social Psychology of Leisure	
SPMT 551	Sport in the Global Marketplace	
SPMT 651	Sport and International Development	

SRST 598	Special Topics (must register for 3 credits)	
Total Credits		12

[1] Additional courses may be selected as electives with advisor approval

Concentration in Sport Management (SPMT)

Code	Title	Credits
Coursework		
SPMT 611	Sport Marketing and Sales	3
SPMT 612	Economics and Financial Management in the Sport Industry [1]	3
SPMT 616	Sport Operations, Venues, and Event Management	3
Electives		
Select 3 credits from the following: [2]		3
SPMT 551	Sport in the Global Marketplace	
SPMT 555	The Australian Model of Sport	
SPMT 556	The Global Soccer Industry	
SPMT 618	Psychology of Coaching	
SPMT 620	Ethical Issues in Global Sport	
SPMT 631	Theoretical Models of Sport Coaching	
SPMT 651	Sport and International Development	
SPMT 652	Governance and Policy in International Sport	
SRST 598	Special Topics (must register for 3 credits)	
Total Credits		12

[1] SPMT 612 may not be used to satisfy the concentration requirement if taken in SRST core.

[2] Additional courses may be selected as electives with advisor approval

Concentration in Individualized Study in Sport, Recreation, and Tourism (ISRT)

Code	Title	Credits
With advisor approval, select four 3-credit courses within the university catalog that form an integrated program of study.		12
Total Credits		12

Accelerated Master's

Bachelor's Degree (any)/Sport and Recreation Studies, Accelerated MS

Overview

Qualified Mason undergraduates may be admitted to a bachelor's/accelerated master's program and obtain a BA or BS in any degree area and a MS in Sport and Recreation Studies (https://catalog.gmu.edu/colleges-schools/education-human-development/school-sport-recreation-tourism-management/sport-recreation-studies-ms/).

See AP.6.7 Bachelor's/Accelerated Master's Degree for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/#text).

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies (https://catalog.gmu.edu/admissions/graduate-policies/) and Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies. For information specific to this accelerated master's program, see Application Requirements and Deadlines (https://cehd.gmu.edu/bachelors-accelerated-masters-program/).

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits, and additional unit-specific criteria.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MS program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- 3.0 overall GPA
- Completion of specific undergraduate coursework
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following which can be taken as Advanced Standing or Reserve Graduate credit (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) (to be determined by the student and their advisor):

Code	Title	Credits
PRLS 501	Introduction to Natural Resources Law	3
PRLS 613	Strategic Leadership in Recreation Administration	3
SPMT 551	Sport in the Global Marketplace	3
SPMT 611	Sport Marketing and Sales	3
SPMT 612	Economics and Financial Management in the Sport Industry	3
SPMT 613	Strategic Leadership in Sport Organizations	3
SPMT 614	Legal Issues in Sport	3
SPMT 616	Sport Operations, Venues, and Event Management	3
SRST 598	Special Topics	1-6

SRST 606	Foundations of Sport and Recreation Studies	3

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies.

Sport Communication Minor (CEHD)

Banner Code: SCOM

Academic Advising

Phone: 703-993-5200
Email: srht@gmu.edu
Website: https://srtm.gmu.edu/sport-management/degree-options/sport-communication-undergraduate-minor/

This minor offers students the opportunity to examine important and timely sports-related issues in an ethical context as well as analyze sports from cross-cultural perspectives. Students will gain an understanding of sport mass media, sport communication, sports reporting, interpersonal and organizational communication, and the impact each has in our global society. The courses cover theory and practice in cross-platform communication, sports ethics and theoretical underpinnings, public relations, and marketing. The minor provides applied fundamentals for students seeking employment in the commercial world of sports (areas such as management or promotion of athletic organizations) and in sports media. The sport communication minor is offered jointly with the Department of Communication in the College of Humanities and Social Sciences.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 18

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Core Courses

Code	Title	Credits
COMM 303	Writing across the Media	3
COMM 320	Business and Professional Communication	3
SPMT 201	Introduction to Sport Management	3
or SPMT 304	Sport, Culture, and Society	
SPMT 430	Sport Communication	3
Total Credits		12

Electives

Code	Title	Credits
Select two electives from the following: [1]		6
COMM 204	Introduction to Public Relations	
COMM 305	Foundations of Intercultural Communication (Mason Core)	
COMM 351	News Writing and Reporting	
COMM 356	Video: Performance and Writing	
COMM 359	Media Management	
COMM 361	Online Journalism	
COMM 371	Sports Writing and Reporting	
COMM 372	Sports and the Media	
SPMT 201	Introduction to Sport Management	
SPMT 302	Philosophical and Ethical Dimensions of Sport	
SPMT 304	Sport, Culture, and Society	
SPMT 318	Diversity and Inclusion Issues in Sport	
SPMT 405	Sport Venues and Events	
SPMT 412	Sport Marketing and Sales	
SPMT 420	Economics and Finance in the Sport Industry	
SPMT 440	Global Perspectives in Sport	
SPMT 455	Governance and Policy in Sport Organizations	
Total Credits		6

[1]
- Special topics courses, when relevant, may be used to fulfill this requirement with the prior written approval of the director.
- Depending on which courses students took as a required course (above), they may use either SPMT 201 Introduction to Sport Management or SPMT 304 Sport, Culture, and Society as an elective.
- COMM majors are required to take one elective SPMT course.

Sport Management Graduate Certificate

Banner Code: E1-CERG-SPMG

Academic Advising

Phone: 703-993-5200
Email: mgnoleba@gmu.edu
Website: srtm.gmu.edu/sport-recreation-studies/

Concentrations

Students complete the certificate by choosing one of the following concentrations:

Concentration in International Sport Management

This concentration offers students the opportunity to study the managerial aspects of international sport enterprises. Theoretically-grounded sport management skills will be examined and applied within the global context of the sport industry.

Concentration in Sport Coaching

This concentration provides students the opportunity to prepare for a career in coaching. Theoretically-grounded content addresses advanced skills applied to a variety of coaching situations.

Admissions & Policies

Policies

For policies governing all graduate certificates, see AP.6.8 Requirements for Graduate Certificates.

Requirements

Certificate Requirements

Total credits: 15

This certificate may be pursued on a full-or part-time basis.

Students pursuing this graduate certificate may choose from any of the following concentrations:

Concentration in International Sport Management (ISPM)

Code	Title	Credits
Required Courses		
SPMT 551	Sport in the Global Marketplace	3
SPMT 613	Strategic Leadership in Sport Organizations	3
SPMT 620	Ethical Issues in Global Sport	3
Electives		
Select two courses from the following:		6
SPMT 555	The Australian Model of Sport	
SPMT 556	The Global Soccer Industry	
SPMT 651	Sport and International Development	
SPMT 652	Governance and Policy in International Sport	
Other SPMT graduate courses with advisor approval		
Other SRST graduate courses with advisor approval		
Other PRLS graduate courses with advisor approval		
Total Credits		15

Concentration in Sport Coaching (SPTC)

Code	Title	Credits
Required Courses		
SPMT 614	Legal Issues in Sport	3
SPMT 618	Psychology of Coaching	3
SPMT 631	Theoretical Models of Sport Coaching	3
Electives		
Select two courses from the following:		6
SRST 598	Special Topics	
SPMT graduate courses		
SRST graduate courses		
PRLS graduate courses		
Additional courses with advisor approval		
Total Credits		15

Sport Management Minor

Banner Code: SPMT

Academic Advising

Phone: 703-993-5200
Email: srht@gmu.edu
Website: https://srtm.gmu.edu/sport-management/degree-options/minor/

This minor introduces students to the sports industry and the sport management academic discipline. Students will learn about the principles of finance, economics, policy, and governance as they relate to sports organizations. They will then have the opportunity to choose from a series of sport management courses to complete the minor, based on their area of theoretical or practical interest.

Admissions & Policies

Admissions

This minor is available to all Mason undergraduate students, with the exception of those enrolled in the Health, Fitness, and Recreation Resources, BS with a concentration in Sport Management.

Policies

Eight credits of coursework must be unique to the minor and students should complete all coursework with a minimum GPA of 2.00. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 18

Coursework

Code	Title	Credits
SPMT 201	Introduction to Sport Management	3
SPMT 420	Economics and Finance in the Sport Industry	3
SPMT 455	Governance and Policy in Sport Organizations	3
Select three from the following:		9
PRLS 410	Administration of SRT Organizations I	
PRLS 460	Sport and Recreation Law	
SPMT 302	Philosophical and Ethical Dimensions of Sport	
SPMT 304	Sport, Culture, and Society	
SPMT 405	Sport Venues and Events	
SPMT 412	Sport Marketing and Sales	
SPMT 430	Sport Communication	
SPMT 440	Global Perspectives in Sport	

SPMT 480	Special Topics in Sport Management	
Total Credits		18

Sports Analytics Minor (CEHD)

Banner Code: SPTA

Academic Advising

Phone: 703-993-5200
Email: srht@gmu.edu
Website: https://srtm.gmu.edu/sport-management/degree-options/sport-analytics-minor

This minor provides students with a foundational understanding of the sports industry coupled with the study of how data can be used in the world of sports to enable teams, leagues, and other sports businesses to acquire an advantage over their competitors. With the successful completion of this minor, students should be able to use various statistical models and other analytic tools to help sports organizations improve performance in some of the following areas: season ticket sales, luxury box sales, marketing, talent identification, scouting of opponents, the prediction of industry trends, and customer service.

This minor is offered jointly with the School of Business, College of Science, and Volgenau School of Engineering.

Admissions & Policies

Admissions

This minor is available to all Mason undergraduate students.

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 18

Required Courses

Code	Title	Credits
SPMT 201	Introduction to Sport Management	3
SPMT 425	Sport Analytics	3
Select one of the following groups:		6
BUS 210 & BUS 310	Business Analytics I and Business Analytics II	
STAT 250 & STAT 350	Introductory Statistics I (Mason Core) and Introductory Statistics II	
Total Credits		12

Electives

Code	Title	Credits
Select two courses from the following:		6
CDS 130	Computing for Scientists	
CDS 292	Introduction to Social Network Analysis (Mason Core)	
SRST 450	Research Methods	
SYST 473	Decision and Risk Analysis	
Total Credits		6

Tourism and Events Management Minor

Banner Code: TEM

Academic Advising

Phone: 703-993-5200
Email: srht@gmu.edu
Website: https://srtm.gmu.edu/tourism-and-events-management/degree-options/minor

Admissions & Policies

Admissions

This minor is available to all Mason undergraduate students, with the exception of those enrolled in the Tourism and Events Management, BS.

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. For policies governing all minors, see the AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 15

Required Courses

Code	Title	Credits
TOUR 200	Introduction to Tourism Management	3
TOUR 220	Introduction to Event Management	3
TOUR 340	Sustainable Tourism	3
Total Credits		9

Electives

Code	Title	Credits
Select two courses from the following:		6
TOUR 190	Wedding Planning	
TOUR 210	Global Understanding through Travel and Tourism (Mason Core)	
TOUR 221	Event Implementation and Evaluation	
TOUR 230	Introduction to Hospitality Management	

TOUR 311	Women and Tourism (Mason Core)	
TOUR 313	Event Technical Production	
TOUR 330	Resort Management	
TOUR 352	Heritage and Cultural Tourism	
Total Credits		6

Tourism and Events Management, BS

Banner Code: E1-BS-TEM

Academic Advising

Phone: 703-993-5200
Email: srht@gmu.edu
Website: https://srtm.gmu.edu/tourism-and-events-management/degree-options/

The B.S. in Tourism and Events Management degree prepares students to become future managers and leaders in one of the world's largest and most diverse industries: tourism, events and hospitality. Our Tourism and Events Management (TEM) major focuses on the management, planning, implementation, marketing, and evaluation of tourism, events, and hospitality businesses. Courses in Tourism and Events Management are designed to provide a variety of management competencies and fieldwork experiences, which lay the foundation for a successful career in the wide and dynamic world of tourism, events, and hospitality.

This is a Green Leaf Program.

Admissions & Policies

Policies

For all policies regarding undergraduate degrees, see AP.5 Undergraduate Policies.

Requirements

Degree Requirements

Total credits: 120

This is a Green Leaf program.

Mason Core

Code	Title	Credits
Written Communication		6
Oral Communication		3
Information Technology		3
Quantitative Reasoning:		
STAT 250	Introductory Statistics I (Mason Core)	3
or EDRS 220	Introduction to Applied Quantitative Analysis (Mason Core)	
Literature		3
Arts		3
Western Civilization/World History		3
Social and Behavioral Sciences		3
TOUR 311	Women and Tourism (Mason Core) (recommended course) [1]	
Global Understanding		3
TOUR 210	Global Understanding through Travel and Tourism (Mason Core) (recommended course) [1]	
Natural Science		7
Synthesis/Capstone [2]		
Total Credits		37

1 May not be used to satisfy both degree and Mason Core requirements.

2 Fulfilled by TOUR 490 Hospitality, Tourism, and Events Management Internship (Mason Core), listed in professional sequence requirements.

Professional Sequence

Code	Title	Credits
TOUR 110	Professionalism and Civility	1
TOUR 200	Introduction to Tourism Management	3
TOUR 214	Hospitality Tourism and Events Management Accounting	3
TOUR 220	Introduction to Event Management	3
TOUR 230	Introduction to Hospitality Management	3
TOUR 241	Hospitality, Tourism, and Events Management Practicum	3
TOUR 320	Hospitality, Tourism and Event Management Information Systems	3
TOUR 330	Resort Management	3
TOUR 340	Sustainable Tourism	3
TOUR 412	Hospitality, Tourism, and Events Management Marketing and Sales	3
TOUR 414	Hospitality, Tourism, and Events Management Finance	3
TOUR 420	Tourism Planning/Policy	3
TOUR 470	Career Preparation	1
TOUR 490	Hospitality, Tourism, and Events Management Internship (Mason Core)	12
SRST 450	Research Methods (Satisfies the university Writing Intensive requirement)	3
PRLS 410	Administration of SRT Organizations I	3
PRLS 460	Sport and Recreation Law	3
Total Credits		56

TEM Electives

Code	Title	Credits
Select 6 courses from:		18
TOUR 190	Wedding Planning	
TOUR 210	Global Understanding through Travel and Tourism (Mason Core) [1]	
TOUR 221	Event Implementation and Evaluation	
TOUR 301	Hotel Management	
TOUR 310	Food and Beverage Management	
TOUR 311	Women and Tourism (Mason Core) [1]	
TOUR 313	Event Technical Production	

TOUR 331	Cruise Ship Management
TOUR 341	Film and Medical Tourism
TOUR 342	Sacred Spaces and Dark Tourism
TOUR 343	Wine and Food Tourism
TOUR 352	Heritage and Cultural Tourism
TOUR 355	Event Logistics
TOUR 362	Cultural and Environmental Interpretation
TOUR 410	Tourism Economics
TOUR 430	Destination Marketing and Management
TOUR 440	Meetings and Conventions
TOUR 445	Restaurant Management
TOUR 450	Hospitality Human Resources Management
TOUR 460	Hospitality Facilities Operations
TOUR 480	Special Topics
Total Credits	18

[1] Can count as Mason Core or TEM Elective, but cannot be double counted.

General Electives

Code	Title	Credits
Select an additional 9 credits.		9
Total Credits		9

4-Year Plans

Bachelor of Science in Tourism and Events Management Sample Plan of Study

The sample plan below is a recommended sequencing of courses based on pre-requisites and scheduling. This may not fit every student's needs and is a guideline, not a requirement. Students should confirm major requirements with their academic advisor and with PatriotWeb Degree Evaluation to ensure they enroll in the proper courses and are on track to graduate.

To be supplemented by Mason Core and Electives.

First Year

Fall Semester	Credits	Spring Semester	Credits
TOUR 110	1	TOUR 230	3
TOUR 200	3	TEM Elective #1	3
TOUR 220	3		
	7		6

Second Year

Fall Semester	Credits	Spring Semester	Credits
TOUR 214	3	TOUR 241	3
TEM Elective #2	3	TOUR 340	3
TEM Elective #3	3	General Elective #1	3
	9		9

Third Year

Fall Semester	Credits	Spring Semester	Credits
TOUR 320	3	TEM Elective #4	3
STAT 250 or EDRS 220	3	TEM Elective #5	3
TOUR 330	3	TOUR 414	3
TOUR 420	3	PRLS 410	3
General Elective #2	3	SRST 450	3
	15		15

Fourth Year

Fall Semester	Credits	Spring Semester	Credits
TOUR 470	1	TOUR 490	12
TOUR 412	3		
PRLS 460	3		
TEM Elective #6	3		
General Elective #3	3		
	13		12

Total Credits 86

Detailed four year plans and degree planning checklists can be found at https://advising.gmu.edu/current-student/majors-at-mason/.

College of Health and Human Services

1000 Peterson Hall
Fairfax Campus
MSN: 6C4

Phone: 703-993-1901
Website: chhs.gmu.edu

Administration

- Germaine Louis, Dean
- Robert Weiler, Senior Associate Dean, Academic Affairs
- Rosemary Higgins, Associate Dean, Research
- Kimberly Holmes, Associate Dean, Student Affairs
- Catherine Tompkins, Associate Dean, Faculty Affairs

College Code: HH

Recognized as the “health college” of George Mason University, the College of Health and Human Services (CHHS) offers highly specialized interdisciplinary undergraduate and graduate degree programs that prepare students for professional careers aimed at improving the public’s health and well-being across the lifespan, while eliminating health disparities and promoting social justice. Graduates from our programs work in official health and social agencies, non-governmental health organizations, private industry, colleges and universities, and in a variety of clinical health care settings.

CHHS offers undergraduate and graduate degree programs in community health, global health, health administration, health informatics, health policy, health system management, nursing, public health and social work and selected academic minors, concentrations, and graduate certificates. To learn more about our degree programs, please visit https://chhs.gmu.edu/academics (https://chhs.gmu.edu/academics/) or call the CHHS Office of Student Affairs at 703-993-1901.

Throughout the year, CHHS hosts degree program information sessions to interested students. For dates and times and registration information, visit the Prospective Student Information Sessions (https://chhs.gmu.edu/admissions/prospective-student-information-sessions/) website.

Academic Programs

CHHS is committed to educating the next generation of health professionals, researchers, and educators. Our School of Nursing produces more new RNs each year than any other program in Virginia, and these graduates have one of the state's highest pass rates on the nursing licensure exam. Through the PhD program in nursing, the college is helping to fill the need for nursing faculty and researchers, and through the DNP program, provides an opportunity for nurses to become experts as nurse practitioners, nurse administrators, or nurse educators. The Department of Health Administration and Policy prepares students for careers as leaders of health care organizations and as health policymakers at the state and national levels, while the Department of Global and Community Health trains public health practitioners with a global reach, who can intervene and improve the health of local and international populations. The Department of Nutrition and Food Studies integrates education, research, and outreach in preparing students to improve the health and well-being of populations through food and nutrition. The Department of Social Work educates undergraduate and graduate students to be professional social workers practicing in either community organizations or clinical settings. The CHHS academic units offer a variety of specializations within degree programs, including gerontology, epidemiology and biostatistics, health informatics, clinical social work, and conflict analysis and resolution.

Faculty

College Faculty

Professors

Alemi, Cheskin, Cuellar, Drews-Botsch, Gerber, Griffin, Guccione, Higgins, Hong, Jacobsen, Kitsantas, Kubik, Louis, Maddox, Metcalf, Roess, Rome, Rose, Tompkins, Weiler, Wolf-Branigin

Associate Professors

Anand, Blair, Bloom, Cantiello, Cleaveland, Davis, Douglas, Freedman, Gewa, Gimm, Goldberg, Gupta, Hines, Huddleston, Ihara, Inoue, Keyser, Kirsch, Lahm, Lindley, Mallinson, Matto, Middle, Min, Oetjen, Oh, Pollack, Poms, Rodan, Sheingold, Slavin, C. Sutter, R. Sutter, Weinstein, Winter, Wojtusiak, Xue

Assistant Professors

Avramovic, Bethija, Black, Brown, Carmack, Catona, S. Chang, Chin, Davidson, de Jonge, Fleming, Freedman, Eklou, Fine, Garrison, Green-Lawson, Haas, Harman, Kelly, King, Krall, LaCharite, Madison, Osborn-Harrison, Rossheim, Scafide, Shiver, Stoehr, Tomaszewski, von Fricken, Wagner, Waithaka, Williams

Instructors

K. Chang, Goodknight

Administrative Faculty

Beckwith, Brown-Rolle, Cornejo, Dugger, Fleck, Gillette, Green, Helmick, Holmes, Johnson, Joyner, Kargbo, Okuda, Park, Perez-Brodeur, Sawyer, Stokes, Thompson, Walsh, Williams

ASTHO Affiliate Faculty

Allen, Dennison, Fraser, Lane, Plescia, Ruebush, Yeide

Emeriti

Ailinger, Baghi, Boland, Boyd, Brenkus, Carty, Chong, Howell, Jenkins, Langley, Moore, Moss, Nichols, Normile, Parker-Smith, Raskin, Redmond, Ritchie, Silva, Sluzki, Sorrell, Vail, Walker, Whittington, Wu

Requirements & Policies

Policies

Professional Conduct Policy

All CHHS students are expected to conduct themselves professionally at all times. This means that certain behavior is prohibited, including verbal abuse, insubordination, and behavior that threatens the safety of a client, another student, a faculty member, or other health care provider when the behavior occurs within the context of an academic program. CHHS reserves the right to place on probation, suspend, or terminate any student in its programs who engages in such conduct. Students disciplined for such reasons have the right to appeal to their department chair or director.

Student Affairs

The Office of Student Affairs supports students, faculty, and staff members on a variety of admissions, academic, and policy issues. Student Affairs is involved in recruiting new students; pre-admissions advising; processing applications for graduate programs and undergraduate nursing programs; and conducting orientations for newly admitted students.

Student Affairs maintains the college's student records; reviews and recommends action on student requests for exceptions to academic policy; processes standard academic actions; and approves student records for degree completion prior to graduation. Student grade appeals fall under university policy as described in AP.3.9 Grade Appeals.

Each CHHS student is assigned an academic advisor, with whom he or she should meet at least once per semester in order to ensure that program requirements are met. The assigned advisor may be a faculty member, a departmental program coordinator, or an advisor in the Office of Student Affairs.

Student Responsibility

All students are required to have an active Mason e-mail account (https://its.gmu.edu/service/masonlive-email-for-students/) and to update any change of address on-line through Patriot Web (https://patriotweb.gmu.edu/). The college will not communicate with students via a personal e-mail address, so it is important that students check their Mason e-mail regularly. Students are responsible for knowing the university academic policies and the policies governing their program as stated in the university catalog. They are also responsible to know the semester academic calendar including withdrawal deadlines; to review

their Mason transcript on-line to ensure transfer of credit accuracy; and to monitor their degree progression through the degree evaluation tool on Patriot Web (https://patriotweb.gmu.edu/).

Background Checks

Many clinical agencies and practicum sites mandate that students working there have a criminal background check. All students enrolled in the School of Nursing are required to complete a criminal background check prior to beginning the program. Students enrolled in other CHHS programs may be required to complete background checks before entering a practicum environment. Information obtained from the background check is strictly confidential but may result in a student's inability to perform clinical or practicum activities and, therefore, will disqualify the student from entering or continuing in the program. School of Nursing students are sent information regarding the criminal background check process, and associated fees, upon admission. Other students are informed individually as they are considered for practicum activities requiring background checks. Students are responsible for notifying the assistant dean of student affairs of any arrests, regardless of adjudication, that occur after acceptance and during enrollment in the program. Failure to promptly notify the assistant dean of student affairs may be grounds for termination from the program.

Health Records

To comply with the policies established by the Commonwealth of Virginia, all students must provide current immunization records to the university's Student Health Services at the time of admission to the college. Immunizations may be obtained through Student Health Services (http://shs.gmu.edu/) on any of the Mason campuses. All students in the School of Nursing also must submit immunization records to the School of Nursing at the time of admission. Additional documentation of good health may be required.

Students should keep copies of their health records should agencies require them for clinical and practicum assignments. All costs associated with immunizations and certifications are the student's responsibility.

Insurance and Liability

Students are strongly advised to maintain health insurance coverage at all times. All students enrolled in the School of Nursing are required to maintain health insurance at all times. A student health insurance plan (http://shs.gmu.edu/insurance/) is available to eligible students through Mason. Students are responsible for their own health care, including emergency care, and CHHS assumes no financial responsibility for the health care of students. Enrolled students who are performing internships and similar experiential learning as a required part of their academic programs are considered agents of the university. They are covered for professional liability by the Commonwealth of Virginia Risk Management Plan (http://risk.gmu.edu/) while engaged in their prescribed educational duties.

Academic Outreach

The mission of the Office of Academic Outreach is to provide off-campus graduate coursework that supports the continued professional development and competency of practicing health professionals. This purpose is accomplished through collaborative relationships with expert health and instructional resources—individual and organizational—both internal and external to the University.

Academic Policies

Students should become familiar with the university's general academic policies in addition to those specific to each academic unit. See Academic Policies.

Graduate Admission

Admission decisions are made by the faculty committee on admissions of the respective graduate programs. Denial of admission is not subject to appeal. Applicants denied admission to a program are not permitted to enroll in courses in that program through Non-Degree Studies.

If an applicant is offered graduate admission, the college reserves the right to withdraw that offer of admission or to terminate a student in a graduate program if:

- During his or her academic studies, the admitted applicant has a significant drop in academic performance or fails to graduate with a degree prior to the first day of classes for the term admitted.
- There has been a misrepresentation in the application process.
- Prior to the first day of classes for the term admitted, the college learns that the admitted applicant has engaged in behavior that indicates a serious lack of judgment or integrity, irrespective of the outcome of any disciplinary process related to such behavior.

The university further reserves the right to require the applicant to provide additional information (and/or authorization for the release of information) about any such matter.

Non-Degree Enrollment

Non-degree status enables students who have no immediate degree objective or may need to satisfy prerequisites for admission to a degree program to enroll in courses for which they are qualified without seeking formal admission to a degree program. Applicants should be aware of the fact that non-degree admission does not guarantee enrollment in any specific course or future degree program. Enrollment in specific courses is based on eligibility criteria and availability of space in courses. **In some areas of study, enrollment may be restricted or prohibited.**

Non-degree applications and their established deadlines are available online through the Office of Admission (https://www2.gmu.edu/admissions-aid/). Detailed information regarding non-degree admission policies and procedures can be found in Non-Degree Enrollment.

The Department of Global and Community Health, the Department of Health Administration and Policy, the Department of Nutrition and Food Studies, and the Department of Social Work welcome non-degree students in their classes on a space-available basis. Programs in the College of Health and Human Services which have course restrictions are listed below.

Graduate Non-Degree Restrictions

All Graduate Programs

Students may take a maximum of 9 credit hours in non-degree studies. A student cannot graduate or receive a degree while in non-degree studies. Non-degree graduate students may not register for classes numbered 800 or higher.

Nursing, MSN

A student may be eligible to enroll in approved non-degree MSN courses when space is available if the student:

- Has not applied for the MSN program and has not been previously denied admission to the MSN program;
- Holds a BSN from an accredited college and achieved a cumulative degree GPA of 3.00;
- Holds a current RN license.

MSN non-degree students may not take classes numbered 800 or higher. In addition, they may take a maximum of 9 credit hours in non-degree studies.

Undergraduate Non-Degree Restrictions

Nursing, BSN

Students must be admitted into the BSN program in order to register for undergraduate nursing (NURS) courses.

Academic Units

- Department of Global and Community Health
- Department of Health Administration and Policy
- Department of Nutrition and Food Studies
- Department of Rehabilitation Science
- Department of Social Work
- School of Nursing

Department of Global and Community Health

Phone: 703-993-3126
Website: publichealth.gmu.edu

Administration

- Carolyn Drews-Botsch, Chair

The Department of Global and Community Health (GCH) brings together faculty and students from the disciplines of biostatistics, epidemiology, environmental health, and the behavioral and social sciences. The educational mission of GCH is to provide high-quality undergraduate and graduate degrees and certificates in the core disciplines of community, global, and public health that prepare students to enter the domestic and global public health workforce. The research mission of GCH is to conduct innovative research that addresses pressing and emerging domestic and global health problems and security threats. Establishing partnerships that promote and protect health and well-being, especially among underserved and disadvantaged populations, is the principal focus of our service mission.

Faculty

Department Faculty

Professors

Drews-Botch (chair), Higgins (associate dean for research), Griffin, Jacobsen, Louis (dean), Metcalf, Roess, Weiler (senior associate dean for academic affairs)

Associate Professors

Bloom, Gupta, Lindley, Pollack, Poms, Weinstein (Center for the Study of Chronic Illness and Disability, director), Winter

Assistant Professors

Carmack, Catona, Chin, Fleming, Krall, Rossheim, von Fricken, Williams

Administrative Faculty

Beckwith

Emeriti

Baghi, Howell, Sluzki

Requirements & Policies

Requirements

Academic Advising

Each student is assigned an academic advisor who is a faculty member within their academic department or a professional academic advisor within the Office of Student Affairs (OSA). Academic advisor assignments are listed on the CHHS website (https://chhs.gmu.edu/students/academic-advising/), and students are expected to meet with their advisor regularly (at least once each semester) to seek advice about academic schedules and program plans. Students also should meet with their advisor if they are experiencing academic difficulty.

Student Responsibilities

All students are responsible for knowing the requirements of their major as specified in the university catalog for their catalog year; academic deadlines outlined in the semester academic calendar (http://registrar.gmu.edu/calendars/); and university policies and procedures as stated in the catalog.

Students also should run their own degree evaluation (http://registrar.gmu.edu/students/degree-evaluation/) to identify graduation requirements and progress towards their degree. While academic advisors can give advice to students, **students are responsible for the academic planning decisions they make**. Academic advisors cannot be held responsible for mistakes made by students in selecting courses that may not count toward their degree and thus delay a desired graduation date.

Programs

- Community Health, BS
- Global Health Minor
- Global Health, MS
- Public Health Graduate Certificate
- Public Health Minor
- Public Health, MPH
- Public Health, PhD

Community Health, BS

Banner Code: HH-BS-COMH

Academic Advising

Website: https://chhs.gmu.edu/students/academic-advising/undergraduate-advising/global-and-community-health-advisors (https://chhs.gmu.edu/students/academic-advising/undergraduate-advising/global-and-community-health-advisors/)

Website: https://publichealth.gmu.edu

Community, global, and public health are the fastest growing, most exciting, and versatile areas of study on college campuses across the United States today. Community health is the applied science of protecting and improving the health and well-being of individuals, families, populations, and communities using evidence-based health promotion and disease prevention programs and policies. Accredited by the Council on Education for Public Health (CEPH), the BS in Community Health prepares students with the knowledge and understanding of community and public health systems, issues and policies related to health promotion, and health education and disease prevention in populations of all sizes. Community, public, and global health specialists work with a variety of health-related organizations and are expected to confront complex behavioral, cultural and social health and well-being issues at the local, national and global levels.

Community Health students develop the competencies and skills necessary for entry-level positions in a variety of professional settings such as local, state, and federal health and social service agencies and non-governmental and voluntary health organizations, health care, and private industry. Students completing this degree are eligible for and strongly encouraged to take the Certified Health Education Specialist (CHES) exam.

The BS in Community Health is unique in that it provides a solid foundation for students interested in pursuing graduate degrees in public health or advanced training in a health profession (see the Clinical Science concentration).

Optional Concentrations

Students may wish to complete an optional concentration in Global Health, Clinical Science, Nutrition, or Physical Activity and Public Health. Selection of a concentration is not required.

Global Health Concentration

The Global Health concentration focuses on understanding diseases and other health security threats reflecting the new global landscape, such as tobacco use and obesity, and emerging pandemics such as COVID-19, avian influenza, and Ebola. Students complete the required coursework for the BS in Community Health and specialized coursework in global health in addition to interdisciplinary coursework. This concentration is designed for students interested in public health at the global level and is particularly focused on improving health conditions in less developed countries.

Clinical Science Concentration

The Clinical Science concentration prepares students for graduate clinical training in a health profession field such as medicine, dentistry, nursing, optometry, occupational and physical therapy, and pharmacy. This concentration provides students the flexibility to design their curriculum to satisfy prerequisites for these programs. Students choosing this option are encouraged to check coursework requirements for their desired health profession because such requirements vary.

Nutrition Concentration

The Nutrition concentration provides students interested in nutritional health with a strong knowledge base in factors affecting individual, community, and global nutrition, as well as the tools to plan effective interventions.

Physical Activity and Public Health Concentration

Numerous public health burdens such as cardiovascular disease, diabetes, cancer, and depression can be prevented, delayed, or managed with proper physical activity. The Physical Activity and Public Health concentration prepares students to effectively advocate for policies, programs, and legislation that enables equitable opportunities for physical activity across all levels of society. The completion of this concentration prepares students to take the Physical Activity and Public Health Specialist certification.

Admissions & Policies

Policies

- For all policies governing bachelor's degrees, see A.5.3.2 Requirements for Bachelor's Degrees.
- A criminal background check and proof of vaccination status may be required of students prior to beginning the internship if required by the internship organization.
- A minimum grade of C must be earned in all major courses.
- Students must check with their advisor to ensure that all requirements have been met prior to graduation and should assess their own degree evaluation in Patriot Web each semester.

Requirements

Degree Requirements

Total credits: 120

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Students must fulfill all requirements for bachelor's degrees,
 including the Mason Core requirements.
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Mason Core

Code	Title	Credits
Written Communication [1]		
ENGH 101	Composition (Mason Core)	3
ENGH 302	Advanced Composition (Mason Core) (social science section recommended)	3
Oral Communication		
COMM 100	Public Speaking (Mason Core)	3
or COMM 101	Fundamentals of Communication (Mason Core)	
Quantitative Reasoning		
Any Mason Core Quantitative Reasoning course		3-4
Information Technology		
Any Mason Core Information Technology course		3-7
Literature		
Any Mason Core Literature course		3
Arts		
Any Mason Core Arts course		3
Natural Science [2]		

Any Mason Core non-lab science course [3]		3
Any Mason Core lab science course		4
Western Civilization		
Any Mason Core Western Civilization course		3
Global Understanding		
GCH 205	Global Health (Mason Core)	3
Social and Behavioral Sciences		
Any Mason Core Social and Behavioral Sciences course		3
Total Credits		30-42

1 Nonnative speakers of English with limited proficiency in the language may substitute ENGH 100 for ENGH 101. Students must attain a minimum grade of C in ENGH 100 or ENGH 101, as well as in ENGH 302, to fulfill degree requirements.

2 Only for students who choose the Global Health concentration, Nutrition concentration, or no concentration. Students in the Clinical Science concentration complete the Mason Core Natural Science requirement within their concentration courses.

3 The recommended course for students in the Nutrition and Physical Activity and Public Health concentrations is NUTR 295 Introduction to Nutrition (Mason Core). This is a prerequisite for required courses in these concentrations.

Required Courses

Code	Title	Credits
Select one of the following:		8
BIOL 124 & BIOL 125	Human Anatomy and Physiology and Human Anatomy and Physiology	
RHBS 270 & RHBS 271	Applied Human Anatomy and Physiology I and Applied Human Anatomy and Physiology II	
Total Credits		8

Community Health Major Core

Completion of this curriculum also prepares students to sit for the Certified Health Education Specialist (CHES) exam.

Code	Title	Credits
GCH 300	Introduction to Public Health	3
GCH 310	Health Behavior Theories	3
GCH 332	Health and Disease	3
GCH 335	Applied Health Statistics	3
GCH 350	Health Promotion and Education	3
GCH 360	Health and Environment	3
GCH 376	Health Ethics, Leadership, and Advocacy	3
GCH 380	Public Health Research Methods	3
GCH 411	Health Program Planning and Evaluation (fulfills writing intensive requirement)	3
GCH 412	Fundamentals of Epidemiology	3
GCH 445	Social Determinants of Health	3
GCH 465	Community Health Capstone (Mason Core)	3
or GCH 466	Physical Activity in Public Health Capstone	
Total Credits		36

Completing the Degree without a Concentration

Students completing the BS without a concentration follow the coursework outlined below.

Code	Title	Credits
Additional Courses		
Select nine credits of 300- or 400-level courses from the following		9
GCH		
HAP		
HEAL		
NUTR		
RHBS		
Other 300- or 400-level course approved by advisor		
General Electives		
Select 30 credits of General Electives		30
Total Credits		39

Global Health Concentration (GLOH)

The optional global health concentration enables students to look at public health issues through a global lens and increases understanding of the differences in health, well-being, disease, and interventions that exist within an international context.

Code	Title	Credits
Concentration Courses		
GGS 101	Major World Regions (Mason Core)	3
or GGS 103	Human Geography (Mason Core)	
or GGS 340	Health Geography	
GCH 305	Introduction to OneHealth	3
GCH 405	Global Health Interventions: History and Systems	3
GCH 406	Global Health Interventions: Emerging Issues	3
GCH 426	Global Emerging Infectious Diseases	3
One 3-credit 300- or 400-level GCH course		3
General Electives		
Select 21 credits of General Electives		21
Total Credits		39

Clinical Science Concentration (CLNS)

The optional clinical science concentration prepares students to apply for graduate programs in fields such as medicine, physical therapy, occupational therapy, dentistry, pharmacy, and optometry. This concentration does not guarantee entrance into a graduate health professional program. It is important to note that, depending on the type of graduate program in which a student is interested, additional coursework may be required. It is the student's responsibility to determine the essential criteria for admission to their target schools in consultation with the health professions advising office.

Code	Title	Credits
Concentration Courses		
Select a minimum of 20 credits of the following:		20

BIOL 103 & BIOL 105	Introductory Biology II-Survey of Cell and Molecular Biology (Mason Core) and Introductory Biology II Laboratory (Mason Core) [1]
BIOL 213	Cell Structure and Function (Mason Core) [1]
BIOL 246 & BIOL 306	Introductory Microbiology and Biology of Microorganisms Laboratory
BIOL 305 & BIOL 306	Biology of Microorganisms and Biology of Microorganisms Laboratory
BIOL 311	General Genetics
BIOL 483	General Biochemistry
CHEM 211 & CHEM 213	General Chemistry I (Mason Core) and General Chemistry Laboratory I (Mason Core) [1]
CHEM 212 & CHEM 214	General Chemistry II (Mason Core) and General Chemistry Laboratory II (Mason Core) [1]
CHEM 313 & CHEM 315	Organic Chemistry I and Organic Chemistry Lab I
CHEM 314 & CHEM 318	Organic Chemistry II and Organic Chemistry Lab II
PHYS 243 & PHYS 244	College Physics I (Mason Core) and College Physics I Lab (Mason Core) [1]
PHYS 245 & PHYS 246	College Physics II (Mason Core) and College Physics II Lab (Mason Core) [1]
General Electives	
Select 26 credits of General Electives	26
Total Credits	46

[1] At least 8 of these credits must be selected from these courses to fulfill the Mason Core Natural Science requirement.

Nutrition Concentration (NUTR)

The optional nutrition concentration provides students interested in nutritional health with a strong knowledge base in factors affecting individual, community, and global nutrition, as well as the tools to plan effective interventions.

Code	Title	Credits
Concentration Courses		
NUTR 315	Fundamentals of Cooking	3
NUTR 410	Introduction to Food Safety and Defense	3
NUTR 420	Strategies for Nutrition Education	3
NUTR 421	Community Nutrition	3
NUTR 422	Nutrition throughout the Life Cycle	3
NUTR 423	Nutrition and Chronic Illnesses	3
NUTR 451	Nutrition Assessment	3
Nutrition Electives		
Students should select from the following list or get advisor approval:		3
ANTH 366	Food and Human Evolution	
GCH 497	Pre-Internship Seminar	
GCH 498	Global and Community Health Internship	
NUTR 383	Taste and Place	
NUTR 414	Food, Culture, Nutrition and the Mediterranean Diet	
NUTR 435	Urban Agriculture	
NUTR 466	Nutrition and Weight Management: Obesity, Anorexia, and Bulimia	
NUTR 494	Special Topics in Nutrition and Food Studies	
General Electives		
Select 15 credits of General Electives		15
Total Credits		39

Physical Activity and Public Health (PAPH)

Numerous public health burdens such as cardiovascular disease, diabetes, cancer, and depression can be prevented, delayed, or managed with proper physical activity. The optional physical activity and public health concentration prepares students to effectively advocate for policies, programs, and legislation that enables equitable opportunities for physical activity across all levels of society. Students in this concentration should take GCH 466 Physical Activity and Public Health Capstone. The completion of this concentration prepares students to take the Physical Activity and Public Health Specialist certification.

Code	Title	Credits
Concentration Courses		
KINE 200	Methods of Exercise Instruction	3
KINE 310	Exercise Physiology I	3
KINE 320	Principles of Human Nutrition	3
or NUTR 295	Introduction to Nutrition (Mason Core)	
KINE 350	Exercise Prescription and Programming	3
KINE 370	Exercise Testing and Evaluation	3
KINE 380	Exercise Prescription and Programming for Special Populations	3
ATEP 300	Functional Anatomy	3
GCH 410	Physical Activity and Public Health	3
General Electives		
Select 18 hours of general electives		18
Total Credits		42

4-Year Plan

Bachelor of Science in Community Health Sample Plan of Study

Detailed four year plans can be found at https://chhs.gmu.edu/students/academic-advising/undergraduate-advising/program-planning-advising-sheets (https://chhs.gmu.edu/students/academic-advising/undergraduate-advising/program-planning-advising-sheets/)

Global Health Minor

Banner Code: GLOH

Academic Advising

Website: chhs.gmu.edu/students/academic-advising/undergraduate-advising/global-and-community-health-advisors

The global health minor requires 18 credits of coursework and is designed to increase students' awareness of the major health problems and issues that transcend national boundaries. Students develop an understanding of the critical global health concerns that affect health equity and health care for all people worldwide. Students examine the public health implications of globalization and learn to think critically about how specific global health challenges may be solved in culturally appropriate ways. The minor will enhance the education of students who are planning to work in a variety of settings with a global health focus, including health care, government, education, and non-governmental organizations.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 18

Coursework

Code	Title	Credits
Core Courses		
GCH 205	Global Health (Mason Core)	3
GCH 332	Health and Disease	3
GCH 405	Global Health Interventions: History and Systems	3
GCH 406	Global Health Interventions: Emerging Issues	3
Choose one from: [1]		
GCH 426	Global Emerging Infectious Diseases	3
or GCH 450	Culture, Sexuality and the Global AIDS Epidemic	
Total Credits		15

[1] GCH 426 is offered only in the fall. GCH 450 is offered only in the spring.

Elective

Code	Title	Credits
Choose one from:		3
GCH 412	Fundamentals of Epidemiology	
GCH 491	Study Abroad in Public Health	
GCH 494	Special Topics in Global and Community Health [1]	
Other GCH elective course approved by the global health minor advisor		
Total Credits		3

[1] GCH 494 must be approved by the global health minor advisor

Global Health, MS

Banner Code: HH-MS-GLOH

Academic Advising

Website: https://chhs.gmu.edu/students/academic-advising/graduate-advising (https://chhs.gmu.edu/students/academic-advising/graduate-advising/)

Email: gch@gmu.edu
Website: https://publichealth.gmu.edu

Graduates of this program will have the knowledge base and skills to work and conduct research within the global health environment. This degree incorporates epidemiology, biostatistics, sociocultural influences on health and behavior, global health systems, communicable and non-communicable diseases of global importance, and migrant health to prepare students to conduct global health-related research. Through coursework and thesis research, students will be prepared to work in the diverse cultural and multidisciplinary environments inherent in global health. Graduates will be prepared to work in international health organizations such as nongovernmental organizations (NGOs), governmental organizations, and multilateral organizations, or may choose to pursue a research pathway and continue toward a terminal degree.

Admissions & Policies

Admissions

Requirements

Admission to the program is competitive, and a variety of criteria are evaluated in the admission process, including:

- undergraduate academic performance and recent post-baccalaureate coursework (transcripts)
- professional and volunteer experience
- statement of goals and objectives
- letters of recommendation

Previous undergraduate coursework in statistics, anthropology, sociology, and natural sciences is helpful. Applicants must meet the admission standards and application requirements specified in the Admissions section of the catalog and apply using the online Schools of Public Health Application System (http://www.sophas.org/) (SOPHAS). Applications are considered for the fall semester only. For application deadlines and detailed application requirements, please refer to the CHHS Admissions website (https://chhs.gmu.edu/admissions/graduate-admissions/standards-requirements-and-deadlines/).

Policies

Transfer of Credit

Transfer credit is governed by the AP.6.5.3 Graduate Transfer of Credit policy and the AP.6.9 Requirements for Master's Degrees policy, and transfer credit must be approved by the program director and the dean. **Students who enroll initially through non-degree studies should seek academic advising through the department prior to taking a course and plan to submit their application to the MS program in their first semester of study.**

Requirements

Degree Requirements

Total credits: 42

Students must achieve a 3.00 GPA to graduate from the master's program. A graduate course in which a grade of C or below is earned may be repeated only once. Graduate students may repeat no more than two courses. The required thesis provides students an opportunity to work closely with a GCH faculty member to systematically investigate a problem or issue with global health implications.

Global Health Core

Code	Title	Credits
GCH 500	Foundations of Public Health	3
GCH 543	Global Health	3
GCH 626	Migrant Health	3
GCH 640	Global Infectious Diseases	3
GCH 645	U.S. and Global Public Health Systems	3
GCH 650	Global Non-Communicable Diseases	3
Total Credits		18

Research Core

Code	Title	Credits
GCH 604	Fundamentals of Epidemiology and Biostatistics	3
GCH 651	Behavioral Research Methods	3
GCH 804	Biostatistics for Public Health I	3
GCH 805	Biostatistics for Public Health II	3
Total Credits		12

Thesis

Code	Title	Credits
Students must take six credits of Thesis Research		6
GCH 799	Thesis Research	
Total Credits		6

Electives

Code	Title	Credits
In consultation with advisor, select 6 credits from the following list:		**6**
ANTH 687	Medical Anthropology	
BIOD 620	Global Health Security Policy	
COMM 705	Intercultural Health and Risk Communication	
EVPP 637	Human Dimensions of Climate Change	
GCH 560	Environmental Health	
GCH 571	HIV/AIDS: Concepts, Principles, and Interventions	
GCH 600	Health Promotion Methods	
GCH 610	Health Behavior Theory	
GCH 712	Introduction to Epidemiology	
GCH 726	Advanced Methods in Epidemiology I	
GCH 762	Environmental Epidemiology	
GCH 772	Social Epidemiology	
GGS 540	Health Geography	
GLOA 600	Global Competencies	
HAP 609	Comparative International Health Systems	
NUTR 583	Food and Culture	
NUTR 630	Global Nutrition	
PUAD 630	Emergency Planning and Preparedness	
PUAD 636	The NGO: Policy and Management	
PUBP 757	Public Policy in Global Health and Medical Practice	
PUBP 758	Global Threats and Medical Policies	
Or advisor-approved elective course		
Total Credits		6

Public Health Graduate Certificate

Banner Code: HH-CERG-PUBH

Academic Advising

Website: chhs.gmu.edu/students/academic-advising/graduate-advising#gch

The Graduate Certificate in Public Health provides working professionals and graduate students an opportunity to advance their career and education in public health at their own pace on either a full- or part-time basis in two areas of concentration:

Generalist Concentration

The Public Health Graduate Certificate - Generalist Concentration, allows students to take up to six core classes required of the Master's in Public Health (MPH) program. This program is ideally suited for those with public health-related experience or for students seeking to enhance a graduate degree program. For students planning to apply to the MPH degree program, a simplified application is available for those completing the Public Health Generalist certificate who have earned a grade of "B" or better in all coursework.

Leadership and Management Concentration

The Public Health Graduate Certificate - Leadership Management Concentration, prepares students to apply the principles of public health leadership, stewardship and policy implementation to manage state and local health departments and various non-profit organizational and community health program initiatives. Students learn leadership strategies, public health regulatory requirements, public program management tools and policy development skills necessary to function in public health systems in the United States.

Admissions & Policies

Admissions

Applicants must meet the admission standards and application requirements specified in Graduate Admissions and must apply using the online Schools of Public Health Application System (http://www.sophas.org/) (SOPHAS). Applications are considered for the fall and spring semesters. For more information about the application requirements and deadlines, visit the CHHS Admissions website

(https://chhs.gmu.edu/admissions/graduate-admissions/standards-requirements-and-deadlines/).

Policies

For policies governing all graduate certificates, see AP.6.8 Requirements for Graduate Certificates.

Requirements

Certificate Requirements

Total credits: 18

This certificate may be pursued on a full-or part-time basis.

Students must complete all requirements listed within a concentration. Minimum GPA of 3.0 is required in all courses applied to the Certificate in Public Health.

Generalist Concentration (GLST)

Code	Title	Credits
Required Courses		
GCH 500	Foundations of Public Health	3
GCH 604	Fundamentals of Epidemiology and Biostatistics	3
GCH 609	Community Assessment and Partnerships	3
GCH 645	U.S. and Global Public Health Systems	3
HAP 635	Role of Government in Health Care and Public Health	3
Elective		
Select three credits from the following:		3
COMM 637	Risk Communication	
GCH 535	Public Health Preparedness and Response	
GCH 543	Global Health	
GCH 560	Environmental Health	
GCH 600	Health Promotion Methods	
GCH 601	Introduction to Biostatistics	
GCH 607	Evidence-Based Public Health Practice	
GCH 610	Health Behavior Theory	
GCH 611	Health Program Planning and Evaluation	
GCH 632	SAS for Health Research	
GCH 691	Project Management in Public Health	
GCH 712	Introduction to Epidemiology	
GCH 772	Social Epidemiology	
HAP 680	Applied Public Health Leadership and Management	
HAP 715	Health Economics	
NUTR 626	Food Systems	
NUTR 630	Global Nutrition	
Total Credits		18

Leadership and Management Concentration (LM)

Code	Title	Credits
Required Courses		
GCH 712	Introduction to Epidemiology	3
HAP 680	Applied Public Health Leadership and Management	3
HAP 715	Health Economics	3
HAP 742	Health Policy Development and Analysis	3
PUAD 661	Public Budgeting Systems	3
Elective		
Select three credits from the following:		3
HAP 609	Comparative International Health Systems	
HAP 661	Policy Development and Analysis for Community Health Programs	
HAP 705	Strategic Management and Marketing in Health Care	
HAP 740	Management of Health Information Systems	
HAP 750	Legal Issues in Health Administration	
HAP 764	Health Policy and Government Payment Systems for Health Care Services	
PUBP 758	Global Threats and Medical Policies	
Total Credits		18

Public Health Minor

Banner Code: PUBH

Academic Advising

Website: https://chhs.gmu.edu/students/academic-advising/undergraduate-advising/global-and-community-health-advisors

The minor in public health offers students the opportunity to study concepts and principles related to disease prevention, health promotion, and injury control. The minor provides students with a basic understanding of each of the core areas of public health, introduces students to career opportunities in the fields of global and community health, and prepares students for admission to graduate programs in public health.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 18-19

Coursework

Code	Title	Credits
Required Courses		
GCH 205	Global Health (Mason Core)	3
GCH 300	Introduction to Public Health	3
GCH 360	Health and Environment	3
GCH 412	Fundamentals of Epidemiology	3
Select one from the following:		**3**
GCH 310	Health Behavior Theories	
GCH 350	Health Promotion and Education	
GCH 445	Social Determinants of Health	
Select one from the following:		**3-4**
GCH 335	Applied Health Statistics	
BIOL 214	Biostatistics for Biology Majors	
OM 210		
PSYC 300	Statistics in Psychology	
SOCI 313	Statistics for the Behavioral Sciences (Mason Core)	
STAT 250	Introductory Statistics I (Mason Core)	
Other statistics course as approved by the minor coordinator		
Total Credits		18-19

Public Health, MPH

Banner Code: HH-MPH-PUBH

Academic Advising

Website: https://chhs.gmu.edu/students/academic-advising/graduate-advising (https://chhs.gmu.edu/students/academic-advising/graduate-advising/)

Website: https://publichealth.gmu.edu

Accredited by the Council on Education for Public Health (CEPH), the 42 credit-hour Master of Public Health (MPH) degree program is designed to prepare students with the foundational public health knowledge and competencies to address the most pressing and emerging health problems and concerns nationally and globally. Graduates are prepared to work in a variety of employment sectors including local, state, and federal health and social service agencies, non-governmental and voluntary health organizations, health care, and private industry. Students may choose from seven highly specialized concentrations:

- Community Health Promotion
- Epidemiology
- Food Security and Nutrition
- Global Health
- Health Policy
- Public Health Communication
- Public Health Practice (offered 100% online only)

In accordance with the CEPH accreditation standards, students are required to complete coursework in the public health core and one concentration, as well as fieldwork for the applied practice experience.

As a CEPH-accredited program, all graduates are eligible to sit for the Certified in Public Health (CPH) examination.

Admissions & Policies

Admissions

Admission decisions are based on a review of:

- undergraduate academic performance and recent post-baccalaureate coursework (transcripts)
- professional and volunteer experience
- statement of goals and objectives
- letters of recommendation

Some background in statistics, biology, and the social sciences is preferred. Applicants must meet the admission standards and application requirements specified in Admissions. Applications must be submitted using the online Schools of Public Health Application System (http://www.sophas.org/) (SOPHAS). Applications are considered for the fall semester only. For more information about application requirements and deadlines, please visit the CHHS Admissions website (https://chhs.gmu.edu/admissions/graduate-admissions/standards-requirements-and-deadlines/).

Food Security and Nutrition Concentration

To be admitted to the Food Security and Nutrition Concentration, students must have taken NUTR 295 Introduction to Nutrition (Mason Core) or a substitute approved by the Department of Nutrition and Food Studies.

Public Health Practice Concentration

To be admitted to the Public Health Practice Concentration, students must have at least two years' work experience in a health-related field.

Policies

Transfer of Credit

Transfer credit is governed by the policies outlined in AP.6.5.3 Graduate Transfer of Credit and AP.6.9 Requirements for Master's Degrees, and transfer credit must be approved by the program director and the dean. **Students who enroll initially through non-degree studies should seek academic advising through the department before taking a course and should plan to submit their application to the MPH program in their first semester of study.**

Requirements

Degree Requirements

Total credits: 42

Students must complete 42 credits of graduate coursework with at least a 3.00 GPA in order to graduate. Each course listed below can be used to fulfill only one requirement toward the MPH degree. A graduate course in which a grade of C or below is earned may be repeated only once. Graduate students may repeat no more than two courses.

Public Health Core

Code	Title	Credits
GCH 500	Foundations of Public Health	3
GCH 604	Fundamentals of Epidemiology and Biostatistics	3
GCH 609	Community Assessment and Partnerships	3
GCH 611	Health Program Planning and Evaluation	3
GCH 645	U.S. and Global Public Health Systems	3
HAP 635	Role of Government in Health Care and Public Health	3
HAP 680	Applied Public Health Leadership and Management	3
Total Credits		21

Practicum Requirements

This required 200-hour practicum gives students the opportunity to practice and improve professional skills in a supervised setting. Students must have completed at least 21 credits toward the degree program in order to be eligible for their practicum.

The requirements to complete the practicum are in three courses over two semesters, as follows:

Code	Title	Credits
GCH 780	Practicum Seminar	0
GCH 790	Practicum in Public Health	3
GCH 792	Integrative Learning Experience	0
Total Credits		3

Concentration

Students must complete one concentration.

Concentration in Community Health Promotion (CMHP)

Students examine the social and behavioral determinants associated with the most pressing health problems in order to improve population health through the design, implementation, and evaluation of health promotion programs. Graduates of this concentration are eligible to sit for the Certified Health Education Specialist (CHES®) exam.

Code	Title	Credits
Required Courses		
GCH 607	Evidence-Based Public Health Practice	3
GCH 610	Health Behavior Theory	3
GCH 620	Public Health Promotion Strategies	3
GCH 651	Behavioral Research Methods	3
GCH 700	Social and Ecological Determinants of Health	3
Electives		
Select three credits from the following:		3
BIOL 666	Human Genetics Concepts for Health Care	
COMM 637	Risk Communication	
COMM 639	Science Communication	
COMM 660	Climate Change and Sustainability Communication Campaigns	
COMM 721	E-Health Communication	
EVPP 506	Science of the Environment I	
EVPP 641	Environmental Science and Public Policy	
EVPP 745	Environmental Toxicology	
GCH 515	Lesbian, Gay, Bisexual, Transgender, and Queer Health	
GCH 535	Public Health Preparedness and Response	
GCH 543	Global Health	
GCH 560	Environmental Health	
GCH 571	HIV/AIDS: Concepts, Principles, and Interventions	
GCH 626	Migrant Health	
GCH 640	Global Infectious Diseases	
GCH 650	Global Non-Communicable Diseases	
GCH 691	Project Management in Public Health	
GCH 730	Interventions in Public Health	
GCH 762	Environmental Epidemiology	
GGS 540	Health Geography	
GGS 553	Geographic Information Systems	
NUTR 620	Nutrition Education	
NUTR 630	Global Nutrition	
NUTR 651	Nutrition Assessment, Monitoring and Surveillance	
PUAD 502	Administration in Public and Nonprofit Organizations	
PUAD 505	Introduction to Management of Nonprofits	
PUAD 630	Emergency Planning and Preparedness	
PUAD 636	The NGO: Policy and Management	
SOCI 635	Environment and Society	
Advisor-approved elective course		
Total Credits		18

Concentration in Epidemiology (EPID)

Students develop strong quantitative skills to investigate and analyze factors that influence the occurrence, distribution, prevention and control of disease. Emphasis is placed on the development of such skills as study design, data collection and management, data analysis and interpretation, and communication of research findings.

Code	Title	Credits
Required Courses		
GCH 712	Introduction to Epidemiology	3
GCH 726	Advanced Methods in Epidemiology I	3
GCH 762	Environmental Epidemiology	3
or GCH 722	Infectious Disease Epidemiology	
or GCH 732	Chronic Disease Epidemiology	
or GCH 772	Social Epidemiology	
GCH 804	Biostatistics for Public Health I	3
GCH 805	Biostatistics for Public Health II	3
Electives		
Select three credits from the following:		3
BIOL 574	Population Genetics	

CSS 600	Introduction to Computational Social Science
EVPP 641	Environmental Science and Public Policy
GCH 543	Global Health
GCH 560	Environmental Health
GCH 600	Health Promotion Methods
GCH 607	Evidence-Based Public Health Practice
GCH 632	SAS for Health Research
GCH 651	Behavioral Research Methods
GCH 722	Infectious Disease Epidemiology
GCH 732	Chronic Disease Epidemiology
GCH 752	Nutritional Epidemiology
GCH 762	Environmental Epidemiology
GCH 772	Social Epidemiology
GGS 540	Health Geography
GGS 553	Geographic Information Systems
NUTR 630	Global Nutrition
Advisor-approved elective course	
Total Credits	18

Concentration in Food Security and Nutrition (FSN)

Students in this interdisciplinary concentration create population health approaches to implement food security and nutrition programs and policies at the local, regional and global levels. Students explore definitions, measurement, and policy implications of food security and nutrition through a multidisciplinary approach.

Code	Title	Credits
Required Courses		
NUTR 608	Perspectives on Food Security	3
NUTR 610	Food Safety and Defense	3
NUTR 626	Food Systems	3
NUTR 630	Global Nutrition	3
NUTR 651	Nutrition Assessment, Monitoring and Surveillance	3
Electives		
Select three credits from the following:		3
GCH 601	Introduction to Biostatistics	
GCH 626	Migrant Health	
GCH 732	Chronic Disease Epidemiology	
GCH 752	Nutritional Epidemiology	
NUTR 515	Fundamentals of Cooking	
NUTR 522	Nutrition Across the Lifespan	
NUTR 530	Introduction to Wine and Beer	
NUTR 535	Urban Agriculture	
NUTR 570	Food Science for Nutritionists	
NUTR 583	Food and Culture	
NUTR 620	Nutrition Education	
NUTR 642	Macronutrients	
NUTR 644	Micronutrients	
NUTR 670	Nutrition Research Methods	
NUTR 675	Nutrition Program Development, Interventions and Assessments	
Advisor-approved elective course		
Total Credits		18

Concentration in Global Health (GLOH)

Students develop competencies and apply skills to promote health in a global context, emphasizing comparative global health metrics; the socioeconomic, environmental, and other risk factors associated with transnational health concerns; and ethical and effective strategies for preventing and controlling infectious and non-communicable diseases in diverse populations.

Code	Title	Credits
Required Courses		
GCH 543	Global Health	3
GCH 626	Migrant Health	3
GCH 640	Global Infectious Diseases	3
GCH 650	Global Non-Communicable Diseases	3
GLOA 600	Global Competencies	3
Electives		
Select three credits from the following:		3
BIOL 685	Emerging Infectious Diseases	
COMM 620	Health Communication	
COMM 637	Risk Communication	
COMM 639	Science Communication	
COMM 660	Climate Change and Sustainability Communication Campaigns	
COMM 721	E-Health Communication	
EVPP 506	Science of the Environment I	
EVPP 641	Environmental Science and Public Policy	
GCH 515	Lesbian, Gay, Bisexual, Transgender, and Queer Health	
GCH 535	Public Health Preparedness and Response	
GCH 571	HIV/AIDS: Concepts, Principles, and Interventions	
GCH 591	Study Abroad in Public Health	
GCH 600	Health Promotion Methods	
GCH 607	Evidence-Based Public Health Practice	
GCH 610	Health Behavior Theory	
GCH 632	SAS for Health Research	
GCH 651	Behavioral Research Methods	
GCH 691	Project Management in Public Health	
GCH 730	Interventions in Public Health	
GCH 762	Environmental Epidemiology	
GCH 772	Social Epidemiology	
GGS 540	Health Geography	
GGS 553	Geographic Information Systems	
GGS 581	World Food and Population	
NUTR 583	Food and Culture	
NUTR 630	Global Nutrition	
NUTR 651	Nutrition Assessment, Monitoring and Surveillance	
PUAD 502	Administration in Public and Nonprofit Organizations	

PUAD 505	Introduction to Management of Nonprofits	
PUAD 630	Emergency Planning and Preparedness	
PUAD 636	The NGO: Policy and Management	
SOCI 635	Environment and Society	
Advisor-approved elective course		
Total Credits		18

Concentration in Health Policy (HTHP)

Students address the nature and importance of policy and policy-making in today's public health system in order to engage with public health and advocacy organizations on policy issues and to analyze and support policy approaches in an era of scarce public resources and ever-changing priorities. Students are introduced to the context and process for policy-making in public health, including the current political, economic, and legal environment for health policy and the basic elements of the public policy-making process.

Code	Title	Credits
Required Courses		
HAP 602	Statistics in Health Services Management	3
or HAP 719	Advanced Statistics in Health Services Research I	
HAP 715	Health Economics	3
HAP 742	Health Policy Development and Analysis	3
HAP 764	Health Policy and Government Payment Systems for Health Care Services	3
HAP 793	Final Project in Applied Health Policy	3
Electives		
Select three credits from the following:		3
HAP 652	Essentials of Health Insurance and Managed Care	
HAP 712	Topics in Public Policy	
HAP 745	Health Care Security Policy	
HAP 746	Health Policy Leadership	
Advisor-approved elective course		
Total Credits		18

Concentration in Public Health Communication (PHCM)

Students design, evaluate, and implement effective communication strategies and messages to inform and influence individual and community decisions that affect health. This interdisciplinary concentration links the fields of communication and public health.

Code	Title	Credits
Required Courses		
COMM 620	Health Communication	3
COMM 637	Risk Communication	3
COMM 670	Social Marketing	3
COMM 721	E-Health Communication	3
COMM 820	Health Communication Campaigns	3
Electives		
Select three credits from the following:		3
BIOL 685	Emerging Infectious Diseases	
COMM 639	Science Communication	
COMM 660	Climate Change and Sustainability Communication Campaigns	
EVPP 506	Science of the Environment I	
EVPP 641	Environmental Science and Public Policy	
GCH 515	Lesbian, Gay, Bisexual, Transgender, and Queer Health	
GCH 571	HIV/AIDS: Concepts, Principles, and Interventions	
GCH 626	Migrant Health	
GCH 640	Global Infectious Diseases	
GCH 650	Global Non-Communicable Diseases	
GCH 691	Project Management in Public Health	
GCH 730	Interventions in Public Health	
GCH 762	Environmental Epidemiology	
GCH 772	Social Epidemiology	
GCH 804	Biostatistics for Public Health I	
GGS 540	Health Geography	
GGS 553	Geographic Information Systems	
GGS 581	World Food and Population	
NUTR 583	Food and Culture	
NUTR 651	Nutrition Assessment, Monitoring and Surveillance	
NUTR 630	Global Nutrition	
PUAD 502	Administration in Public and Nonprofit Organizations	
PUAD 505	Introduction to Management of Nonprofits	
PUAD 630	Emergency Planning and Preparedness	
PUAD 636	The NGO: Policy and Management	
SOCI 635	Environment and Society	
Advisor-approved elective course		
Total Credits		18

Concentration in Public Health Practice (PHP)

Students examine the social and environmental factors associated with improving population and community health with a focus on the application of evidence-based public health concepts. The Public Health Practice concentration (offered 100% online) is designed to advance the competencies of public health practitioners and other health professionals to fulfill their roles and responsibilities in local, state, and federal public health agencies and non-governmental health-related organizations.

Code	Title	Credits
Required Courses		
COMM 637	Risk Communication	3
GCH 535	Public Health Preparedness and Response	3
GCH 601	Introduction to Biostatistics	3
GCH 607	Evidence-Based Public Health Practice	3
GCH 691	Project Management in Public Health	3
Electives		
Select three credits from the following:		3
BIOD 610	Advanced Topics in Global Health Security	
BIOD 620	Global Health Security Policy	

CONF 501	Introduction to Conflict Analysis and Resolution
GCH 571	HIV/AIDS: Concepts, Principles, and Interventions
HHS 646	Social Gerontology
NUTR 630	Global Nutrition
PUAD 630	Emergency Planning and Preparedness
PUAD 631	Disaster Response Operations and Recovery
Advisor-approved elective course	
Total Credits	18

Accelerated Master's

Bachelor's Degree (any)/Public Health, Accelerated MPH

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's (BAM) program and obtain any bachelor's degree and an MPH in Public Health in an accelerated time-frame after satisfactory completion of a minimum of 150 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/).

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies. For information specific to this accelerated master's program, see the Department of Global and Community Health's Accelerated Bachelor's/MPH (https://publichealth.gmu.edu/program/view/495566/) website.

Students will be considered for admission into the BAM Pathway after completion of at least 60 credits with a minimum overall 3.25 GPA, and:

- A completed application form (available at the admissions website);
- A career goal statement, between 500 and 750 words in length, that addresses the following:
  - Why are you applying to Mason's MPH program, and the concentration you chose?
  - How will earning an MPH help you achieve your professional goals?
  - What have you learned from successes and/or challenges in your past educational, professional, and/or personal experiences? Please use specific examples, as applicable.
- Two academic letters of recommendation, one of which must come from a Department of Global and Community Health faculty member. The second letter may come from an employer if a student has had significant public health related experience.

Students may submit their application to the BAM Pathway after completion of the following classes:

Code	Title	Credits
GCH 300	Introduction to Public Health	3
ENGH 302	Advanced Composition (Mason Core)	3
STAT 250	Introductory Statistics I (Mason Core) [1]	3

1 Students may take any Mason Core Quantitative Reasoning course

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MPH program if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition Form (http://registrar.gmu.edu/wp-content/uploads/BAMT.pdf):

- 3.00 overall GPA
- 3.00 GPA in graduate-level coursework
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

Students may take up to four graduate level courses (12 credits) that count as advanced standing. These courses also substitute for BS in Community Health major-specific degree requirements. To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Code	Title	Credits
GCH 500	Foundations of Public Health [1]	3
GCH 604	Fundamentals of Epidemiology and Biostatistics [2]	3
GCH 609	Community Assessment and Partnerships [3]	3
GCH 611	Health Program Planning and Evaluation [4]	3
Total Credits		12

1 Substitutes for a BS in Community Health elective

2 Substitutes for GCH 335 Applied Health Statistics

3 Substitutes for GCH 376 Health Ethics, Leadership, and Advocacy

4 GCH 609 Community Assessment and Partnerships is a required prerequisite. Substitutes for GCH 411 Health Program Planning and Evaluation

Reserve Graduate Credit

While still undergraduates, students in the accelerated master's program may take up to 6 additional graduate credits. These "reserve credits" do not apply to the student's undergraduate degree but may later be applied to their master's degree, using the Bachelor's/Accelerated Master's Transition Form (http://registrar.gmu.edu/wp-content/uploads/BAMT.pdf).

Code	Title	Credits
GCH 645	U.S. and Global Public Health Systems	3
HAP 635	Role of Government in Health Care and Public Health	3
Total Credits		6

The ability to take courses, including those not listed above, for reserve graduate credit is available to all high-achieving undergraduates with the permission of the department. See AP.1.4.4 Graduate Course Enrollment by Undergraduates.

Public Health, PhD

Banner Code: HH-PHD-PUBH

Academic Advising

Website: https://chhs.gmu.edu/students/academic-advising/graduate-advising (https://chhs.gmu.edu/students/academic-advising/graduate-advising/)

The Doctor of Philosophy (PhD) in Public Health prepares students to think critically as public health scientists, develop subject matter expertise and analytical skills to become successful independent researchers, and respond to the most pressing public health challenges facing Virginia, the nation, and the world.

The program provides doctoral students with a substantive public health knowledge base accompanied by advanced training in research methods and data analysis. Students develop competencies related to synthesizing the scientific literature on the social and behavioral determinants that influence public health and associated health disparities. Students receive individualized research and professional mentoring necessary to ensure their success as public health scholars. The program also requires all students to complete a teaching practicum, which includes an opportunity to independently teach a variety of public health courses to prepare them for successful careers in academia.

Graduates are prepared to work as researchers, prevention scientists, epidemiologists, and evaluation specialists in a variety of employment sectors including, colleges and universities, local, state, and federal official health agencies, non-government health organizations, health care systems, and private entities such as contract research organizations, consultant management firms, and industry-based associations.

The PhD in Public Health offers two concentrations:

Epidemiology

Students pursing the concentration in Epidemiology examine the distribution and determinants of health-related conditions in populations to ameliorate disease, disability, and other health problems. Students in this concentration develop the substantive knowledge and methodologic tools needed for designing and analyzing etiologic research focusing on understanding observed disparities and etiology of heath conditions.

Social and Behavioral Sciences

The Social and Behavioral Science concentration prepares students to analyze the social and behavioral determinants of population health and well-being. Using social/behavioral theoretical frameworks, students learn how to design and evaluate multi-level public health interventions aimed at preventing disease, promoting health and well-being, and eliminating health disparities.

Admissions & Policies

Admissions

Requirements

Students must have an earned baccalaureate and/or graduate degree from an institution of higher education accredited by a Mason-recognized U.S. institutional accrediting agency or international equivalent verified from official transcripts. Expectation of an earned baccalaureate and/or graduate degree from an institution of higher education accredited by a Mason-recognized U.S. institutional accrediting agency or international equivalent, prior to the first day of classes for the term for which the student is applying, will also meet this requirement. Students with a master's degree will have preference for admission, but exceptional post-baccalaureate candidates will be considered. Applicants must meet the admission standards and application requirements specified in Graduate Admissions (https://catalog.gmu.edu/admissions/graduate-policies/) and must apply using SOPHAS (http://www.sophas.org/). For application deadlines and detailed application requirements, refer to the CHHS admissions website (https://chhs.gmu.edu/admissions/graduate-admissions/standards-requirements-and-deadlines/). Students must submit transcripts, resume/CV, GRE scores, and three letters of recommendation. TOEFL scores are required for applicants from foreign institutions, as required by the university.

Policies

Reduction of Credit

Students who enter with a master's or other advanced degree may have the credit requirement reduced by up to 30 credits for previous coursework that closely corresponds with doctoral program requirements. The credit reduction will be recommended by the Director of Doctoral Studies in consultation with the doctoral advisor.

Time requirements

Students must complete all requirements for the PhD in Public Health within 9 calendar years from the time of first enrollment as a doctoral student. PhD students are expected to progress steadily toward their degree and to complete all coursework, the qualifying exam and dissertation proposal defense in order to advance to candidacy within no more than 6 years.

Qualifying Exam

The qualifying exam will be written exam offered once per academic year. The exam must be taken at the first opportunity following completion of core courses (excluding: GCH 890, HAP 824 and HHS 850). Any student failing the qualifying exam will be offered a second opportunity to pass the exam. A second failure will result in dismissal from the program. Students must pass the qualifying exam in order to be eligible to sign up for GCH 998 Doctoral Dissertation Proposal and to undertake the Oral Dissertational Proposal Defense.

Dissertation Proposal Defense

The written dissertation proposal and oral defense of proposal will constitute of Dissertation Proposal Defense. The student's Dissertation Committee will assess the student's success and preparedness for undertaking dissertation research. The Dissertation Committee may pass the student unconditionally, request additional work before passing the

student, or fail the student. A student who fails the oral examination will be given one additional attempt. Students failing the oral dissertation proposal defense twice will be dismissed from the Program.

Advancement to Candidacy

Students who complete all core and concentration course requirements and pass the Defense of Proposal advance to candidacy. A student must advance to candidacy before registering for GCH 999 Doctoral Dissertation.

Dissertation

With the approval of the Director of Doctoral Studies, students may change advisors at any point prior to beginning work on their dissertation proposal. At the time the student begins the dissertation process, the PhD Advisor becomes the Dissertation Mentor, and Chair of the Dissertation Committee. Dissertation Mentors must hold a graduate faculty appointment in the Department of Global and Community Health, or be designated as Public Health program graduate faculty, and have successfully completed their three-year review.

The Director of Doctoral Studies must approve the Dissertation Committee. The committee must have at least three members, each of whom must be a full-time member of the graduate faculty. At least one other member of the Dissertation Committee must be a faculty member in the College of Health and Human Services (CHHS). The third member of the committee may be from CHHS or another academic unit at George Mason University. Additional members may be added with approval of the Director of Doctoral Studies and may include scholars from outside Mason.

After advancement to candidacy, the PhD Public Health student must complete an approved dissertation. The Dissertation represents a substantial body of scholarship that advances the scientific understanding related to an important public health question or concern. The Dissertation is presented and evaluated in two components: a written document and an oral defense of dissertation. The final evaluation of the Dissertation is made by the Committee after the Dissertation Defense. The Committee may decide to pass the student unconditionally, request additional work, or fail the student.

Requirements

Degree Requirements

Total credits: 72

Overview

The purpose of the PhD program in Public Health is to prepare students for research careers in academia, government agencies, non-governmental organizations, and private-sector entities that support population health. The degree includes two concentrations of specialized study:

- Epidemiology
- Social and Behavioral Sciences

Requirements

The PhD Public Health comprises 72 credits. This includes 24 credits in the Public Health and Research Core, 12 credits toward dissertation requirements, and 21 credits of concentration coursework and 15 credits of approved elective coursework within their concentration area.

Public Health and Research Core

Code	Title	Credits
Core Classes		
GCH 700	Social and Ecological Determinants of Health	3
GCH 712	Introduction to Epidemiology	3
GCH 726	Advanced Methods in Epidemiology I	3
GCH 804	Biostatistics for Public Health I	3
GCH 805	Biostatistics for Public Health II	3
GCH 830	Research Grant Writing for Public Health	3
GCH 890	Doctoral Seminar	3
HAP 824	Social Determinants of Health: A Multilevel Evidence-Based Approach	3
Faculty Preparation (0-6 credits)		
HHS 850	Teaching Practicum in Public Health [1]	0-6
Total Credits		**24**

[1] Students must take HHS 850 twice. Students may elect zero (0) credit hours at no tuition cost, or students may elect 3 credits to maintain full-time enrollment status.

Concentration in Epidemiology (EPID)

Code	Title	Credits
GCH 727	Advanced Methods in Epidemiology II	3
GCH 814	Biostatistics for Public Health III	3
GCH 824	Advanced Data Analysis for Epidemiologic Research	3
GCH 826	Design of Epidemiologic Research	3
GCH 880	Epidemiologic Research Seminar	3
Restricted Electives		
Select one from the following:		3
GCH 722	Infectious Disease Epidemiology	
GCH 732	Chronic Disease Epidemiology	
GCH 742	Behavioral Epidemiology	
GCH 752	Nutritional Epidemiology	
GCH 762	Environmental Epidemiology	
GCH 772	Social Epidemiology	
Select one from the following:		3
GCH 728	Meta-Analysis for Population Health Research	
GCH 795	Advanced Special Topics in Global and Community Health [1]	
GCH 807	Measurement Theories and Applications in Public Health Research	
RHBS 720	Principles of Clinical Trials	
Electives		
Advisor-approved electives		15
Total Credits		36

[1] GCH 795 Advanced Special Topics in Global and Community Health requires advisor permission prior to registration. Course may be repeated for credit within the concentration as long as the topic varies.

Concentration in Social and Behavioral Sciences (SBS)

Code	Title	Credits
GCH 609	Community Assessment and Partnerships	3
GCH 610	Health Behavior Theory	3
GCH 651	Behavioral Research Methods	3
GCH 730	Interventions in Public Health	3
GCH 731	Monitoring and Evaluation of Public Health Interventions	3
GCH 772	Social Epidemiology	3
GCH 851	Advanced Research Designs and Analysis for Social and Behavioral Health Sciences	3
Electives		
Advisor-approved electives		15
Total Credits		36

Dissertation

Code	Title	Credits
GCH 998	Doctoral Dissertation Proposal	3
GCH 999	Doctoral Dissertation	9
Total Credits		12

Department of Health Administration and Policy

Phone: 703-993-1929
Website: hap.gmu.edu

Administration

- P. J. Maddox, Chair

The mission of the Department of Health Administration and Policy (HAP) is to provide innovative education, service, and research that contribute to improving the quality of care and delivery of healthcare services. The department accomplishes this mission by preparing professionals for careers as executives and managers in acute and ambulatory care and senior housing/assisted living organizations, as well as specialists in health informatics, healthcare risk management, and health policy.

The research and scholarly activities of the department contribute to basic and applied knowledge about the organization, management, financing, and performance of U.S. health systems and public health services; the development and management of health information systems; and the development and analysis of evidence-based U.S. health policy to foster innovation and public accountability and contribute to ensuring access to cost-effective, high-quality health services. The department works with consumers, stakeholders, students, faculty, alumni, research funders, and the community to ensure rigorous, relevant educational programs (including post-graduate professional development), service activities, and the development and timely dissemination of research. Part-time students are encouraged to take at least 6 credits per semester to promote timely completion of the program.

Faculty

Department Faculty

Professors

Alemi, Cuellar (Center for Health Policy Research and Ethics, director), Gerber, Hong, Kitsantas, Maddox (chair)

Associate Professors

Anand, Blair, Cantiello, Gimm, Goldberg, Min, Sheingold, Wojtusiak (Center for Discovery Science and Health Informatics, director), Xue

Assistant Professors

Avramovic, Black, Brown, Green-Lawson, Madison, Osborn-Harrison, Shiver

Emeritus

Nichols

Requirements & Policies

Requirements

Academic Advising

Each student is assigned an academic advisor who is a faculty member within their academic department or a professional academic advisor within the Office of Student Affairs (OSA). Academic advisor assignments are listed on the CHHS website (https://chhs.gmu.edu/students/academic-advising/), and students are expected to meet with their advisor regularly (at least once each semester) to seek advice about academic schedules and program plans, internships, and career guidance. Students also should meet with their advisor if they are experiencing academic difficulty or personal challenges or if they are feeling overwhelmed.

All students are responsible for knowing the requirements of their major as specified in the university catalog for their catalog year; academic deadlines outlined in the semester academic calendar (http://registrar.gmu.edu/calendars/); and university policies and procedures as stated in the catalog.

Students also should run their own degree-evaluation (http://registrar.gmu.edu/students/degree-evaluation/) to identify graduation requirements and progress towards their degree. While academic advisors can give advice to students, students are responsible for the academic planning decisions they make. Academic advisors cannot be held responsible for mistakes made by students in selecting courses that may not count toward their degree and thus delay a desired graduation date.

Programs

- Health Administration, BS
- Health Informatics and Data Analytics Graduate Certificate
- Health Informatics, MS
- Health Information Technology Minor
- Health Services Research, PhD
- Health Systems Management, MHA

- Health and Medical Policy, MS
- Health and Social Policy Minor
- Senior Housing Administration Minor

Health Administration, BS

Banner Code: HH-BS-HADM

Academic Advising

Website: https://chhs.gmu.edu/students/academic-advising/undergraduate-advising/health-administration-and-policy-advisors

The BS in Health Administration prepares students to work in a variety of settings, including hospitals; clinics; community health, home care, long-term care, and managed care organizations; physician practices; information technology, medical technology and supply organizations; advocacy organizations and professional associations; the insurance industry; and consulting firms.

The program may be completed on a full- or part-time basis leading to completion of the objectives of the undergraduate BS program.

Concentrations are offered in health systems management, assisted living/senior housing administration, and health informatics.

Health Systems Management Concentration

The concentration in health systems management prepares graduates to serve in entry-level management, administrative and support positions in a variety of health-related organizations and settings.

Assisted Living/Senior Housing Administration Concentration

The concentration in assisted living/senior housing administration prepares graduates to serve in entry-level administrative and support positions within independent living, assisted living, and continuing care retirement communities.

Health Informatics Concentration

The concentration in health informatics prepares graduates in theory and methods for using information processing methods in healthcare organizations.

Admissions & Policies

Policies

Program Requirements

- A criminal background check is generally required of all students prior to beginning their internship.
- Students must fulfill all requirements for bachelor's degrees, including the Mason Core requirements. For all policies governing bachelor's degrees, see A.5.3.2 Requirements for Bachelor's Degrees.
- Students should enroll in HAP 201 Health Professions Careers and HAP 301 Health Care Delivery in the United States during their first semester in the program.
- HAP 498 Health Administration Internship (Mason Core) and HAP 465 Integration of Professional Skills and Issues (Mason Core) are to be completed during the student's final semester. The final semester is defined as the final 15 academic credits of the academic schedule.
- Students must check with their advisor to ensure that all requirements have been met prior to graduation.

Minimum Grade Requirements

A minimum grade of C must be obtained in all major requirements (58 - 64 credits). A minimum grade of C must also be obtained in ECON 103 in order for a student to enroll in HAP 425. In the health informatics concentration, a maximum of 6 credits of C grades in major requirements (64 credits) is permitted. Students in the health informatics concentration who earn more than 6 credits of C grades in the major requirements courses must either repeat one of the courses in which they earned a C and earn a C+ or higher or change programs or concentrations.

Requirements

Degree Requirements

Total credits: 120

Students must fulfill all requirements for bachelor's degrees, including the Mason Core requirements.

Mason Core

Code	Title	Credits
Written Communication [1]		
ENGH 101	Composition (Mason Core)	3
ENGH 302	Advanced Composition (Mason Core) [2]	3
Oral Communication		
COMM 100	Public Speaking (Mason Core)	3
or COMM 101	Fundamentals of Communication (Mason Core)	
Quantitative Reasoning		
STAT 250	Introductory Statistics I (Mason Core)	3
Information Technology		
IT 104	Introduction to Computing [3]	3
Literature		
Any Mason Core Literature course		3
Arts		
Any Mason Core Arts course		3
Natural Science		
Select one group from the following:		8
BIOL 102 & BIOL 103 & BIOL 105	Introductory Biology I-Survey of Biodiversity and Ecology (Mason Core) and Introductory Biology II-Survey of Cell and Molecular Biology (Mason Core) and Introductory Biology II Laboratory (Mason Core)	
BIOL 124 & BIOL 125	Human Anatomy and Physiology and Human Anatomy and Physiology	
Western Civilization/World History		
HIST 100	History of Western Civilization (Mason Core)	3
or HIST 125	Introduction to World History (Mason Core)	
Global Understanding		
Any Mason Core Global Understanding course		3
Social and Behavioral Sciences		

ECON 103	Contemporary Microeconomic Principles (Mason Core)	3
Total Credits		38

1 Nonnative speakers of English with limited proficiency in the language may substitute ENGH 100 for ENGH 101. Students must attain a minimum grade of C in ENGH 100 or ENGH 101, as well as in ENGH 302, to fulfill degree requirements.

2 Business-designated sections of ENGH 302 Advanced Composition (Mason Core) are recommended.

3 Health Informatics concentration students must attain a minimum grade of B in IT 104 to fulfill degree requirements. Students in the Assisted Living/Senior Housing Administration concentration or Health Systems Management concentration must attain a minimum grade of C to fulfill degree requirements. Transfer students may substitute IT 103.

Required Courses

Code	Title	Credits
HAP 201	Health Professions Careers [1]	3
HAP 202	Medical Terminology	3
Select one from the following:		3
PSYC 100	Basic Concepts in Psychology (Mason Core)	
PSYC 211	Developmental Psychology (Mason Core)	
PSYC 231	Social Psychology (Mason Core)	
HAP 290	Lifestyle Management	
GOVT 103	Introduction to American Government (Mason Core)	
Total Credits		9

1 HAP 201 is to be taken during the student's first semester in the program.

Concentration in Assisted Living/Senior Housing Administration (ASHA)

Code	Title	Credits
Major Requirements		
HAP 301	Health Care Delivery in the United States [1]	3
GCH 300	Introduction to Public Health	3
HAP 309	Healthcare Accounting	3
HAP 310	Healthcare Ethics	3
HAP 312	Healthcare Law	3
HAP 360	Introduction to Health Information Systems	3
HAP 392	Human Resources Management in Healthcare	3
HAP 395	Healthcare Finance	3
HAP 396	Strategic Health Management and Planning	3
HAP 403	Assisted Living/Senior Housing Management and Philosophy	3
HAP 404	Senior Housing Sales and Marketing	3
HAP 416	Leadership and Management of Health Systems I	3
HAP 417	Leadership and Management of Health Systems II	3
HAP 425	Health Economics and Policy	3
HAP 465	Integration of Professional Skills and Issues (Mason Core) (fulfills synthesis and writing intensive requirements) [2]	3
HAP 489	Pre-Internship Seminar (Mason Core) [3]	3
HAP 498	Health Administration Internship (Mason Core) [4]	4
Select two from the following:		6
GCH 480	Health Maintenance and Health Aspects of Aging	
NUTR 422	Nutrition throughout the Life Cycle	
SOCW 435	Introduction to Gerontology	
PSYC 415	Psychological Factors in Aging	
PSYC 418	Death, Dying, and Grieving	
EDAT 410	Introduction to Assistive Technology	
CHHS Electives		
6 credits must include 200-level or above courses from the following:		6
GCH courses		
HAP courses		
HHS courses		
NURS courses		
NUTR courses		
RHBS courses		
SOCW courses		
Non-CHHS courses pre-approved for substitution by the concentration coordinator		
General Electives		
Electives are at the student's discretion		9
Total Credits		73

1 HAP 301 is to be taken during the student's first semester in the program.

2 HAP 465 may only be taken within the final 15 credits of the curriculum.

3 HAP 489 may only be taken in the semester immediately prior to HAP 498.

4 HAP 498 may only be taken within the final 15 credits of the curriculum. Students in HAP 498 complete an internship as identified and approved by the concentration coordinator during HAP 489. Under special circumstances and upon recommendation by the course instructors and the student's advisor, students may be excused by the department chair from taking HAP 489 and HAP 498. Such students are required to take alternative courses that are pre-approved by the student's advisor and worth at least 7 credits.

Concentration in Health Informatics (HINF)

A maximum of 6 credits of C grades earned in the major requirements courses (64 credits) may be applied to the health informatics concentration. Students who earn more than 6 credits of C grades must either repeat one of the courses in which they earned a C and earn a C+ or higher or change programs or concentrations.

Code	Title	Credits
Major Requirements		
HAP 301	Health Care Delivery in the United States [1]	3
HAP 308	Public Health Informatics	3
HAP 309	Healthcare Accounting	3
HAP 312	Healthcare Law	3
HAP 318	Introduction to IT Methods for Healthcare	3
HAP 360	Introduction to Health Information Systems	3
HAP 361	Health Databases	3
or IT 214	Database Fundamentals	
HAP 430	Process Improvement in Healthcare Organizations	3
HAP 436	Electronic Health Data in Process Improvement	3
HAP 440	Mobile Health	3
HAP 445	Introduction to Health Services Research	3
HAP 459	Health Data Standards and Interoperability	3
HAP 460	Information Technology Project Management	3
HAP 461	Internet and Web Technology Applications for Healthcare	3
HAP 462	Privacy and Security in Health Informatics	3
HAP 464	Electronic Health Record Configuration and Data Analysis	3
HAP 465	Integration of Professional Skills and Issues (Mason Core) (fulfills synthesis and writing intensive requirements) [2]	3
HAP 467	Advanced Information Technology Project Management	3
HAP 489	Pre-Internship Seminar (Mason Core) [3]	3
HAP 498	Health Administration Internship (Mason Core) [4]	4
Select one from the following:		3
HAP 395	Healthcare Finance	
HAP 425	Health Economics and Policy	
HAP 442	Introduction to Health Care Politics and Policy	
General Electives		
Electives must be approved by student's advisor		9
Total Credits		73

1 HAP 301 is to be taken during the student's first semester in the program.

2 HAP 465 may only be taken within the final 15 credits of the curriculum.

3 HAP 489 may only be taken in the semester immediately prior to HAP 498.

4 HAP 498 may only be taken within the final 15 credits of the curriculum. Students in HAP 498 complete an internship as identified and approved by the concentration coordinator during HAP 489. Under special circumstances and upon recommendation by the course instructors and the student's advisor, students may be excused by the department chair from taking HAP 489 and HAP 498. Such students are required to take alternative courses that are pre-approved by the student's advisor and worth at least 7 credits.

Concentration in Health Systems Management (HSMG)

Code	Title	Credits
Major Requirements		
GCH 300	Introduction to Public Health	3
HAP 301	Health Care Delivery in the United States [1]	3
HAP 309	Healthcare Accounting	3
HAP 310	Healthcare Ethics	3
HAP 312	Healthcare Law	3
HAP 360	Introduction to Health Information Systems	3
HAP 392	Human Resources Management in Healthcare	3
HAP 395	Healthcare Finance	3
HAP 396	Strategic Health Management and Planning	3
HAP 410	Introduction to Health/Medical Practice Management	3
HAP 416	Leadership and Management of Health Systems I	3
HAP 417	Leadership and Management of Health Systems II	3
HAP 425	Health Economics and Policy	3
HAP 430	Process Improvement in Healthcare Organizations	3
HAP 442	Introduction to Health Care Politics and Policy	3
HAP 445	Introduction to Health Services Research	3
HAP 465	Integration of Professional Skills and Issues (Mason Core) (fulfills synthesis and writing intensive requirements) [2]	3
HAP 489	Pre-Internship Seminar (Mason Core) [3]	3
HAP 498	Health Administration Internship (Mason Core) [4]	4
CHHS Electives		
6 credits must include 200-level or above courses from the following:		6
GCH courses		
HAP courses		
HHS courses		
NURS courses		
NUTR courses		
RHBS courses		
SOCW courses		
Non-CHHS courses pre-approved for substitution by the concentration coordinator		
General Electives		

Electives are at the student's discretion.	9
Total Credits	73

1. HAP 301 is to be taken during the student's first semester in the program.
2. HAP 465 may only be taken within the final 15 credits of the curriculum.
3. HAP 489 may only be taken in the semester immediately prior to HAP 498.
4. HAP 498 may only be taken within the final 15 credits of the curriculum. Students in HAP 498 complete an internship as identified and approved by the concentration coordinator during HAP 489. Under special circumstances and upon recommendation by the course instructors and the student's advisor, students may be excused by the department chair from taking HAP 489 and HAP 498. Such students are required to take alternative courses that are pre-approved by the student's advisor and worth at least 7 credits.

4-Year Plan

Bachelor of Science in Health Administration Sample Plan of Study

Detailed four year plans can be found at https://chhs.gmu.edu/students/academic-advising/undergraduate-advising/program-planning-advising-sheets (https://chhs.gmu.edu/students/academic-advising/undergraduate-advising/program-planning-advising-sheets/)

Health and Medical Policy, MS

Banner Code: HH-MS-HMP

Academic Advising

Website: https://chhs.gmu.edu/students/academic-advising/graduate-advising#hap

The master's program in health and medical policy prepares students to become analysts and informed decision-makers at the local, state, and national levels, to be policy consultants, to support the work of foundations, or to engage with public health and advocacy organizations in the U.S. and abroad. Students are expected to graduate with the knowledge and skills needed to analyze health policy issues; examine health system approaches; formulate new policies; and support policy development in health care financing, healthcare delivery system innovations, and the allocation of scarce resources.

Students will learn how health care services in the U.S. are delivered and paid for, how well the U.S. health care system performs from an individual and societal perspective, and how various key stakeholders influence the formation and development of health policy.

Admissions & Policies

Admissions

Requirements

Applicants must meet the admission standards and application requirements specified in Graduate Admissions and must apply using the online Application for Graduate Admission (https://www2.gmu.edu/admissions-aid/). The application process is competitive, and applications are considered for the fall and spring semesters. For application deadlines and detailed application requirements, refer to the CHHS Admissions website (https://chhs.gmu.edu/admissions/graduate-admissions/standards-requirements-and-deadlines/).

Policies

For policies governing all graduate degrees, see AP.6 Graduate Policies.

Transfer of Credit

Students may transfer a maximum of 12 credits from graduate courses taken at other institutions or taken at Mason in non-degree status. Transfer credit is subject to university and college policies and must be approved by the program director and the dean. Students who enroll initially through non-degree studies should seek course advising through the department and should submit their application to the MS program in their first semester of study.

Requirements

Degree Requirements

Total credits: 42

Core Courses

Code	Title	Credits
Health Delivery and Policy Issues		
HAP 635	Role of Government in Health Care and Public Health	3
HAP 652	Essentials of Health Insurance and Managed Care	3
HAP 715	Health Economics	3
HAP 742	Health Policy Development and Analysis	3
HAP 764	Health Policy and Government Payment Systems for Health Care Services	3
Public Policy Process		
PUBP 730	US Institutions and the Policy Process	3
PUAD 615	Administrative Law	3
PUAD 750	Federalism and Intergovernmental Relations	3
Policy Analysis		
HAP 602	Statistics in Health Services Management	3
HAP 645	Introduction to Health Services Research	3
HAP 719	Advanced Statistics in Health Services Research I	3
POGO 646	Policy and Program Evaluation	3
Capstone		
HAP 793	Final Project in Applied Health Policy	3
Total Credits		39

Electives

Code	Title	Credits
Select three credits from the following:		**3**
Courses not listed below must be approved by the student's advisor.		

HAP 621	Organization Behavior and Healthcare Leadership
HAP 647	Regulatory Requirements for Health Care Systems
HAP 661	Policy Development and Analysis for Community Health Programs
HAP 703	Financial Management in Health Systems
HAP 745	Health Care Security Policy
HAP 746	Health Policy Leadership
HAP 750	Legal Issues in Health Administration
GCH 600	Health Promotion Methods
GCH 610	Health Behavior Theory
GCH 611	Health Program Planning and Evaluation
GCH 651	Behavioral Research Methods
GCH 712	Introduction to Epidemiology
BIOD 609	Biodefense Strategy
BIOD 620	Global Health Security Policy
PUAD 630	Emergency Planning and Preparedness
PUAD 633	Hazard Mitigation Policy
PUAD 635	Emergency Preparedness: Interagency Communication and Coordination
PUAD 645	Policy Analysis
PUAD 649	Advocacy and Lobbying
PUAD 651	Virginia Politics, Policy, and Administration
PUBP 709	Professional Writing for Policy
PUBP 712	Policy Systems Analysis and Management Science
PUBP 734	Administrative Law and Public Policy
PUBP 735	Lobbying and Interest Representation
PUBP 739	Media and Public Policy
PUBP 744	Federal Institutions and Management
PUBP 761	Social Entrepreneurship and Public Policy
Or advisor-approved elective course	
Total Credits	3

Health and Social Policy Minor

Banner Code: HSP

Academic Advising

Website: https://chhs.gmu.edu/students/academic-advising/undergraduate-advising/health-administration-and-policy-advisors

The minor in health and social policy introduces students to the context and process for public policymaking in health care and social services. Students will examine the current environment for health and social policy, learn the basic elements of the public policymaking process, and apply this knowledge in a practical research endeavor. This minor is a joint program offered by the Department of Health Administration and Policy and the Department of Social Work. This minor is not intended to be for students with a major in health administration as many of the required courses overlap with the required minor coursework.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students should complete all coursework with a minimum GPA of 2.00. Students should be familiar with university-wide requirements for minors described in AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 18

Students will take five (5) core courses and one (1) elective course in an area of health and social policy interest.

Required Courses

Code	Title	Credits
HAP 301	Health Care Delivery in the United States	3
HAP 312	Healthcare Law	3
or SOCW 400	Legal and Ethical Issues in Human Services	
HAP 442	Introduction to Health Care Politics and Policy	3
GCH/SOCW 445	Social Determinants of Health	3
HAP 445	Introduction to Health Services Research	3
or SOCW 471	Research in Social Work	
Total Credits		15

Elective

Code	Title	Credits
Select one from the following:		**3**
HAP 290	Lifestyle Management	
HAP 310	Healthcare Ethics	
HAP 395	Healthcare Finance	
SOCW 410	Alcohol and Substance Abuse: Policies and Programs	
SOCW 415	Child and Family Welfare	
SOCW 435	Introduction to Gerontology	
GCH 405	Global Health Interventions: History and Systems [1]	
Total Credits		3

[1] GCH 405 requires a prerequisite course: GCH 205 Global Health (Mason Core)

Health Informatics and Data Analytics Graduate Certificate

Banner Code: HH-CERG-HIDA

Academic Advising

Website: hap.gmu.edu/program/view/19933

This certificate prepares clinicians, health care managers, statisticians, epidemiologists, computer programmers, data analysts, and other professionals in analysis of complex health care data, including data extracted from electronic health records, claims data, and consumer generated data. Since electronic health records and related data repositories are becoming increasingly more massive, the certificate emphasizes topics related to big data analysis. Data mining, propensity scoring, and other advanced analytic techniques covered in the certificate can handle complex problems typically found in observational data: large, multidimensional and multi-type data sets, with many confounding issues and noise. These techniques can be computationally efficient on large scale analysis and intelligent in predicting an outcome.

This certificate qualifies for Title IV Federal Financial Aid.

Admissions & Policies

Admissions

Applicants must hold a bachelor's degree from a an institution of higher education accredited by a Mason-recognized U.S. institutional accrediting agency or international equivalent and must have a minimum of a 3.0 GPA to be considered. Applicants must meet the admission standards and application requirements specified in Graduate Admissions and must apply using the online Application for Graduate Admission (https://www2.gmu.edu/admissions-aid/). The application process is competitive, and applications are considered for the fall and spring semesters. For application deadlines and detailed application requirements, refer to the CHHS Admissions website (https://chhs.gmu.edu/admissions/graduate-admissions/standards-requirements-and-deadlines/).

Policies

For policies governing all graduate certificates, see AP.6.8 Requirements for Graduate Certificates.

Requirements

Certificate Requirements

Total credits: 18

This certificate may be pursued on a full-or part-time basis.

Students must complete at least 18 credits of required courses with a grade of B or better. The course content and syllabi are also available at the program website (https://hap.gmu.edu/program/health-informatics-and-data-analytics-graduate-certificate/) and by contacting hap@gmu.edu.

Required Courses

Code	Title	Credits
Students must complete six of the following:		**18**
HAP 618	Computational Tools in Health Informatics	
HAP 671	Health Care Databases	
HAP 719	Advanced Statistics in Health Services Research I	
HAP 720	Health Data Integration	
HAP 725	Statistical Process Control in Healthcare	
HAP 777	Health Data Visualization	
HAP 780	Data Mining in Health Care	
HAP 823	Comparative Effectiveness Analysis using Observational Data	
HAP 880	Advanced Health Data Mining	
Total Credits		18

Health Informatics, MS

Banner Code: HH-MS-HINF

Academic Advising

Website: https://chhs.gmu.edu/students/academic-advising/graduate-advising#hap

The purpose of the degree is to provide students with a graduate education to advance careers as leaders and innovators in health informatics. The program combines healthcare, medical and information technology domains, and places particular emphasis on the interdisciplinary collaboration between these fields. We prepare health informatics professionals with knowledge of healthcare industry and technology solutions, in conjunction with practical skills needed in this dynamically evolving field. The program's goal is to prepare graduates to be able to effectively analyze complex health data, manage evolving health information systems (ranging from evaluation of information needs to design, development, acquisition, implementation, operation and improvement) and support the increased adoption and use of electronic health records.

This 30-36 credit graduate degree program prepares students to become health information systems specialists, health data analysts, health care managers and consultants. Graduates of the program may be employed in health information technology firms, health care/service organizations and their business partners, as well as public health entities. Students learn about emerging technologies likely to impact delivery of health services in the future. The program provides a basis for students who wish to continue their education toward a doctoral degree in health informatics or a related field. The program consists of three concentrations: Health Data Analytics, Health Informatics Management and Population Health Informatics.

The MS in Health Informatics degree is offered via a regular on-campus or premium priced all-online delivery format. The curriculum in both programs is the same, but students must matriculate through only one pathway. Separate application processes are used for online and on-campus programs. Most courses in the on-campus program are taught in the evening at Mason's Fairfax Campus, with some courses available in hybrid or online formats. On-campus students can complete their degree at their own pace provided that they do so within six years of starting the program. The online premium-priced program is offered in a flexible, compressed schedule online format. In the all-online program, courses are taken one at a time, in an accelerated 8-week format, and follow a prescribed sequence.

Concentrations

Health Data Analytics Concentration

The Health Data Analytics Concentration provides students with deep understanding of health data, analytic methods, and data mining, as well

as data science skills applied to clinical, administrative and consumer-generated health data.

Health Informatics Management Concentration

The Health Information Management Concentration provides students with knowledge and skills needed to manage evolving health information systems (ranging from evaluation of information needs to design, development, acquisition, implementation, operation and improvement) and support the increased adoption and use of electronic health records.

Population Health Informatics Concentration

The Population Health Informatics Concentration provides students with knowledge and skills needed to collect, analyze and manage population-level data, as well as understanding of electronic tools used in population health. Managing the health of populations requires the involvement of both organizations and individuals within a community and is viewed as a promising model to not only improve health outcomes but also reduce cost. The concentration content starts by addressing traditional public health information needs and then moves on to sophisticated business analytics and data governance to support the goals of accountable care organizations, integrated care networks, and value-based purchasing programs.

Admissions & Policies

Admissions

Requirements

Applicants must hold a BA or BS degree or equivalent from an institution of higher education accredited by a Mason-recognized U.S. institutional accrediting agency or international equivalent. Although the field or major is not a criterion for admission, the applicants are expected to have taken basic-level computer science/technology, mathematics, and statistics, and be familiar with these fields. Students who do not meet these requirements may be required to take additional prerequisite courses. Clinicians are encouraged to apply. An undergraduate grade point average of 3.25 (on a 4.0 scale) or above is preferred.

Applicants must meet the admission standards and application requirements specified in Graduate Admissions and must apply using the online Application for Graduate Admission (https://www2.gmu.edu/admissions-aid/). The application process is competitive, and applications are considered for the fall and spring semesters. For application deadlines and detailed application requirements, refer to the CHHS Admissions website (https://chhs.gmu.edu/admissions/graduate-admissions/standards-requirements-and-deadlines/).

Furthermore, although experience is not required, applicants with at least 1 year of professional work experience in a medical or health-related organization OR 1 year of work experience in information technology in any sector are preferred.

Policies

For policies governing all graduate degrees, see AP.6 Graduate Policies.

Transfer of Credit

Students may transfer a maximum of 12 credits from graduate courses taken at other institutions or taken at Mason in non-degree status. Transfer credit is subject to university and college policies and must be approved by the program director and the dean. Students who enroll initially through non-degree studies should seek course advising through the department and should submit their application to the MS program in their first semester of study.

Students with Undergraduate Program in Health Informatics

Students coming from Health Informatics undergraduate programs may request substitution of selected courses with more advanced courses if they received at least B+ in equivalent undergraduate courses.

Requirements

Degree Requirements

Total credits: 30-36

Core Courses

Code	Title	Credits
HAP 618	Computational Tools in Health Informatics [1]	3
HAP 670	Introduction to Health Informatics	3
HAP 671	Health Care Databases	3
HAP 672	Health Data: Vocabulary and Standards	3
HAP 678	Introduction to the U.S. Health System [2]	3
Total Credits		9-15

1. HAP 618 Computational Tools in Health Informatics may be waived for student with strong computing skills and/or a degree in computer science.
2. HAP 678 may be waived for student with strong health administration background.

Health Data Analytics Concentration (HDAN)

Code	Title	Credits
HAP 719	Advanced Statistics in Health Services Research I	3
HAP 780	Data Mining in Health Care	3
HAP 823	Comparative Effectiveness Analysis using Observational Data	3
Electives		**6**
Select two of the following:		
HAP 555	Computer Programming in Health Applications	
HAP 675	Project in Health Data Analysis [1]	
HAP 720	Health Data Integration	
HAP 725	Statistical Process Control in Healthcare	
HAP 730	Health Care Decision Analysis	
HAP 770	Medical Decision Making and Decision Support Systems	
HAP 774	Artificial Intelligence in Health	
HAP 777	Health Data Visualization	
HAP 819	Advanced Statistics in Health Services Research II	
HAP 880	Advanced Health Data Mining	
Total Credits		15

[1] HAP 675 is a variable-credit course. Three credits must be completed to fulfill the elective requirement.

Health Informatics Management Concentration (HINM)

Code	Title	Credits
HAP 602	Statistics in Health Services Management	3
HAP 713	Project Management in Health Information Technology	3
or SWE 625	Software Project Management	
HAP 745	Health Care Security Policy	3
Electives		**6**
Select two of the following:		
HAP 601	E-Commerce and On-line Marketing for Health Services	
HAP 621	Organization Behavior and Healthcare Leadership	
HAP 622	Healthcare Information Systems Analysis and Design	
HAP 645	Introduction to Health Services Research	
HAP 647	Regulatory Requirements for Health Care Systems	
HAP 704	Contemporary Issues in Health Systems Management	
HAP 705	Strategic Management and Marketing in Health Care	
HAP 715	Health Economics	
HAP 725	Statistical Process Control in Healthcare	
HAP 750	Legal Issues in Health Administration	
HAP 770	Medical Decision Making and Decision Support Systems	
Total Credits		15

Population Health Concentration (HIP)

Code	Title	Credits
HAP 717	Population Health Informatics	3
HAP 718	Consumer Health Informatics	3
GCH 712	Introduction to Epidemiology	3
Electives		**6**
Select two of the following:		
GGS 650	Introduction to GIS Algorithms and Programming	
HAP 730	Health Care Decision Analysis	
HAP 774	Artificial Intelligence in Health	
HAP 780	Data Mining in Health Care	
Total Credits		15

Practicum or Thesis

After completing coursework, and with permission of advisor, students choose between the Capstone Practicum and Master's Thesis. Both options require two semesters to complete.

Code	Title	Credits
Select one option from the following:		
Practicum Option		
HAP 789	Pre-Capstone Professional Development Seminar	3
HAP 790	Capstone Practicum in Health Systems Management	3
Thesis Option		
HAP 799	Master's Thesis	6
Total Credits		6

Accelerated Master's

Bachelor's Degree (Any)/Health Informatics, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a bachelor's degree in any discipline and an MS in Health Informatics in an accelerated time-frame after satisfactory completion of a minimum of 141 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/).

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies. For information specific to this accelerated master's program, see department website (https://hap.gmu.edu/academics/health-informatics/health-informatics-ms/admissions/).

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits and students must submit two letters of recommendation from a faculty member.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MS program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

3.25 overall GPA

3.50 GPA in major coursework

Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing Courses: (substitutes are possible for major-specific BS Health Administration degree required courses, or as a required CHHS elective)

Code	Title	Credits
HAP 670	Introduction to Health Informatics [1]	3
HAP 671	Health Care Databases [2]	3
HAP 672	Health Data: Vocabulary and Standards [3]	3
HAP 745	Health Care Security Policy [4]	3
HAP 713	Project Management in Health Information Technology [5]	3
Any 500, 600, or 700 level course listed in MSHI program. [6]		

1. Substitutes *for* HAP 360 Introduction to Health Information Systems
2. Substitutes *for* HAP 361 Health Databases.
3. Substitutes for HAP 459 Health Data Standards and Interoperability.
4. Substitutes *for* HAP 462 Privacy and Security in Health Informatics.
5. Substitutes *for* HAP 460 Information Technology Project Management.
6. Electives

Students can replace HAP 489 and HAP 498 with 7 credits of graduate courses approved by advisor if enrolled in the BS in Health Administration. Only 6 of the 7 credits are applied towards MS program.

Reserve credit courses:

Students may take 500, 600 and 700 level courses listed in MSHI program to be used for reserve credit with approval from their BAM advisor.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies.

Health Information Technology Minor

Banner Code: HIT

Academic Advising

Website: chhs.gmu.edu/students/academic-advising/undergraduate-advising/health-administration-and-policy-advisors

The minor in health information technology introduces students, in a non-technical context, to the utilization of health information management in the professional arena of health care management and policy. Students will examine the current and projected role of health information management in the delivery of health care and development of health policy and apply this information in a practical research endeavor.

Admissions & Policies

Policies

At least 12 credits must be unique to the minor and cannot be used to fulfill the program of study requirements of the student's major, concentration, undergraduate certificate, or another minor, and students must complete all coursework with a minimum GPA of 2.00. Students should be familiar with university-wide requirements for minors described in AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 18

Required Courses

Code	Title	Credits
HAP 301	Health Care Delivery in the United States	3
HAP 360	Introduction to Health Information Systems	3
HAP 361	Health Databases	3
or IT 214	Database Fundamentals	
HAP 459	Health Data Standards and Interoperability	3
Total Credits		12

Electives

Code	Title	Credits
Select two from the following:		**6**
HAP 308	Public Health Informatics	
HAP 436	Electronic Health Data in Process Improvement	
HAP 440	Mobile Health	
HAP 460	Information Technology Project Management	
HAP 461	Internet and Web Technology Applications for Healthcare	
HAP 464	Electronic Health Record Configuration and Data Analysis	
HAP 467	Advanced Information Technology Project Management	
Total Credits		6

Health Services Research, PhD

Banner Code: HH-PHD-HSR

Academic Advising

Website: https://chhs.gmu.edu/students/academic-advising/graduate-advising#hap (https://chhs.gmu.edu/students/academic-advising/graduate-advising/#hap)

Administration

- Panagiota (Yiota) Kitsantas, PhD, Program Director

The purpose of the PhD program in Health Services Research is to prepare graduates to be scholars, educators, researchers, and leaders in higher education, health care and service organizations, health care consulting firms, government and nonprofit organizations, and private businesses that support or regulate the health service industry.

The degree has the following two specialized programs of study (concentrations):

- Knowledge Discovery and Health Informatics
- Health Systems and Policy

Admissions & Policies

Admissions

Requirements

Students must have a master's degree or other advanced degree (i.e., MD, JD, PhD or equivalent) from an institution of higher education accredited by a Mason-recognized U.S. institutional accrediting agency or international equivalent before being admitted to the 72-credit PhD program.

Applicants must meet the admission standards and application requirements specified in Graduate Admissions and must apply using the online Application for Graduate Admission (https://www2.gmu.edu/admissions-aid/apply-now/). For application deadlines and detailed application requirements, refer to the CHHS Admissions website (https://chhs.gmu.edu/admissions/graduate-admissions/standards-requirements-and-deadlines/).

Policies

Reduction of Credit

Students who enter with a master's or other advanced degree may have the credit requirement reduced by up to 30 credits for previous coursework that closely corresponds with doctoral program requirements. The credit reduction decision will be made by the doctoral advisor and requires approval of the doctoral program director. Requests for reduction of credit are reviewed only after acceptance to the doctoral program.

Time Requirements

Students must complete all requirements for the PhD in Health Services Research within 9 calendar years from the time of first enrollment as a doctoral student in the program. PhD students are expected to progress steadily toward their degree and to complete all coursework and comprehensive and field exams in order to advance to candidacy within no more than 6 years.

Requirements

Degree Requirements

Total credits: 72

Core Courses

Code	Title	Credits
HAP 671	Health Care Databases	3
HAP 742	Health Policy Development and Analysis	3
HAP 761	Philosophy of Science and Research Methods	3
HAP 780	Data Mining in Health Care	3
HAP 819	Advanced Statistics in Health Services Research II	3
HAP 824	Social Determinants of Health: A Multilevel Evidence-Based Approach	3
HAP 835	Causal Inference in Health Services Research	3
HAP 846	Advanced Health Economics	3
HAP 850	Health Informatics Research	3
HAP 865	Health Services Research Seminar	3
Total Credits		30

Concentration and Electives

Students take additional courses in one of two concentration domains: Knowledge Discovery and Health Informatics or Health Systems and Policy. Doctoral-level electives outside of CHHS or concentration-related content areas may be taken as approved by the student's academic advisor. A maximum of 6 credits of 600-level courses may be applied to the degree.

Concentration in Knowledge Discovery and Health Informatics (KDHI)

Code	Title	Credits
Select 30 credits from the following:		30
HAP 618	Computational Tools in Health Informatics	
HAP 672	Health Data: Vocabulary and Standards	
HAP 730	Health Care Decision Analysis	
HAP 719	Advanced Statistics in Health Services Research I	
HAP 720	Health Data Integration	
HAP 745	Health Care Security Policy	
HAP 770	Medical Decision Making and Decision Support Systems	
HAP 774	Artificial Intelligence in Health	
HAP 823	Comparative Effectiveness Analysis using Observational Data	
HAP 925	Advanced Methods in Qualitative Research for Health Care	
HAP 940	Advanced Independent Study	
GCH 807	Measurement Theories and Applications in Public Health Research	
RHBS 720	Principles of Clinical Trials	
RHBS 816	Rehabilitation Efficacy and Effectiveness Research	
STAT 663	Statistical Graphics and Data Exploration I	
STAT 763	Statistical Graphics and Data Exploration II	
CSI 873	Computational Learning and Discovery	
HHS 850	Teaching Practicum in Public Health	
Other course(s) supporting the student's subject matter or research methods, as approved by the advisor		
Total Credits		30

Concentration in Health Systems and Policy (HSYP)

Code	Title	Credits
Select 30 credits from the following:		30
HAP 645	Introduction to Health Services Research	

HAP 661	Policy Development and Analysis for Community Health Programs
HAP 704	Contemporary Issues in Health Systems Management
HAP 745	Health Care Security Policy
HAP 746	Health Policy Leadership
HAP 823	Comparative Effectiveness Analysis using Observational Data
HAP 925	Advanced Methods in Qualitative Research for Health Care
HAP 940	Advanced Independent Study
GCH 807	Measurement Theories and Applications in Public Health Research
RHBS 816	Rehabilitation Efficacy and Effectiveness Research
HAP 719	Advanced Statistics in Health Services Research I
HHS 850	Teaching Practicum in Public Health
Other course(s) supporting the student's subject matter or research methods, as approved by the advisor	
Total Credits	30

Comprehensive Exams

Two comprehensive examinations will determine whether the student has the necessary knowledge and skills to undertake dissertation work. These examinations must be taken within one year of completion of all coursework (except for dissertation sequence courses).

Advancement to Candidacy

Students who complete all core and concentration course requirements, pass the comprehensive exams, and successfully defend the dissertation proposal can advance to candidacy. A student must advance to candidacy status before taking the dissertation credits.

Dissertation Sequence Courses

Code	Title	Credits
Complete at least 12 credits:		**12**
HAP 998	Doctoral Dissertation Proposal	
HAP 999	Doctoral Dissertation (at least 6 credits)	
Total Credits		12

Dissertation

After advancement to candidacy, the HSR PhD student must complete an approved dissertation. The student must seek and obtain the approval of the HSR PhD Program Director on the selection of his/her Dissertation Chair and committee members. The committee must have at least three members, each of which must be a full-time member of the graduate faculty. The Chair must hold an appointment in the Department of Health Administration and Policy (HAP) and be approved by the Program Director. The second member of the dissertation committee may be a member of either the HAP Department or the College of Health and Human Services (CHHS), and the third member of the committee may be from CHHS, other academic unit at George Mason University, or from outside of Mason. A fourth member of the committee may be appointed, from another academic unit or from outside Mason, with the approval of the Program Director.

Within twelve months of passing the comprehensive examinations, the student must submit a draft of the dissertation proposal to the Dissertation Chair and committee. The proposal shall describe the proposed research as directed by the Chair and Committee. The proposal must provide a detailed literature review that provides the context and rationale for the research objectives, state the dissertation objective(s), and describe the proposed study design and analytic methods. An oral proposal defense must be scheduled with dissertation committee members who have agreed to serve. During the oral proposal defense, the student will describe their proposed research and address questions by the committee members. At the oral defense, the Dissertation Committee determines approval or disapproval of the proposal. Committee disapproval is accompanied by written recommendations for improving the proposed research with expectations for resubmission.

Health Systems Management, MHA

Banner Code: HH-MHA-HSMG

Academic Advising

Website: https://chhs.gmu.edu/students/academic-advising/graduate-advising#hap

The master of health administration (MHA), health systems management program is accredited by the Commission on Accreditation of Healthcare Management Education (http://cahme.org/) (CAHME). The United States Department of Education and Council on Higher Education Accreditation have granted formal recognition to CAHME as the only organization to accredit master's level health care management programs in the United States and Canada. This master's program prepares future executives to assume leadership positions in health care organizations. We prepare health care professionals with strategic, business, analytic, and decision-making skills needed to successfully navigate the evolving health care industry.

This program prepares students to work as leaders and executive-level managers in evolving health systems, or as consultants and managers of health-related organizations. The curriculum was developed in response to the demand for advanced health management preparation for a variety of health care and allied health professionals to be employed in both the public and private sectors of health care.

Admissions & Policies

Admissions

Requirements

Applicants must hold a bachelor's degree from an institution of higher education accredited by a Mason-recognized U.S. institutional accrediting agency or international equivalent and have a minimum of a 3.0 GPA to be considered. Admission to the program is competitive, and a variety of criteria are evaluated in the admission decision. For application deadlines and detailed application requirements, refer to the CHHS Admissions website (https://chhs.gmu.edu/admissions/graduate-admissions/standards-requirements-and-deadlines/). Applicants are evaluated based on past academic performance (including prior academic degrees and courses taken), letters of recommendation, personal professional goal statement and professional experience. Work experience in the healthcare industry is preferred, but not required for admission. The application materials are

used to determine the applicant's "match" with the program and potential for success in graduate studies. Applicants who are deemed to meet the above criteria are required to have a brief personal interview with faculty. Applicants who are unable to attend a personal interview will be interviewed through video conferencing technology.

Policies

For policies governing all graduate degrees, see AP.6 Graduate Policies.

Transfer of Credit

Students may transfer a maximum of 12 credits from graduate courses taken at other institutions or taken at Mason in non-degree status. Transfer credit is subject to university and college policies and must be approved by the program director and the dean. Students who enroll initially through non-degree studies should seek course advising through the department and should submit their application to the MHA program in their first semester of study.

Program Format

The MHA in Health Systems Management is offered in both on-campus and online delivery formats. The curriculum is the same whether you are studying online or on campus, but students must apply to and matriculate through only one pathway.

Most courses in the on-campus program are taught in the evening at Mason's Fairfax Campus. Additionally, some courses are offered on Saturdays, a few are offered at the Arlington Campus, and a small percentage can be taken online. Students can complete their degree at their own pace provided that they do so within six years of starting the program.

The online premium priced program is offered in a flexible, online format, which mirrors the CAHME-accredited on-campus program. Courses are taken one at a time in an accelerated 8 week format.

English Language Test Score Thresholds

International students whose scores on the English Language Tests are below the thresholds required by the program must take EAP 508 Graduate Communication in the Disciplines III (Credits: 4) in their first semester of study and earn a grade of B (3.0) or higher. This will add 4 credits to the 47 credit hour program for a total of 51 credits.

Test	Overall	Listening	Reading	Writing	Speaking
TOEFL IBT	100	24	26	24	23
TOEFL PBT	610	59	60	62	
TOEFL CBT	253	24	25	26	N/A
PTE	65+	Subsections 68+			
IELTS	7	7	6.5	7	6.5

Requirements

Degree Requirements

Total credits: 47-51

The program of study comprises 47-51 credits grouped into two phases of study. International students whose scores on the English Language Tests are below the thresholds required by the program are required to take EAP 508 - Graduate Communication in the Disciplines III (http://catalog.gmu.edu/preview_course_nopop.php?catoid=29&coid=308575) (Credits: 4) in their first semester of study and earn a grade of B (3.0) or higher. This will increase the degree requirements for these students from 47 to 51 credits.

Required Courses

Code	Title	Credits
Phase I - Leadership in the Healthcare Delivery System		
HAP 678	Introduction to the U.S. Health System	3
HAP 621	Organization Behavior and Healthcare Leadership	3
HAP 715	Health Economics	3
HAP 670	Introduction to Health Informatics	3
HAP 652	Essentials of Health Insurance and Managed Care	3
or HAP 764	Health Policy and Government Payment Systems for Health Care Services	
HAP 750	Legal Issues in Health Administration	3
HAP 707	Human Resource Management in Healthcare	3
Phase II - Problem Resolution and Decision Making		
HAP 602	Statistics in Health Services Management	3
HAP 708	Quantitative Methods in Health Care Management	3
HAP 711	Quality Improvement in Health Services	2
HAP 703	Financial Management in Health Systems	3
HAP 702	Managerial Accounting in Health Care	3
HAP 746	Health Policy Leadership	3
or HAP 742	Health Policy Development and Analysis	
HAP 705	Strategic Management and Marketing in Health Care	3
HAP 704	Contemporary Issues in Health Systems Management	3
HAP 790	Capstone Practicum in Health Systems Management	3
Total Credits		47

Code	Title	Credits
International students whose scores on the English Language Tests are below required thresholds are required to take EAP 508 Graduate Communication in the Disciplines III in their first semester of study and earn a grade of B (3.0) or higher. This will increase the degree requirements for these students from 47 to 51 credits.		
EAP 508	Graduate Communication in the Disciplines III	4

Accelerated Master's

Bachelor's Degree (BS Health Administration)/Health Systems Management, Accelerated MHA

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BS in Health Administration

(Health System's Management Concentration and Assisted Living/ Seniors Housing Concentration) and an MHA in Health Systems Management in an accelerated time-frame after satisfactory completion of a minimum of 155 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/ Accelerated Master's Degree policies. For information specific to this accelerated master's program, see department website (https://hap.gmu.edu/program/view/19950/) .

Students must submit two professional letters of recommendation and a personal statement, have a 3.25 GPA, and a 3.50 GPA in all major coursework.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 15 HAP undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MA/MS program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

3.25 overall GPA

3.50 GPA in major coursework

Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses may choose from the following:

Advanced Standing Courses: (substitutes for these major-specific BS degree required courses, or as a required CHHS elective)

Code	Title	Credits
HAP 702	Managerial Accounting in Health Care [1]	3
HAP 703	Financial Management in Health Systems [2]	3
HAP 707	Human Resource Management in Healthcare [3]	3
HAP 715	Health Economics [4]	3

1 Can count as CHHS elective in BS Health Administration degree.

2 Substitutes *for* HAP 395 Healthcare Finance.

3 Substitutes for HAP 392 Human Resources Management in Healthcare.

4 Substitutes *for* HAP 425 Health Economics and Policy.

Please consult the undergraduate program coordinator and graduate program director regarding further questions about course substitutions.

Reserve Credit Courses: (Graduate courses that undergraduate students can take, up to 6 credits, that will only count for the graduate degree requirements).

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degree policies.

Senior Housing Administration Minor

Banner Code: SHA

Academic Advising

Website: chhs.gmu.edu/students/academic-advising/undergraduate-advising/health-administration-and-policy-advisors

The minor introduces students to the context and foundational knowledge required for administrative or managerial work within residential communities for older adults - including independent living, assisted living, Alzheimer's/memory care, and continuing care retirement communities. Students will examine the current U.S. health care and senior housing environment, best practices in day-to-day management and marketing of senior housing communities, and have the opportunity to gain additional understanding of ethical, legal, and gerontological issues applicable to aging populations. Health Administration majors may pursue either the concentration in Senior Housing Administration or complete senior housing coursework to fulfill elective requirements for other concentrations in the degree.

Admissions & Policies

Admissions

The minor is available only to students outside of the Health Administration major.

Policies

At least 12 credits must be unique to the minor and cannot be used to fulfill the program of study requirements of the student's major, concentration, undergraduate certificate, or another minor. Students must complete all coursework with a minimum GPA of 2.00. Students should be familiar with university-wide requirements for minors described in AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 15

Required Courses

Code	Title	Credits
HAP 301	Health Care Delivery in the United States	3
HAP 310	Healthcare Ethics	3
HAP 403	Assisted Living/Senior Housing Management and Philosophy	3
HAP 404	Senior Housing Sales and Marketing	3
Total Credits		12

Elective

Code	Title	Credits
Select one course from the following:		3
HHS 432	Healthy Aging	
GCH 480	Health Maintenance and Health Aspects of Aging	
SOCW 435	Introduction to Gerontology	
RHBS 420	Adult Health and Function	
HAP 312	Healthcare Law	
HAP 392	Human Resources Management in Healthcare	
HAP 395	Healthcare Finance	
HAP 396	Strategic Health Management and Planning	
Total Credits		3

Department of Nutrition and Food Studies

Phone: 703-993-4628
Website: nutrition.gmu.edu

Administration

- Lawrence Cheskin, Chair

The overarching mission of the Department of Nutrition and Food Studies (NUTR) is to inform students and the public about the role of food and nutrition in improving health and well-being among local and global populations through the integration of education, research, and outreach. The educational mission is to provide undergraduate and graduate degrees and certificates in food and nutrition-related studies. The research mission is to promote, develop and support research programs that help define and address food and nutritional issues. The outreach mission is to increase the awareness of food and nutrition-related issues among local and global communities, support local and global food and nutrition initiatives, and enhance collaboration among individuals and organizations to improve nutrition and health-related outcomes. Part-time students are encouraged to take at least 6 credits per semester to promote timely completion of the program.

Faculty

Department Faculty

Professor

Cheskin (chair)

Associate Professor

de Jonge, Gewa, Slavin

Assistant Professors

Bethija, LaCharite, Wagner

Requirements & Policies

Requirements

Academic Advising

Each student is assigned an academic advisor who is a faculty member within their academic department or a professional academic advisor within the Office of Student Affairs (OSA). Academic advisor assignments are listed on the CHHS website (https://chhs.gmu.edu/students/academic-advising/), and students are expected to meet with their advisor regularly (at least once each semester) to seek advice about academic schedules and program plans, internships, and career guidance. Students also should meet with their advisor if they are experiencing academic difficulty or personal challenges or if they are feeling overwhelmed.

All students are responsible for knowing the requirements of their major as specified in the university catalog for their catalog year; academic deadlines outlined in the semester academic calendar (http://registrar.gmu.edu/calendars/); and university policies and procedures as stated in the catalog.

Students also should run their own degree-evaluation (http://registrar.gmu.edu/students/degree-evaluation/) to identify graduation requirements and progress towards their degree. While academic advisors can give advice to students, students are responsible for the academic planning decisions they make. Academic advisors cannot be held responsible for mistakes made by students in selecting courses that may not count toward their degree and thus delay a desired graduation date.

Programs

- Food Systems Minor
- Nutrition Graduate Certificate
- Nutrition Minor
- Nutrition, MS

Food Systems Minor

Banner Code: FOOD

Academic Advising

Website: https://chhs.gmu.edu/students/academic-advising/undergraduate-advising/nutrition-and-food-studies-advisor

The minor in food systems is designed to provide students from a range of disciplines with the knowledge and skills to understand how factors of the food system affect the health of a community (e.g., nutrition, food security, inequity, agriculture, food safety). Using a systems approach, students will study the interrelating components, drivers, and outcomes in the national and global food systems, including the obesity epidemic, food security, and the environmental impact of agriculture.

Admissions & Policies

Policies

To complete the minor, students are required to pass at least 15 credits of undergraduate coursework. At least six credits must be completed at Mason, and no more than three credits of C- or D in the minor are accepted. Eight credits of coursework must be unique to the minor.

Students should be familiar with university-wide requirements for minors described in AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: minimum 15

Required Courses

Code	Title	Credits
NUTR 295	Introduction to Nutrition (Mason Core)	3
NUTR 318	Global Nutrition and Food Security	3
NUTR 326	Food Systems	3
NUTR 383	Taste and Place	3
Select one course from the following:		3
NUTR 312 & NUTR 313	Experimental Foods and Experimental Foods Lab	
NUTR 410	Introduction to Food Safety and Defense	
NUTR 315	Fundamentals of Cooking	
NUTR 430	Introduction to Wine and Beer	
NUTR 435	Urban Agriculture	
ANTH 366	Food and Human Evolution	
BIOL 385	Biotechnology and Genetic Engineering	
EVPP 442	Urban Ecosystems and Processes	
INTS 371	Food Systems and Policy (Mason Core)	
INTS 370	Sustainable Food Systems	
INTS 470	Professional Pathways in Sustainable Food Systems	
INTS 402	Plants and People - Sustenance, Ceremony, and Sustainability	
MBUS 303	Marketing in a Global Economy	
PHIL 243	Global Environmental Ethics (Mason Core)	
or PHIL 343	Topics in Environmental Philosophy (Mason Core)	
or PHIL 358	Ethics and Economics	
TOUR 310	Food and Beverage Management	
Total Credits		15

Nutrition Graduate Certificate

Banner Code: HH-CERG-NUTR

Academic Advising

Website: chhs.gmu.edu/students/academic-advising/graduate-advising#nfs

Available Concentrations

Students pursuing the graduate certificate in nutrition may choose from one of the following concentrations:

- Community Nutrition
- Food Security

This certificate qualifies for Title IV Federal Financial Aid.

Concentration in Community Nutrition

The graduate certificate in nutrition with a concentration in community nutrition prepares students to apply nutrition principles and the latest scientific evidence and methods of nutrition to health practice and research among different populations. The program emphasizes understanding the role of nutrition in population health and well-being and the development of skills required in the practice, analysis, and interpretation of nutrition-related information and data among individuals and populations. Students will acquire competencies in the following areas:

- public health nutrition framework
- nutritional assessment and monitoring
- research design and methodology
- planning and evaluation of nutrition programs

Concentration in Food Security

The graduate certificate in nutrition with a concentration in food security provides knowledge and tools in the areas of nutrition, food studies, geography, and geoinformation science to prepare students for careers in food security and safety. The program includes courses in nutrition, food security, food safety, and GIS and remote sensing, and the program will give students insight into the determinants of food security in developing and industrialized countries, the roots of vulnerabilities of populations most at-risk, and programs involved in food security research and interventions worldwide.

Admissions & Policies

Admissions

Applicants must meet the admission standards and application requirements specified in Graduate Admissions and must apply using the Application for Graduate Admission (https://www2.gmu.edu/admissions-aid/). The application process is competitive, and applications are considered for the fall and spring semesters. For application deadlines and detailed application requirements, refer to the CHHS Admissions website (https://chhs.gmu.edu/admissions/graduate-admissions/standards-requirements-and-deadlines/).

Concentration in Community Nutrition

Previous undergraduate coursework in natural sciences, nursing, health science, and sociology is helpful.

Policies

For policies governing all graduate certificates, see AP.6.8 Requirements for Graduate Certificates.

Concentration in Community Nutrition

A maximum of 3 credits in equivalent coursework taken at another college or university can be applied toward the certificate.

Requirements

Certificate Requirements

Total credits: 18

This certificate may be pursued on a full-or part-time basis.

To earn the certificate, students must complete all requirements listed within a concentration and earn a minimum GPA of 3.00 in the 18 credits of graduate coursework, with no more than 3 credits with a grade of C.

Concentration in Community Nutrition (CMNT)

Code	Title	Credits
Required Courses		
NUTR 630	Global Nutrition	3
NUTR 566	Nutrition and Weight Management	3
GCH 712	Introduction to Epidemiology	3
NUTR 651	Nutrition Assessment, Monitoring and Surveillance	3
Electives		
Select two from the following:		6
GCH 610	Health Behavior Theory	
GCH 611	Health Program Planning and Evaluation	
GCH 752	Nutritional Epidemiology	
NUTR 583	Food and Culture	
Total Credits		18

Concentration in Food Security (FSEC)

Code	Title	Credits
Required Courses		
NUTR 608	Perspectives on Food Security	3
or BIOD 726	Food Security	
NUTR 610	Food Safety and Defense	3
NUTR 626	Food Systems	3
NUTR 630	Global Nutrition	3
Elective		
Select six credits from the following:		6
GCH 560	Environmental Health	
GGS 553	Geographic Information Systems	
GGS 579	Remote Sensing	
GGS 581	World Food and Population	
NUTR 611	Food and Nutrition Security Policy	
NUTR 651	Nutrition Assessment, Monitoring and Surveillance	
or other approved elective course		
Total Credits		18

Nutrition Minor

Banner Code: NUTR

Academic Advising

Website: https://chhs.gmu.edu/students/academic-advising/undergraduate-advising/nutrition-and-food-studies-advisor

The minor in nutrition is intended to increase knowledge of nutrition issues for students from all disciplines. Students pursuing degrees related to nutrition, health, and education may be interested in completing this minor.

Note: This minor is *not* equivalent to the registered dietitian license and does not provide a license to practice therapeutic nutrition.

Admissions & Policies

Policies

To complete the minor, students are required to pass at least 15 credits of undergraduate coursework. At least 6 credits must be completed at Mason, and no more than 3 credits of C- or D in the minor are accepted.

Students should be familiar with university-wide requirements for minors described in AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: minimum 15

Students are required to take an introductory nutrition course such as NUTR 295 Introduction to Nutrition (Mason Core) before beginning coursework in this minor.

Required Courses

Code	Title	Credits
NUTR 420	Strategies for Nutrition Education [1]	3
NUTR 421	Community Nutrition [1]	3
NUTR 422	Nutrition throughout the Life Cycle	3
NUTR 423	Nutrition and Chronic Illnesses	3
Total Credits		12

[1] NUTR 466 Nutrition and Weight Management: Obesity, Anorexia, and Bulimia can be used to substitute for either NUTR 420 or NUTR 421.

Elective

Code	Title	Credits
Select at least three credits from the following list:		**3-4**
CHEM 102	Chemistry for Changing Times (Mason Core)	

CHEM 463	General Biochemistry I
NUTR 466	Nutrition and Weight Management: Obesity, Anorexia, and Bulimia
NUTR 583	Food and Culture
GCH 205	Global Health (Mason Core)
GCH 360	Health and Environment
GCH 411	Health Program Planning and Evaluation
GCH 412	Fundamentals of Epidemiology
PSYC 211	Developmental Psychology (Mason Core)
PSYC 231	Social Psychology (Mason Core)
Other course as approved by advisor	
Total Credits	3-4

Nutrition, MS

Banner Code: HH-MS-NUTR

Academic Advising

Website: https://chhs.gmu.edu/students/academic-advising/graduate-advising#nfs

The master's in nutrition emphasizes a skill-set tailored to expanding nutrition-related needs. Students learn to assess, evaluate, and intervene in the most current and relevant nutrition issues. The curriculum prepares graduates to work for agencies, businesses, and organizations that seek to improve nutrition at the local, national, and global level. This program also prepares students to engage in further study for research careers in nutrition.

Admissions & Policies

Admissions

Requirements

Applicants must meet the admission standards and application requirements specified in Graduate Admissions and must apply using the online Application for Graduate Admission (https://www2.gmu.edu/admissions-aid/). For application deadlines and detailed application requirements, refer to the CHHS Admissions website (https://chhs.gmu.edu/admissions/graduate-admissions/standards-requirements-and-deadlines/).

Policies

For policies governing all graduate degrees, see AP.6 Graduate Policies.

Transfer of Credit

Transfer credit is governed by university transfer of credit policy and the university requirements for master's degrees, and transfer credit must be approved by the program director and the dean. Students who enroll initially through non-degree studies should seek course advising through the department prior to taking a course and plan to submit their application to the MS in Nutrition program in their first semester of study.

Requirements

Degree Requirements

Total credits: 39

Nutrition Core Courses

Code	Title	Credits
NUTR 651	Nutrition Assessment, Monitoring and Surveillance	3
NUTR 620	Nutrition Education	3
NUTR 522	Nutrition Across the Lifespan	3
NUTR 515	Fundamentals of Cooking	3
NUTR 642	Macronutrients	3
NUTR 644	Micronutrients	3
NUTR 670	Nutrition Research Methods	3
NUTR 675	Nutrition Program Development, Interventions and Assessments	3
NUTR 626	Food Systems	3
GCH 601	Introduction to Biostatistics	3
or HAP 602	Statistics in Health Services Management	
NUTR 583	Food and Culture [1]	3
Total Credits		30-33

[1] Required only for students who will complete the Practicum Option

Elective

All electives must be approved by advisor.

Code	Title	Credits
Select one from the following elective courses in any topic area.		**3**
Cultural Competency:		
NUTR 530	Introduction to Wine and Beer	
NUTR 630	Global Nutrition	
ANTH 699	Contemporary Issues in Sociocultural Anthropology [1]	
Nutrition Intervention, Programs, and Policy:		
NUTR 566	Nutrition and Weight Management	
NUTR 608	Perspectives on Food Security	
NUTR 610	Food Safety and Defense	
NUTR 611	Food and Nutrition Security Policy	
Nutrition Research:		
GCH 752	Nutritional Epidemiology	
GCH 804	Biostatistics for Public Health I	
GCH 805	Biostatistics for Public Health II	
HAP 719	Advanced Statistics in Health Services Research I	
RHBS 710	Applied Physiology I	
RHBS 711	Applied Physiology II	
Total Credits		3

[1] ANTH 699 may be selected only when topic is focused on food and human evolution.

Capstone Experience

Students must complete either the Practicum or Thesis option.

Practicum Option

The practicum option entails a supervised practical application of previously studied theory through fieldwork. Students will be required to engage for a minimum of 200 contact hours per practicum in a nutrition-related organization under the guidance of a preceptor and a faculty advisor. Students must attend one seminar course, complete a project while working in the agency, and produce a formal report and presentation during the practicum. Students will enroll in the Pre-Practicum course the semester prior to conducting the practicum. In their final semester, students will enroll in the Nutrition Practicum.

Code	Title	Credits
NUTR 788	Pre-Practicum Seminar	0
NUTR 790	Nutrition Practicum	3
Total Credits		3

Thesis Option

The thesis option is a research project incorporating an original design to test a theory and resulting in a final written thesis. The topic must fall within one of the areas of faculty expertise within the department, including: food science, food studies, global nutrition, public health nutrition, nutrition policy, nutrition assessment, and chronic disease and nutrition. Students may register for the thesis only with approval from their advisor and after they have completed at least 18 credits of the program.

Students in the master's thesis option are required to work with a committee of three faculty members. It is the responsibility of the student to form a committee at least 9 months before the desired graduation. The thesis director and at least one of the committee members must be members of the Department of Nutrition and Food Studies faculty, but the third member may or may not be from the Department. Students must take two thesis classes (6 credits total) while working on their thesis. Students must develop a proposal and have it approved by their committee and by the appropriate University committees, such as the Human Subjects Review Board, before undertaking the project. The thesis must conform to the format stated within Mason's University Libraries guidelines.

Code	Title	Credits
Six credits of		**6**
NUTR 799	Thesis Research	
Total Credits		6

Department of Rehabilitation Science

Phone: 703-993-1950
Website: rehabscience.gmu.edu

Administration

- Rosemary Higgins, Interim Chair

Rehabilitation Science is an interdisciplinary field of study that seeks to understand the relationships among chronic illness, function, and disability and to improve the quality of life for those individuals who live with a chronic condition. This field draws its body of knowledge from multiple disciplines spanning the physiological, health, and social sciences in order to approach the individual who lives with or is at risk of disability as a complete person with a full appreciation of the biopsychosocial environment in which that person functions.

Faculty

Departmental Faculty

Professors

Guccione, Higgins (interim chair)

Department of Social Work

Phone: 703-993-4247
Website: socialwork.gmu.edu

Administration

- Emily Ihara, Chair

The mission of the Department of Social Work (SOCW) is to promote human well-being by ensuring economic and social justice, as well as human rights for all. The department accomplishes this mission by providing an academically rigorous education that nurtures and develops social work leaders, scholars, and practitioners to serve diverse populations, engage in critical thinking, challenge injustice, and implement interventions grounded in theory and science.

The research and scholarly activities of the department contribute to basic and applied social science research that investigates systemic inequities in power and unequal access to resources. The department aims to solve individual, family, and social problems by identifying and developing effective interventions rooted in scientific theory and collaborates with community members, social service agencies, governmental stakeholders, students, faculty, alumni, and research funders to cultivate community partnerships, enhance capacity, and provide technical expertise to human service organizations caring for diverse local, national, and global communities.

Undergraduate

The mission of the BSW Program is to prepare entry-level generalist social work professionals who will demonstrate ethical leadership in innovative multidisciplinary practice, social reform, and research in diverse communities. Students are provided a range of opportunities to develop a broad knowledge and skills base consistent with the systems and strengths perspectives. They are expected to practice using core social work values and to examine and resolve ethical dilemmas. Classroom and field experiences prepare students to be competent in the use of relevant new technologies and in culturally sensitive, generalist social work practice.

Graduate

The mission of the MSW program is to prepare social workers for advanced professional practice bringing excellent interpersonal, technological, research, and communication skills to the human service delivery system. The MSW program builds upon a foundation of generalist social work knowledge and skills that integrates micro and macro theory and practice and emphasizes empowerment and systems transformation. This foundation equips students to enhance human

well-being and to promote social and economic justice through ethical professional practice with culturally diverse individuals, families, groups, organizations, and communities. Graduates will be prepared to work collaboratively with individuals, families, and communities to stimulate positive change through clinical practice, advocacy, social and political action, and address local, national, and global challenges.

Field Placement

The Department of Social Work will make reasonable efforts to work with a student to secure an appropriate field placement, but it does not guarantee a placement. A student with a criminal history may find it difficult to obtain a field placement or employment in a human service agency depending on the specific charge. It is possible that a student with a criminal background may not be able to be placed in a field practicum or complete their degree program. The Criminal Background Policy is available on the Social Work Department website. (https://socialwork.gmu.edu/)

Program Completion

Part-time students are encouraged to take at least 6 credits per semester to promote timely completion of the program.

Faculty

Department Faculty

Professors

Rome, Rose, Tompkins (associate dean for faculty affairs), Wolf-Branigin

Associate Professors

Cleaveland, Davis, Freedman, Hines, Ihara (chair), Inoue, Kirsch, Lee, Matto

Assistant Professors

Booth, King, Tomaszewski, Waithaka

Administrative Faculty

Cornejo, Okuda

Emeriti

Ritchie, Raskin, Whittington

Requirements & Policies

Policies

Academic Advising

Each student is assigned an academic advisor who is a faculty member within their academic department or a professional academic advisor within the Office of Student Affairs (OSA). Academic advisor assignments are listed on the CHHS website (https://chhs.gmu.edu/students/academic-advising/), and students are expected to meet with their advisor regularly (at least once each semester) to seek advice about academic schedules and program plans, internships, and career guidance. Students also should meet with their advisor if they are experiencing academic difficulty or personal challenges or if they are feeling overwhelmed.

All students are responsible for knowing the requirements of their major as specified in the university catalog for their catalog year; academic deadlines outlined in the semester academic calendar (http://registrar.gmu.edu/calendars/); and university policies and procedures.

Students also should run their own degree-evaluation (http://registrar.gmu.edu/students/degree-evaluation/) to identify graduation requirements and progress towards their degree. While academic advisors can give advice to students, students are responsible for the academic planning decisions they make. Academic advisors cannot be held responsible for mistakes made by students in selecting courses that may not count toward their degree and thus delay a desired graduation date.

Programs

- Aging Studies Minor
- Gerontology Graduate Certificate
- Health and Social Policy Minor
- Social Work Minor
- Social Work, BSW
- Social Work, MSW

Aging Studies Minor

Banner Code: AGES

Academic Advising

Website: chhs.gmu.edu/students/academic-advising/undergraduate-advising/social-work-advisors

The minor in aging studies combines theoretical and applied coursework in aging with the student's undergraduate curriculum in any department of the university. Because aging studies is by definition multidisciplinary, students are required to take coursework outside their major field.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. Students should be familiar with university-wide requirements for minors described in AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 15

Required Courses

Code	Title	Credits
SOCW 435	Introduction to Gerontology	3
HHS 432	Healthy Aging	3
PSYC 415	Psychological Factors in Aging	3
HHS 480	Research Internship in Public Health	3
Total Credits		12

Elective

Code	Title	Credits
Select one from the following:		3
GCH 480	Health Maintenance and Health Aspects of Aging	
PSYC 418	Death, Dying, and Grieving	
Other aging-related course as approved by the program coordinator		
Total Credits		3

Gerontology Graduate Certificate

Banner Code: HH-CERG-GERO

Academic Advising

Website: masononline.gmu.edu/programs/gerontology-graduate-certificate/

This graduate certificate combines theoretical and applied coursework in aging with the student's graduate curriculum in any department. Because gerontology is by definition multidisciplinary, students are required to take coursework outside their major field.

Admissions & Policies

Admissions

Applicants must meet the admission standards and application requirements specified in Graduate Admissions and must apply using the Application for Graduate Admission (https://www2.gmu.edu/admissions-aid/). The application process is competitive, and applications are considered for the fall and spring semesters. For application deadlines and detailed application requirements, refer to the CHHS Admissions website (https://chhs.gmu.edu/admissions/graduate-admissions/standards-requirements-and-deadlines/).

Policies

For policies governing all graduate certificates, see AP.6.8 Requirements for Graduate Certificates.

Requirements

Certificate Requirements

Total credits: 15

This certificate may be pursued on a full-or part-time basis.

To earn the certificate, students must earn a minimum GPA of 3.00 in the 15 credits of coursework outlined below, with no more than 3 credits with a grade of C.

Required Courses

Code	Title	Credits
HHS 646	Social Gerontology	3
SOCW 689	Clinical Practice with Older Adults	3
SOCW 655	Aging Programs and Policies	3
HHS 648	Aging and Health	3
Total Credits		12

Elective

Code	Title	Credits
Select one from the following:		3
SOCW 655	Aging Programs and Policies	
PSYC 614	The Psychology of Aging	
An independent study course that focuses on research and gerontology		
Total Credits		3

Health and Social Policy Minor

Banner Code: HSP

Website: https://chhs.gmu.edu/students/academic-advising/undergraduate-advising/health-administration-and-policy-advisors

The minor in health and social policy introduces students to the context and process for public policymaking in health care and social services. Students will examine the current environment for health and social policy, learn the basic elements of the public policymaking process, and apply this knowledge in a practical research endeavor. This minor is a joint program offered by the Department of Health Administration and Policy and the Department of Social Work.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students should complete all coursework with a minimum GPA of 2.00. Students should be familiar with university-wide requirements for minors described in AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 18

Students will take five (5) core courses and one (1) elective course in an area of health and social policy interest.

Required Courses

Code	Title	Credits
HAP 301	Health Care Delivery in the United States	3
HAP 312	Healthcare Law	3
or SOCW 400	Legal and Ethical Issues in Human Services	
HAP 442	Introduction to Health Care Politics and Policy	3
GCH/SOCW 445	Social Determinants of Health	3
HAP 445	Introduction to Health Services Research	3
or SOCW 471	Research in Social Work	
Total Credits		15

Elective

Code	Title	Credits
Select one from the following:		**3**
HAP 290	Lifestyle Management	
HAP 310	Healthcare Ethics	
HAP 395	Healthcare Finance	
SOCW 410	Alcohol and Substance Abuse: Policies and Programs	
SOCW 415	Child and Family Welfare	
SOCW 435	Introduction to Gerontology	
GCH 405	Global Health Interventions: History and Systems [1]	
Total Credits		3

[1] GCH 405 requires a prerequisite course: GCH 205 Global Health (Mason Core)

Social Work Minor

Banner Code: SOCW

Academic Advising

Website: chhs.gmu.edu/students/academic-advising/undergraduate-advising/social-work-advisors

The minor in social work requires 15 credits and provides students with conceptual, theoretical, and practical knowledge related to the field of social work at the individual, family, group, community, and societal levels.

Note: Social work practice courses and internship experiences are only open to social work majors.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. Students should be familiar with university-wide requirements for minors described in AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 15

Required Courses

Code	Title	Credits
SOCW 200	Introduction to Social Work (Mason Core)	3
SOCW 375	Human Behavior and the Family Life Course (Mason Core)	3
SOCW 380	Changing Social Policies and Systems	3
Total Credits		9

Electives

Code	Title	Credits
Select two from the following:		6
SOCW 312	Knowledge Building for Helping Professionals	
SOCW 390	Analytic Methods for Social Work Research	
SOCW 400	Legal and Ethical Issues in Human Services	
SOCW 410	Alcohol and Substance Abuse: Policies and Programs	
SOCW 415	Child and Family Welfare	
SOCW 435	Introduction to Gerontology	
SOCW 445	Social Determinants of Health	
SOCW 475	Selected Topics in Social Work Policy	
SOCW 483	Selected Topics in Social Work Intervention	
Total Credits		6

Note:

The following courses are **not** open to students enrolled in this minor. See an advisor in the social work program for more information.

Code	Title	Credits
SOCW 311	Building Professional Social Work Skills	3
SOCW 357	Methods of Social Work Intervention I	3
SOCW 358	Methods of Social Work Intervention II	3
SOCW 361	Methods of Social Work Intervention I: Laboratory	3
SOCW 362	Methods of Social Work Intervention II: Laboratory	3
SOCW 471	Research in Social Work	3
SOCW 472	RS: Integrative Methods in Social Action and Social Change (Mason Core)	3
SOCW 495	Field Practicum and Seminar I	5
SOCW 496	Field Practicum and Seminar II	5

Social Work, BSW

Banner Code: HH-BSW-SOCW

Academic Advising

Website: https://chhs.gmu.edu/students/academic-advising/undergraduate-advising/social-work-advisors

This program prepares students for beginning generalist professional practice in social work at the baccalaureate level and has been granted full accreditation by the Council on Social Work Education. All students are expected to abide by the Code of Ethics of the National Association of Social Workers.

No academic credit toward field experience or coursework is given based on previous work or life experience. Students are required to successfully complete 450 hours of supervised field practicum in agencies approved by the Department of Social Work. The Department of Social Work will make reasonable efforts to work with a student to secure an appropriate field placement, but it does not guarantee a placement. The social work

program does *not* offer all of the required courses during the evening hours, so students should meet with their academic advisor to develop a plan to complete coursework for the degree. Field placements generally require availability during regular daytime hours.

Admissions & Policies

Admissions

Admission Requirements

To be admitted to the social work program, a student must have

1. completed at least 45 credits with a GPA of 2.50 or higher;
2. completed or be registered in:

Code	Title	Credits
BIOL 103	Introductory Biology II-Survey of Cell and Molecular Biology (Mason Core)	3
ENGH 101	Composition (Mason Core)	3
SOCI 101	Introductory Sociology (Mason Core)	3
PSYC 100	Basic Concepts in Psychology (Mason Core)	3

3. earned at least a C in:

Code	Title	Credits
SOCW 200	Introduction to Social Work (Mason Core)	3
SOCW 357	Methods of Social Work Intervention I	3
SOCW 361	Methods of Social Work Intervention I: Laboratory	3
And at least two of the following courses:		
SOCW 311	Building Professional Social Work Skills	3
SOCW 312	Knowledge Building for Helping Professionals	3
SOCW 375	Human Behavior and the Family Life Course (Mason Core)	3
SOCW 380	Changing Social Policies and Systems	3
SOCW 390	Analytic Methods for Social Work Research	3

4. be enrolled in all other required 300-level SOCW courses; and
5. submitted an application for the social work major and the senior field practicum by the deadline stated on the BSW admissions website (https://socialwork.gmu.edu/admissions/undergraduate-admissions/).

The student's application for admission to the social work major is reviewed for action by social work faculty members. A personal interview may be required.

There is no admission to the social work program in the summer. Students who have not met all criteria for admission to the major will not be considered for admission until the next academic year.

Policies

For policies governing all undergraduate degrees, see AP.5 Undergraduate Policies.

Program Requirements

To earn a bachelor's degree in social work, students must earn a grade of C or above in all Social Work classes applied to the major and must achieve a GPA of 2.50 overall. Class attendance is required in all Social Work courses. Before beginning SOCW 495 Field Practicum and Seminar I, students must successfully complete all required 200- and 300-level courses with a grade of C or above.

The Social Work faculty evaluates student performance periodically and may require students to withdraw from the program when, in their judgment, performance is not satisfactory. The decision is based on the quality of academic and field performance, as well as on personal fitness for the profession of social work. Students have the right to appeal.

A student with a criminal history may find it difficult to obtain a field placement or employment in a human service agency depending on the specific charge. It is possible that a student with a criminal background may not be able to be placed in a field practicum or complete their degree program. The Criminal Background Policy is available on the Social Work Department website (https://socialwork.gmu.edu/).

Immunization and Fees

All students who are enrolled in a course that requires a field placement (SOCW 495 Field Practicum and Seminar I and SOCW 496 Field Practicum and Seminar II) must have an annual tuberculosis screening (PPD). In addition, students must complete the entire hepatitis B immunization series in accordance with current U.S. Public Health Service recommendations. The cost of immunizations is the responsibility of the student. The majority of agencies used for field placements require fingerprinting, a criminal background check (may be more extensive than the university requirement), and a child protective services check. Any cost related to these requirements is the responsibility of the student.

Writing Intensive Requirement

The university requires all students to complete at least one course designated "writing intensive" in the 300 level or above. Students majoring in social work fulfill this requirement by successfully completing SOCW 471 Research in Social Work.

Requirements

Degree Requirements

Total credits: 120

Mason Core

Code	Title	Credits
Written Communication		
ENGH 101	Composition (Mason Core)	3
ENGH 302	Advanced Composition (Mason Core)	3
Oral Communication		
Any Mason Core Oral Communication course		3
Quantitative Reasoning		
Any Mason Core Quantitative Reasoning course		3
Information Technology		
Any Mason Core Information Technology course		3-7
Literature		
Any Mason Core Literature course		3

Arts		
Any Mason Core Arts course		3
Natural Science		
Any Mason Core non-lab Natural Science course		3
Any Mason Core lab Natural Science course		4
Western Civilization		
HIST 100	History of Western Civilization (Mason Core)	3
or HIST 125	Introduction to World History (Mason Core)	
Global Understanding		
Any Mason Core Global Understanding course		3
Total Credits		34-38

Required Courses

Code	Title	Credits
BIOL 103	Introductory Biology II-Survey of Cell and Molecular Biology (Mason Core)	3
PSYC 100	Basic Concepts in Psychology (Mason Core)	3
SOCI 101	Introductory Sociology (Mason Core)	3
Statistics		
Select one from the following:		3-4
SOCW 390	Analytic Methods for Social Work Research	
SOCI 313	Statistics for the Behavioral Sciences (Mason Core)	
PSYC 300	Statistics in Psychology	
STAT 250	Introductory Statistics I (Mason Core)	
Total Credits		12-13

Social Work Major

Code	Title	Credits
SOCW 200	Introduction to Social Work (Mason Core)	3
SOCW 311	Building Professional Social Work Skills	3
SOCW 312	Knowledge Building for Helping Professionals	3
SOCW 357	Methods of Social Work Intervention I	3
SOCW 361	Methods of Social Work Intervention I: Laboratory	3
SOCW 358	Methods of Social Work Intervention II	3
SOCW 362	Methods of Social Work Intervention II: Laboratory	3
SOCW 375	Human Behavior and the Family Life Course (Mason Core)	3
SOCW 380	Changing Social Policies and Systems	3
SOCW 471	Research in Social Work (fulfills writing intensive requirement)	3
SOCW 472	RS: Integrative Methods in Social Action and Social Change (Mason Core)	3
SOCW 495	Field Practicum and Seminar I	5
SOCW 496	Field Practicum and Seminar II	5
Total Credits		43

Electives

Code	Title	Credits
Select 32-34 credits of electives [1]		32-34
Total Credits		32-34

[1] Six credits must be in social work at the 400- or 500-level, not including courses listed above; SOCW 499 Independent Study in Social Work may be used to satisfy an additional 1 to 3 credits toward general electives.

Notes

SOCW 357 Methods of Social Work Intervention I and SOCW 361 Methods of Social Work Intervention I: Laboratory (only offered in the fall semester) are prerequisites to SOCW 358 Methods of Social Work Intervention II and SOCW 362 Methods of Social Work Intervention II: Laboratory (only offered in the spring semester). Graduation may be delayed if courses are not taken in proper sequence.

Selected Social Work electives are offered each semester on a rotating basis.

4-Year Plan

Bachelors of Social Work in Social Work Sample Plan of Study

Detailed four year plans can be found at https://chhs.gmu.edu/students/academic-advising/undergraduate-advising/program-planning-advising-sheets (https://chhs.gmu.edu/students/academic-advising/undergraduate-advising/program-planning-advising-sheets/)

Social Work, MSW

Banner Code: HH-MSW-SOCW

Academic Advising

Website: https://chhs.gmu.edu/students/academic-advising/graduate-advising#sw

George Mason's accredited Master of Social Work (MSW) program, which began in fall 2002, prepares students for advanced social work practice. The MSW program builds upon a foundation of generalist social work knowledge and skills that integrates micro and macro theory and practice and emphasizes empowerment and systems transformation. This foundation equips students to enhance human well-being and to promote social and economic justice and human rights through ethical professional practice with culturally diverse individuals, families, groups, organizations, and communities.

Once the generalist curriculum (30 credit hours) is complete, students choose a specialization in Children, Youth, and Families (CYF) or Adults and Healthy Aging (AHA). Graduates will be prepared to strengthen their communities, stimulate positive change through advocacy, social, and political action, and help meet local, national, and global challenges. All social work students are expected to abide by the Code of Ethics of the National Association of Social Workers. No academic credit towards field experience or coursework is given based on previous work or life experience.

The MSW degree is offered via a regular on-campus or fully online delivery format. The curriculum in both programs is the same, but students must matriculate through only one pathway. Separate application processes are used for on-campus and online programs. On-campus students can complete their degree in a two-, three-, or four-year plan of study. All courses are sequenced and must be taken in the order designated. Students should meet with their academic advisor to ensure timely completion of all degree requirements. The fully online program is offered in a flexible 8-week schedule format, and courses are taken in a prescribed sequence, one at a time, except during semesters when students are in their field practicum.

In both program options, students are required to successfully complete 1,050 hours of supervised field practicum in agencies approved by the Department of Social Work: 450 hours during the generalist year and 600 hours during the specialized practice year. Field placements generally require availability during regular daytime hours. The Department of Social Work will make reasonable efforts to work with a student to secure an appropriate field placement, but it does not guarantee a placement.

Admissions & Policies

Admissions

Requirements

Applicants must meet the admission standards and application requirements specified in Graduate Admissions and apply using the online Application for Graduate Admission (http://admissions.gmu.edu/). The application process is competitive, and applications for the on-campus program are considered for the fall semester only. In addition to holding an undergraduate degree from an institution of higher education accredited by a Mason-recognized U.S. institutional accrediting agency or international equivalent, applicants must have a minimum of 30 undergraduate credits in the liberal arts to include at least 3 credits in each of the following: English composition, history or government, social sciences, and statistics. For application deadlines and detailed application requirements, please refer to the CHHS Admissions website (https://chhs.gmu.edu/admissions/graduate-admissions/standards-requirements-and-deadlines/).

Requirements for MSW students with Advanced Standing

Students with a BSW degree who demonstrate superior academic achievement and excellence in social work practice may apply for advanced standing. Advanced standing students begin the MSW Program in the summer and upon successfully completing SOCW 674, move directly into the specialized practice curriculum. Advanced standing students must successfully complete 600 hours of supervised field practicum in agencies approved by the Department of Social Work.

All other academic policies for the advanced standing program are identical to those for the traditional MSW Program.

Advanced standing applicants must meet the admission standards and application requirements specified in Graduate Admissions and must apply using the online Application for Graduate Admission (https://www2.gmu.edu/admissions-aid/). The application process is competitive, and applications are considered for the fall admissions cycle only, with advanced standing students beginning courses in the summer. In addition to holding a BSW in Social Work earned within the past five years from a program accredited by the Council on Social Work Education, applicants must have a minimum of 30 undergraduate credits in the liberal arts to include at least 3 credits in each of the following: English composition, history or government, social sciences, and statistics. For application deadlines and detailed application requirements, refer to the CHHS Admissions website (https://chhs.gmu.edu/admissions/graduate-admissions/standards-requirements-and-deadlines/).

Policies

Transfer of Credit

Students who began MSW programs at another CSWE-accredited MSW program may transfer a maximum of 29 graduate credits into the MSW program.

Transfer credit is subject to university and college policies and must be approved by the program director and the dean. Students must note on the MSW Departmental Form and MSW Application Checklist that they are applying as transfer students.

Non-Degree Students

Admission to the on-campus MSW program is offered once a year for the fall semester only. Non-degree students may apply through the Office of Admissions (http://admissions.gmu.edu/nonDegree/) and be admitted in the fall and spring and, as space allows, enroll in classes as appropriate. Please contact the program director for more information.

Program Requirements

Students must earn a grade of B- or above in each course and must achieve a GPA of 3.0 over all courses applied to the degree. A prerequisite must be satisfied with a B- or better before registering for the next course in a sequence. A course in which the student earns a C may be repeated once. No more than 6 total credits of C may be repeated overall.

Social work faculty members evaluate each student's performance periodically and may terminate the student from the program when, in their judgment, performance is not satisfactory. The decision is based on the quality of academic and field performance, as well as on personal fitness for the profession of social work. The student has the right to appeal.

A student with a criminal history may find it difficult to obtain a field placement or employment in a human service agency depending on the specific charge. It is possible that a student with a criminal background may not be able to be placed in a field practicum or complete their degree program. The Criminal Background Policy is available on the Social Work Department website (https://socialwork.gmu.edu/).

Insurance Coverage

Students engaged in internships are covered for liability under the Commonwealth of Virginia's Self-Insured Liability Insurance Plan and covered for medical malpractice under the Medical Malpractice Insurance Plan, as established by the Department of General Services, Division of Risk Management. Only practicum activities that have been determined by the field instructor to be part of the course are covered. Students are encouraged to obtain professional liability coverage through the National Association of Social Workers, although this additional coverage is optional.

Immunizations

All students who are enrolled in a course that requires a field placement (SOCW 672, SOCW 673, SOCW 696, SOCW 698) must have an annual tuberculosis screening (PPD). In addition, students must complete

the entire Hepatitis B immunization series in accordance with current U.S. Public Health Service recommendations. Any cost related to these requirements is the responsibility of the student. Students can register for field classes prior to the completion of the immunizations, but documentation of completion must be submitted to the Social Work Department office no later than one month after the beginning of the semester. Immunizations are program requirements and must be completed by the student even if they are not required by the agency.

Requirements

Degree Requirements

Total credits: 60

In order to graduate with the MSW degree, students must successfully complete the generalist courses and the courses for one specialization. Before beginning Specialization Courses, students must complete **all** Generalist Courses.

Generalist Courses

Code	Title	Credits
SOCW 600	Foundations of Social Work and Social Welfare	3
SOCW 623	Human Behavior and Social Systems	3
SOCW 644	Community Practice Across the Life Course	3
SOCW 656	Poverty, Oppression, and Inequity	3
SOCW 659	Organizing and Advocating for Change	3
SOCW 660	Foundations of Direct Practice	3
SOCW 671	Research Methods for Social Workers	3
SOCW 672	Generalist Field Practicum and Seminar I	3
SOCW 673	Generalist Field Practicum and Seminar II	3
SOCW 674	Psychopathology	3
Total Credits		30

Specialization in Children, Youth, and Families (CYF)

Core Courses

Code	Title	Credits
SOCW 630	Clinical Social Work in Forensic Settings	3
SOCW 650	Advanced Social Work Policy Practice Skills	3
SOCW 683	Clinical Practice with Children, Youth, and Families	3
SOCW 688	Program Evaluation for Social Workers	3
SOCW 696	Specialized Practice Field Practicum and Seminar I	3
SOCW 698	Specialized Practice Field Practicum and Seminar II	3
Total Credits		18

Specialization in Adults and Healthy Aging (AHA)

Core Courses

Code	Title	Credits
SOCW 640	Clinical Practice with Adults	3
SOCW 650	Advanced Social Work Policy Practice Skills	3
SOCW 688	Program Evaluation for Social Workers	3
SOCW 689	Clinical Practice with Older Adults	3
SOCW 696	Specialized Practice Field Practicum and Seminar I	3
SOCW 698	Specialized Practice Field Practicum and Seminar II	3
Total Credits		18

Macro Elective Courses

Code	Title	Credits
Select 1-4 courses from the following:		3-12
SOCW 653	Immigration Policy	
SOCW 654	Social Policy for Children and Youth	
SOCW 655	Aging Programs and Policies	
SOCW 663	Global Human Rights Policy	
SOCW 676	Selected Topics in Social Work and Social Change	
SOCW 684	Social Work and the Law	
SOCW 685	Organizational Leadership for Social Workers	
Other course with permission of chair		
Total Credits		3-12

Clinical Elective Courses

Code	Title	Credits
Select 0-3 courses from the following:		0-9
SOCW 664	Creative Arts in Social Work Practice	
SOCW 667	Advanced Group Theory and Practice	
SOCW 675	Selected Topics in Clinical Practice	
SOCW 677	Family Therapy	
SOCW 678	Trauma and Recovery	
SOCW 679	Military Social Work	
SOCW 682	Substance Abuse Interventions	
Other course with permission of chair		
Total Credits		0-9

MSW for Students with Advanced Standing

In order to graduate with the MSW degree, advanced standing students must successfully complete the generalist course (SOCW 674) in the summer prior to beginning the specialization curriculum and the courses for one specialization.

Generalist Course

Code	Title	Credits
SOCW 674	Psychopathology	3
Total Credits		3

Specialization in Children, Youth, and Families (CYF)

Core Courses

Code	Title	Credits
SOCW 630	Clinical Social Work in Forensic Settings	3
SOCW 650	Advanced Social Work Policy Practice Skills	3

SOCW 683	Clinical Practice with Children, Youth, and Families	3
SOCW 688	Program Evaluation for Social Workers	3
SOCW 696	Specialized Practice Field Practicum and Seminar I	3
SOCW 698	Specialized Practice Field Practicum and Seminar II	3
Total Credits		18

Specialization in Adults and Healthy Aging (AHA)

Core Courses

Code	Title	Credits
SOCW 640	Clinical Practice with Adults	3
SOCW 650	Advanced Social Work Policy Practice Skills	3
SOCW 688	Program Evaluation for Social Workers	3
SOCW 689	Clinical Practice with Older Adults	3
SOCW 696	Specialized Practice Field Practicum and Seminar I	3
SOCW 698	Specialized Practice Field Practicum and Seminar II	3
Total Credits		18

Macro Elective Courses

Code	Title	Credits
Select 1-4 courses from the following:		3-12
SOCW 653	Immigration Policy	
SOCW 654	Social Policy for Children and Youth	
SOCW 655	Aging Programs and Policies	
SOCW 663	Global Human Rights Policy	
SOCW 676	Selected Topics in Social Work and Social Change	
SOCW 684	Social Work and the Law	
SOCW 685	Organizational Leadership for Social Workers	
Total Credits		3-12

Clinical Elective Courses

Code	Title	Credits
Select 0-3 courses from the following:		0-9
SOCW 664	Creative Arts in Social Work Practice	
SOCW 667	Advanced Group Theory and Practice	
SOCW 675	Selected Topics in Clinical Practice	
SOCW 677	Family Therapy	
SOCW 678	Trauma and Recovery	
SOCW 679	Military Social Work	
SOCW 682	Substance Abuse Interventions	
Total Credits		0-9

Dual Degree Options

Conflict Analysis and Resolution, MS and Social Work, MSW Dual Degree

The Department of Social Work and the Jimmy and Rosalynn Carter School for Peace and Conflict Resolution have joined forces to offer a three year dual-degree program. Students can earn both an MSW and an MS in Conflict Analysis and Resolution while taking advantage of the diversity of the Washington, D.C., metropolitan area and the university's proximity to the nation's capital. This is the only dual-degree program of its kind.

Admission Requirements

Applicants must meet the admission standards and application requirements specified in Graduate Admissions and apply using the online Application for Graduate Admission (http://admissions.gmu.edu/). The application process is competitive, and applications are considered for the fall semester only.

Students interested in the 3-year dual degree program submit one online Application for Graduate Admission (http://admissions.gmu.edu/), select the MSW in Social Work as a primary program, and submit all application support materials to the Office of Graduate Admission in the College of Health and Human Services. Applicants should communicate their interest in completing the dual degree program in their essays, and recommendations should address the dual program interest. Students must be admitted to both programs in the same semester (fall only) to be admitted to the dual degree program.

For application deadlines and detailed application requirements please refer to the CHHS Admissions website (https://chhs.gmu.edu/admissions/graduate-admissions/standards-requirements-and-deadlines/). Interested students should consult the MSW program website (https://socialwork.gmu.edu/program/view/19658/), the MSW program, and the MSW program director for additional information prior to applying.

Transfer of Credit

Transfer credit is governed AP.6.5.3 Transfer of Credit and AP.6 Graduate Policies. Transfer credits must be approved by the program director and the dean. Students who enroll initially through non-degree studies should seek course advising through the department prior to taking a course and plan to submit their application to the dual degree program as soon as possible.

Please refer to the Transfer of Credit policy for the MSW in Social Work for departmental policy governing courses taken at another institution and the maximum number of credits allowed.

MSW-MS Degree Requirements

Total credits: 78

Social Work Courses

Code	Title	Credits
SOCW 600	Foundations of Social Work and Social Welfare	3
SOCW 623	Human Behavior and Social Systems	3
SOCW 644	Community Practice Across the Life Course	3

SOCW 650	Advanced Social Work Policy Practice Skills	3
SOCW 656	Poverty, Oppression, and Inequity	3
SOCW 659	Organizing and Advocating for Change	3
SOCW 660	Foundations of Direct Practice	3
SOCW 672	Generalist Field Practicum and Seminar I	3
SOCW 673	Generalist Field Practicum and Seminar II	3
SOCW 674	Psychopathology	3
SOCW 688	Program Evaluation for Social Workers [1]	3
or CONF 660	Conflict Assessment and Program Evaluation	
Total Credits		33

[1] Students complete only one of SOCW 688 or CONF 660.

Specialization in Children, Youth, and Families (CYF)

Code	Title	Credits
SOCW 630	Clinical Social Work in Forensic Settings	3
SOCW 696	Specialized Practice Field Practicum and Seminar I	3
SOCW 698	Specialized Practice Field Practicum and Seminar II	3
Select two courses from the following. At least one course must be a Macro Elective Course.		6
Macro Elective Courses		
SOCW 653	Immigration Policy	
SOCW 654	Social Policy for Children and Youth	
SOCW 655	Aging Programs and Policies	
SOCW 663	Global Human Rights Policy	
SOCW 676	Selected Topics in Social Work and Social Change	
SOCW 684	Social Work and the Law	
SOCW 685	Organizational Leadership for Social Workers	
Clinical Elective Courses		
SOCW 664	Creative Arts in Social Work Practice	
SOCW 667	Advanced Group Theory and Practice	
SOCW 675	Selected Topics in Clinical Practice	
SOCW 677	Family Therapy	
SOCW 678	Trauma and Recovery	
SOCW 679	Military Social Work	
SOCW 682	Substance Abuse Interventions	
SOCW 640	Clinical Practice with Adults	
SOCW 689	Clinical Practice with Older Adults	
Total Credits		15

Specialization in Adults and Healthy Aging (AHA)

Code	Title	Credits
SOCW 640	Clinical Practice with Adults	3
SOCW 689	Clinical Practice with Older Adults	3
SOCW 696	Specialized Practice Field Practicum and Seminar I	3
SOCW 698	Specialized Practice Field Practicum and Seminar II	3
Select two courses from the following. At least one course must be a Macro Elective Course.		6
Macro Elective Courses		
SOCW 653	Immigration Policy	
SOCW 654	Social Policy for Children and Youth	
SOCW 655	Aging Programs and Policies	
SOCW 663	Global Human Rights Policy	
SOCW 676	Selected Topics in Social Work and Social Change	
SOCW 684	Social Work and the Law	
SOCW 685	Organizational Leadership for Social Workers	
Clinical Elective Courses		
SOCW 630	Clinical Social Work in Forensic Settings	
SOCW 664	Creative Arts in Social Work Practice	
SOCW 667	Advanced Group Theory and Practice	
SOCW 675	Selected Topics in Clinical Practice	
SOCW 677	Family Therapy	
SOCW 678	Trauma and Recovery	
SOCW 679	Military Social Work	
SOCW 682	Substance Abuse Interventions	
Total Credits		18

Conflict Analysis and Resolution Courses

Code	Title	Credits
CONF 600	Foundations of Conflict Analysis and Resolution	6
CONF 610	Conflict Inquiry	3
CONF 657	Facilitation Skills	3
CONF 625	Engaging Conflict [1]	3
Total Credits		15

[1] CONF 657 Facilitation Skills should be completed before a student takes CONF 625 Engaging Conflict.

Electives

Code	Title	Credits
Select 12 credits of CONF Electives with approval from Carter School		12
Total Credits		12

School of Nursing

Phone: 703-993-1901 (Undergraduate)

703-993-1961 (Graduate)

Website: nursing.gmu.edu

Administration

- Martha Kubik, Director

The School of Nursing is a teaching/learning organization with a national and international academic reputation, grounded in sound general education. It develops and supports a diverse faculty who are visionary and competent practitioners, scholars, and researchers, excellent in teaching in academic and practice settings, and responsive to the needs of students and the community. Specifically, the nursing programs

prepare graduates to function as providers, coordinators, and managers of care and for leadership, advanced practice, and nurse scholar roles, as well as members of the nursing profession. Graduates of the School of Nursing are prepared to function as interdisciplinary health professionals and citizens who provide leadership, care, and service to the community. The School promotes health and well-being through its programs and centers, engaging in scholarly activities and research with the aim of maximum health for all people. Part-time students are encouraged to take at least 6 credits per semester to promote timely completion of the program.

Faculty

School Faculty

Professor

Kubik (director)

Associate Professors

Douglas, Mallinson, Middle, Oetjen, Oh, Rodan, C. Sutter, R. Sutter

Assistant Professors

S. Chang, Davidson, Eklou, Fine, Garrison, Haas, Harman, Kelly, Scafide, Stacks, Stoehr

Instructors

K. Chang, Goodknight

Administrative Faculty

Brown-Rolle

Emeriti

Ailinger, Boland, Boyd, Brenkus, Carty, Chong, Jenkins, Langley, Moore, Moss, Normile, Parker-Smith, Redmond, Silva, Sorrell, Vail, Walker, Wu

Requirements & Policies

Policies

Academic Advising

Each student is assigned an academic advisor who is a faculty member within their academic department or a professional academic advisor within the Office of Student Affairs (OSA). Academic advisor assignments are listed on the CHHS website (https://chhs.gmu.edu/students/academic-advising/), and students are expected to meet with their advisor regularly (at least once each semester) to seek advice about academic schedules and program plans, internships, and career guidance. Students also should meet with their advisor if they are experiencing academic difficulty or personal challenges or if they are feeling overwhelmed.

All students are responsible for knowing the requirements of their major as specified in the university catalog for their catalog year; academic deadlines outlined in the semester academic calendar (http://registrar.gmu.edu/calendars/); and university policies and procedures as stated in the catalog.

Students also should run their own degree-evaluation (http://registrar.gmu.edu/students/degree-evaluation/) to identify graduation requirements and progress towards their degree. While academic advisors can give advice to students, students are responsible for the academic planning decisions they make. Academic advisors cannot be held responsible for mistakes made by students in selecting courses that may not count toward their degree and thus delay a desired graduation date.

Programs

- Nursing Education Graduate Certificate
- Nursing, BSN
- Nursing, DNP
- Nursing, MSN
- Nursing, PhD
- Psychiatric Mental Health Nurse Practitioner Graduate Certificate

Nursing Education Graduate Certificate

Banner Code: HH-CERG-NUED

Academic Advising

Website: nursing.gmu.edu/program/view/19938

This program combines foundation courses in education with courses in the principles and practices of nursing education. It prepares students to function in nursing educational roles in academic and nonacademic settings.

Admissions & Policies

Admissions

Applicants must hold a master's degree in nursing. Applicants must meet the admission standards and application requirements specified in Graduate Admissions and apply using the Application for Graduate Admission (https://www2.gmu.edu/admissions-aid/). Acceptance to the nursing program is contingent upon admission to the university. The application process is competitive, and applications are considered for the fall and spring semesters. For application deadlines and detailed application requirements, please refer to the CHHS Admissions (https://chhs.gmu.edu/admissions/graduate-admissions/standards-requirements-and-deadlines/) website.

Policies

For policies governing all graduate certificates, see AP.6.8 Requirements for Graduate Certificates.

Requirements

Certificate Requirements

Total credits: 15

This certificate may be pursued on a part-time basis only.

Candidates must have 15 graduate credits and a minimum GPA of 3.00 in course work, with no more than 3 credits with a grade of C to earn the certificate.

Required Courses

Code	Title	Credits
NURS 716	Principles of Assessment and Evaluation in Nursing Education	3
NURS 726	Perspectives in Nursing Education	3
NURS 727	Application of Nursing Education Principles to Curriculum and Program Development	3
NURS 728	Practicum and Seminar in Nursing Education I	3
NURS 729	Practicum and Seminar in Nursing Education II	3
Total Credits		15

Notes:
Students who qualify for a 3-credit practicum because of their educational experience may choose the remaining 3 credits from courses designated by the graduate nursing program.

Nursing, BSN

Banner Code: HH-BSN-NURS

Academic Advising

Website: https://chhs.gmu.edu/program/nursing-bsn

The Bachelor of Science in Nursing (BSN) Program is accredited by the Virginia State Board of Nursing and the Commission on Collegiate Nursing Education. The undergraduate nursing program prepares students to deliver superior nursing care and provide leadership in nursing in the increasingly complex and challenging field of modern health care. Graduates are in demand as professional nurses in hospitals, long-term care facilities, and community health and other health care agencies. The program emphasizes health promotion and disease prevention, capitalizing on early detection of potential health problems, health maintenance in ambulatory and acute-care agencies, and preparation for the managerial responsibilities of nursing.

The School of Nursing offers four pathways to complete the BSN, all of which lead to completion of the objectives of the undergraduate program. The traditional pathway is a two-year curriculum following the completion of the Mason Core and prerequisite requirements. An accelerated RN-to-BSN pathway for students holding current registered nurse (RN) licenses may be completed in one year (full-time) following completion of the Mason Core and prerequisite requirements. The accelerated, second degree pathway is a 12-month curriculum for students holding a baccalaureate degree outside of nursing. The traditional and accelerated pathways in nursing must be completed on a full-time basis. An accelerated Veteran LPN-to-BSN pathway is offered for licensed LPNs seeking to pursue a BSN and earn their RN license. The Veteran LPN-to-BSN pathway is designed to build upon the skills and knowledge gained through an LPN program and previous military health training and must be completed on a full-time basis. Students can complete this pathway in 12 months following completion of the nursing prerequisite requirements.

Admissions & Policies

Admissions

General Requirements

To be admitted to the BSN program, students must complete a pre-nursing curriculum during their first two years and be admitted to junior standing. Students admitted in the traditional and accelerated, second degree pathways will enter the program in the fall of their junior year and at that point are considered nursing majors. Students admitted to the RN-to-BSN pathway may enter in the fall or spring semester. Students admitted to the Veteran LPN-to-BSN pathway may enter in the fall semester only.

Application to the BSN program is a process involving two applications: the George Mason University Undergraduate Application and the BSN Departmental Application. (Currently enrolled Mason students need only apply using the BSN Departmental Application.) Acceptance to the nursing program is contingent upon admission to the university, but *admission to the university does not guarantee admission to the nursing program*. Application to the BSN major is a competitive admission process. Prospective applicants are responsible to meet all BSN admission requirements at the time of application. Meeting the minimum requirements does not guarantee admission into the nursing program—it only allows an application to be considered. Students who are interested in pursuing a major in nursing are strongly encouraged to attend an information session provided by the CHHS Office of Student Affairs for advising prior to applying to the nursing major.

Attendance at the first meeting of all nursing courses (lectures, on-campus laboratories, and agency laboratories) is mandatory.

Traditional BSN Pathway Requirements

To be eligible to apply for the traditional BSN program, applicants must have achieved a minimum GPA of 3.00 in the designated nursing prerequisite coursework and must have earned a C or better in each of the following courses:

Code	Title	Credits
Anatomy and Physiology		
BIOL 124	Human Anatomy and Physiology	
BIOL 125	Human Anatomy and Physiology	
Microbiology		
BIOL 246	Introductory Microbiology	
BIOL 306	Biology of Microorganisms Laboratory	
Statistics		
Nutrition		
NUTR 295	Introduction to Nutrition (Mason Core)	
Developmental Psychology		
Bioethics		
PHIL 309	Bioethics (Mason Core)	

Applicants must have completed two of the three science prerequisite courses (anatomy and physiology I, anatomy and physiology II, and microbiology) by the submission date of the BSN Departmental Application. Coursework in anatomy and physiology and microbiology cannot be more than five years old by the time of BSN enrollment. Additional eligibility requirements include a grade of C or better in all Mason Core courses and electives. All nursing prerequisites, Mason Core,

and electives must be complete by the end of Mason's spring term before starting the program.

Application to the BSN program is a process involving two applications: the George Mason University Undergraduate Application and the BSN Departmental Application. (Currently-enrolled Mason students need only apply using the BSN Departmental Application.) Acceptance to the nursing program is contingent upon admission to the university. Admission to the university does not guarantee admission to the nursing program. See the CHHS undergraduate admissions website (https://nursing.gmu.edu/admissions/bsn-admissions/) for the latest information on applications and deadlines.

Application to the BSN major is a competitive admission process. Meeting the minimum requirements does not guarantee admission into the nursing program - it only allows an application to be considered in the review process.

The traditional BSN pathway is a full-time program beginning in the fall semester and is completed in two years (four semesters).

Accelerated, Second Degree BSN Pathway Requirements

The Accelerated, Second Degree BSN Pathway is designed for applicants already holding a bachelor's degree who are interested in pursuing an undergraduate degree in nursing. This full-time accelerated program begins in the fall semester and is completed in 12 months.

Applicants must have a baccalaureate degree from an accredited college or university and must have earned a minimum cumulative GPA of 2.85 in their first degree. The non-nursing baccalaureate degree must be completed by the end of the spring semester of the year a student desires to be considered for fall admission.

Applicants to the second degree pathway must have achieved a minimum GPA of 3.00 in the designated nursing prerequisite coursework and must have earned a C or better in each of the following courses:

Code	Title	Credits
Anatomy and Physiology		
BIOL 124	Human Anatomy and Physiology	
BIOL 125	Human Anatomy and Physiology	
Microbiology		
BIOL 246	Introductory Microbiology	
BIOL 306	Biology of Microorganisms Laboratory	
Statistics		
Nutrition		
NUTR 295	Introduction to Nutrition (Mason Core)	
Developmental Psychology		
Bioethics		
PHIL 309	Bioethics (Mason Core)	

Applicants must have completed two of the three science prerequisite courses (anatomy and physiology I, anatomy and physiology II, and microbiology) by the submission date of the BSN Departmental Application. Course work in anatomy and physiology and microbiology cannot be more than five years old by the time of BSN enrollment.

Application to the BSN program is a process involving two applications: the George Mason University Undergraduate Application and the BSN Departmental Application. (Currently enrolled Mason students need only apply using the BSN Departmental Application.) Acceptance to the nursing program is contingent upon admission to the university. Admission to the university does not guarantee admission to the nursing program. See the CHHS undergraduate admissions website (https://nursing.gmu.edu/admissions/bsn-admissions/) for the latest information on applications and deadlines.

Application to the BSN major is a competitive admission process. Meeting the minimum requirements does not guarantee admission into the nursing program - it only allows an application to be considered in the review process.

RN-to-BSN Pathway Requirements

The Accelerated RN-to-BSN Pathway allows RNs to progress quickly through the program through online coursework while meeting the objectives of the undergraduate curriculum. On completion of the Mason Core requirements and designated nursing prerequisites, RN students can complete the BSN in two semesters of full-time study. The program can also be completed on a part-time basis.

RN students must satisfy all Mason Core requirements and designated nursing prerequisites. For some students, the Mason Core requirements (except ENGH 302 Advanced Composition (Mason Core)) may be met by completing the Associate's degree (i.e., AA – Associate of Arts, AS – Associate of Science, or AA&S – Associate of Arts and Science) from the Virginia community college system with a qualifying GPA and specific admissions criteria. The Associate of Applied Science (AAS degree) does not waive Mason Core requirements. Contact Mason's general Office of Admissions for more information and see the Guaranteed Admission Agreement (http://admissions.gmu.edu/transfer/gaa.asp) for details. RN-licensed students enrolled in the RN-to-BSN pathway are required to submit a copy of their current state-based/US license prior to the first day of class. RN-licensed students must maintain current licensure throughout the academic program.

Application to the BSN program is a process involving two applications: the George Mason University Undergraduate Application and the BSN Departmental Application. (Currently enrolled Mason students need only apply using the BSN Departmental Application.) Acceptance to the nursing program is contingent upon admission to the university. Admission to the university does not guarantee admission to the nursing program. See the CHHS undergraduate admissions website (https://nursing.gmu.edu/admissions/bsn-admissions/) for the latest information on applications and deadlines.

Students admitted with a prior bachelor's degree are required to complete at least 30 hours at Mason beyond the first degree. Students should meet with their academic advisor to review degree requirements.

Application to the BSN major is a competitive admission process. Meeting the minimum requirements does not guarantee admission into the nursing program - it only allows an application to be considered in the review process.

Mason Veterans Program in Nursing and Co-enrollment in Nursing Program

The Mason Veterans Program in Nursing and Co-enrollment in Nursing Program allow students to complete a Bachelor of Science in Nursing (BSN) degree online while concurrently enrolled in an Associate of Applied Science nursing degree (AAS Nursing) program at a partner community college. Nursing classes in the CEP are offered online in seven-week and full-semester formats.

Students take the NCLEX (National Council Licensure Examination) after completing their AAS in nursing while enrolled in Mason's BSN program. After a student passes the NCLEX and upon successful completion of NURS 336, students are awarded 33 nursing transfer credits toward their BSN degree. Students complete Mason's BSN program the semester following graduation with the AAS degree.

Application Process
Admission to the Mason Veterans Program in Nursing or Co-enrollment in Nursing Program involves two applications: the George Mason University Undergraduate Application (https://www2.gmu.edu/admissions-aid/apply-now/) and the BSN Departmental Application. The BSN Departmental Application, instructions, and deadlines are available online (https://nursing.gmu.edu/admissions/bsn-admissions/). Please use the Transfer Search Engine (http://admissions.gmu.edu/transfer/transferCreditSearch.asp) to check course equivalency.

Eligibility Guidelines
To be eligible to apply for the Co-enrollment in Nursing Program, applicants must:

- Receive admission to Mason
- Provide a copy of a letter of admission to a pre-licensure nursing program at a partner community college
- Provide proof of enrollment in a partner community college AAS-Nursing program (i.e., copy of an unofficial transcript)
- Have completed all Mason nursing prerequisite courses at any regionally accredited institution with a grade of C (not C-) or better in EACH course by the completion of the AAS Nursing program at the partner community college
- Mason Core and elective courses may be completed at any regionally accredited institution and can still be in progress at the time of admission. These courses must be completed with a grade of C (not C-) or better in EACH course prior to completing the CEP. ENGH 302 must be completed at Mason.
- Earn a cumulative GPA of 3.0 at partner community college institution
- Submit an online BSN departmental application and non-refundable fee through online payment system by the deadlines. See the CHHS undergraduate admissions website (https://nursing.gmu.edu/admissions/bsn-admissions/) for the latest information on applications and deadlines.

In addition, to be eligible to apply for the Mason Veterans Nursing Program, applicants must be a veteran of the US military.

Veteran LPN-to-BSN Pathway Requirements

The accelerated Veteran LPN-to-BSN Pathway is for LPNs seeking to pursue a BSN and earn their RN license. The Veteran LPN-to-BSN program is designed to build upon the skills and knowledge gained through an LPN program and previous military health training. Students can complete this concentration in 12 months following completion of the prerequisite requirements. The program must be completed on a full-time basis.

To be eligible to apply for the Veteran LPN-to-BSN Pathway, applicants must be a veteran of the US military and have a current LPN license. Applicants must have achieved a minimum GPA of 3.00 in the designated nursing prerequisite coursework and must have earned a C or better in each of the following courses:

Code	Title	Credits
Anatomy and Physiology		
BIOL 124	Human Anatomy and Physiology	
BIOL 125	Human Anatomy and Physiology	
Microbiology		
BIOL 246	Introductory Microbiology	
BIOL 306	Biology of Microorganisms Laboratory	
Statistics		
Nutrition		
NUTR 295	Introduction to Nutrition (Mason Core)	
Developmental Psychology		
Bioethics		
PHIL 309	Bioethics (Mason Core)	

Applicants must have completed two of the three science prerequisite courses (anatomy and physiology I, anatomy and physiology II, and microbiology) by the submission date of the BSN Departmental Application. Coursework in anatomy and physiology and microbiology cannot be more than five years old by the time of BSN enrollment. Additional eligibility requirements include a grade of C or better in all Mason Core courses and electives. All nursing prerequisites must be complete by the end of Mason's spring term before starting the program.

Application to the BSN program is a process involving two applications: the George Mason University Undergraduate Application and the BSN Departmental Application. (Currently enrolled Mason students need only apply using the BSN Departmental Application.) Acceptance to the nursing program is contingent upon admission to the university. Admission to the university does not guarantee admission to the nursing program. See the CHHS undergraduate admissions website (https://nursing.gmu.edu/admissions/bsn-admissions/) for the latest information on applications and deadlines.

Application to the BSN major is a competitive admission process. Meeting the minimum requirements does not guarantee admission into the nursing program - it only allows an application to be considered in the review process.

Policies

Degree Requirements

Students must fulfill all requirements for bachelor's degrees, including the Mason Core requirements. For policies governing all undergraduate degrees, see AP.5 Undergraduate Policies.

Writing Intensive Requirement

Mason requires all students to complete at least one 300- or 400-level "writing intensive" course as designated by their department. Students majoring in nursing fulfill this requirement by successfully completing NURS 465.

Academic Grade Standards

The passing grade is a C+ or above in undergraduate nursing didactic courses in the School of Nursing. A grade of satisfactory (S) is the passing grade for NURS 305, NURS 310, NURS 312, NURS 344, NURS 351, and NURS 455. After admission to junior-year standing and to the nursing program, a student who earns a grade of C or below must repeat the course and earn a grade of a C+ or above in that course. This will alter or halt further progression in the nursing program and affect the expected graduation date. A student may repeat only one nursing

course, one time. A student who fails to earn a grade of C+ or above in the repeated course is terminated from the BSN nursing program. In addition, earning a grade of C or below in a second nursing course results in termination from the BSN nursing program. Termination from any one of the nursing undergraduate pathways constitutes termination from the undergraduate (BSN) nursing major in the School of Nursing.

Because of the sequential nature of the nursing curriculum, students are not allowed to progress to the next semester of nursing course work while a grade of "IN" (incomplete) remains on their academic record. A passing grade must be recorded before beginning the next semester's courses. Academic dismissal is governed by university policy.

Professional Conduct Policy

All students in the School of Nursing are expected to adhere to the Professional Conduct Policy of the College of Health and Human Services.

Appeal Process

Although faculty members in the nursing program are generally the best judges of a student's professional performance, there may be times when a student believes a grade is unfair. Students in the School of Nursing wishing to appeal a grade are expected to follow the Mason guidelines for grade appeals.

NCLEX Readiness Preparation and Testing

Throughout the BSN program, all students, with the exception of RN-to-BSN students, participate in preparation for the NCLEX-RN licensing exam through opportunities provided during nursing courses. These opportunities are included as integrated components of select courses and include practice NCLEX-style exams and content-specific testing. A final cumulative assessment exam is given toward the end of the program to provide the student with guidance about their chance for success on the licensing exam. A final course in critical thinking and test-taking strategies is required in the senior year, and remediation in select content areas may be required as a component of this course.

Special Requirements

Fees and expenses related to the nursing program include: skills laboratory fee, standardized testing and course materials, uniforms, stethoscope, name pin, books, CPR certification, health forms, health insurance, immunizations, and criminal background check fees. *The availability of personal transportation to and from clinical agencies is required of all students.* For a summary of all current fees and estimated expenses, see the School of Nursing website (https://nursing.gmu.edu/).

All BSN students are required to obtain a health clearance and complete the immunizations required by Mason as listed in the Student Health Services section of the Mason catalog. In addition, the BSN program has additional health and immunization requirements to meet the requirements of its clinical agency partners. See the Undergraduate Program, School of Nursing website for the most current information. *Students are not allowed into any clinical setting without the completed immunization series as prescribed by Mason or the School of Nursing and may have an offer of admission withdrawn for inability to meet these requirements.* The School of Nursing reviews health records and reserves the right to refuse admission or continued enrollment to any student who is unable to comply with these requirements.

All students must have CPR certification before entering the first clinical nursing course and maintain it through the remainder of the program. The American Heart Association Basic Life Support - Health Care Provider is required. On-line renewal of CPR certification is not accepted. Any cost incurred is the responsibility of the student.

All students must have current health insurance before entering the first clinical nursing course and maintain it through the remainder of the program. All students are required to have an active Mason e-mail account.

No student or faculty member will be discriminated against or denied admission to the nursing program for the sole reason that the student or faculty member has been exposed to, infected with, or diagnosed with HIV or HBV. All students are expected to practice Universal Precautions with all clients, and failure to do so will result in termination from the nursing major. In the event that a student is exposed to body fluids of a client during a clinical experience or practicum, procedures and appropriate reports are completed according to institutional and nursing policies. Information related to exposure or infection is confidential, and dissemination of such information is based on the need-to-know criteria that apply in health care situations. HIPAA and FERPA regulations apply. A complete and detailed HIV/HBV policy is available in the CHHS Office of Student Affairs.

RN-licensed students enrolled in the RN-to-BSN pathway and LPN-licensed students enrolled in the Veteran LPN-to-BSN pathway are required to submit a copy of their current license prior to the first day of class. RN-licensed students and LPN-licensed students must maintain current licensure throughout the academic program.

Requirements

Degree Requirements

Total credits: 120

Mason Core

Code	Title	Credits
Written Communication [1]		
ENGH 101	Composition (Mason Core)	3
ENGH 302	Advanced Composition (Mason Core)	3
Oral Communication		
Any Mason Core Oral Communication course.		3
Information Technology		
Any Mason Core Information Technology course		3
Literature		
Any Mason Core Literature course		3
Arts		
Any Mason Core Arts course		3
Western Civilization		
Any Mason Core Western Civilization course		3
Global Understanding		
Any Mason Core Global Understanding course		3
The recommended course is GCH 205 Global Health		
Social and Behavioral Sciences		
Any Mason Core Social and Behavioral Sciences course		3
The recommended course is PSYC 100 Basic Concepts in Psychology		
Total Credits		27

[1] Non-native speakers of English with limited proficiency in the language may substitute ENGH 100 for ENGH 101. Students must attain a minimum grade of C in ENGH 100 or ENGH 101, as well as in ENGH 302, to fulfill degree requirements.

Designated Nursing Prerequisites

Code	Title	Credits
Anatomy and Physiology		
BIOL 124	Human Anatomy and Physiology [1]	4
BIOL 125	Human Anatomy and Physiology [1]	4
Microbiology		
BIOL 246	Introductory Microbiology	3
or BIOL 305	Biology of Microorganisms	
BIOL 306	Biology of Microorganisms Laboratory	1
Bioethics		
PHIL 309	Bioethics (Mason Core)	3
Statistics [2]		
STAT 250	Introductory Statistics I (Mason Core) [3]	3
Human Lifespan Development		
Any 3-credit human lifespan development course [4]		3
Nutrition [5]		
NUTR 295	Introduction to Nutrition (Mason Core)	3
Total Credits		24

[1] Fulfills Mason Core Natural Science requirement for students in this degree program.

[2] Students in the Accelerated, Second Degree BSN Pathway (SEC) complete any statistics course.

[3] Or a statistics course in another discipline with the approval of the advisor. STAT 250 fulfills the quantitative reasoning Mason Core requirement. If STAT 250 is not taken, an approved Mason Core Quantitative Reasoning course is required.

[4] Or equivalent as approved by advisor (PSYC 211 Developmental Psychology (Mason Core) is recommended)

[5] Other nutrition transfer courses may meet this requirement as approved by the advisor.

Electives

Code	Title	Credits
Select seven credits of electives. [1]		7
Total Credits		7

[1] A course in sociology or anthropology is recommended.

Traditional BSN Major, Required Courses

Code	Title	Credits
NURS 312	Basic Nursing Care of Adults	4
NURS 330	Nursing Fundamentals	3
NURS 334	Nursing as a Health Profession and Discipline	2
NURS 337	Application of Nursing Fundamental Technologies	1
NURS 343	Pharmacology	3
NURS 344	Intermediate Nursing Technologies	1
NURS 347	Adult Pathophysiology and Nursing Care	3
NURS 348	Maternal-Newborn Physiology, Pathophysiology, and Nursing Care	2
NURS 349	Pediatric Pathophysiology and Nursing Care	2
NURS 358	Health Promotion and Disease Prevention in Maternal/Infant Nursing	2
NURS 359	Health Promotion and Disease Prevention in Pediatric Nursing	2
NURS 388	Problem-Based Clinical Inquiry	3
NURS 410	Nursing Care of Clients with Pathological Conditions	3
NURS 425	Comprehensive Health Assessment	3
NURS 436	Leadership and Management of Health Care	3
NURS 451	Advanced Clinical Preceptorship	5
NURS 453	Research in Nursing	3
NURS 455	Advanced Technologies in Nursing	1
NURS 465	Examination and Integration of Professional and Health Care Issues (Mason Core)	3
NURS 466	Community Health Nursing	2
NURS 467	Clinical in Community Health Nursing	2
NURS 468	Psychiatric and Mental Health Nursing	2
NURS 469	Clinical in Psychiatric and Mental Health Nursing	2
NURS 488	Inquiry-Based Clinical Seminar	2
NURS 491	Critical Thinking and Analysis of Test Taking Strategies	3
Total Credits		62

Accelerated, Second Degree BSN Pathway (SEC)

Students who are eligible for an alternative pathway to the BSN must meet the nursing course requirements for the pathway to which they have been admitted rather than those for the traditional BSN pathway. Candidates for the degree must present at least 120 credits via:

- Mason Core requirements, to be satisfied by the initial degree and fulfilled through transfer credit.
- Designated nursing prerequisites
- Concentration requirements below

Concentration Requirements

Code	Title	Credits
NURS 305	Application of Basic Nursing Techniques	1
NURS 309	Introduction to Basic Nursing Care	3
NURS 310	Application of Basic Nursing Care	4
NURS 319	Pathophysiological Basis for Nursing Care of Individuals and Small Groups	4
NURS 334	Nursing as a Health Profession and Discipline	2
NURS 343	Pharmacology	3
NURS 350	Application of Nursing Care for Individuals and Small Groups	4
NURS 351	Application of Intermediate Nursing Technologies	1

NURS 419	Pathophysiological Basis for Nursing Care of Individuals and Small Groups II	4
NURS 425	Comprehensive Health Assessment	3
NURS 427	Advanced Technologies for the Accelerated Pathway	1
NURS 428	Community Health Clinical for the Accelerated Pathway	2
NURS 429	Preceptorship for the Accelerated Pathway	3
NURS 436	Leadership and Management of Health Care	3
NURS 440	Community Health and Epidemiology	3
NURS 453	Research in Nursing	3
NURS 465	Examination and Integration of Professional and Health Care Issues (Mason Core)	3
Total Credits		47

Accelerated RN-to-BSN Pathway (RN)

Candidates for the degree must present at least 120 credits. A minimum of 30 credits must be earned at Mason to fulfill requirements for graduation. These include:

Code	Title	Credits
Mason Core and general electives		57
Concentration-specific requirements		24
ENGH 302	Advanced Composition (Mason Core)	3
Electives earned at Mason		3
"Credit by Exam"		33
Total Credits		120

For some students, the Mason Core requirements (except ENGH 302 Advanced Composition (Mason Core)) may be met by completing the Associate's degree (i.e., AA – Associate of Arts, AS – Associate of Science, or AA&S – Associate of Arts and Science) from an approved Virginia community college with a qualifying GPA and specific admissions criteria. The Associate of Applied Science (AAS degree) does not waive the Mason Core requirements. Contact Mason's general Office of Admissions for more information and see the Guaranteed Admission Agreement (http://admissions.gmu.edu/transfer/gaa.asp) for details.

Code	Title	Credits
RN-to-BSN Pathway, Required Courses		
ENGH 302	Advanced Composition (Mason Core) [1]	3
NURS 336	Concepts in Professional Nursing as a Discipline	3
NURS 425	Comprehensive Health Assessment	3
NURS 436	Leadership and Management of Health Care	3
NURS 440	Community Health and Epidemiology	3
NURS 434	Vulnerable Populations	3
NURS 453	Research in Nursing	3
NURS 457	Introduction to Nursing Informatics	3
NURS 465	Examination and Integration of Professional and Health Care Issues (Mason Core)	3
Elective		3
Total Credits		30

[1] Students must complete ENGH 302 Advanced Composition (Mason Core), listed above under Mason Core requirements. Only students holding a previous baccalaureate degree are not required to take ENGH 302 Advanced Composition (Mason Core).

Code	Title	Credits
Credit by Exam		**33**
NURS 336	Concepts in Professional Nursing as a Discipline [1]	
Total Credits		33

[1] RN students will be awarded 33 nursing credits upon completion of NURS 336 Concepts in Professional Nursing as a Discipline.

Accelerated Veteran LPN-to-BSN Pathway (VLB)

Students who are eligible for an alternative pathway to the BSN must meet the nursing course requirements for the pathway to which they have been admitted rather than those for the traditional BSN pathway. Candidates for the degree must present at least 120 credits. These include:

Code	Title	Credits
Mason Core and General Electives		34
Designated Nursing Prerequisites		24
Concentration-specific requirements		36
Credit by Exam		26
Total Credits		120

Concentration Requirements

Code	Title	Credits
NURS 319	Pathophysiological Basis for Nursing Care of Individuals and Small Groups	4
NURS 334	Nursing as a Health Profession and Discipline	2
NURS 343	Pharmacology	3
NURS 350	Application of Nursing Care for Individuals and Small Groups	4
NURS 351	Application of Intermediate Nursing Technologies	1
NURS 419	Pathophysiological Basis for Nursing Care of Individuals and Small Groups II	4
NURS 427	Advanced Technologies for the Accelerated Pathway	1
NURS 428	Community Health Clinical for the Accelerated Pathway	2
NURS 429	Preceptorship for the Accelerated Pathway	3
NURS 436	Leadership and Management of Health Care	3
NURS 440	Community Health and Epidemiology	3
NURS 453	Research in Nursing	3

NURS 465	Examination and Integration of Professional and Health Care Issues (Mason Core)	3
Total Credits		36

Code	Title	Credits
Credit by Exam		**26**
NURS 334	Nursing as a Health Profession and Discipline [1]	
Total Credits		26

[1] LPN students will be awarded 26 upper-division nursing credits upon completion of NURS 334 Nursing as a Health Profession and Discipline.

4-Year Plan

Bachelor of Science in Nursing Sample Plan of Study

Detailed four year plans can be found at https://chhs.gmu.edu/students/academic-advising/undergraduate-advising/program-planning-advising-sheets (https://chhs.gmu.edu/students/academic-advising/undergraduate-advising/program-planning-advising-sheets/)

Nursing, DNP

Banner Code: HH-DNP-NURS

Academic Advising

Website: https://chhs.gmu.edu/students/academic-advising/graduate-advising#nurs

The Doctor of Nursing Practice (DNP) is the terminal practice degree in the profession. The objective of the program is to prepare graduates for the highest level of nursing practice. Emphasis will be placed on evaluating and applying the evidence that supports practice, understanding and creating practice delivery systems based on patient outcomes, and assuming leadership roles in practice settings. The curriculum will allow students with diverse nursing academic and clinical backgrounds the flexibility to enter a program of study tailored to their future professional goals. In the curriculum, five concentrations are available. The concentrations are configured into two foci as recommended by the American Academy of Colleges of Nursing (AACN) *Essentials of Doctoral Education for Advanced Nursing Practice (2006),* the guidance document for DNP programs. The two foci are:

1. Care of individuals with three concentrations, Family Nurse Practitioner, Adult-Gerontology Nurse Practitioner, and Psychiatric Mental Health Nurse Practitioner; and
2. Care of aggregates with Advanced Clinical Nursing and Administration in Nursing concentrations.

The DNP program is approved by the Virginia State Board of Nursing and accredited by the Commission on Collegiate Nursing Education. The nurse practitioner concentrations have been approved by the state boards of nursing and medicine in Virginia.

Admissions & Policies

Admissions

Requirements

Applicants must meet the admission standards and application requirements specified in Graduate Admissions and must apply using the online Application for Graduate Admission (https://www2.gmu.edu/admissions-aid/). Applicants must be graduates of accredited baccalaureate (BSN) programs in nursing. Applicants for the master's to DNP curriculum must also have a master's degree in nursing or a related field. All applicants must submit a copy of their current state-based/US nursing license and show evidence of at least one year of experience as an RN prior to admission. For application deadlines and detailed application requirements, refer to the CHHS Admissions website (https://chhs.gmu.edu/admissions/graduate-admissions/standards-requirements-and-deadlines/).

Policies

Transfers Between Programs or Concentrations

Approval from the school and college is required for students who wish to transfer between concentrations of the DNP or who wish to resign from the DNP and transfer to the MSN program.

Students must meet the institutional requirements stated in AP.6 Graduate Policies.

Transfer of Credit

Students may transfer a maximum of 9 credits into the DNP program from graduate courses taken at other institutions or taken at Mason in non-degree status, including courses offered through the college's Academic Outreach program. Transfer credit is governed by university transfer of graduate credit policy and the university requirements for doctoral degrees, and transfer credit must be approved by the program director and the dean. Students who enroll initially through non-degree studies or the Academic Outreach program should seek course advising through the department and should submit their application to the DNP program as soon as possible after beginning their study in non-degree status.

Reduction of Credit

Students who come into the master's to DNP program will complete 72 credits, including up to 30 hours of relevant graduate credit awarded for past master's-level courses.

Time Requirements

The total time to degree will not exceed eight (8) calendar years for BSN to DNP students and will not exceed six (6) calendar years for master's to DNP students.

Academic Termination

Academic termination is governed by university policy described in AP.6.6.2 Academic Termination. Additionally, a failing grade of F in a practicum course may result in termination from the program. Any graduate course in which a student earns a C grade or below must be repeated to earn a grade of B or better. A course may be repeated only once. A student may also be terminated from the program due to a finding of violation of the university Honor Code or after demonstrating a significant lack of progress.

Grading

Consistent with the university, the DNP program does not provide a D grade. Final grades for all DNP courses are submitted to the university as letter grades.

Grade	Quality Points	Graduate Courses
A (90-100%)	4.00	Passing
B (80-89%)	3.00	Passing
C (70-79%)	2.00	Failing
F (69% or lower)	0.00	Failing

A graduate course in which a grade of C or below is earned must be repeated to earn a grade of B or better. A course may be repeated only once. Graduate students (both master's and doctoral) may repeat no more than two courses in their total program of study.

Practicum Hour Requirements

The DNP degree requires a minimum of 1,000 practice hours. The 1,000 hours of precepted or mentored practice are distributed among introductory and upper-level graduate courses. Variable hours in the clinical practicums (NURS 921 and NURS 922) will assure a minimum total of 1,000 clinical hours prior to DNP graduation.

Master's to DNP students can transfer in up to 600 hours (depending on the number of hours they accrued during their master's program). The number of clinical hours a student is awarded on admission is based on transcripts and course descriptions. Faculty will review clinical credits earned as part of the master's degree to determine the number of clinical hours awarded.

Requirements

Degree Requirements

Total credits: 72

BSN to DNP Curriculum

Level I Core Courses

Code	Title	Credits
NURS 665	Theoretical and Ethical Foundations Related to Nursing	3
NURS 688	Organization of Nursing and Health Care Delivery Systems	3
NURS 757	Nursing Research and Biostatistics I	3
NURS 758	Nursing Research and Biostatistics II	3
Total Credits		12

Level II Core Essentials Courses

Code	Title	Credits
NURS 643	Community-Oriented Primary Care	3
NURS 715	Nursing Informatics Inquiry	3
NURS 808	Translating Nursing and Health Care Research into Evidence-Based Policy	3
NURS 870	Nursing and Health Care Administration I	3
NURS 883	Evidence-Based Practice in Nursing and Healthcare	4
Total Credits		16

Advanced Practice Competency Courses

Complete requirements of one concentration.

CONCENTRATIONS

- Concentration in Advanced Clinical Nursing (NUAC)
- Concentration in Nursing Administration (NUAD)
- Concentration in Adult-Gerontology Nurse Practitioner (AGNP)
- Concentration in Family Nurse Practitioner (FNUP)
- Concentration in Psychiatric Mental Health Nurse Practitioner (PMHN)

Concentrations in Advanced Nursing Care of Aggregates

Concentration in Advanced Clinical Nursing (NUAC)

Code	Title	Credits
NURS 714	Health Assessment in Clinical Practice	2
NURS 724	Health Assessment Practicum	1
Six credits of		6
NURS 740	Clinical Nurse Specialist Internship	
NURS 761	Pharmacotherapeutics	3
NURS 769	Physiology and Pathophysiology in Advanced Practice	3
NURS 773	Clinical Applications of Theory in Advanced Clinical Nursing	3
NURS 775	Advanced Specialty Practice I	3
NURS 776	Development of Advanced Practice Nursing Role	3
NURS 778	Advanced Specialty Practice II	3
Four credits of		4
NURS 921	Clinical Practicum I	
Five credits of		5
NURS 922	Clinical Practicum II	
Total Credits		36

Concentration in Nursing Administration (NUAD)

Code	Title	Credits
NURS 654	Nursing Administration Financial Management	3
NURS 763	Administrative Theory in Nursing	3
NURS 765	Practicum in Nursing Administration I	3
NURS 766	Administrative Strategies in Nursing	3
NURS 768	Practicum in Nursing Administration II	3
NURS 871	Nursing and Health Care Administration II	2
NURS 874	Internship in Health Care Administration/ Policy/Education	4
Electives toward career goal [1]		5
NURS 921	Clinical Practicum I [2]	8
NURS 922	Clinical Practicum II	2
Total Credits		36

1 All electives must be approved by advisor prior to the start of the course.

2 NURS 921 Clinical Practicum I credits will be taken over multiple semesters.

Concentrations in Advanced Nursing Care of Individuals

Concentration in Adult-Gerontology Nurse Practitioner (AGNP)

Code	Title	Credits
NURS 714	Health Assessment in Clinical Practice	2
NURS 724	Health Assessment Practicum	1
NURS 761	Pharmacotherapeutics	3
NURS 769	Physiology and Pathophysiology in Advanced Practice	3
NURS 713	Decision Making and Pharmacologic Management in Practice	3
NURS 787	Adult Gerontology Primary Care I	2
NURS 786	Adult Gerontology Primary Care Practicum I	2
NURS 789	Adult Gerontology Primary Care II	3
NURS 788	Adult Gerontology Primary Care Practicum II	4
NURS 791	Adult Gerontology Primary Care III	4
NURS 790	Adult Gerontology Primary Care Practicum III	4
Three credits of		3
NURS 921	Clinical Practicum I	
Two credits of		2
NURS 922	Clinical Practicum II	
Total Credits		36

Concentration in Family Nurse Practitioner (FNUP)

Code	Title	Credits
NURS 714	Health Assessment in Clinical Practice	2
NURS 724	Health Assessment Practicum	1
NURS 761	Pharmacotherapeutics	3
NURS 769	Physiology and Pathophysiology in Advanced Practice	3
NURS 713	Decision Making and Pharmacologic Management in Practice	3
NURS 738	Family Primary Care I	2
NURS 742	Family Primary Care Practicum I	2
NURS 739	Family Primary Care II	4
NURS 744	Family Primary Care Practicum II	4
NURS 741	Family Primary Care III	3
NURS 749	Family Primary Care Practicum III	4
Three credits of		3
NURS 921	Clinical Practicum I	
Two credits of		2
NURS 922	Clinical Practicum II	
Total Credits		36

Concentration in Psychiatric Mental Health Nurse Practitioner (PMHN)

Code	Title	Credits
NURS 714	Health Assessment in Clinical Practice	2
NURS 724	Health Assessment Practicum	1
NURS 761	Pharmacotherapeutics	3
NURS 769	Physiology and Pathophysiology in Advanced Practice	3
NURS 632	Pathogenesis of Mental Disorders	3
NURS 633	Individual Psychotherapy	3
NURS 634	Group, Family and Couple Psychotherapy	1
NURS 743	Clinical Psychopharmacology	3
NURS 782	Psychiatric Nurse Practitioner Practicum I	4
NURS 783	Psychiatric Nurse Practitioner Seminar I	2
NURS 784	Psychiatric Nurse Practitioner Practicum II	5
NURS 785	Psychiatric Nurse Practitioner Seminar II	2
Two credits of		2
NURS 921	Clinical Practicum I	
Two credits of		2
NURS 922	Clinical Practicum II	
Total Credits		36

DNP Project

The final step in completion of the degree is the implementation of a DNP project in the practice inquiry courses. The proposal for this project must be prepared with ample time for submission to the Human Subjects Review Board at George Mason University. One School of Nursing faculty member will serve as chair for the project. The student must demonstrate competence of the *AACN Essentials of Doctoral Education for Advanced Nursing Practice (2006)* by planning, developing, and implementing a scholarly DNP project that uses evidence to inform practice.

Code	Title	Credits
NURS 980	Practice Inquiry I	4
NURS 981	Practice Inquiry II	4
Total Credits		8

Master's to DNP Curriculum

Students in the master's to DNP program will complete 72 credits. Up to 30 hours of relevant graduate credit may be awarded for past master's-level courses, and students will complete the remaining minimum of 42 additional credits following the curriculum below.

The core essentials build on previous master's education and must be completed in the first year of full-time study or two years of part-time study. They prepare the student to develop and implement the DNP project in the final two semesters of study. The core essentials for master's to DNP students will be individualized based on the content from the student's master's degree academic program.

Students must complete 1,000 hours of precepted or mentored practice including those obtained during previous master's education (individually awarded based on evaluation of master's clinical hours up to 600 hours). Students also must take additional electives to meet the total requirement of 72 credits required to complete the program.

Students may add one of the following concentrations to their DNP application: Adult-Gerontology Nurse Practitioner, Family Nurse Practitioner, Psychiatric Mental Health Nurse Practitioner, Nursing Administration, or Advanced Clinical Nursing.

Level II Core Essentials Courses

Code	Title	Credits
NURS 654	Nursing Administration Financial Management	3
NURS 715	Nursing Informatics Inquiry	3
NURS 758	Nursing Research and Biostatistics II	3

NURS 808	Translating Nursing and Health Care Research into Evidence-Based Policy	3
NURS 870	Nursing and Health Care Administration I	3
NURS 883	Evidence-Based Practice in Nursing and Healthcare	4
Total Credits		19

Advanced Practice Competency Courses

Code	Title	Credits
NURS 921	Clinical Practicum I	1-10
NURS 922	Clinical Practicum II	1-10
Total Credits		2-20

DNP Project

The final step in completion of the degree is the implementation of a DNP project in the practice inquiry courses. The proposal for this project must be prepared with ample time for submission to the Human Subjects Review Board at George Mason University. One School of Nursing faculty member will serve as chair for the project. The student must demonstrate competence of the *AACN Essentials of Doctoral Education for Advanced Nursing Practice (2006)* by planning, developing, and implementing a scholarly DNP project that uses evidence to inform practice.

Code	Title	Credits
NURS 980	Practice Inquiry I	4
NURS 981	Practice Inquiry II	4
Total Credits		8

Electives

If needed, elective courses should be taken to complete the required 42 program credits. All electives must be approved by the advisor prior to the start of the course.

Nursing, MSN

Banner Code: HH-MSN-NURS

Academic Advising

Website: https://chhs.gmu.edu/students/academic-advising/graduate-advising#nurs

The Master of Science in Nursing (MSN) program is approved by the Virginia State Board of Nursing and accredited by the Commission on Collegiate Nursing Education. The program prepares nurses for a variety of leadership and practice roles in the health care system. The adult gerontology and family nurse practitioner primary care concentrations have been approved by the state boards of nursing and medicine in Virginia. The nursing administration concentration prepares nurses to be leaders in health care organizations. The nurse educator concentration prepares graduates for educational positions in health care organizations.

Admissions & Policies

Admissions

Requirements

Applicants must meet the admission standards and application requirements specified in Graduate Admissions and must apply using the online Application for Graduate Admission (https://www2.gmu.edu/admissions-aid/). Applicants must be graduates of an accredited baccalaureate (BSN) program in nursing, except for the applicants to the RN-to-MSN program. In addition, applicants must have an active state-based/US license as a registered nurse (RN), a current CPR card, and documented work experience as an RN. The application process is competitive, and applications are considered for the fall and spring semesters. For application deadlines and detailed application requirements, refer to the CHHS Admissions website (https://chhs.gmu.edu/admissions/graduate-admissions/standards-requirements-and-deadlines/).

Policies

Transfers Between Concentrations

Approval from the school and college is required for students who wish to transfer between concentrations of the MSN. Students must meet the residency requirements stated in AP.6.9 Requirements for Master's Degrees.

Transfer of Credit

Students may transfer a maximum of 9 credits into the MSN program from other institutions or taken at Mason in non-degree status, including graduate courses offered through the CHHS Academic Outreach program. Transfer credit is subject to university policies found in AP 6.5.3 Transfer of Credit and college policies and must be approved by the program director and the dean/director of the School of Nursing. Students who enroll initially through non-degree studies or the Academic Outreach program should seek course advising through the School of Nursing and should submit their application to the MSN program in their first semester of study.

Special Requirements

Additional fees and expenses related to the nursing graduate program may include: laboratory fee, standardized testing and course materials, name pin, books, CPR certification, health forms, health insurance, immunizations, and criminal background check fees. **All students must provide their own personal transportation to and from clinical agencies.** For a summary of all current fees and estimated expenses, see the School of Nursing website.

All MSN students are required to obtain a health clearance and complete the immunizations required by George Mason University as listed in the Student Health Services section of the catalog. Additional health and immunization requirements are imposed by clinical agency partners. The additional health requirements are included in the School of Nursing welcome letter. See the Graduate Program, School of Nursing website (https://nursing.gmu.edu/) for the most current information. **Students are not allowed into any clinical setting without the completed immunization series as prescribed by Mason's School of Nursing.** The School of Nursing will refuse admission or continued enrollment to any student who is unable to comply with these requirements. No student will attend practicum courses unless all the requirements for CPR, health exams, immunizations, and criminal background checks are met. Students must be in the process of completing a hepatitis B immunization series when they enroll for their first practicum course

All students must have CPR certification before entering their first course and maintain it through the remainder of the program. The American Heart Association Basic Life Support - Health Care Provider is required. Any cost incurred is the responsibility of the student.

All students must have current health insurance before entering the first practicum nursing course and maintain it through the remainder of the program. All students are required to have an active Mason e-mail account.

No student or faculty member will be discriminated against or denied admission to the nursing program for the sole reason that the student or faculty member has been exposed to, infected with, or diagnosed with HIV or HBV. All students are expected to practice Universal Precautions with all clients, and failure to do so will result in termination from the nursing major. In the event that a student is exposed to body fluids of a client during a clinical experience or practicum, procedures and appropriate reports are completed according to institutional and nursing policies. Information related to exposure or infection is confidential, and dissemination of such information is based on the need-to-know criteria that apply in health care situations. HIPAA and FERPA regulations apply. A complete and detailed HIV/HBV policy is available in the CHHS Office of Student Affairs.

MSN students are required to submit a copy of their current RN license prior to the first day of class and must maintain licensure throughout the academic program.

Professional Conduct

All students in the School of Nursing are expected to adhere to the Professional Conduct Policy of the College of Health and Human Services.

Appeal Process

Although faculty members in the nursing program are generally the best judges of a student's professional performance, some students may feel that the faculty member's judgment is unfair. Students in the School of Nursing wishing to appeal a grade are expected to follow the Mason guidelines for grade appeals, found in AP 3.9 Grade Appeals.

Honor System and Code

The School of Nursing supports academic integrity and follows the standards and procedures as described in the University catalog and available online (http://oai.gmu.edu/).

Academic Termination

Academic termination is governed by university policy described in AP.6.6.2 Academic Termination. Additionally, a failing grade of "F" in a practicum course may result in termination from the program. Any graduate course in which a student earns a C grade or below must be repeated to earn a grade of B or better in order to progress. A course may be repeated only once. A student may also be terminated from the program due to a finding of violation of the university Honor Code or after demonstrating a significant lack of progress.

Grading

Throughout the semester, students are assessed on how well they have met curricular outcomes. Consistent with the university, the MSN in Nursing program does not provide a D grade. Final grades for all MSN in Nursing courses are submitted to the university as letter grades.

Grade	Quality Points	Graduate Courses
A (90-100%)	4.00	Passing
B (80-89%)	3.00	Passing
C (70-79%)	2.00	Failing
F (69% or lower)	0.00	Failing

A graduate course in which a grade of C or below is earned must be repeated to earn a grade of B or better in order to progress, and a course may be repeated only once. Graduate students (both master's and doctoral) may repeat no more than two courses in their total program of study.

Curriculum

The master's program in nursing requires 39 to 49 graduate credits. Of these, a 15-credit core consists of coursework in the theoretical and ethical foundations of nursing, nursing research and biostatistics, nursing informatics, and the organization of nursing and health care delivery systems. The remaining 24-34 credits are satisfied by completing one of the concentrations:

Code	Title	Credits
Nursing Administration Concentration		24
Advanced Clinical Nursing Concentration		27-30
Nurse Educator Concentration		26
Adult Gerontology Nurse Practitioner Concentration		34
Family Nurse Practitioner Concentration		34

Actual practicum course hours may exceed those listed in the catalog. Actual practicum hours will meet the requirements for certification purposes. Requirements in the catalog reflect the minimum number of credits or practicum hours.

Requirements

Degree Requirements

Total credits: 39-49

Students must complete all Level I courses and the requirements for one concentration.

MSN Level I Core Courses (Required of all students)

Code	Title	Credits
NURS 665	Theoretical and Ethical Foundations Related to Nursing	3
NURS 715	Nursing Informatics Inquiry	3
NURS 757	Nursing Research and Biostatistics I	3
NURS 758	Nursing Research and Biostatistics II	3
NURS 688	Organization of Nursing and Health Care Delivery Systems	3
Total Credits		15

Concentration in Adult Gerontology Nurse Practitioner in Primary Care (AGNP)

Code	Title	Credits
Level II Courses Core		
NURS 643	Community-Oriented Primary Care	3
NURS 713	Decision Making and Pharmacologic Management in Practice	3
NURS 714	Health Assessment in Clinical Practice	2
NURS 724	Health Assessment Practicum	1

NURS 761	Pharmacotherapeutics	3
NURS 769	Physiology and Pathophysiology in Advanced Practice	3
Required Courses		
NURS 787	Adult Gerontology Primary Care I	2
NURS 786	Adult Gerontology Primary Care Practicum I	2
NURS 789	Adult Gerontology Primary Care II	3
NURS 788	Adult Gerontology Primary Care Practicum II	4
NURS 791	Adult Gerontology Primary Care III	4
NURS 790	Adult Gerontology Primary Care Practicum III	4
Total Credits		34

Concentration in Advanced Clinical Nursing (NUAC)

Code	Title	Credits
Level II Courses Core		
NURS 714	Health Assessment in Clinical Practice	2
NURS 724	Health Assessment Practicum	1
NURS 761	Pharmacotherapeutics	3
NURS 769	Physiology and Pathophysiology in Advanced Practice	3
Required Courses		
NURS 773	Clinical Applications of Theory in Advanced Clinical Nursing	3
NURS 775	Advanced Specialty Practice I	3
NURS 776	Development of Advanced Practice Nursing Role	3
NURS 778	Advanced Specialty Practice II	3
Elective Courses		
Select six credits of cognates in area of expertise [1]		6
Total Credits		27

[1] Students may take NURS 740 Clinical Nurse Specialist Internship for 3 elective credits.

Clinical Nurse Specialist Emphasis

Students in the advanced clinical nursing concentration who opt for the clinical nurse specialist emphasis must accrue 500 clinical hours by completing NURS 740. The course may be repeated once if necessary to accrue 500 hours (for a total of 6 credits).

Code	Title	Credits
NURS 740	Clinical Nurse Specialist Internship	3

Concentration in Family Nurse Practitioner in Primary Care (FNUP)

Code	Title	Credits
Level II Courses Core		
NURS 643	Community-Oriented Primary Care	3
NURS 713	Decision Making and Pharmacologic Management in Practice	3
NURS 714	Health Assessment in Clinical Practice	2
NURS 724	Health Assessment Practicum	1
NURS 761	Pharmacotherapeutics	3
NURS 769	Physiology and Pathophysiology in Advanced Practice	3
Required Courses		
NURS 738	Family Primary Care I	2
NURS 742	Family Primary Care Practicum I	2
NURS 739	Family Primary Care II	4
NURS 744	Family Primary Care Practicum II	4
NURS 741	Family Primary Care III	3
NURS 749	Family Primary Care Practicum III	4
Total Credits		34

Concentration in Nursing Administration (NUAD)

Code	Title	Credits
Required Courses		
NURS 763	Administrative Theory in Nursing	3
NURS 765	Practicum in Nursing Administration I	3
NURS 766	Administrative Strategies in Nursing	3
NURS 768	Practicum in Nursing Administration II	3
Nursing Administration Support Courses		
Financial Management:		
NURS 654	Nursing Administration Financial Management	3
or HAP 703	Financial Management in Health Systems	
Management/Organizational Theory:		
HAP 621	Organization Behavior and Healthcare Leadership	3
Select six credits from Nursing or related discipline electives		6
Total Credits		24

Nurse Educator Concentration (NURE)

Code	Title	Credits
Level II Courses Core		
NURS 714	Health Assessment in Clinical Practice	2
NURS 716	Principles of Assessment and Evaluation in Nursing Education	3
NURS 761	Pharmacotherapeutics	3
NURS 769	Physiology and Pathophysiology in Advanced Practice	3
Required Courses		
NURS 726	Perspectives in Nursing Education	3
NURS 727	Application of Nursing Education Principles to Curriculum and Program Development	3
NURS 728	Practicum and Seminar in Nursing Education I	3
NURS 729	Practicum and Seminar in Nursing Education II	3
Elective Courses		
Select three credits in Nursing or related disciplines.		3
Total Credits		26

RN-to-MSN Pathway

This pathway allows RNs who have completed the Mason Core requirements (as listed in the undergraduate RN-to-MSN Pathway

described in the Nursing, BSN program) and have demonstrated substantial involvement in professional nursing within the past two years to earn the MSN degree. Students entering a concentration through this pathway must meet all the requirements for admission to that concentration.

In addition to fulfilling admission requirements for degree status at Mason, applicants must:

1. Hold a current state-based/US license to practice nursing.
2. Be graduates of an accredited nursing program.
3. Have earned a 3.00 GPA in
   a. the nursing prerequisites,
   b. the nursing curriculum from the graduating institution, and
   c. Mason Core/general education courses at an accredited institution.
4. Demonstrate involvement in professional nursing within the past two years as an RN in clinical practice.

Students in the RN-to-MSN pathway are required to take the following bridge course:

Code	Title	Credits
NURS 440	Community Health and Epidemiology	3

After completion of the bridge course, students choose one of the concentrations and meet all requirements of the graduate program.

Nursing, PhD

Banner Code: HH-PHD-NURS

Academic Advising

Website: https://chhs.gmu.edu/students/academic-advising/graduate-advising#nurs

The PhD in Nursing program builds on the MSN degree and requires a total of 78 credit hours of work (a minimum of 48 credit hours beyond the master's). The objective of the program is to prepare nursing scholars who will pursue intellectual inquiry and conduct research for the purpose of extending knowledge to contribute to the health of all populations. Graduates of the program conduct independent and collaborative research, advance nursing science, and provide leadership to the nursing profession.

Admissions & Policies

Admissions

Requirements

Applicants must meet the admission standards and application requirements specified in Graduate Admissions (http://catalog.gmu.edu/admissions/graduate-policies/) and must apply using the online Application for Graduate Admission (https://www2.gmu.edu/admissions-aid/). Nursing PhD applicants must hold a Master's degree in nursing from an accredited program equivalent to 30 credits or a Master's degree in a related health field with a baccalaureate degree in nursing. Applicants also must hold a valid, current nursing license in a U.S. state or territory; waivers for international applicants will be determined by the PhD program director. Applicants must have a 3.00 GPA or higher on a 4.00 scale in their Master's program. Applicants also must have completed a graduate-level course in statistics with a final grade of 3.00 or higher. The application process is competitive, and applications are considered for the fall semester only. For application deadlines and detailed application requirements, refer to the CHHS Admissions website (https://chhs.gmu.edu/admissions/graduate-admissions/standards-requirements-and-deadlines/).

Policies

Reduction of Credit

Students must have a Master's degree before being admitted to the PhD in Nursing program. Up to 30 hours of relevant graduate credit may be awarded for past Master's-level courses. Students will complete the minimum of 48 additional credits following the curriculum below.

Transfer of Credit

Students may transfer a maximum of 9 credits into the program from graduate courses taken at other institutions or taken at Mason in non-degree status, including courses offered through the college's Academic Outreach program. Transfer credit is governed by university transfer of graduate credit policy and the university requirements for doctoral degrees, which can be found in AP.6 Graduate Policies (http://catalog.gmu.edu/policies/academic/graduate-policies/). Transfer credit must be approved by the PhD program director. Students who intend to apply to the PhD program and enroll initially through non-degree studies or the Academic Outreach program should seek course advising through the PhD program director and apply to the PhD program as soon as possible.

Program Requirements

To complete the PhD in Nursing, students must:

- Complete the program of study outlined in the PhD curriculum.
- Pass a written doctoral candidacy comprehensive examination after completing all PhD course requirements, except NURS 998 Doctoral Dissertation Proposal and NURS 999 Doctoral Dissertation.
- Pass the oral dissertation proposal defense within 2 years of advancement to candidacy and submit a dissertation proposal approved by the doctoral dissertation committee.
- Pass the final oral dissertation defense and submit a doctoral dissertation. Consistent with university graduate academic policy, final approval of the dissertation must be given by the doctoral dissertation committee, the PhD program director, the Director of the School of Nursing, and the Dean of the college. The dissertation is submitted in the approved format to University Libraries.
- Complete application material for graduation in accordance with prevailing Mason policies.

Professional Conduct

All students in the School of Nursing are expected to adhere to the Professional Conduct Policy (http://catalog.gmu.edu/colleges-schools/health-human-services/#requirementspoliciestext) of the College of Health and Human Services.

Grading

Throughout the semester, students are assessed on how well they have met curricular outcomes. Consistent with the university, the PhD in Nursing program does not provide a D grade. Final grades for all PhD in Nursing courses are submitted to the university as letter grades.

Grade	Quality Points	Graduate Courses
A (90-100%)	4.00	Passing
B (80-89%)	3.00	Passing
C (70-79%)	2.00	Failing
F (69% or lower)	0.00	Failing

Time Requirements

Students must complete all requirements for the PhD in Nursing within 9 calendar years from the time of first enrollment as a doctoral student in the program or with provisional status. Students must advance to candidacy within 4.5 years from the start of the program. Once students advance to candidacy, they must defend their oral proposal within 2 years. PhD students are expected to progress steadily towards their degree.

Academic Termination

A degree-seeking student can be terminated from the PhD in Nursing program for reasons including, but not limited to, the following:

- after earning unsatisfactory grades (below a 3.00) in two core courses. Any core course in which a student earns a grade below a 3.00 must be repeated and may prevent the student from progressing any further in coursework; a core course may be repeated only once. A student may not repeat more than one course. Any cognate course in which a student earns a grade below 3.00 will not be counted towards the 9 credits needed to meet the cognate requirement for the PhD program.
- after not passing the comprehensive exam on the second attempt.
- after demonstrating a significant lack of progress.
- a finding that the student has violated the university Honor Code (http://catalog.gmu.edu/policies/honor-code-system/).

Requirements

Degree Requirements

Total credits: 78

The PhD in Nursing program of study is based on the student's interests and career goals and on the expertise of the faculty. A student develops their program of research through core coursework, cognate courses, and dissertation research.

Scientific Base/Research Core

Code	Title	Credits
NURS 804	Advanced Quantitative Data Analysis for Healthcare Research I	3
NURS 805	Advanced Quantitative Data Analysis for Healthcare Research II	3
HHS 810	Systematic Reviews of Health Research	3
NURS 814	Theory and Design in Health Science	3
HHS 818	Advanced Ethics of Health Research	3
HHS 825	Conducting and Publishing Health Research	3
NURS 860	Measurement Theories in Healthcare Research	3
NURS 920	Qualitative Research in Nursing and Health Care	3
NURS 930	Quantitative Methods in Nursing and Health Care	3
Total Credits		27

Cognate Courses

Students must complete a cohesive set of doctoral-level (700 or higher) cognate courses selected with their academic advisor or the PhD program director to contribute to their program of research. A minimum of 9 credits of cognate courses must be completed prior to taking the comprehensive exam.

Code	Title	Credits
Complete nine credits of cognate courses		9
Total Credits		9

Dissertation

Advancement to Candidacy

The student must complete all coursework and pass the comprehensive examination to advance to candidacy for the doctoral degree. The Doctoral Program Director of the School of Nursing will approve the student's program of study and recommend advancement to candidacy to the director of the School of Nursing, who will render final approval for candidacy. A student who is unsuccessful in passing the comprehensive examination will be provided only one additional opportunity to sit for the examination after completing a remediation plan approved by the program director. A student who fails the comprehensive examination a second time will be terminated from the program.

Dissertation

The final requirement for the PhD degree in nursing is the submission of an acceptable dissertation. The dissertation will be a report of an original, independent research project completed by the student and approved by the dissertation committee.

Credits

During the process of writing the dissertation proposal, students must initially register for a minimum of 3 credits of NURS 998 Doctoral Dissertation Proposal; the student may repeat NURS 998 for variable credit until the proposal is successfully defended. The student must initially register for at least 3 credits of NURS 999 Doctoral Dissertation. Once the student has completed the required combined minimum of 12 credits of 998 and/or 999, they must register for at least 1 credit per semester until they have successfully completed the dissertation. The University guidelines for dissertation registration (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-10-6) (998, 999) provide additional guidance.

Code	Title	Credits
At least 12 credits of		12
NURS 998	Doctoral Dissertation Proposal [1]	
NURS 999	Doctoral Dissertation [2]	
Total Credits		12

1 Students must enroll for 3 credits the first time NURS 998 Doctoral Dissertation Proposal is taken.

2 Students must register for at least 3 credits of NURS 999 per semester until completing a total of 12 credits for 998 and 999 combined.

Dissertation Committee

With the advice of the PhD program director, and approval of the Director of the School of Nursing, the student will select a dissertation committee, composed of at least 3 members of the graduate faculty (as defined by the university), who will direct the dissertation research. The committee will be composed of a chair and at least two additional members who meet the criteria as established by university policy A.P.6.10.5 Dissertation Committee (http://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-10-5).

Dissertation Proposal

The student, in consultation with the dissertation committee, will write an acceptable dissertation proposal. If an acceptable proposal cannot be completed within the first semester the student is registered for the course, the student may continue working on the proposal under the direction of the committee, registering for at least one credit of NURS 998 Doctoral Dissertation Proposal each semester until the proposal is approved. Once the student has successfully defended their dissertation proposal before the dissertation committee, the student will be eligible to register for NURS 999 Doctoral Dissertation.

Dissertation Research

The dissertation will be a written report of original research in a content area of significance to the discipline of Nursing. As defined by the university, the dissertation demonstrates the candidate's mastery of the subject matter, methodologies, and conceptual foundations in their chosen field of study. The PhD in Nursing program requires that the dissertation meet the guidelines and content as specified by the University Library and also include at least two publishable manuscripts as approved by the dissertation committee. After the dissertation committee gives preliminary approval of the dissertation, the chair and PhD program director will schedule a final public defense of the dissertation. A copy of the dissertation must be provided to the PhD program director and dissertation committee members at least two weeks before the scheduled final dissertation defense. At the close of the public defense, the committee makes a final judgment regarding approval of the dissertation.

The dissertation must be approved by the PhD program director. Students who defend in the summer semester must be registered for at least one credit of NURS 999 Doctoral Dissertation for that summer semester. The student, with the approval of the chair and the PhD program director, is responsible for completing the application for graduation and submitting the final dissertation to the University Library by the appropriate deadlines. Failure to meet the required deadlines will result in the student not graduating during the intended semester.

Psychiatric Mental Health Nurse Practitioner Graduate Certificate

Banner Code: HH-CERG-PMHN

Academic Advising

Website: nursing.gmu.edu/program/view/21578

This certificate prepares students for the Psychiatric Mental Health Nurse Practitioner (PMHNP) role through formal study in the theory and practice of advanced practice psychiatric nursing in a variety of practice settings within the healthcare delivery system. Graduates will be eligible for prescriptive authority and will have the potential to perform a variety of mental health services including medication management and psychotherapy. Course and practice content focus on the assessment and management of serious mental illness.

Certification and Role

Graduates of this post-master's certificate are eligible to sit for the Psychiatric Mental Health Nurse Practitioner national certification examination given by the American Nurses Credentialing Center.

Admissions & Policies

Admissions

Applicants must hold a master's degree in nursing. Applicants must meet the admission standards and application requirements specified in the Graduate Admissions section of the catalog and apply using the Application for Graduate Admission (https://www2.gmu.edu/admissions-aid/). Acceptance to the nursing program is contingent upon admission to the university. The application process is competitive, and applications are considered for the fall semester only. For application deadlines and detailed application requirements, please refer to CHHS Admissions (https://chhs.gmu.edu/admissions/graduate-admissions/standards-requirements-and-deadlines/).

Policies

For policies governing all graduate certificates, see AP.6.8 Requirements for Graduate Certificates.

Requirements

Certificate Requirements

Total credits: 23

This certificate may be pursued on a full-or part-time basis.

Candidates must complete 23 graduate credits with a minimum GPA of 3.00 in course work and no more than 3 credits with a grade of C to earn the certificate.

Required Courses

Code	Title	Credits
NURS 632	Pathogenesis of Mental Disorders	3
NURS 633	Individual Psychotherapy	3
NURS 634	Group, Family and Couple Psychotherapy	1
NURS 743	Clinical Psychopharmacology	3
NURS 782	Psychiatric Nurse Practitioner Practicum I	4
NURS 783	Psychiatric Nurse Practitioner Seminar I	2
NURS 784	Psychiatric Nurse Practitioner Practicum II	5
NURS 785	Psychiatric Nurse Practitioner Seminar II	2
Total Credits		23

Additional Coursework for Certification

Applicants who are not already certified as a nurse practitioner will be required to complete the following courses to sit for certification upon graduation:

Code	Title	Credits
NURS 714	Health Assessment in Clinical Practice	2
NURS 724	Health Assessment Practicum	1
NURS 761	Pharmacotherapeutics	3
NURS 769	Physiology and Pathophysiology in Advanced Practice	3
Total Credits		9

College of Humanities and Social Sciences

6100 Horizon Hall
Fairfax Campus
MSN: 3A3

Phone: 703-993-8720
Website: chss.gmu.edu

Administration

- Ann Ardis, Dean
- Lisa Breglia, Senior Associate Dean for Undergraduate Affairs
- Marguerite Rippy, Associate Dean for Graduate Academic Affairs
- Michele Schwietz, Associate Dean for Research
- Jaime Lester, Associate Dean of Faculty Development and Strategic Initiatives
- Felicia Carr, Assistant Dean for Strategic Communications and Marketing
- Eleanor Weis, Director of Development
- Daniel Collier, Director of IT and Web Development
- Kim Dight, Executive Director of Finance and Human Resources

College Code: LA

The College of Humanities and Social Sciences (CHSS) is composed of 10 departments and 9 major interdisciplinary programs. The college is also home to the School of Integrative Studies, which offers an innovative interdisciplinary major. The college has a distinguished faculty of more than 400, including recipients of the Pulitzer Prize and Guggenheim Fellowship.

Undergraduate Programs

At the undergraduate level, all programs emphasize challenge, opportunity, and success. They challenge students to think critically and creatively and to go beyond what is required by pursuing research experiences, minors, double majors, honors in the major, and accelerated master's degree programs, which enable them to earn both an undergraduate and a graduate degree, often within five years. They provide many opportunities beyond the classroom including study abroad programs, service learning, internships, and career-enhancing courses and minors, all of which will help prepare them for success beyond college.

Graduate Programs

At the graduate level, programs of study provide opportunities for career development and advancement, professional education, participation in research, and personal fulfillment.

All programs encourage the exploration of contemporary issues through a dynamic curriculum that fosters an informed understanding of real world problems. The college provides students with an education that enables them to think critically, adapt to the changing conditions of society, and provide informed leadership to future generations.

Bachelor's/Accelerated Master's Degree Options

Many graduate programs offer highly-qualified undergraduates the opportunity to apply to accelerated master's degree programs. Students accepted into an accelerated master's degree program obtain both a bachelor's and a master's degree after satisfactory completion of 138 - 144 credits (number of required credits depends on the degree program).

For more information see AP.6.7 Bachelor's/Accelerated Master's Degrees and the specific degree listing.

The college offers accelerated master's degrees in these disciplines:

- Anthropology
- Art History
- Communication
- Criminal Justice
- Economics
- English with a concentration in folklore studies
- English with a concentration in linguistics
- Foreign Languages with a concentration in Spanish
- Foreign Languages with a concentration in Spanish/Bilingual-Multicultural Education
- Global Affairs
- History
- Interdisciplinary Studies with a concentration in computational social science
- Interdisciplinary Studies with a concentration in energy and sustainability
- Interdisciplinary Studies with a concentration in religious studies
- Interdisciplinary Studies with a concentration in social entrepreneurship
- Interdisciplinary Studies with a concentration in social justice and human rights
- Interdisciplinary Studies with a concentration in war and the military in society
- Interdisciplinary Studies with a concentration in women and gender studies
- Middle East and Islamic Studies
- Philosophy
- Psychology with a concentration in cognitive and behavioral neuroscience
- Sociology

Minors and Interdisciplinary Minors

The College of Humanities and Social Sciences has more than 60 minors, some of which are offered jointly with other units in the university. Minors require between 15 and 21 credits, and all but 8 of those credits

usually can be used simultaneously to fill other requirements. The college encourages all students to declare a minor, if they can. A minor can complement the major, enhance career preparation, allow students to develop a secondary area of expertise, or give them a chance to explore a passion.

The college offers two types of minors: disciplinary and interdisciplinary. The coursework for disciplinary minors comes mainly from a single discipline. Disciplinary minors are offered by one of the 10 departments in the college.

Interdisciplinary minors require coursework from two or more disciplines and are administered by interdepartmental faculty groups, often including faculty from across the university.

All minors in the college are available to students in any major in the university. For policies governing all minors, see AP.5.3.4 Minors.

Disciplinary Minors

- Arabic
- Anthropology
- Art History
- Chinese
- Clinical Psychology
- Communication
- Criminology, Law and Society
- Developmental Psychology
- Economics
- English
- Forensic Psychology
- French
- German Studies
- Health Communication
- Health Psychology
- History
- Industrial/Organizational Psychology
- Intelligence Studies
- Italian Studies
- Journalism
- Judaic Studies
- Korean Studies
- Latin
- Linguistics
- Philosophy
- Philosophy and Law
- Professional Experience in Communication
- Professional and Technical Writing
- Psychology
- Religious Studies
- Russian
- Sociology
- Spanish
- Teaching English as a Second Language

Interdisciplinary Minors

- African and African American Studies
- Ancient History and Mediterranean Archaeology
- Asia-Pacific and Northeast Asian Studies
- Conservation Studies (offered jointly with the College of Science)
- Childhood Studies
- Classical Studies
- Digital Humanities
- Film and Media Studies
- Folklore and Mythology
- Global Affairs
- Health, Disease, and Culture
- Human Development and Family Science (offered jointly with the College of Education and Human Development)
- Immigration Studies
- Islamic Studies
- Japanese Studies
- Latin American Studies
- Leadership
- LGBTQ Studies
- Medieval Studies
- Middle East Studies
- Native American and Indigenous Studies
- Nonprofit Studies
- Photojournalism (offered jointly with the College of Visual and Performing Arts)
- Political Communication (offered jointly with the Schar School of Policy and Government)
- Political Philosophy
- Social Innovation
- Social Justice and Human Rights
- Sport and American Culture (offered jointly with the School of Recreation, Health, and Tourism)
- Sport Communication (offered jointly with the School of Recreation, Health, and Tourism)
- STEM in Society
- Sustainability Studies (offered jointly with the College of Science)
- Well-Being
- Women and Gender Studies

Requirements & Policies

Policies for All Students

The requirements for each academic program offered by the college are described in the sections for the sponsoring departments and programs. All students are subject to the policies stated in Academic Policies. Additional policies and procedures for students in the college are presented in this section.

Mason uses only Mason e-mail accounts to communicate with enrolled students. Students should activate their Mason e-mail account, use it to communicate with their department and other administrative units, and check it regularly for important information.

Registration and Degree Audit

Students are responsible for correctly registering for courses and paying all tuition and fees by the official university registration and payment deadlines. Instructors do not have the authority to add students to

courses, and students may not sit in on classes for which they are not registered. All students should verify the accuracy of their enrollment before the end of the add period and should check Patriot Web (https://patriotweb.gmu.edu/) to verify that they are registered for the classes that they think they are.

All students are responsible for reviewing their own transcripts and degree audits regularly to ensure that they are correct and that they are on track to meet all their requirements.

Withdrawal

Students are responsible for all courses in which they remain officially enrolled once the drop period has ended. Instructors do not have the authority to withdraw students from classes. Withdrawals after the published deadlines require the approval of the relevant dean (undergraduate academic affairs or graduate academic affairs) and are allowed only for full semesters at a time (a withdrawal from all enrolled courses). Withdrawals are only permitted for non-academic reasons; no withdrawals can be approved for academic reasons. When submitting a withdrawal request, students must provide verifiable, third-party documentation for the reason for the withdrawal. Requests for withdrawals should be submitted as early in the semester as possible; withdrawal requests submitted after the last day of classes are rarely approved.

Grade Appeals

Grade appeals should be made to the department or program following the process specified in AP.6.9 Grade Appeals. If they are resolved within the department or program, that unit is the final level of appeal. The departmental decision may be appealed to the dean only on the basis of procedural irregularity. Undergraduate students should address such appeals through the Office of Undergraduate Academic Affairs and graduate students through the Office of Graduate Academic Affairs. If the grade appeal is not resolved within the department or program, the chair makes a recommendation to the dean, who makes the final determination. The decision of the dean is not subject to review or further appeal.

Accommodations for Students with Disabilities

Students with documented disabilities should contact the Office of Disability Services (http://ods.gmu.edu/) to open a file and learn more about accommodations that may be available to them.

Policies for Undergraduate Students

The college offers 17 Bachelor of Arts (BA) degrees, 4 Bachelor of Science (BS) degrees, a Bachelor of Fine Arts in Creative Writing (BFA), and a Bachelor of Individualized Study (BIS) degree.

All students must complete 120 credits, of which at least 45 must be in upper-level courses (numbered 300 and above). At least one course at the 300 or 400 level must be designated "writing intensive."

Students should consult the Mason Core and College Requirements for information concerning the ways they can fulfill Mason Core and college requirements for undergraduate degrees. Transfer students are encouraged to meet with their academic advisor prior to registering for classes to review their transcripts and course equivalencies. In some cases, students may need to earn more than 120 credits to complete all of their requirements.

The college cooperates with the Jimmy and Rosalynn Carter School for Peace and Conflict Resolution (Carter School) to provide courses from various disciplines in the college toward a BA, BS, and minor in conflict analysis and resolution. More information about the Carter School undergraduate degree programs can be found in the Jimmy and Rosalynn Carter School for Peace and Conflict Resolution.

Questions about Academic Policies for Undergraduates

Students with questions about exceptions to academic policies and about college requirements should contact the Office of Undergraduate Academic Affairs (http://chssundergrad.gmu.edu/) (703-993-8725; chssdean@gmu.edu).

Additional policy information and forms are available online from the Office of Undergraduate Academic Affairs (http://chssundergrad.gmu.edu/).

Academic Load

Students should review university policies regarding academic load in AP.1.2 Academic Load.

In order to be considered for an overload, students must fulfill all of the following criteria:

- Be in good academic standing;
- Have completed the prior semester with no course grades below "C" and with a minimum term GPA of 2.50;
- Have a cumulative GPA of 2.50 or higher;
- Have demonstrated the ability to handle an increased and demanding courseload while maintaining high performance in a previous semester at Mason; and
- Have no remaining incompletes (INs) from a previous semester.

Freshmen and transfer students in their first semesters are not given permission for overloads as they have yet to establish an academic record at George Mason University.

If approved for an overload, the student is responsible for adding the additional class(es) and paying for the related tuition by the official university deadlines.

Excluded Courses and Credits

Students are encouraged to take advantage of the many excellent courses available at Mason to broaden their educational experience or strengthen their background; however, some credits earned may not satisfy any degree requirements. Only MLSC courses at the 400-level can be used for credit for a degree in the college; credit for other MLSC courses may not be used toward a CHSS degree. At most 3 credits of 100-level RECR coursework may be taken to satisfy the degree requirements of any CHSS major, and these courses will be applied toward a students general electives. Whenever there is uncertainty, students must consult with an academic advisor in their department.

Qualifying CLEP credits may apply to a degree in the College of Humanities and Social Science if those credits were awarded and reported prior to matriculation at Mason. After matriculation, students are limited to taking and applying credits for the CLEP exam in "Information Systems & Computer Applications". Students with a qualifying score on this exam will be awarded credit for IT 104T. Students receiving credit for IT 104T, who are subject to a prior catalog year, must still meet the university Information Technology ethics requirement. The Office of Admissions will continue to evaluate transfer credit for CLEP exams for new students applying to the University. Current students should contact their CHSS academic advisor with any questions regarding CLEP credit.

University Consortium

Students should review university policies regarding the University Consortium under AP.1.4 Special Registration Procedures in the Academic Policies section. Students who have attempted or failed a course at Mason are not permitted to take the equivalent course through the consortium under any circumstances. All consortium registration requests must be submitted to the dean's office at least 3 weeks prior to the first day of classes for the relevant semester at Mason.

Permission to Study Elsewhere

Once enrolled in degree status at Mason, students with fewer than 60 hours of transfer coursework (not including registration through the Consortium of Universities of the Washington Metropolitan Area or coursework completed through the Global Education Office) may take up to 8 hours of coursework at another institution of higher education accredited by a Mason-recognized U.S. institutional accrediting agency or international equivalent. Students with 60 or more hours of transfer coursework are not permitted to take additional coursework at another institution. A student may seek permission for additional hours beyond these limits for summer registration if his/her permanent residence is more than 50 miles from the George Mason University Fairfax campus. See AP.1.4.2 Permission to Study Elsewhere for additional information.

In addition to the university cumulative GPA requirement of 2.00, CHSS students requesting course elsewhere permission must have a previous semester GPA of 2.00 or higher.

Study Abroad

In order to be considered for study through Mason Study Abroad (http://masonabroad.gmu.edu/), students must plan well in advance and receive prior, written permission from the dean. Students must also meet all of the following criteria:

- Meet all eligibility requirements for their program as specified by Mason Study Abroad (http://masonabroad.gmu.edu/) including course prerequisites and minimum GPA;
- Must have a minimum cumulative GPA of 2.50 *after* prior semester grades post to record; and
- Have completed the necessary forms and have obtained all required signatures and course equivalencies.

Students in danger of probation, suspension, or dismissal should plan very carefully before requesting to study abroad. Students with a cumulative GPA below 2.50 (after grades from prior term are posted to transcript) will not be permitted to study abroad.

Leave of Absence

All undergraduate students who are planning an absence from George Mason University must submit a formal request for Leave of Absence to the Office of the University Registrar. See AP.1.8 Undergraduate Leave of Absence for full university policy.

Reserve Graduate Credit

Approval to register for reserve graduate credit (earned credit held in reserve to apply later toward a graduate degree) is given only to Mason seniors within 15 credits of completing undergraduate study who have successfully completed all course prerequisites. In addition, this privilege is normally extended only to seniors who have completed at least 12 credits at the university, have a cumulative GPA of 3.00 or better, and have a major in the department offering the course. Approval for reserve graduate credit is limited to 6 credits and does not imply approval for admission into a Mason graduate program or that credit earned will be accepted at another graduate school.

Withdrawals

Students should review AP.1.5 Withdrawal for more information. Courses for which a withdrawal is approved receive a grade of "W."

Students should be aware of the potential consequences of withdrawing on their academic standing. Though credits graded "W" do not affect a student's GPA, they do count towards the total attempted hours. The total attempted hours and cumulative GPA together determine a student's academic standing. These are explained in AP.5.2 Academic Standing.

Academic Clemency

Students should review the university policies in AP.5.2.9 Academic Clemency.

To be considered for clemency, students must meet all of the following criteria:

- Be absent from George Mason for a minimum of three consecutive calendar years;
- Provide a detailed explanation for why they were unsuccessful in those courses and how they have made changes to ensure their academic progress upon their return;
- Submit their request within 12 months of the first day of the re-enrollment term;
- Complete at least 6 credits during their first 12 months back at George Mason; and
- Earn a minimum GPA of 2.50 each semester back prior to making the clemency request with no individual grade below 2.00.

If the last three minimum academic requirements are not met, clemency will not be allowed under any circumstances.

Appeals Process

Students may appeal departmental decisions concerning academic actions to the Office of Undergraduate Academic Affairs. They may appeal decisions of the Office of Undergraduate Academic Affairs to the Dean's Council, a committee composed of college deans and faculty members. Students may appeal decisions of the Dean's Council to the Student Policies and Appeals Committee, a standing committee elected by the college faculty. These levels of appeal are subject to the limits below concerning the final level of appeal for each type of academic action. Students who feel that the college appeal process was conducted unfairly may appeal to the Provost's Office as specified in Appeals of Academic Procedures.

The grade appeal process is discussed above.

Departments set the requirements for the majors and minors that they administer. Substitutions and waivers of these requirements require the approval of the Office of Undergraduate Academic Affairs. When a department denies a substitution or waiver of a requirement, the denial may be appealed to the Office of Undergraduate Academic Affairs on the basis of procedural irregularity only. That office is the final level of appeal.

The Dean's Council is the final level of appeal for course overloads, consortium registration, study elsewhere, and withdrawals after the drop deadline within the semester. Appeals of these decisions may be made to the Student Policies and Appeals Committee on the basis of

procedural irregularity only, and the committee is the final level of appeal on procedural grounds.

Student Policies and Appeals Committee is the final level of appeal for college-level requirements, retroactive actions (adds, withdrawals, and graduation), and return from suspension and dismissal. This committee is the final level of approval.

There is no waiver or appeal of satisfactory performance standards [minimum grades or grade point average (GPA)] that have been set by the department or program faculty for the courses in their major or minor.

Students should file all appeals in a timely manner, usually within the semester in which the original decision is rendered, but no later than the final day of classes of the following semester.

Teacher Licensure

Students who plan to seek teacher licensure and become K–12 teachers should consult College of Education and Human Development and attend an information session early in their undergraduate career. For more information, call 703-993-2892, e-mail cehdgrad@gmu.edu, or see the College of Education and Human Development webpage (http://gse.gmu.edu/).

Second Bachelor's Degree

Students should review Application for a Second Bachelor's Degree and AP.5.3.3 Second Bachelor's Degrees for more information. Students pursuing a second bachelor's degree concurrently with their first bachelor's degree at Mason must meet all the college-level requirements if they differ from the requirements in the college of their first major.

Students pursuing a second bachelor's degree in the college after already having received one or more bachelor's degrees are considered to have met all of the Mason Core requirements. Students pursuing a bachelor of science degree do not have additional college-level requirements. Students pursuing a bachelor of arts degree in the college must complete these additional college-level requirements: one additional 3-credits course each in philosophy or religious studies, in social and behavioral science, and in non-western culture (for a total of 9 credits). They must also demonstrate proficiency in a foreign language through the intermediate level. For more information about college-level requirements see Mason Core and College Requirements.

Minors

Students may elect to take a minor in addition to their major field of study. For policies governing all minors, AP.5.3.4 Minors. Students interested in earning a minor should complete the appropriate section of the Change/Declaration of Academic Program form and submit it to the Office of the University Registrar. See All about Minors (http://chss.gmu.edu/minors/) for more information.

College-Level Requirements for Undergraduate Students

Bachelor of Arts

The BA degree provides students with a breadth of knowledge as well as the necessary skills to make in-depth study of a major truly meaningful. In addition to the Mason Core program, students pursuing a BA degree must complete the coursework below. Except where expressly prohibited, a course used to fulfill a college-level requirement may also be used simultaneously to satisfy other requirements (Mason Core requirements or requirements for the major).

- Philosophy or religious studies: 3 credits fulfilled by any course in philosophy or religious studies (PHIL, RELI) except for, PHIL 323 Classical Western Political Theory, PHIL 324 Modern Western Political Theory, PHIL 327 Contemporary Western Political Theory, PHIL 393 Humanities College to Career, PHIL 460 Senior Seminar in Philosophy, Politics, and Economics. PHIL 253 Philosophy and Literature (Mason Core) and RELI 235 Religion and Literature (Mason Core) cannot be used to fulfill both the philosophy/religious studies requirement and the Mason Core literature requirement.
- Social and behavioral science: 3 credits in addition to the university-wide requirement in social and behavioral science for a total of 6 credits. The two courses used to fulfill the combined college and university requirements must be from different disciplines in the social and behavioral sciences. This requirement may be fulfilled by completing any course in ANTH, CRIM, ECON, GOVT, HIST (except HIST 100 History of Western Civilization (Mason Core) or HIST 125 Introduction to World History (Mason Core)), LING, PSYC, or SOCI and these courses in GGS:

Code	Title	Credits
GGS 101	Major World Regions (Mason Core)	3
GGS 103	Human Geography (Mason Core)	3
GGS 110	Introduction to Geoinformation Technologies	3
GGS 301	Political Geography (Mason Core)	3
GGS 303	Geography of Resource Conservation (Mason Core)	3
GGS 304	Population Geography (Mason Core)	3
GGS 305	Economic Geography	3
GGS 306	Urban Geography	3
GGS 315	Geography of the United States	3
GGS 316	Geography of Latin America	3
GGS 320	Geography of Europe	3
GGS 325	Geography of North Africa and the Middle East	3
GGS 330	Geography of the Soviet Succession States	3
GGS 357	Urban Planning	3
GGS 380	Geography of Virginia	3

- Foreign language: intermediate-level proficiency in one foreign language. This requirement may be fulfilled by completing a course in a foreign language numbered 202 (or higher level courses taught in the language) or achieving a satisfactory score on an approved proficiency test. A three course sequence (12 credits) in American Sign Language (EDSE 115 American Sign Language (ASL) I, EDSE 116 American Sign Language (ASL) II, and EDSE 219 American Sign Language (ASL) III) will also meet the foreign language requirement. Students who are already proficient in a second language may be eligible for a waiver of this requirement. Additional information on waivers can be found at the Office of Undergraduate Academic Affairs (http://chssundergrad.gmu.edu/).
- Non-Western culture: 3 credits of an approved course in the study of a non-Western culture in addition to the course used to fulfill the Mason Core requirement in global understanding. A course used to fulfill the Mason Core global understanding requirement may not be simultaneously used to satisfy this college-level requirement. A course used to fulfill this requirement may be used simultaneously to fulfill any other requirements (Mason Core requirements, college-level requirements, or requirements for the major). Additional information

on waivers can be found at the Office of Undergraduate Academic Affairs (http://chssundergrad.gmu.edu/).

Code	Title	Credits
ANTH 114	Introduction to Cultural Anthropology (Mason Core)	3
ANTH 300	Civilizations	3
ANTH 302	Peoples and Cultures of Latin America (Mason Core)	3
ANTH 307	Ancient Mesoamerica (Mason Core)	3
ANTH 308	Peoples and Cultures of the Middle East (Mason Core)	3
ANTH 309	Peoples and Cultures of India (Mason Core)	3
ANTH 313	Myth, Magic, and Mind (Mason Core)	3
ANTH 314	Zombies	3
ANTH 330	Peoples and Cultures of Selected Regions: Non-Western	3
ANTH 332	Cross-Cultural Perspectives on Globalization (Mason Core)	3
ANTH 381	Medical Anthropology	3
ANTH 396	Issues in Anthropology: Social Sciences (Mason Core)	3
ARAB 360	Topics in Arabic Cultural Production	3
ARAB 420	Survey of Arabic Literature	3
ARAB 440	Topics in Arabic Religious Thought and Texts (Mason Core)	3
ARTH 203	Survey of Asian Art (Mason Core)	3
ARTH 204	Survey of Latin American Art (Mason Core)	3
ARTH 206	Survey of African Art (Mason Core)	3
ARTH 318	Art and Archaeology of Ancient Egypt	3
ARTH 319	Art and Archaeology of the Ancient Near East (Mason Core)	3
ARTH 320	Art of the Islamic World (Mason Core)	3
ARTH 382	Arts of India (Mason Core)	3
ARTH 383	Arts of Southeast Asia (Mason Core)	3
ARTH 384	Arts of China (Mason Core)	3
ARTH 385	Arts of Japan (Mason Core)	3
ARTH 386	The Silk Road (Mason Core)	3
ARTH 482	RS: Advanced Studies in Asian Art	3
CHIN 318	Introduction to Classical Chinese (Mason Core)	3
CHIN 320	Contemporary Chinese Film	3
CHIN 325	Major Chinese Writers (Mason Core)	3
CHIN 470	Special Topics in Chinese Studies	3
DANC 118	World Dance (Mason Core)	3
ECON 361	Economic Development of Latin America (Mason Core)	3
ECON 362	African Economic Development (Mason Core)	3
FREN 451	Topics in Sub-Saharan Francophone Literature and Culture	3
FREN 454	Topics in Caribbean Francophone Literature and Culture	3
GGS 101	Major World Regions (Mason Core)	3
GGS 316	Geography of Latin America	3
GGS 317	Geography of China (Mason Core)	3
GGS 325	Geography of North Africa and the Middle East	3
GGS 330	Geography of the Soviet Succession States	3
GGS 399	Select Topics in GGS	3
GOVT 328	Global Political Theory	3
GOVT 332	Government and Politics of the Middle East and North Africa	3
GOVT 333	Government and Politics of Asia	3
GOVT 338	Government and Politics of Russia	3
GOVT 340	Central Asian Politics	3
GOVT 341	Chinese Foreign Policy	3
GOVT 345	Islam and Politics	3
GOVT 433	Political Economy of East Asia	3
HIST 251	Survey of East Asian History (Mason Core)	3
HIST 252	Survey of East Asian History (Mason Core)	3
HIST 261	Survey of African History (Mason Core)	3
HIST 262	Survey of African History (Mason Core)	3
HIST 271	Survey of Latin American History (Mason Core)	3
HIST 272	Survey of Latin American History (Mason Core)	3
HIST 281	Survey of Middle Eastern Civilization (Mason Core)	3
HIST 282	Survey of Middle Eastern Civilization (Mason Core)	3
HIST 326	Stalinism	3
HIST 327	The Soviet Union and Russia Since World War II	3
HIST 328	Rise of Russia (Mason Core)	3
HIST 329	Modern Russia and the Soviet Union (Mason Core)	3
HIST 353	History of Traditional China	3
HIST 354	Modern China (Mason Core)	3
HIST 356	Modern Japan (Mason Core)	3
HIST 357	Postwar Japan (Mason Core)	3
HIST 358	Post-1949 China (Mason Core)	3
HIST 360	History of South Africa (Mason Core)	3
HIST 364	Revolution and Radical Politics in Latin America (Mason Core)	3
HIST 365	Conquest and Colonization in Latin America (Mason Core)	3
HIST 366	Comparative Slavery	3
HIST 367	History, Fiction, and Film in Latin America	3
HIST 387	Topics in Global History (Mason Core)	3-6
HIST 426	The Russian Revolution	3
HIST 460	Modern Iran (Mason Core)	3
HIST 461	Arab-Israeli Conflict	3
HIST 462	Women in Islamic Society (Mason Core)	3

HIST 465	The Middle East in the 20th Century	3
JAPA 310	Japanese Culture in a Global World (Mason Core)	3
JAPA 340	Topics in Japanese Literature (Mason Core)	3
KORE 320	Korean Popular Culture in a Global World	3
MUSI 103	Musics of the World (Mason Core)	3
RELI 211	Religions of the West (Mason Core)	3
RELI 212	Religions of Asia (Mason Core)	3
RELI 240	Death and the Afterlife in World Religions	3
RELI 272	Islam	3
RELI 313	Hinduism (Mason Core)	3
RELI 314	Chinese Philosophies and Religious Traditions	3
RELI 315	Buddhism (Mason Core)	3
RELI 317	Daoism	3
RELI 337	Mysticism: East and West	3
RELI 365	Muhammad: Life and Legacy	3
RELI 374	Islamic Thought (Mason Core)	3
RELI 375	Qur'an and Hadith	3
RELI 379	Islamic Law, Society, and Ethics	3
RELI 387	Islam, Democracy, and Human Rights	3
RELI 490	Comparative Study of Religions (Mason Core)	3
RUSS 353	Russian Civilization (Mason Core)	3
RUSS 354	Contemporary Post-Soviet Life (Mason Core)	3

Requirements for each major are listed in the departmental sections.

Bachelor of Science

The BS degree provides students with a more intensive approach to the core technical questions of their majors. This curriculum has a reduced number of courses in humanities and social sciences in comparison with the BA degree to allow students to achieve greater depth in their majors. Students in Humanities and Social Sciences pursuing a BS must complete the Mason Core program. Requirements for each major are listed in the departmental sections.

Transfer Students

Admitted and enrolled transfer students who have completed an AA, AS, or AA&S degree from the Virginia Community College System (VCCS) and have been offered admission to Mason by the Office of Admissions may be eligible for a waiver of all George Mason University's lower level Mason Core requirements in accordance with the Guaranteed Admission Agreement. Students eligible for this waiver are still required by the university to complete ENGH 302 Advanced Composition (Mason Core) and a synthesis course. Transfer students who have been offered admission under the terms of the Guaranteed Admission Agreement and are pursuing a degree in this college are considered to have met all college requirements except for proficiency in a foreign language (required of BA students).

Policies for Graduate Students

The college offers 16 master's degrees, plus a master of arts in interdisciplinary studies (MAIS), a master of fine arts in creative writing (MFA), and 9 doctoral degrees.

Graduate Admission

Admission decisions are made by the faculty committee of the respective graduate program. Denial of admission is not subject to appeal. Applicants denied admission to a program are not permitted to enroll in courses in that program.

If an applicant is offered graduate admission, the college reserves the right to withdraw that offer of admission if:

- During his or her academic studies, the admitted applicant has a significant drop in academic performance or fails to graduate with a degree prior to the first day of classes for the term admitted.
- There has been a misrepresentation in the application process.
- Prior to the first day of classes for the term admitted, the college learns that the admitted applicant has engaged in behavior that indicates a serious lack of judgment or integrity, irrespective of the outcome of any disciplinary process related to such behavior.
- For students admitted to an accelerated master's program, the student does not maintain satisfactory progress in his or her undergraduate program, does not receive a minimum grade of 3.00 in the graduate classes taken as an undergraduate, or otherwise does not meet the conditions specified on the application and admission letter.

The university further reserves the right to require the applicant to provide additional information (and/or authorization for the release of information) about any such matter.

Provisional Admission

Students provisionally admitted to their graduate degree program are not eligible to enroll in consortium coursework or study at another institution until the conditions of the provisional contract have been met. Provisionally admitted students are also not eligible to participate in any study abroad programs until the conditions of the provisional contract have been met. Transfer of credit requests for coursework taken in non-degree status at Mason or from another institution prior to admission will not be considered until the provisional contract has been fulfilled.

Academic Load

Graduate students can enroll in up to 12 credits of coursework each semester. Non-degree students can enroll in up to 10 credits of coursework each semester.

Non-Degree Enrollment

Graduate non-degree students may enroll in 500, 600, and 700 level courses. In exceptional cases graduate non-degree students in the College of Humanities and Social Sciences may request to enroll in an 800-level course if they have an appropriate academic or professional background and have the written permission of the course instructor, director of the graduate program offering the course, and the graduate dean.

University Consortium

Students should review university policies regarding the University Consortium AP.1.4 Special Registration Procedures.

Eligible students may enroll in courses at any of the institutions in the Consortium of Universities in the Washington Metropolitan area. Students are limited to one consortium course per semester, with a career maximum of 6 credits. To register for a consortium course, students must have an overall GPA of at least 3.00 and be in good academic standing. Students with grades of IN on their record or who earned

grades of C or F in the most recent semester are not eligible to register for a consortium course. Students who have received a grade less than 3.00 in a consortium course are not permitted to enroll in additional consortium courses. Newly admitted graduate students are not permitted to enroll in consortium courses during their first semester of graduate study. Students who wish to enroll in consortium courses during their second semester of study must wait until the grades for the previous semester have been posted.

Transfer of Credit

To be eligible for transfer, credits must have been earned at an accredited graduate degree-granting institution (and applicable to a graduate degree at that institution) or at Mason while in non-degree status. Courses accepted for transfer credit must have been completed within six years of the admission term and with a minimum grade of 3.00. Courses with grades of P or S are not accepted for transfer unless the official transcript indicates that the grade is equivalent to a 3.00 (B) or better. Some programs have more stringent standards on transfer of credit; students should contact their graduate program for specific information.

Reduction of Credit

Doctoral and master's students in the college may request a reduction of credit based on a previously conferred graduate degree. Not all master's programs in the college permit reduction of credit and some programs limit the number of credits that can be reduced. Further details and related restrictions can be found in AP.6.5.2 Reduction of Credits.

Credit from Other Institutions

Students must obtain all approvals, including course equivalencies, prior to enrolling in any coursework at another institution. All appropriate paperwork must be submitted to the Office of the University Registrar by the last day to add during the academic term the course meets. Students enrolling in courses at other institutions with different drop/add timetables must still abide by Mason's drop/add deadlines in terms of acquiring necessary approvals.

Dissertation Committee

The college follows university policies regarding dissertation committees. See AP.6.10.5 Dissertation Committee.

Dissertation (999) Registration

Doctoral students must be advanced to candidacy before they may enroll in 999. Students must register for 999 before the add deadline published in the Academic Calendar by the Office of the University Registrar (http://registrar.gmu.edu/). Once doctoral students begin registering for 999, they must enroll in at least 3 credits of 999 each semester (excluding summers) until they have completed the total number of dissertation credits required on their individual program of study. Once enrolled in 999, all doctoral students must maintain continuous enrollment in 999 until they deposit their approved dissertation in the University Library. If they have completed the number of dissertation credits required on their program of study, they may maintain continuous enrollment by registering for only 1 credit of 999. Please see AP.6.10.6 Dissertation Registration (998, 999).

Time Limit for Doctoral Students

Total time to degree will not exceed nine (9) calendar years from the time of first enrollment as a doctoral degree-seeking student in a program of the college. Doctoral students are expected to progress steadily toward their degree and to advance to candidacy within no more than six (6) years.

Students who do not meet published time limits because of compelling circumstances may petition their program and the graduate dean for a single extension of one calendar year at any point during their program. If such an extension is granted, the total time limit for completion of the degree will not exceed ten (10) years. Requests for extension of time limits should explain the extenuating circumstances that prevented timely completion of the degree and a timeline for completing the remaining work within the limits of the extension. The request should include a letter from the student's graduate program director indicating program support for the extension and confirmation that the work can be completed within the limits of the extension.

Please see AP.6.10.1 Time Limit.

Graduate Appeals of Termination

All graduate students should be familiar with the university polices on termination as stated in AP.6.6.2 Academic Termination. Students who meet the criteria for termination may submit a written appeal to the Office of Graduate Academic Affairs. Appeals should include all relevant information on the basis for appeal, as well as any appropriate documentation. Appeals of termination are reviewed at the beginning of each semester by a faculty committee. The ruling of that committee represents the final decision of the college.

Academic Units

- African and African American Studies Program
- Cultural Studies Program
- Department of Communication
- Department of Criminology, Law and Society
- Department of Economics
- Department of English
- Department of History and Art History
- Department of Modern and Classical Languages
- Department of Philosophy
- Department of Psychology
- Department of Religious Studies
- Department of Sociology and Anthropology
- Global Affairs Program
- Higher Education Program
- Interdisciplinary Studies Program
- Latin American Studies Program
- Middle East and Islamic Studies Progam
- Russian and Eurasian Studies Program
- School of Integrative Studies
- Women and Gender Studies Program

African and African American Studies Program

3167 Horizon Hall
Fairfax Campus

Phone: 703-993-4414

Website: aaas.gmu.edu

The African and African American Studies Program offers an interdisciplinary minor open to students in all majors.

Students who pursue this minor examine the cultural, historical, economic, and political dimensions of people of African descent in America, the Caribbean, Africa, and throughout the Diaspora. Students learn theories and methodologies that are used to examine the complex dynamics of race, class, gender, and ethnicity in America. Through the coursework for this program, students develop critical and analytical approaches to societal issues because they are addressed through a variety of academic disciplines.

Students are encouraged to do an internship as part of the minor to further enhance their education and provide them with valuable preparation for the workforce.

African American Studies Research and Resource Center

The goal of the African American Studies Research and Resource Center (Paul Robeson Room) is to facilitate new ways for George Mason University students to learn about the African diaspora. As part of their academic and community involvements, students often need to address issues related to African and African American Studies. The center offers them opportunities for hands-on experience with African and African American life. It has been instrumental in assisting students, faculty, staff, and the community in finding resources to accomplish this goal.

The center sponsors a lecture series and a scholar-in-residence program and offers research and resources support for the Mason community.

Faculty

Program Faculty

Professors

Keith Clark (https://aaas.gmu.edu/people/kclark1/)

Kevin A Clark (https://aaas.gmu.edu/people/kclark6/)

Spencer Crew (https://aaas.gmu.edu/people/srcrew/)

Rutledge M Dennis (https://aaas.gmu.edu/people/rdenni1/)

Hazel M McFerson (https://aaas.gmu.edu/people/hmcferso/)

Suzanne E. Smith (https://aaas.gmu.edu/people/smisuze/)

Toni-Michelle C Travis (https://aaas.gmu.edu/people/ttravis/)

Associate Professors

Benedict Carton (https://aaas.gmu.edu/people/bcarton1/)

Rose M Cherubin (https://aaas.gmu.edu/people/rcherubi/)

Charlene Y Douglas (https://aaas.gmu.edu/people/cdouglas/)

Cynthia Fuchs (https://aaas.gmu.edu/people/cfuchs/)

Mark C Hopson (https://aaas.gmu.edu/people/mhopson/)

Yevette Richards Jordan (https://aaas.gmu.edu/people/yjordan/)

Stefan Wheelock (https://aaas.gmu.edu/people/swheeloc/)

Term Professors

Wendi N. Manuel-Scott (https://aaas.gmu.edu/people/wmanuels/)

Term Research Assistant Professors

Thomas T Stanley (https://aaas.gmu.edu/people/tstanle1/)

Programs

- African and African American Studies Minor

African and African American Studies Minor

Banner Code: AAMS

Academic Advising

3167 Horizon Hall
Fairfax Campus

Website: aaas.gmu.edu/programs/LA-MINOR-LA-AFAM/

In this minor, students will examine the cultural, historical, economic, and political dimensions and experiences of people of African descent in America, the Caribbean, Africa, and throughout the Diaspora. Students will learn theories and methodologies that are used to examine the complex dynamics of race, class, gender, and ethnicity in America. Through this minor, students are able to develop critical and analytical approaches to societal issues because such issues are addressed and delineated through a variety of academic disciplines.

Students are encouraged to do an internship as part of the minor to further enhance their education and provide them with valuable preparation for the workforce.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 18

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Required Course

Code	Title	Credits
AFAM 200	Introduction to African American Studies (Mason Core)	3
Total Credits		3

Electives

Code	Title	Credits
Select 15 credits from the following: [1]		15
AFAM 390	Special Topics in African and African American Studies	
AFAM 490	Internship	
AFAM 499	Independent Study	
COMM 365	Gender, Race, and Class in the Media	
DANC 118	World Dance (Mason Core) (May be applied to the minor when the topic is relevant to African and African American Studies)	
ENGH 348	Beginnings of African American Literature Through 1865	
ENGH 349	African American Literature: Reconstruction to 1903	
ENGH 350	African American Literature Through 1946	
ENGH 351	Contemporary African American Literature	
FREN 451	Topics in Sub-Saharan Francophone Literature and Culture	
FREN 454	Topics in Caribbean Francophone Literature and Culture	
GGS 325	Geography of North Africa and the Middle East	
GOVT 464	Issues in Public Policy and Administration	
HIST 261	Survey of African History (Mason Core)	
HIST 262	Survey of African History (Mason Core)	
HIST 335	The African American Experience in the United States: African Background to 1885	
HIST 336	The African American Experience in the United States: Reconstruction to the Present	
INTS 437	Critical Race Studies (Mason Core)	
INTS 438	Representations of Race (Mason Core)	
SOCI 308	Race and Ethnicity in a Changing World (Mason Core)	
SOCI 332	The Urban World (Mason Core)	
WMST 307	Women and Work	
WMST 309	Black Social Movements: Gendering of Violence and Activism	
WMST 315	Women During the Enslavement Era	
WMST 317	Women's Activism: From Jim Crow to Black Power	
WMST 375	Gender, Race, Sexuality, and TV	
WMST 412	Race, Class, and LGBTQ Communities	
WMST 416	Policing Black Bodies	
Total Credits		15

[1] Other courses, when relevant, may be able to meet this requirement with prior written approval of the director.

Cultural Studies Program

4260 Chain Bridge Road
Fairfax, VA 22030

Phone: 703-993-2851
Website: culturalstudies.gmu.edu

The Cultural Studies Program is distinctive in several respects. While similar programs at other universities are based in a department, the program at Mason has a truly interdisciplinary foundation, drawing on faculty members from 14 different departments across the university. The program explicitly links the social sciences and the humanities by combining their methods of interpretation to explore the production, distribution, and consumption of cultural objects in their social contexts. With particular focus on theory and method in crafting this linkage, the program addresses contemporary issues of nationality, class, race, and gender and opens the scope of scholarly inquiry to all forms of culture, past and present.

Undergraduate Programs

Cultural studies does not have an undergraduate program, but supports the interdisciplinary undergraduate program in global affairs as well as a special topics course in cultural studies. CULT 320 Globalization and Culture is a core requirement for students majoring in global affairs. CULT 390 Topics in Cultural Studies is a course whose content will change from offering to offering and may be of special interest to global affairs majors.

Graduate Programs

The doctoral program in cultural studies trains students for scholarship and teaching. The core curriculum includes an introduction to cultural studies and a methods course, as well as courses on political economy, gender and sexuality, critical race studies, science and technology, social institutions, and visual and performance culture.

All students develop field specializations in two areas of cultural studies. The particular strengths of the program are visual culture, media, and new media studies; political economy and globalization; and gender and sexuality studies.

Related Master's Degrees

Applicants to the doctoral degree in cultural studies must already hold a master's degree. Students interested in pursuing the PhD in cultural studies at Mason who do not meet this requirement might wish to consider one of the related master's degrees at Mason (anthropology, English, history, foreign languages, philosophy, and sociology). The required master's degree may be taken from any institution of the student's choice.

Funding

The program offers teaching assistantships and fellowships, which are awarded on a competitive basis. Other sources of funding such as grants, loans, and employment on campus are also available. Students awarded

assistantships must register for a minimum of six credits a semester and show satisfactory progress toward their degree.

Faculty

Program Faculty

Professors

Denise Albanese (https://culturalstudies.gmu.edu/people/dalbanes/)
Amy L Best (https://culturalstudies.gmu.edu/people/abest/)
Keith Clark (https://culturalstudies.gmu.edu/people/kclark1/)
Spencer Crew (https://culturalstudies.gmu.edu/people/srcrew/)
Shannon N Davis (https://culturalstudies.gmu.edu/people/sdaviso/)
Michele Greet (https://culturalstudies.gmu.edu/people/mgreet/)
Mark D Jacobs (https://culturalstudies.gmu.edu/people/mjacobs/)
Matthew B. Karush (https://culturalstudies.gmu.edu/people/mkarush/)
David Kaufmann (https://culturalstudies.gmu.edu/people/dkaufman/)
Roger N Lancaster (https://culturalstudies.gmu.edu/people/rlancast/)
Alison Landsberg (https://culturalstudies.gmu.edu/people/alandsb1/)
Jennifer Leeman (https://culturalstudies.gmu.edu/people/jleeman/)
Peter Mandaville (https://culturalstudies.gmu.edu/people/pmandavi/)
Robert I Matz (https://culturalstudies.gmu.edu/people/rmatz/)
Michael Hugh O'Malley (https://culturalstudies.gmu.edu/people/momalle3/)
Stephen Robertson (https://culturalstudies.gmu.edu/people/srober30/)
Paul Smith (https://culturalstudies.gmu.edu/people/psmith5/)
Suzanne E. Smith (https://culturalstudies.gmu.edu/people/smisuze/)

Emeritus Professors

Jack R. Censer (https://culturalstudies.gmu.edu/people/jcenser/)
Marion F. Deshmukh
Gregory A Guagnano (https://culturalstudies.gmu.edu/people/gguagnan/)
David W Haines (https://culturalstudies.gmu.edu/people/dhaines1/)
Mack P. Holt (https://culturalstudies.gmu.edu/people/mholt/)
Rosemary Jann (https://culturalstudies.gmu.edu/people/rjann/)
Cindy Lont (https://culturalstudies.gmu.edu/people/clont/)
Linda J Seligmann (https://culturalstudies.gmu.edu/people/lseligm2/)
Ellen Wiley Todd (https://culturalstudies.gmu.edu/people/etodd/)
Margaret Yocom (https://culturalstudies.gmu.edu/people/myocom/)

Associate Professors

Amal Amireh (https://culturalstudies.gmu.edu/people/aamireh/)
Eric Gary Anderson (https://culturalstudies.gmu.edu/people/eandersd/)
Johanna Bockman (https://culturalstudies.gmu.edu/people/jbockman/)
Zofia Burr (https://culturalstudies.gmu.edu/people/zburr/)
Michael G. Chang (https://culturalstudies.gmu.edu/people/mchang5/)
Dina M. Copelman (https://culturalstudies.gmu.edu/people/dcopelma/)
Maria M Dakake (https://culturalstudies.gmu.edu/people/mdakakem/)
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Eric Eisner (https://culturalstudies.gmu.edu/people/eeisner/)
Wayne J Froman (https://culturalstudies.gmu.edu/people/wfroman/)
Cynthia Fuchs (https://culturalstudies.gmu.edu/people/cfuchs/)
Benjamin Gatling (https://culturalstudies.gmu.edu/people/bgatling/)
Tim Gibson (https://culturalstudies.gmu.edu/people/tgibson1/)
Nancy W Hanrahan (https://culturalstudies.gmu.edu/people/nhanraha/)
Tamara Harvey (https://culturalstudies.gmu.edu/people/tharvey2/)
Cortney Hughes Rinker (https://culturalstudies.gmu.edu/people/chughe13/)
Dae Young Kim (https://culturalstudies.gmu.edu/people/dkio/)
Debra Lattanzi Shutika (https://culturalstudies.gmu.edu/people/dshutika/)
Michael G Malouf (https://culturalstudies.gmu.edu/people/mmalouf/)
Char R Miller (https://culturalstudies.gmu.edu/people/cmillerd/)
Kristen Johnsen Neshati (https://culturalstudies.gmu.edu/people/kneshati/)
Lisa M. Rabin (https://culturalstudies.gmu.edu/people/lrabin/)
Rashmi Sadana (https://culturalstudies.gmu.edu/people/rsadana/)
Jessica Scarlata (https://culturalstudies.gmu.edu/people/jscarlat/)
Kelly Schrum (https://culturalstudies.gmu.edu/people/kschrum/)
Gabrielle A Tayac (https://culturalstudies.gmu.edu/people/gtayac/)
Alok Yadav (https://culturalstudies.gmu.edu/people/ayadav/)

Assistant Professors

Hatim El-Hibri (https://culturalstudies.gmu.edu/people/helhibri/)
Alexander Monea (https://culturalstudies.gmu.edu/people/amonea/)
Amaka Okechukwu (https://culturalstudies.gmu.edu/people/aokechuk/)

Term Professors

Wendi N. Manuel-Scott (https://culturalstudies.gmu.edu/people/wmanuels/)

Term Associate Professors

Rachel Ann Lewis (https://culturalstudies.gmu.edu/people/rlewis13/)

Term Instructor

Elena Guglielmi (https://culturalstudies.gmu.edu/people/hgugliel/)

Programs

- Cultural Studies, PhD

Cultural Studies, PhD

Banner Code: LA-PHD-CULT

Academic Advising

Email: cultural@gmu.edu
Website: culturalstudies.gmu.edu/programs/la-phd-cult

The PhD in Cultural Studies combines theory and method with practice and concrete case studies. Students' research projects are individualized, as should be the case when research is not confined to the objects and methods of a single discipline. The program's emphasis is in the development of intellectual mastery and professional competence, while training students for scholarship and teaching. Most graduates go on to careers as university professors. Others pursue careers in cultural advocacy, museum work, and related areas.

Admissions & Policies

Admissions

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions. Applicants must already have earned a master's degree in a relevant field. For further information specific to the PhD in Cultural Studies, see Application Requirements

and Deadlines (https://culturalstudies.gmu.edu/programs/la-phd-cult/application/).

Policies

For policies governing all graduate degrees, see Graduate Policies.

Reduction of Credit

Students must have a master's degree before being admitted to the PhD. Most students receive a reduction of study of 30 credits based on their previous master's degree.

Academic Performance Standards

Students are required to maintain a minimum cumulative GPA of 3.33 for all coursework, with no unsatisfactory grades. Students who fail to meet this standard at any point will be given a warning and one semester to raise their GPA to the 3.33 minimum. Students who fail to meet this minimum standard for two consecutive or non-consecutive semesters will be terminated from the program.

Requirements

Degree Requirements

Total credits: 78-81

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Doctoral Coursework

Code	Title	Credits
Core Courses		
CULT 802	Histories of Cultural Studies	3
CULT 804	Histories of Cultural Studies II	3
CULT 806	Research Seminar in Cultural Studies	3
CULT 808	Student/Faculty Colloquium in Cultural Studies [1]	1
Theory		
Select a minimum of one course from the following:		3
CULT 810	Culture and Political Economy	
CULT 814	Social Construction of identity	
CULT 820	After Colonialism	
Topic		
Select a minimum of one course from the following:		3
CULT 812	Visual Culture	
CULT 816	Science/Technology	
CULT 818	Social Institutions	
Total Credits		18

[1] Students must take CULT 808 Student/Faculty Colloquium in Cultural Studies a minimum of 3 times

Field Requirements

Under the guidance of faculty advisory committees, students define two fields that point topically and theoretically toward teaching interests, dissertation research, and related forms of professional development. If doctoral level coursework is not available in a given area, students may take one independent study (CULT 870 Independent Study) to support the development of the field.

Code	Title	Credits
Field One		
CULT 880	Field Concentration [1]	3
Two relevant courses from theory or topic courses not used to fulfill the previous requirements or from special topics courses.		6
Field Two		
CULT 880	Field Concentration [1]	3
Two relevant courses from theory or topic courses not used to fulfill the previous requirements or from special topics courses.		6
Total Credits		18

[1] Must be taught by that field's primary advisor.

Field Statements

Students demonstrate competence in each of their two chosen fields by producing and orally defending a field statement that consists of a comprehensive, critical literature review.

The field statements and the defense constitute the candidacy exam for the PhD.

Methodology

Code	Title	Credits
Students must take one course in a relevant methodology in which they are not already trained		3
Total Credits		3

Students choose the specific course from program or departmental graduate offerings (600 level or above) under the guidance of their faculty advisory committee.

A course chosen to fulfill the credits for a field requirement, if relevant, may be used to meet the methodology requirement with permission of the faculty advisory committee. Students who do not take a relevant and approved methodology course in partial fulfillment of a field requirement need to take a methodology course (3 credits) to fulfill this requirement. They will have a degree total of 81 credits.

Proficiency in a Foreign Language

Students are required to demonstrate proficiency in at least one foreign language before being permitted to defend the doctoral dissertation proposal.

Electives

Code	Title	Credits
Students can complete the 78 credit requirement through credits of additional coursework chosen in consultation with an advisor		0-30
Total Credits		0-30

Advancement to Candidacy

To advance to candidacy, students must successfully complete all coursework required on their approved program of study and demonstrate proficiency in a foreign language. Students must also

successfully complete two written field statements and pass an oral comprehensive exam based on them.

Dissertation

Once enrolled in CULT 998 Doctoral Dissertation Proposal, students in this degree program must maintain continuous registration in CULT 998 Doctoral Dissertation Proposal or CULT 999 Doctoral Dissertation each semester (excluding summers) until the dissertation is submitted to and accepted by the University Libraries. Once enrolled in CULT 999 Doctoral Dissertation, students must follow the university's continuous registration policy. Students who defend in the summer must be registered for at least 1 credit of CULT 999 Doctoral Dissertation.

Students must complete a minimum of 3 credits of CULT 999 Doctoral Dissertation. They may apply a maximum of 12 dissertation credits (CULT 998 Doctoral Dissertation Proposal and CULT 999 Doctoral Dissertation combined) to the degree.

Code	Title	Credits
Dissertation Research		12
CULT 998	Doctoral Dissertation Proposal	
CULT 999	Doctoral Dissertation (minimum of 3 credits)	
Total Credits		12

Department of Communication

5200 Horizon Hall
Fairfax Campus

Phone: 703-993-1090
Website: communication.gmu.edu

Undergraduate Programs

The department offers a Bachelor of Arts in Communication, which prepares students for future graduate study or professional positions in such fields as human relations and organizational communication, media and journalism, political communication, and public relations.

Students majoring in communication complete a concentration from one of the following areas: interpersonal and organizational communication, journalism, media production and criticism, political communication, or public relations.

Bachelor's/Accelerated Master's Program

The department offers highly qualified undergraduate majors in communication the opportunity to apply to an accelerated master's degree program in communication. If accepted, students will be able to earn both the undergraduate and graduate degrees after satisfactory completion of 141 credits, generally within five years.

Internships

The department has an active internship program. Many students pursue an internship during their junior and/or senior year to earn credit while gaining practical experience with public relations firms, national and international businesses, associations, or government agencies.

Student Activities

All students are encouraged to participate in the following communication-related student activities: Communication Ambassadors, Debate, Forensics, Fourth Estate (student journalism), GMView, Mason Cable Network, Public Relations Student Society of America (PRSSA), Lambda Pi Eta, Society of Professional Journalists (SPJ), or WGMU.

Minors

The department offers minors in communication, health communication, journalism, political communication, professional experience in communication, and sport communication. The political communication minor is offered jointly with the Schar School of Policy and Government, and the sport communication minor is offered jointly with the School of Recreation, Health, and Tourism in the College of Education and Human Development. The photojournalism minor is offered jointly with the School of Art in the College of Visual and Performing Arts. Department faculty also participate in these minors:

- Film and Media Studies Minor
- Well-Being Minor
- Women and Gender Studies Minor

Students majoring in communication may also choose to minor in any discipline that offers an undergraduate minor.

Graduate Programs

The department offers both MA and PhD degrees in communication with three major areas of emphasis: strategic communication, health communication, and science communication. The programs provide students with a strong foundation in communication theory and research while at the same time encouraging students to apply their skills in the public, private, and nonprofit sectors.

The faculty in strategic communication, drawing on their expertise in organizational, public relations, and political communication theory and research, teach courses on planning, developing, executing, and evaluating public communication campaigns and interventions. Faculty in health communication teach courses which explore the relationship between communication practices and the health and well-being of individuals and communities. This includes how to improve cooperation and coordination between health care providers and consumers, how to effectively utilize health information technologies, and how to develop influential health promotion campaigns. The faculty in science communication offer courses designed to improve students' knowledge of the particular challenges involved in making science and technology understandable to a variety of audiences, as well as exploring solutions to those challenges. Science communicators work in media and in other organizations and agencies involved in promoting and disseminating science, as well as facilitating public engagement in considering science-related issues.

Strategic, health, and science communication are three of the most rapidly expanding specialties within the broad field of communication. Graduates of these programs find a very welcoming employment market for their expertise.

Funding

The department offers graduate teaching and research assistantships, which are awarded on a competitive basis. Other sources of funding such as grants, loans, and employment on campus are also available. Students awarded assistantships must register for a minimum of six credits a semester and show satisfactory progress toward their degree.

Faculty

Department Faculty

Professors

Botan, Decker, Kreps, Lichter, Maibach, Nicotera (chair), Rowan, K. Wright, Zhao

Emeritus Professors

Boileau, Friedley, Looney, Lont, Manchester, McAuley, Taylor

Associate Professors

Broeckelman-Post, Cai, Clarke, Craig, Gibson (associate chair), Hopson, Muir

Assistant Professors

Brennan-Moran, S. Kim, Samoilenko

Term Associate Professor

Finn, C. Wright

Term Assistant Professor

Mathis, Tatum, Tucker

Term Research Assistant Professor

Cook

Term Instructors

Lowry, Miller, Poapst, Saleson, Schmeidler, R. Smith, Steele, Sweeney, Tomasovic, Watkins

Programs

- Communication Minor
- Communication, BA
- Communication, MA
- Communication, PhD
- Health Communication Minor
- Journalism Minor
- Photojournalism Minor (CHSS)
- Political Communication Minor (CHSS)
- Professional Experience in Communication Minor
- Science Communication Graduate Certificate
- Sport Communication Minor (CHSS)

Communication Minor

Banner Code: COM

Academic Advising

5200 Horizon Hall
Fairfax Campus

Email: cdadvice@gmu.edu
Website: communication.gmu.edu/programs/la-minor-comm-com

The minor in communication provides useful knowledge of human resources management, advertising, marketing, public relations/political campaign management, events management, speech writing, media production, or journalism.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must earn a minimum grade of 2.00 in all courses applied to the minor. COMM 100 Public Speaking (Mason Core), COMM 101 Fundamentals of Communication (Mason Core), or COMM 487 Washington Media Institute cannot be used toward the minor. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 18

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Core Courses

Code	Title	Credits
COMM 200	Communication Theory	3
Select two courses from the following:		6
COMM 300	Rhetorical Theory and Criticism	
COMM 301	Relational Communication Theory	
COMM 302	Media Theory	
COMM 305	Foundations of Intercultural Communication (Mason Core)	
Select one public-presentation (PPI) course from the following: [1]		3
COMM 210	Voice and Articulation	
COMM 310	Performance for Communication Arts	
COMM 320	Business and Professional Communication	
COMM 356	Video: Performance and Writing	
COMM 440	Ceremonial Speech Writing and Performance	
Total Credits		12

[1] Other courses that are PPI may be applied to this requirement with prior written approval of the director of the minor. COMM 100 Public Speaking (Mason Core) or COMM 101 Fundamentals of Communication (Mason Core) cannot be used toward the minor.

Electives in Communication

Code	Title	Credits
Select two COMM courses (6 credits) in consultation with an advisor [1]		6
Total Credits		6

[1] COMM 100 Public Speaking (Mason Core), COMM 101 Fundamentals of Communication (Mason Core), or COMM 487 Washington Media Institute cannot be used toward the minor.

Communication, BA

Banner Code: LA-BA-COM

5200 Horizon Hall
Fairfax Campus

Email: cdadvice@gmu.edu
Website: communication.gmu.edu/programs/la-ba-com

Communication is the study of basic human social processes: the creation and dissemination of meaning and information. The major prepares students for graduate study or professional positions in such fields as interpersonal and organizational communication, journalism, media production and criticism, political communication, and public relations. Students develop skills and knowledge that put them at the edge of a rapidly changing communication industry. Majors learn to construct and evaluate messages across platforms—web, print, audio and visual.

Admissions & Policies

Policies

Students pursuing this degree must complete 39 credits within the major, with a minimum grade of C in each course.

Of the 39 credits applied to the major, no more than 10 credits may be from courses listed in the Degree Requirements. In addition to 12 credits of core courses, students take 21 credits of courses in a concentration and 6 credits of additional communication courses. Of these last 27 credits, at least 12 credits must be at the 300-400 level, no more than 6 credits may be in COMM 450 Internship in Communication, and no more than 3 credits may be in COMM 452 Media Production Practicum. COMM 479 Digital Media and Web Design Capstone cannot be used toward the major.

For policies governing all undergraduate degrees, see AP.5 Undergraduate Policies.

Requirements

Degree Requirements

Total credits: minimum 120

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Core Courses

Code	Title	Credits
COMM 200	Communication Theory	3
COMM 300	Rhetorical Theory and Criticism [1]	3
COMM 305	Foundations of Intercultural Communication (Mason Core)	3
COMM 400	Research Methods in Communication [2]	3
Total Credits		12

[1] Must first complete COMM 200 Communication Theory with a grade of C or better.

[2] Must first complete six credits from COMM 300 Rhetorical Theory and Criticism, COMM 301 Relational Communication Theory, or COMM 305 Foundations of Intercultural Communication (Mason Core) with a grade of C or better.

Concentration

Students must complete coursework in one concentration. Students may also declare a second concentration. No more than six credits can count between the two declared concentrations and no credits used within the declared concentration(s) can be used to satisfy communication elective credits. Students must declare a concentration before they earn more than 75 credits. Transfer students with 60 or more credits are encouraged to declare a concentration by the end of their first semester. COMM 399 Special Topics in Communication or other special topics courses from other concentrations may be applied toward a concentration when the topic is relevant to the concentration with prior written approval of the undergraduate director.

- Interpersonal and Organizational Communication (IOC)
- Journalism (JNL)
- Media Production and Criticism (MPC)
- Political Communication (PCOM)
- Public Relations (PR)

Concentration in Interpersonal and Organizational Communication (IOC)

Code	Title	Credits
Required Courses		
COMM 301	Relational Communication Theory (core course)	3
COMM 335	Organizational Communication (core course)	3
Select one course from the following:		3
COMM 201	Small Group Communication	
COMM 332	Nonverbal Communication	
COMM 401	Interpersonal Communication in the Workplace	
Electives		
Select 12 credits from the following:		12
COMM 201	Small Group Communication	
COMM 230	Case Studies in Persuasion	
COMM 304	Foundations of Health Communication	
COMM 306	Issues in Intercultural Communication	
COMM 320	Business and Professional Communication	
COMM 332	Nonverbal Communication	
COMM 334	Family and Health Communication	
COMM 367	Children and Media	
COMM 385	Special Topics in Interpersonal and Organizational Communication	
COMM 395	Special Topics in Health Communication	

COMM 401	Interpersonal Communication in the Workplace	
COMM 430	Persuasion	
COMM 433	Environmental Communication	
COMM 434	Interviewing	
COMM 435	Digital Communication	
COMM 440	Ceremonial Speech Writing and Performance	
COMM 465	Topics in Communication and Gender	
Total Credits		21

Concentration in Journalism (JNL)

Code	Title	Credits
Required Courses		
COMM 203	Introduction to Journalism	3
COMM 303	Writing across the Media	3
COMM 475	Journalism Law	3
Select three credits from the following:		3
COMM 351	News Writing and Reporting	
COMM 352	News Editing	
Electives		
Select 9 credits from the following:		9
COMM 145	Newspaper Workshop I	
COMM 148	Radio Workshop I	
COMM 157	Digital Media Workshop	
COMM 208	Introduction to Media Production	
COMM 302	Media Theory	
COMM 345	Newspaper Workshop II	
COMM 351	News Writing and Reporting (if not taken as a required course)	
COMM 352	News Editing (if not taken as a required course)	
COMM 353	Broadcast Journalism	
COMM 356	Video: Performance and Writing	
COMM 361	Online Journalism	
COMM 369	Multimedia Storytelling	
COMM 370	Feature Writing	
COMM 371	Sports Writing and Reporting	
COMM 374	Political Journalism	
COMM 387	Special Topics in Journalism	
COMM 454	Free Speech and Ethics (Mason Core)	
Total Credits		21

Concentration in Media Production and Criticism (MPC)

Code	Title	Credits
Required Courses		
COMM 208	Introduction to Media Production	3
COMM 302	Media Theory	3
COMM 360	Digital Postproduction	3
COMM 380	Media Criticism	3
Electives		
Select 9 credits from the following:		9
COMM 148	Radio Workshop I	
COMM 157	Digital Media Workshop	
COMM 202	Media and Society	
COMM 210	Voice and Articulation	
COMM 255	Introduction to Media Literacy	
COMM 303	Writing across the Media	
COMM 310	Performance for Communication Arts	
COMM 346	Yearbook Workshop	
COMM 347	Cable TV Programming and Marketing	
COMM 348	Radio Workshop II	
COMM 350	Mass Communication and Public Policy	
COMM 353	Broadcast Journalism	
COMM 354	Radio Production and Podcasting	
COMM 356	Video: Performance and Writing	
COMM 358	Multi-Camera Studio Production	
COMM 359	Media Management	
COMM 363	Media Career Seminar	
COMM 364	Videography	
COMM 365	Gender, Race, and Class in the Media	
COMM 366	Visual Communication	
COMM 367	Children and Media	
COMM 372	Sports and the Media	
COMM 375	Digital Advertising and Promotions	
COMM 396	Special Topics in Mass Communication	
COMM 397	Special Topics in Production	
COMM 435	Digital Communication	
COMM 452	Media Production Practicum	
COMM 456	Comparative Mass Media (Mason Core)	
Total Credits		21

Concentration in Political Communication (PCOM)

Code	Title	Credits
Required Courses		
COMM 302	Media Theory	3
COMM 327	Political Communication	3
COMM 430	Persuasion	3
COMM 454	Free Speech and Ethics (Mason Core)	3
Electives		
Select 9 credits from the following:		9
COMM 140	Forensics Seminar I	
COMM 141	Forensics Seminar II	
COMM 142	Debate Seminar I	
COMM 143	Debate Seminar II	
COMM 230	Case Studies in Persuasion	
COMM 260	Basic Debate Theory and Practice	
COMM 261	Theories of Argumentation	
COMM 320	Business and Professional Communication	
COMM 326	Rhetoric of Social Movements and Political Controversy (Mason Core)	
COMM 340	Forensics Seminar III	
COMM 341	Forensics Seminar IV	
COMM 342	Debate Seminar III	
COMM 343	Debate Seminar IV	
COMM 362	Argument and Public Policy (Mason Core)	

COMM 374	Political Journalism	
COMM 380	Media Criticism	
COMM 386	Special Topics in Political Communication	
COMM 412	Politics and the Mass Media	
COMM 431	New Media and Democracy	
COMM 433	Environmental Communication	
COMM 465	Topics in Communication and Gender	
Total Credits		21

Concentration in Public Relations (PR)

Code	Title	Credits
Required Courses		
COMM 204	Introduction to Public Relations	3
COMM 308	Writing for Public Relations	3
COMM 331	Public Relations Campaigns	3
COMM 430	Persuasion	3
Electives		
Select 9 credits from the following:		9
COMM 203	Introduction to Journalism	
COMM 208	Introduction to Media Production	
COMM 302	Media Theory	
COMM 320	Business and Professional Communication	
COMM 335	Organizational Communication	
COMM 359	Media Management	
COMM 362	Argument and Public Policy (Mason Core)	
COMM 375	Digital Advertising and Promotions	
COMM 384	Public Relations and Social Media	
COMM 388	Special Topics in Public Relations	
COMM 389	Public Relations for Associations and Nonprofits	
COMM 390	Issues in Public Relations	
COMM 392	Public Relations Study Abroad	
COMM 411	Public Relations in Practice	
COMM 433	Environmental Communication	
COMM 454	Free Speech and Ethics (Mason Core)	
Total Credits		21

Electives

Code	Title	Credits
Select six credits of COMM courses in consultation with an advisor [1]		6
Total Credits		6

[1] COMM 100 Public Speaking (Mason Core) and COMM 101 Fundamentals of Communication (Mason Core) cannot be used to fulfill this requirement.

Courses Limited to 10 Credits

Of the 39 credits applied to the major, no more than 10 credits may be in these courses. In addition, no more than 6 credits of COMM 450 Internship in Communication or 3 credits of COMM 452 Media Production Practicum may be applied to the major.

Code	Title	Credits
COMM 140	Forensics Seminar I	
COMM 141	Forensics Seminar II	
COMM 142	Debate Seminar I	
COMM 143	Debate Seminar II	
COMM 145	Newspaper Workshop I	
COMM 148	Radio Workshop I	
COMM 157	Digital Media Workshop	
COMM 340	Forensics Seminar III	
COMM 341	Forensics Seminar IV	
COMM 342	Debate Seminar III	
COMM 343	Debate Seminar IV	
COMM 345	Newspaper Workshop II	
COMM 346	Yearbook Workshop	
COMM 348	Radio Workshop II	
COMM 398	Research Practicum in Communication	
COMM 450	Internship in Communication	
COMM 451	Facilitating Communication Education	
COMM 452	Media Production Practicum	
COMM 491	RS: Honors Research Project in Communication	
COMM 498	RS: Research Projects in Communication	
COMM 499	Independent Study in Communication	

Writing-Intensive Requirement

The university requires all students to complete at least one course designated as writing intensive in their majors at the 300 level or above. Students majoring in communication fulfill this requirement by successfully completing COMM 300 Rhetorical Theory and Criticism.

Additional Electives

Any remaining credits may be completed with elective courses to bring the degree total to 120.

Upper Level Requirement

Students seeking a bachelor's degree must apply at least 45 credits of upper-level courses (numbered 300 or above) toward graduation requirements.

College Level Requirements for the BA Degree

In addition to the Mason Core program, students pursuing a BA degree must complete the coursework below. Except where expressly prohibited, a course used to fulfill a college level requirement may also be used simultaneously to satisfy other requirements (Mason Core requirements or requirements for the major).

Philosophy or Religious Studies

Code	Title	Credits
Select 3 credits from the following:		3
PHIL [1]		
RELI		

[1] Note that the following courses may not be used to fulfill this requirement:

- PHIL 323 Classical Western Political Theory
- PHIL 324 Modern Western Political Theory
- PHIL 327 Contemporary Western Political Theory
- PHIL 393 Humanities College to Career
- PHIL 460 Senior Seminar in Philosophy, Politics, and Economics

Additionally, PHIL 253 Philosophy and Literature (Mason Core), RELI 235 Religion and Literature (Mason Core), and RELI 333 Spiritual Autobiography (Mason Core) cannot be used to fulfill both the philosophy/religious studies requirement and the Mason Core literature requirement.

Social and Behavioral Sciences

Code	Title	Credits
Select 3 credits of social and behavioral sciences from the following (additional to the Mason Core social and behavioral sciences requirement) [1]		3
ANTH		
CRIM		
ECON		
GOVT		
HIST [2]		
LING		
PSYC		
SOCI		
Or choose from the following GGS courses:		
GGS 101	Major World Regions (Mason Core)	
GGS 103	Human Geography (Mason Core)	
GGS 110	Introduction to Geoinformation Technologies	
GGS 301	Political Geography (Mason Core)	
GGS 303	Geography of Resource Conservation (Mason Core)	
GGS 304	Population Geography (Mason Core)	
GGS 305	Economic Geography	
GGS 306	Urban Geography	
GGS 315	Geography of the United States	
GGS 316	Geography of Latin America	
GGS 320	Geography of Europe	
GGS 325	Geography of North Africa and the Middle East	
GGS 330	Geography of the Soviet Succession States	
GGS 357	Urban Planning	
GGS 380	Geography of Virginia	

[1] The two courses used to fulfill the combined college and Mason Core requirements must be from different disciplines in the social and behavioral sciences.

[2] HIST 100 History of Western Civilization (Mason Core) and HIST 125 Introduction to World History (Mason Core) may not be used to fulfill this requirement.

Foreign Language

Code	Title	Credits
Intermediate-level proficiency in one foreign language, fulfilled by: [1]		
Completing 3 credits in a foreign language numbered 202 (or higher level courses taught in the language)		
Or achieving a satisfactory score on an approved proficiency test		
Or completing the following ASL three course sequence:		
EDSE 115	American Sign Language (ASL) I	
EDSE 116	American Sign Language (ASL) II	
EDSE 219	American Sign Language (ASL) III	

[1] Students who are already proficient in a second language may be eligible for a waiver of this requirement. Additional information on waivers can be found at the Office of Undergraduate Academic Affairs (http://chssundergrad.gmu.edu/).

Non-Western Culture

Select 3 credits of an approved course in the study of a non-Western culture (additional to the Mason Core requirement in global understanding)

Code	Title	Credits
Select 3 credits (additional to Mason Core Global Understanding requirement) [1]		
ANTH 114	Introduction to Cultural Anthropology (Mason Core)	3
ANTH 300	Civilizations	3
ANTH 302	Peoples and Cultures of Latin America (Mason Core)	3
ANTH 307	Ancient Mesoamerica (Mason Core)	3
ANTH 308	Peoples and Cultures of the Middle East (Mason Core)	3
ANTH 309	Peoples and Cultures of India (Mason Core)	3
ANTH 313	Myth, Magic, and Mind (Mason Core)	3
ANTH 314	Zombies	3
ANTH 330	Peoples and Cultures of Selected Regions: Non-Western	3
ANTH 332	Cross-Cultural Perspectives on Globalization (Mason Core)	3
ANTH 381	Medical Anthropology	3
ANTH 396	Issues in Anthropology: Social Sciences (Mason Core)	3
ARAB 360	Topics in Arabic Cultural Production	3
ARAB 420	Survey of Arabic Literature	3
ARAB 440	Topics in Arabic Religious Thought and Texts (Mason Core)	3
ARTH 203	Survey of Asian Art (Mason Core)	3
ARTH 204	Survey of Latin American Art (Mason Core)	3
ARTH 206	Survey of African Art (Mason Core)	3
ARTH 318	Art and Archaeology of Ancient Egypt	3
ARTH 319	Art and Archaeology of the Ancient Near East (Mason Core)	3
ARTH 320	Art of the Islamic World (Mason Core)	3

ARTH 382	Arts of India (Mason Core)	3
ARTH 383	Arts of Southeast Asia (Mason Core)	3
ARTH 384	Arts of China (Mason Core)	3
ARTH 385	Arts of Japan (Mason Core)	3
ARTH 386	The Silk Road (Mason Core)	3
ARTH 482	RS: Advanced Studies in Asian Art	3
CHIN 318	Introduction to Classical Chinese (Mason Core)	3
CHIN 320	Contemporary Chinese Film	3
CHIN 325	Major Chinese Writers (Mason Core)	3
CHIN 470	Special Topics in Chinese Studies	3
DANC 118	World Dance (Mason Core)	3
ECON 361	Economic Development of Latin America (Mason Core)	3
ECON 362	African Economic Development (Mason Core)	3
FREN 451	Topics in Sub-Saharan Francophone Literature and Culture	3
FREN 454	Topics in Caribbean Francophone Literature and Culture	3
GGS 101	Major World Regions (Mason Core)	3
GGS 316	Geography of Latin America	3
GGS 317	Geography of China (Mason Core)	3
GGS 325	Geography of North Africa and the Middle East	3
GGS 330	Geography of the Soviet Succession States	3
GGS 399	Select Topics in GGS	3
GOVT 328	Global Political Theory	3
GOVT 332	Government and Politics of the Middle East and North Africa	3
GOVT 333	Government and Politics of Asia	3
GOVT 338	Government and Politics of Russia	3
GOVT 340	Central Asian Politics	3
GOVT 341	Chinese Foreign Policy	3
GOVT 345	Islam and Politics	3
GOVT 433	Political Economy of East Asia	3
HIST 251	Survey of East Asian History (Mason Core)	3
HIST 252	Survey of East Asian History (Mason Core)	3
HIST 261	Survey of African History (Mason Core)	3
HIST 262	Survey of African History (Mason Core)	3
HIST 271	Survey of Latin American History (Mason Core)	3
HIST 272	Survey of Latin American History (Mason Core)	3
HIST 281	Survey of Middle Eastern Civilization (Mason Core)	3
HIST 282	Survey of Middle Eastern Civilization (Mason Core)	3
HIST 326	Stalinism	3
HIST 327	The Soviet Union and Russia Since World War II	3
HIST 328	Rise of Russia (Mason Core)	3
HIST 329	Modern Russia and the Soviet Union (Mason Core)	3
HIST 353	History of Traditional China	3
HIST 354	Modern China (Mason Core)	3
HIST 356	Modern Japan (Mason Core)	3
HIST 357	Postwar Japan (Mason Core)	3
HIST 358	Post-1949 China (Mason Core)	3
HIST 360	History of South Africa (Mason Core)	3
HIST 364	Revolution and Radical Politics in Latin America (Mason Core)	3
HIST 365	Conquest and Colonization in Latin America (Mason Core)	3
HIST 366	Comparative Slavery	3
HIST 367	History, Fiction, and Film in Latin America	3
HIST 387	Topics in Global History (Mason Core)	3-6
HIST 426	The Russian Revolution	3
HIST 460	Modern Iran (Mason Core)	3
HIST 461	Arab-Israeli Conflict	3
HIST 462	Women in Islamic Society (Mason Core)	3
HIST 465	The Middle East in the 20th Century	3
JAPA 310	Japanese Culture in a Global World (Mason Core)	3
JAPA 340	Topics in Japanese Literature (Mason Core)	3
KORE 320	Korean Popular Culture in a Global World	3
MUSI 103	Musics of the World (Mason Core)	3
RELI 211	Religions of the West (Mason Core)	3
RELI 212	Religions of Asia (Mason Core)	3
RELI 240	Death and the Afterlife in World Religions	3
RELI 272	Islam	3
RELI 313	Hinduism (Mason Core)	3
RELI 314	Chinese Philosophies and Religious Traditions	3
RELI 315	Buddhism (Mason Core)	3
RELI 317	Daoism	3
RELI 337	Mysticism: East and West	3
RELI 365	Muhammad: Life and Legacy	3
RELI 374	Islamic Thought (Mason Core)	3
RELI 375	Qur'an and Hadith	3
RELI 379	Islamic Law, Society, and Ethics	3
RELI 387	Islam, Democracy, and Human Rights	3
RELI 490	Comparative Study of Religions (Mason Core)	3
RUSS 353	Russian Civilization (Mason Core)	3
RUSS 354	Contemporary Post-Soviet Life (Mason Core)	3

[1] A course used to fulfill the Mason Core global understanding requirement may not be simultaneously used to satisfy this college-level requirement. A course used to fulfill this requirement may be used simultaneously to fulfill any other requirements (Mason Core requirements, college-level requirements, or requirements for the major). Additional information on waivers can be found at the Office of Undergraduate Academic Affairs (http://chssundergrad.gmu.edu/).

Mason Core

Some Mason Core requirements may already be fulfilled by the major requirements listed above. Students are strongly encouraged to consult their advisors to ensure they fulfill all remaining Mason Core requirements.

Code	Title	Credits
Foundation Requirements		
Written Communication (ENGH 101)		3
Oral Communication		3
Quantitative Reasoning		3
Information Technology and Computing		3
Exploration Requirements		
Arts		3
Global Understanding		3
Literature		3
Natural Science		7
Social and Behavioral Sciences		3
Western Civilization/World History		3
Integration Requirements		
Written Communications (ENGH 302)		3
Writing-Intensive [1]		3
Synthesis/Capstone [2]		3
Total Credits		40

[1] Most programs include the writing-intensive course designated for the major as part of the major requirements; this course is therefore not counted towards the total required for Mason Core.

[2] Minimum 3 credits required.

4-Year Plan

Bachelor of Arts in Communication Sample Plan of Study

A sample four year graduation plan and degree planning worksheet can be found at https://academicaffairs.chss.gmu.edu/undergraduate-students/advising/advising-sheets (https://academicaffairs.chss.gmu.edu/undergraduate-students/advising/advising-sheets/). The plan is a recommended sequencing of courses based on prerequisites and scheduling. This may not fit every student's needs and is a guideline, not a requirement. Students should confirm major requirements with their academic advisor each semester and with their PatriotWeb Degree Evaluation to ensure they enroll in the proper courses and are on track to graduate.

Honors

Honors in the Major

Highly-qualified students may pursue advanced coursework leading to graduation with honors in the major.

Eligibility

Students are eligible to apply for honors coursework if they meet the following requirements:

- Completion of a minimum of 75 credit hours, including COMM 200 Communication Theory and two of COMM 300 Rhetorical Theory and Criticism, COMM 301 Relational Communication Theory, COMM 302 Media Theory, COMM 305 Foundations of Intercultural Communication (Mason Core).
- Minimum GPA of 3.25 in all coursework completed at George Mason.
- GPA of 3.50 in all communication coursework completed at George Mason and applied to the major.

Honors coursework in communication is a fall-spring sequence. Applications may be submitted by eligible students for fall semester enrollment. The deadline is March 15 each spring, for the sequence beginning the following fall. Student eligibility will be dependent on the GPA at the time of application. If accepted to pursue honors coursework, the student must then enroll in COMM 490 Honors Research Methods in Communication. Under the guidance of the COMM 490 Honors Research Methods in Communication instructor, the student will complete a research prospectus for an honors project to be implemented in the following semester in COMM 491 RS: Honors Research Project in Communication.

Honors Requirements

To remain eligible for honors coursework, the student must

- receive a grade of 3.00 (no lower than B) in COMM 490 Honors Research Methods in Communication;
- have the research prospectus approved by the COMM 490 Honors Research Methods in Communication instructor and the honors director; and
- maintain an overall GPA of 3.25 and a minimum GPA of 3.50 in all COMM coursework completed at George Mason University and applied to the major.

In the following semester, the student enrolls in COMM 491 RS: Honors Research Project in Communication. The student conducts his/her research and prepares a written project conforming to the standards set by the instructor. Upon completion of the project, the COMM 491 RS: Honors Research Project in Communication instructor and the honors director will determine if the project is of honors quality, which is then indicated by the grade earned in COMM 491 RS: Honors Research Project in Communication. For honors designation, the student must achieve an average grade of 3.50 across COMM 490 Honors Research Methods in Communication and COMM 491 RS: Honors Research Project in Communication and must also maintain minimum GPA eligibility requirements outlined above.

Accelerated Master's

The accelerated master's program below specifies the BA in communication as a feeder degree for its program. Many other

accelerated master's programs are available for any bachelor's degree at Mason. See the full list of degrees (http://catalog.gmu.edu/programs/#filter=filter_24) with accelerated programs at George Mason.

Communication, BA/Communication, Accelerated MA

Overview

Highly qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BA in Communication and an MA in Communication in an accelerated time-frame after satisfactory completion of a minimum of 141 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degrees for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's Accelerated Master's Degree policies. For information specific to this accelerated master's program, see Application Requirements and Deadlines (http://communication.gmu.edu/programs/LA-MA-ACEL-COM/application/).

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits.

Accelerated Master's Admission Requirements

Students already admitted to the BAM Pathway will be admitted to the MA program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- Minimum overall GPA of 3.25
- Minimum grade of B in each advanced standing course
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing courses (up to 12 credits with a minimum grade of B in each)

COMM 600 Introduction to Graduate Studies (3 credits)
COMM 602 Theories and Research of Mass Communication (3 credits)
COMM 605 Intercultural Communication (3 credits)
COMM 615 Political Communication (3 credits)
COMM 620 Health Communication (3 credits)
COMM 630 Theories of Public Relations (3 credits)
COMM 632 Persuasion Theory (3 credits)
COMM 634 Theories of Interpersonal Communication (3 credits)
COMM 635 Organizational Communication (3 credits)
COMM 636 Communication Consulting (3 credits)
COMM 637 Risk Communication (3 credits)
COMM 639 Science Communication (3 credits)
COMM 640 Controversies in Science Communication (3 credits)
COMM 641 Advanced Communication Skills for STEM (3 credits)
COMM 642 Science and the Public (3 credits)
COMM 644 Analysis and Criticism of Science Journalism (3 credits)
COMM 653 Graduate Seminar in Instructional Communication (3 credits)
COMM 660 Climate Change and Sustainability Communication Campaigns (3 credits)
COMM 670 Social Marketing (3 credits)
COMM 690 Special Topics in Communication (3 credits)

Reserve Graduate Credit courses (up to 6 credits) taken while an undergraduate and will only count for the graduate degree program

All courses listed above as advanced standing can be used for reserve graduate credit.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees.

Communication, MA

Banner Code: LA-MA-COM

5200 Horizon Hall
Fairfax Campus

Email: commgrad@gmu.edu
Website: communication.gmu.edu/programs/la-ma-com

As the environment for public and private communication becomes increasingly complex, organizations rely more and more heavily on thoughtful and effective communication professionals. To this end, Communication MA students may choose to specialize in strategic communication/public relations, health communication or science communication. They may also choose an individualized specialization in communication studies according to their interests. Across all specializations, students receive a strong foundation in communication theory and learn to design, execute, and interpret rigorous communication research. Students are challenged to apply communication knowledge to help solve problems and to address important social issues.

Admissions & Policies

Admissions

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified by Graduate Admissions. For information specific to the MA in communication, see Application Requirements and Deadlines (http://communication.gmu.edu/programs/LA-MA-COM/application/).

Admission to the graduate program in communication is competitive.

Policies

For policies governing all graduate degrees, see Graduate Policies.

Transfer of Credit/Reduction of Credit

Students may request transfer of up to 15 hours of graduate coursework from graduate non-degree status or from graduate study at another institution, or request a reduction of credit up to 6 hours based on a previously conferred graduate degree. Students should carefully review AP.6.5 and the policies governing graduate transfer of credit and reduction of credit. Transfer and reduction of credit is subject to the approval of the program director and graduate dean.

Requirements

Degree Requirements

Total credits: 33

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Students complete two program core courses, two methods courses, two theory courses, two specialization and at least three elective courses (or 9 credits), of which 3 credits may be thesis.

Students must choose from one area of specialization (strategic communication/public relations, health communication, science communication, or individualized communication studies). Specific requirements are described below.

Core Courses

Code	Title	Credits
Two Core Courses		
COMM 600	Introduction to Graduate Studies	3
COMM 798	Communication Studies Project (only 3 credits can apply to the degree)	3
Two Methods Courses		
COMM 650	Research Methodologies in Communication (required course)	3
Select one course from the following:		3
COMM 725	Qualitative Methods	
COMM 750	Research Methods II	
COMM 775	Media Content Analysis	
Other graduate level methods course, taken in COMM or elsewhere, as approved by graduate director.		
Two Theory Courses		
Select two theory courses from the following:		6
COMM 602	Theories and Research of Mass Communication	
COMM 605	Intercultural Communication	
COMM 615	Political Communication	
COMM 620	Health Communication	
COMM 630	Theories of Public Relations	
COMM 632	Persuasion Theory	
COMM 634	Theories of Interpersonal Communication	
COMM 635	Organizational Communication	
COMM 637	Risk Communication	
COMM 639	Science Communication	
COMM 642	Science and the Public	
COMM 660	Climate Change and Sustainability Communication Campaigns	
COMM 706	Strategic Communication	
COMM 735	Crisis Communication	
Total Credits		18

Specializations

Students complete the degree by completing 6 credits of coursework in one of the four specializations and an additional 9 elective credits in any graduate coursework, to include an optional thesis. Courses outside the department require the prior written approval of the program director.

Available Specializations

- Strategic Communications/Public Relations Specialization
- Health Communication Specialization
- Science Communication
- Individualized Communication Studies specialization

Strategic Communications/Public Relations Specialization

The specialization in strategic communication/public relations requires a minimum of two courses from the list below. A course taken as a part of the general program cannot be duplicated in credits, but it can count as a course required for the specialization. Additional credits may be met through electives.

Code	Title	Credits
Two Specialization Courses		
Select two specialization courses from the following:		6
COMM 590	Seminar in Communication [1]	
COMM 602	Theories and Research of Mass Communication	
COMM 615	Political Communication	
COMM 630	Theories of Public Relations	
COMM 632	Persuasion Theory	
COMM 636	Communication Consulting	
COMM 637	Risk Communication	
COMM 642	Science and the Public	
COMM 660	Climate Change and Sustainability Communication Campaigns	
COMM 670	Social Marketing	
COMM 690	Special Topics in Communication [1]	
COMM 696	Directed Readings and Research	
COMM 706	Strategic Communication	
COMM 716	International Public Relations	
COMM 735	Crisis Communication	
COMM 820	Health Communication Campaigns	
COMM 890	Special Topics in Communication [1]	
Optional Thesis [2]		
Three credits of		3
COMM 799	Master's Thesis	
Electives [3]		
Six to nine additional credits chosen from:		6-9
Courses from the list above		
Any other graduate COMM courses		

Up to 6 credits of coursework from other departments with prior written approval of the program director.	
Total Credits	15

1 When topic is strategic communication, as approved by program director.

2 Students who do not choose to complete a thesis will take additional credits of elective. Students who choose to write a thesis should be aware of the policies governing theses as stated in AP.6.9.3 Master's Thesis. If a thesis is chosen, students must follow the thesis enrollment policy of the university and, once enrolled in COMM 799 Master's Thesis, maintain continuous enrollment.

3 Students choosing to write a thesis take 6 credits of electives. Those opting out of a thesis take 9 credits.

Health Communication Specialization

The specialization in health communication requires a minimum of two courses from the list below. A course taken as a part of the general program cannot be duplicated in credits, but it can count as a course required for the specialization. Additional credits may be met through electives.

Code	Title	Credits
Two Specialization Courses		
Select two specialization courses from the following:		6
COMM 590	Seminar in Communication [1]	
COMM 620	Health Communication	
COMM 632	Persuasion Theory	
COMM 690	Special Topics in Communication [1]	
COMM 696	Directed Readings and Research	
COMM 705	Intercultural Health and Risk Communication	
COMM 720	Consumer-Provider Health Communication	
COMM 721	E-Health Communication	
COMM 820	Health Communication Campaigns	
COMM 890	Special Topics in Communication [1]	
Optional Thesis [2]		
Three credits of		3
COMM 799	Master's Thesis	
Electives [3]		
Six to nine credits chosen from:		6-9
Additional courses from the list above		
Any other graduate COMM course		
Up to 6 credits of coursework from other departments with prior written approval of the program director.		
Total Credits		15

1 When topic is health communication as approved by program director.

2 Students who do not choose to complete a thesis will take additional credits of elective courses. Students who choose to write a thesis should be aware of the policies governing theses as stated in AP.6.9.3 Master's Thesis. If a thesis is chosen, students must follow the thesis enrollment policy of the university and, once enrolled in COMM 799 Master's Thesis, maintain continuous enrollment.

3 Students choosing to write a thesis take 6 credits of electives. Those opting out of the thesis take 9 credits.

Science Communication Specialization

Students who wish to focus their graduate study in science communication complete the following requirements.

Code	Title	Credits
Two Specialization Courses		
Select two specialization courses from the following:		6
COMM 637	Risk Communication	
COMM 639	Science Communication	
COMM 640	Controversies in Science Communication	
COMM 641	Advanced Communication Skills for STEM	
COMM 642	Science and the Public	
COMM 644	Analysis and Criticism of Science Journalism	
COMM 660	Climate Change and Sustainability Communication Campaigns	
COMM 696	Directed Readings and Research	
Optional Thesis [1]		
Three credits of		3
COMM 799	Master's Thesis	
Electives [2]		
Six to nine credits chosen from:		6-9
Additional courses from the list above		
Any other graduate COMM course		
Up to 6 credits of coursework from other departments with prior written approval of the program director.		
Total Credits		15

1 Students who do not choose to complete a thesis will take additional credits of elective courses. Students who choose to write a thesis should be aware of the policies governing theses as stated in AP.6.9.3 Master's Thesis. If a thesis is chosen, students must follow the thesis enrollment policy of the university and, once enrolled in COMM 799 Master's Thesis, maintain continuous enrollment.

2 Students choosing to write a thesis take 6 credits of electives. Those opting out of the thesis take 9 credits.

Individualized Communication Studies specialization

Students pursuing a specialization in individualized communication studies design a program of courses to reflect their interests.

Code	Title	Credits
Two Specialization Courses		
Select from the following: [1]		6
COMM 590	Seminar in Communication	
COMM 690	Special Topics in Communication	
COMM 890	Special Topics in Communication	
Optional Thesis [2]		
Three credits of		3
COMM 799	Master's Thesis	
Electives		
Six to nine credits chosen from: [3]		6-9
Additional courses from the list above		

Any other graduate COMM course	
Up to 6 credits of coursework from other departments with prior written approval of the program director.	
Total Credits	15

1 Two courses in a field of specialization are chosen in consultation with an advisor or the program director. These courses may include select special topics courses shown above as approved by the program director.

2 Students who do not choose to complete a thesis will take additional credits of elective courses. Students who choose to write a thesis should be aware of the policies governing theses as stated in AP.6.9.3 Master's Thesis. If a thesis is chosen, students must follow the thesis enrollment policy of the university and, once enrolled in COMM 799 Master's Thesis, maintain continuous enrollment.

3 Students choosing to write a thesis take 6 credits of electives. Those opting out of the thesis take 9 credits.

Accelerated Master's

Communication, BA/Communication, Accelerated MA

Overview

Highly qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BA in Communication and an MA in Communication in an accelerated time-frame after satisfactory completion of a minimum of 141 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degrees for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's Accelerated Master's Degree policies. For information specific to this accelerated master's program, see Application Requirements and Deadlines (http://communication.gmu.edu/programs/LA-MA-ACEL-COM/application/).

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits.

Accelerated Master's Admission Requirements

Students already admitted to the BAM Pathway will be admitted to the MA program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- Minimum overall GPA of 3.25
- Minimum grade of B in each advanced standing course
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing courses (up to 12 credits with a minimum grade of B in each)

COMM 600 Introduction to Graduate Studies (3 credits)
COMM 602 Theories and Research of Mass Communication (3 credits)
COMM 605 Intercultural Communication (3 credits)
COMM 615 Political Communication (3 credits)
COMM 620 Health Communication (3 credits)
COMM 630 Theories of Public Relations (3 credits)
COMM 632 Persuasion Theory (3 credits)
COMM 634 Theories of Interpersonal Communication (3 credits)
COMM 635 Organizational Communication (3 credits)
COMM 636 Communication Consulting (3 credits)
COMM 637 Risk Communication (3 credits)
COMM 639 Science Communication (3 credits)
COMM 640 Controversies in Science Communication (3 credits)
COMM 641 Advanced Communication Skills for STEM (3 credits)
COMM 642 Science and the Public (3 credits)
COMM 644 Analysis and Criticism of Science Journalism (3 credits)
COMM 653 Graduate Seminar in Instructional Communication (3 credits)
COMM 660 Climate Change and Sustainability Communication Campaigns (3 credits)
COMM 670 Social Marketing (3 credits)
COMM 690 Special Topics in Communication (3 credits)

Reserve Graduate Credit courses (up to 6 credits) taken while an undergraduate and will only count for the graduate degree program

All courses listed above as advanced standing can be used for reserve graduate credit.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees.

Communication, PhD

Banner Code: LA-PHD-COM

5200 Horizon Hall
Fairfax Campus

Email: commgrad@gmu.edu
Website: communication.gmu.edu/programs/la-phd-com

The PhD in Communication explores key issues in the discipline such as communicating complex information, social influence and behavior change, the digital divide, public advocacy, intercultural sensitivity, media literacy, and national security. The PhD program offers three major areas of emphasis: health communication, science communication, and strategic communication. Faculty and students conduct research concerning health communication, risk communication, climate change communication, science communication, crisis management, organizational communication, media systems, public communication

campaigns, new information technologies, communication policy, and media advocacy.

Admissions & Policies

Admissions

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions. For information specific to the PhD in Communication, see Application Requirements and Deadlines (http://communication.gmu.edu/programs/LA-PHD-COM/application/).

Policies

For policies governing all graduate degrees, see Graduate Policies.

Reduction of Credit

For students entering the doctoral program with a master's degree, the number of required credits may be reduced by a maximum of 30 credits, subject to approval of the program faculty and the dean. Requests for reduction of credit are reviewed only after acceptance to the doctoral program.

Program Requirements

To receive the PhD in Communication, students must complete a minimum of 90 credits, 60 beyond the master's degree, including core courses in theory and research methods, coursework in substantive fields of study, and a research practicum. Following completion of all required coursework, students must pass a written qualifying examination and an oral defense of it, after which they are advanced to candidacy by the dean and complete a dissertation, an original and independent research project.

If specific requirements are waived, students must complete substitutions, which are recorded on their Program of Study. All substitutions to degree requirements must be approved by the graduate committee.

Requirements

Degree Requirements

Total credits: 90

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Core Courses

Four Theory Courses

Code	Title	Credits
COMM 700	Building Social Science Theory	3
Select one additional theory course from the following:		3
COMM 602	Theories and Research of Mass Communication	
COMM 605	Intercultural Communication	
COMM 632	Persuasion Theory	
COMM 634	Theories of Interpersonal Communication	
COMM 635	Organizational Communication	
Select two additional theory courses from the following:		6
COMM 602	Theories and Research of Mass Communication	
COMM 605	Intercultural Communication	
COMM 620	Health Communication	
COMM 630	Theories of Public Relations	
COMM 632	Persuasion Theory	
COMM 634	Theories of Interpersonal Communication	
COMM 635	Organizational Communication	
COMM 639	Science Communication	
COMM 642	Science and the Public	
COMM 706	Strategic Communication	
Total Credits		12

Three Research Methods Courses

Code	Title	Credits
Methods Course		
COMM 650	Research Methodologies in Communication	3
Specialized Methods Course		
Select 3 credits from the following:		3
COMM 725	Qualitative Methods	
COMM 750	Research Methods II	
COMM 775	Media Content Analysis	
One additional course at the 700-level or above. [1]		3
Total Credits		9

[1] This course should be chosen to help prepare for the dissertation and must be approved by the graduate committee.

Substantive Field of Study

Students choose one of the following substantive fields of study.

Health Communication

Code	Title	Credits
Select three courses from the following:		9
COMM 620	Health Communication	
COMM 705	Intercultural Health and Risk Communication	
COMM 720	Consumer-Provider Health Communication	
COMM 820	Health Communication Campaigns	
Select three elective courses chosen with approval of the advisor and director		9
Total Credits		18

Science Communication

Code	Title	Credits
Select three courses from the following:		9
COMM 632	Persuasion Theory	
COMM 639	Science Communication	
COMM 642	Science and the Public	
COMM 660	Climate Change and Sustainability Communication Campaigns	

Select three courses chosen with approval of the advisor and director	9
Total Credits	18

Strategic Communication

Code	Title	Credits
Select three courses from the following:		9
COMM 630	Theories of Public Relations	
COMM 705	Intercultural Health and Risk Communication	
COMM 706	Strategic Communication	
COMM 735	Crisis Communication	
Select three elective courses chosen with approval of the advisor and director		9
Total Credits		18

One Research Practicum

Code	Title	Credits
COMM 701	Communication Science Research Practicum	3
Total Credits		3

Elective Courses

Code	Title	Credits
Students complete the remaining credits through additional elective courses chosen in consultation with an advisor		0-30
Total Credits		0-30

Advancement to Candidacy

To advance to candidacy, students must complete all coursework required on their approved program of study. Students must also successfully pass a written qualifying exam and an oral qualifying exam. In addition, students must have a dissertation committee appointed by the Dean's Office as well as an approved proposal. Evidence of the approved proposal must be on file in the Dean's Office before a student can advance to candidacy.

Dissertation

Once enrolled in COMM 998 Doctoral Dissertation Proposal, students in this degree program must maintain continuous registration for at least 1 credit. Once enrolled in COMM 999 Doctoral Dissertation Research, student must maintain continuous registration each semester (excluding summers) until the dissertation is submitted to and accepted by the University Libraries. Once enrolled in COMM 999 Doctoral Dissertation Research, students must follow the university's continuous registration policy as specified in AP.6.10.6 Dissertation Research. Students who defend in the summer must be registered for at least 1 credit of COMM 999 Doctoral Dissertation Research.

Students complete a minimum of 3 credits of COMM 998 Doctoral Dissertation Proposal and 3 credits of COMM 999 Doctoral Dissertation Research. They must apply a minimum of 18 dissertation credits (COMM 998 Doctoral Dissertation Proposal and COMM 999 Doctoral Dissertation Research combined) to the degree. Because of the continuous registration policy, students may be required to register for additional credits of these courses.

Code	Title	Credits
At least eighteen credits of the following:		18
COMM 998	Doctoral Dissertation Proposal	
COMM 999	Doctoral Dissertation Research	
Total Credits		18

Health Communication Minor

Banner Code: HCOM

Academic Advising

5200 Horizon Hall
Fairfax Campus

Email: cdadvice@gmu.edu
Website: communication.gmu.edu/programs/la-minor-la-hcom

Health communication, one of the fastest growing fields in the broader communication discipline, addresses how communication intersects with all aspects of health (social, mental, and physical).

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must earn a minimum grade of 2.00 in all courses applied to the minor. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 18

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Core Courses

Required Courses

Code	Title	Credits
COMM 304	Foundations of Health Communication	3
COMM 430	Persuasion	3
COMM 334	Family and Health Communication	3
Total Credits		9

One Additional Communication Course

Code	Title	Credits
Select 3 credits from the following: [1]		3
COMM 395	Special Topics in Health Communication	
COMM 399	Special Topics in Communication [2]	
COMM 433	Environmental Communication	
Total Credits		3

1 Other COMM courses may be substituted with approval of the minor director.

2 Requires approval of the minor director.

Electives

Students should confer with the health communication minor program director when making choices among these courses. Other courses may be substituted with approval of the minor director.

Code	Title	Credits
Select 6 credits from the following:		6
HAP 301	Health Care Delivery in the United States	
HAP 310	Healthcare Ethics	
HAP 395	Healthcare Finance	
HAP 425	Health Economics and Policy	
HAP 442	Introduction to Health Care Politics and Policy	
HAP 445	Introduction to Health Services Research	
HEAL 230	Introduction to Health Behavior (Mason Core)	
HEAL 310	Drugs and Health	
HEAL 325	Human Sexuality	
HEAL 327	Women's Health	
HEAL 331	Men's Health	
HEAL 350	Interventions for Populations and Communities at Risk	
HEAL 351	Relationship Health	
HEAL 372	Health Communication	
HHS 432	Healthy Aging	
GCH 205	Global Health (Mason Core)	
GCH 300	Introduction to Public Health	
GCH 310	Health Behavior Theories	
GCH 350	Health Promotion and Education	
GCH 360	Health and Environment	
GCH 412	Fundamentals of Epidemiology	
GCH 445	Social Determinants of Health	
GCH 480	Health Maintenance and Health Aspects of Aging	
INTS 310	Violence and Gender	
INTS 314	Conflict, Trauma and Healing	
INTS 410	Contemporary Health Issues	
INTS 440	Death, Dying, and Decision Making	
NUTR 295	Introduction to Nutrition (Mason Core)	
NUTR 422	Nutrition throughout the Life Cycle	
PSYC 211	Developmental Psychology (Mason Core)	
PSYC 313	Child Development	
PSYC 314	Adolescent Development	
PSYC 321	Clinical Psychology	
PSYC 322	Behavior Modification	
PSYC 325	Abnormal Psychology	
PSYC 326	Therapeutic Communication Skills	
PSYC 415	Psychological Factors in Aging	
PSYC 417	Science of Well Being	
PSYC 418	Death, Dying, and Grieving	
PSYC 466	Psychology of Intimate Relationships	
SOCI 390	Sociology of Health, Illness, and Disability	
SOCW 410	Alcohol and Substance Abuse: Policies and Programs	
SOCW 415	Child and Family Welfare	
SOCW 435	Introduction to Gerontology	
SOCW 445	Social Determinants of Health	
Total Credits		6

Journalism Minor

Banner Code: JNL

Academic Advising

5200 Horizon Hall
Fairfax Campus

Email: cdadvice@gmu.edu
Website: communication.gmu.edu/programs/la-minor-comm-jnl

Journalism provides a cross-platform foundation with a focus on reporting, research techniques and writing style unique to online, print, broadcast, social media and database journalism.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. For policies governing all minors, see AP.5.3.4 Minors.

This minor is not available to communication majors pursuing a concentration in journalism.

Requirements

Minor Requirements

Total credits: 18

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Core Courses

Code	Title	Credits
COMM 303	Writing across the Media	3
COMM 351	News Writing and Reporting	3
or COMM 352	News Editing	
COMM 361	Online Journalism	3
or COMM 369	Multimedia Storytelling	
COMM 475	Journalism Law	3
Total Credits		12

Electives

Code	Title	Credits
Select two from the following:		6
COMM 203	Introduction to Journalism	
COMM 208	Introduction to Media Production	
COMM 351	News Writing and Reporting [1]	
COMM 352	News Editing [1]	

COMM 353	Broadcast Journalism	
COMM 361	Online Journalism [1]	
COMM 369	Multimedia Storytelling [1]	
COMM 370	Feature Writing	
COMM 371	Sports Writing and Reporting	
COMM 373	Business and Economic Journalism	
COMM 374	Political Journalism	
COMM 387	Special Topics in Journalism	
COMM 450	Internship in Communication (take for 3 credits) [2]	
COMM 454	Free Speech and Ethics (Mason Core)	
COMM 455	History of Journalism	
Total Credits		6

1 Only if not taken as a required course.

2 When relevant, may be taken as elective with prior written approval of the director of the minor.

Photojournalism Minor (CHSS)

Banner Code: PHOJ

Academic Advising

5200 Horizon Hall
Fairfax Campus

Email: cdadvice@gmu.edu

The photojournalism minor explores photography as a journalistic storytelling medium. Offered jointly by the Department of Communication and the School of Art, the minor prepares students to bear witness through the lens of a camera; to examine the world around them, pose questions and inform audiences. Students gain proficiency with digital photo technology, develop reporting skills, apply visual storytelling principles, and examine the ethical and legal challenges of capturing stories in a mediated society.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must earn a minimum grade of 2.00 in all courses applied to the minor. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 18

Required Courses

Code	Title	Credits
COMM 203	Introduction to Journalism	3
COMM 303	Writing across the Media	3
COMM 475	Journalism Law	3
AVT 357	Photobook: Concepts Form [1]	3
AVT 359	Photography Seminar	3
AVT 457	Documentary Photography	3
Total Credits		18

1 Course has a required prerequisite of AVT 253 Digital Photography I (Mason Core)

Political Communication Minor (CHSS)

Banner Code: PCOM

Academic Advising

5200 Horizon Hall
Fairfax Campus

Email: cdadvice@gmu.edu
Website: communication.gmu.edu/programs/la-minor-comm-pcom

This interdisciplinary minor is offered jointly by the Schar School of Policy and Government and the Department of Communication.

Political communication explores the interaction among members of the public, the media, advocacy groups, and politicians in a democratic society. This minor uses a diverse approach to questions of how mass and interpersonal communication influence democratic functioning, including:

1. how political actors use strategic messaging to persuade and mobilize the public;
2. how citizens make sense of these messages and their impact on engagement, deliberation, efficacy, knowledge, and participation;
3. the role of the mass media in facilitating or hindering this relationship;

Political communication includes explicitly political activities like voting and political campaigns. It also encompasses any issue of public debate or deliberation, including culture and social movements.

Admissions & Policies

Admissions

This minor is available to all Mason undergraduate students with the exception of communication majors pursuing a concentration in political communication.

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. A minimum of 6 COMM credits and a minimum of 6 GOVT credits are required. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 18

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Coursework

Code	Title	Credits
COMM 327	Political Communication	3
COMM 412	Politics and the Mass Media	3
or GOVT 412	Politics and the Mass Media	
Total Credits		6

Communication and Political Process

Code	Title	Credits
Select one course from the following: [1]		3
COMM 326	Rhetoric of Social Movements and Political Controversy (Mason Core)	
COMM 374	Political Journalism	
COMM 431	New Media and Democracy	
COMM 454	Free Speech and Ethics (Mason Core)	
GOVT 311	Public Opinion and Electoral Behavior	
Total Credits		3

Persuasion Theory

Code	Title	Credits
Select one course from the following: [1]		3
COMM 230	Case Studies in Persuasion	
COMM 261	Theories of Argumentation	
COMM 362	Argument and Public Policy (Mason Core)	
COMM 430	Persuasion	
GOVT 313	Political Psychology	
GOVT 342	Diplomacy	
Total Credits		3

Political Process

Code	Title	Credits
Select one course from the following: [1]		3
GOVT 308	The American Presidency	
GOVT 312	Political Parties and Campaigns	
GOVT 318	Interest Groups, Lobbying, and the Political Process	
GOVT 353	Social Entrepreneurship	
GOVT 364	Public Policy Making	
GOVT 430	Comparative Political Leadership	
GOVT 445	Human Rights	
GOVT 447	Revolution and International Politics	
Total Credits		3

Cultural Politics

Code	Title	Credits
Select one course from the following: [1]		3
COMM 380	Media Criticism	
COMM 433	Environmental Communication	
COMM 465	Topics in Communication and Gender	
GOVT 361	Introduction to Environmental Policy	
GOVT 414	Politics of Race and Gender	
GOVT 427	Feminist Political Thought	
GOVT 460	Surveillance and Privacy in Contemporary Society	
Total Credits		3

[1] COMM 386 Special Topics in Political Communication may be substituted for any other COMM course with the permission of the minor director, depending on the specific topic.
GOVT 319 Issues in Government and Politics may be substituted for any other GOVT course with the permission of the minor director, depending on the specific topic. Courses from the Schar School of Policy and Government may be substituted in the cultural politics, persuasion theory, or political process categories, with the permission of the minor director.

Professional Experience in Communication Minor

Banner Code: PCM

Academic Advising

5200 Horizon Hall
Fairfax Campus

Email: cdadvice@gmu.edu
Website: communication.gmu.edu/programs/la-minor-comm-pcm

This minor is designed for undergraduate students who wish to augment their main academic program with an intense experiential learning semester in professional and career media. Students attend the Washington Media Institute program in Washington, DC and are taught by Mason faculty, Washington Media Institute leaders and practitioners. Enrollment in the program carries a premium fee added to normal tuition.

The minor is available only to students who are accepted into the program by application to the Department of Communication, and enroll in credits dedicated to the Washington Media Institute Mason Semester, a semester-long program held in Washington Media Institute in Washington, DC.

Admissions & Policies

Admissions

The minor is available only to students who are accepted into the program by application to the Department of Communication, and enroll in credits dedicated to the Washington Media Institute Mason Semester, a semester-long program held in Washington Media Institute in Washington, DC.

Policies

Students pursuing this minor must complete all course offerings with a minimum grade of 2.00 in each course. All fifteen credits of coursework must be unique to the minor.

For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 15

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Coursework

Students complete five required courses, offered as individualized sections of COMM 487 Washington Media Institute. Specific course titles may vary from semester to semester. Examples are Entrepreneurial Media and Journalism and Social Justice. Various seminars, a technology workshop and internship may also be offered.

Code	Title	Credits
Take five sections of the following under different titles.		15
COMM 487	Washington Media Institute	
Total Credits		15

Science Communication Graduate Certificate

Banner Code: LA-CERG-SCMN

Brittany Sanders

5200 Horizon Hall

Email: bsander7@gmu.edu
Website: https://sciencecommunication.gmu.edu/programs/la-cerg-scmn

This certificate, designed for graduate students and professionals with or without a communication background, explores how science communication research informs best practices within diverse, applied settings (and vice-versa). Spanning the intersection of research and practice, graduates strengthen science communication efforts geared toward various audiences and support effective science-related decision making within academic, government, and non-profit sectors, among others.

This graduate certificate may be pursued on a part-time or full-time basis.

Admissions & Policies

Admissions

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions.

Policies

All course choices included in this certificate must be approved by the department.

For policies governing all graduate certificates, see AP.6.8 Requirements for Graduate Certificates.

Requirements

Certificate Requirements

Total credits: 15

This certificate may be pursued on a full-or part-time basis.

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Core Course

Code	Title	Credits
COMM 639	Science Communication	3
Total Credits		3

Electives in COMM

Code	Title	Credits
Select two courses from the following:		6
COMM 637	Risk Communication	
COMM 640	Controversies in Science Communication	
COMM 642	Science and the Public	
COMM 644	Analysis and Criticism of Science Journalism	
COMM 660	Climate Change and Sustainability Communication Campaigns	
COMM 694	Communication Internship	
COMM 735	Crisis Communication	
Total Credits		6

Electives in Science

Code	Title	Credits
Students select two 500- or 600- level courses in the Science, Technology, Engineering, Math (STEM), health sciences, or science policy disciplines offered by the College of Humanities and Social Sciences, the College of Science, the College of Health and Human Services, the Schar School of Policy and Government, or the College of Education and Human Developement.		6
Total Credits		6

Sport Communication Minor (CHSS)

Banner Code: SCOM

Academic Advising

5200 Horizon Hall
Fairfax Campus

Email: cdadvice@gmu.edu
Website: communication.gmu.edu/programs/la-minor-comm-scom

This minor offers students the opportunity to examine important and timely sports-related issues in an ethical context as well as analyze sports from cross-cultural perspectives. Students will gain an understanding of sport mass media, sport communication, sports reporting, interpersonal and organizational communication, and

the impact each has in our global society. The courses cover theory and practice in cross-platform communication, sports ethics and theoretical underpinnings, public relations, and marketing. The minor provides applied fundamentals for students seeking employment in the commercial world of sports (areas such as management or promotion of athletic organizations) and in sports media. The sport communication minor is offered jointly with the School of Recreation, Health, and Tourism in the College of Education and Human Development.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 18

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Core Courses

Code	Title	Credits
COMM 303	Writing across the Media	3
COMM 320	Business and Professional Communication	3
SPMT 201	Introduction to Sport Management	3
or SPMT 304	Sport, Culture, and Society	
SPMT 430	Sport Communication	3
Total Credits		12

Electives

Code	Title	Credits
Select two electives from the following: [1]		6
COMM 204	Introduction to Public Relations	
COMM 305	Foundations of Intercultural Communication (Mason Core)	
COMM 351	News Writing and Reporting	
COMM 356	Video: Performance and Writing	
COMM 359	Media Management	
COMM 361	Online Journalism	
COMM 371	Sports Writing and Reporting	
COMM 372	Sports and the Media	
SPMT 201	Introduction to Sport Management	
SPMT 302	Philosophical and Ethical Dimensions of Sport	
SPMT 304	Sport, Culture, and Society	
SPMT 318	Diversity and Inclusion Issues in Sport	
SPMT 405	Sport Venues and Events	
SPMT 412	Sport Marketing and Sales	
SPMT 420	Economics and Finance in the Sport Industry	
SPMT 440	Global Perspectives in Sport	
SPMT 455	Governance and Policy in Sport Organizations	
Total Credits		6

1
- Special topics courses, when relevant, may be used to fulfill this requirement with the prior written approval of the director.
- Depending on which courses students took as a required course (above), they may use either SPMT 201 Introduction to Sport Management or SPMT 304 Sport, Culture, and Society as an elective.
- COMM majors are required to take one elective SPMT course.

Department of Criminology, Law and Society

Phone: 703-993-8315
Website: cls.gmu.edu/

Criminology, Law and Society is a dynamic, multidisciplinary unit. Students at the graduate and undergraduate level develop strong foundations in research, methods, theories and systems of justice, criminology and crime policy, security, and law and society. They graduate with the knowledge and skills needed to understand the causes and consequences of crime and injustice, the responses by criminal and civil justice institutions, and what works to improve social conditions among affected individuals, communities, organizations, and countries.

Undergraduate Programs

Criminology, Law and Society, BS

The bachelors of science in criminology, law and society provides students with a focused study of criminology, law and society and the social, human, and moral problems raised in the justice field. The BS degree prepares students for careers in law enforcement, corrections, the courts, investigations, juvenile justice, private and homeland security, and related social and human services. Students who earn the BS degree either gain work experience in a criminal justice agency, or complete a minor in a related field to enhance their study of justice.

Criminology, Law and Society, BA

The bachelors of arts in criminology, law and society provides students with the opportunity to acquire a broader liberal arts education while studying criminology, law and society. The BA degree prepares students for careers in a range of justice, social service, and human services fields. It also provides a strong background for law school or graduate study in criminal justice or criminology.

Internships

The department supports an active internship program, which places students in justice and related organizations throughout the Washington metropolitan area. Students can gain valuable work place experience while earning credit toward their degree.

Graduate Programs

The department offers a master's and a doctoral degree in criminology, law and society and a master's degree in criminal justice. These degrees draw on a strong multidisciplinary faculty who teach a wide range of courses in their specialties. These programs take advantage of Mason's proximity to the many justice organizations at the federal, state, and local levels. The curriculum is structured to give students the skills they need to do policy-relevant research. They will be able to work with local and

national agencies concerned with justice and security to put those skills to use.

Funding

The department offers graduate teaching and research assistantships awarded on a competitive basis. Other sources of funding such as grants, loans, and employment on campus are also available. Students awarded assistantships must register for a minimum of six credits a semester and, like all graduate students, show satisfactory progress toward their degree.

Faculty

Department Faculty

Professors

Lum, Rebellon, Redlich, Robinson, Weisburd, Willis (chair), Wilson

Emeritus Professors

Mastrofski, Turner

Associate Professors

Gallagher, Gill, Johnson, Koper, Merola, Rudes, Yang

Assistant Professors

Dong, Houston, Irvin-Erickson, Lee, Lowder, Norris, Umamaheswar

Term Professor

Newmark

Term Assistant Professor

Dobson, Gudaitis, Novak

Term Lecturer

Bamford

Affiliate Faculty

Uchida

Programs

- Criminal Justice, MS
- Criminology, Law and Society Minor
- Criminology, Law and Society, BA
- Criminology, Law and Society, BS
- Criminology, Law and Society, MA
- Criminology, Law and Society, PhD
- Intelligence Studies Minor

Criminal Justice, MS

Banner Code: LA-MS-CJUS

Academic Advising

354 Enterprise Hall
Fairfax Campus

Email: clsgrad@gmu.edu
Website: https://cls.gmu.edu/programs/la-ms-cjus

The MS in Criminal Justice prepares students to acquire jobs or advance their careers in the field of criminal justice policy and practice. Students receive the scientific foundations and practical insights required to evaluate, select, and implement criminal justice policies and practices that are effective, efficient, and fair. They also learn data analysis skills that equip them with the knowledge required for many policy-oriented and front-line operational positions. Criminal Justice, MS graduates are prepared to be leaders and change agents in the criminal justice field.

Admissions & Policies

Admissions

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions. For information specific to the MS degree in criminal justice, see Application Requirements and Deadlines (https://cls.gmu.edu/programs/la-ms-cjus/application/) on the departmental website.

Policies

For policies governing all graduate degrees, see AP.6 Graduate Policies.

Requirements

Degree Requirements

Total credits: 30

Core Courses

Code	Title	Credits
CRIM 511	Evidence-based Crime and Justice Policy	3
CRIM 512	Implementing Crime and Justice Policy	3
CRIM 513	Leadership in Justice Organizations	3
CRIM 514	Legal and Ethical Issues in Criminal Justice	3
CRIM 515	Criminal Justice Research Methods and Data Analysis	3
CRIM 516	Evaluation of Crime and Justice Policies and Practices	3
CRIM 517	Research Practicum in Justice Policy and Practice	3
Total Credits		21

Electives

Code	Title	Credits
Select three courses from the following:		9
CRIM 509	Justice Organizations and Processes	
CRIM 510	Policing in a Democratic Society	
CRIM 521	The Constitution, Criminal Procedure, and Security	
CRIM 523	Law and Social Control	
CRIM 541	Conduct of Justice Organizations at the Street Level	
CRIM 544	Corrections	

CRIM 545	Crime Analysis	
CRIM 561	Politics of Crime Policy	
CRIM 562	Crime and Place	
CRIM 595	Special Topics	
Total Credits		9

Accelerated Master's

Bachelor's Degree (any)/Criminal Justice, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BA/BS in a chosen major and an MS in Criminal Justice in an accelerated time-frame after satisfactory completion of a minimum of 138 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degrees for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degrees policies. For information specific to this degree, see the department's website (https://cls.gmu.edu/programs/la-ms-acel-cjus/).

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits, 15 upper-level credits completed at Mason, and a minimum overall GPA of 3.50.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MS program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form.

- Minimum overall GPA of 3.25
- Minimum grade of B in each advanced standing course
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing courses (up to 12 credits with a minimum grade of B in each)

Courses include any graduate CRIM course with the exception of CRIM 517 Research Practicum in Justice Policy and Practice.

Accelerated master's students will work with undergraduate and graduate advisors to select courses for their plan of study.

Reserve Graduate Credit courses (up to 6 credits) taken while an undergraduate and will only count for the graduate degree program

Any graduate CRIM course with the exception of CRIM 517 Research Practicum in Justice Policy and Practice

For more detailed information on coursework and timeline requirements see AP 6.7 Bachelor's/Accelerated Master's Degrees policies.

Criminology, Law and Society Minor

Banner Code: CLS

Academic Advising

354 Enterprise Hall
Fairfax Campus

Website: cls.gmu.edu/programs/la-minor-cls-cls

Through the minor in criminology, law and society, students develop knowledge of the principles, institutions, and practices of the systems for administering justice. It provides a solid foundation for students seeking to supplement their major area of study, to develop knowledge and skills needed for justice-related occupations, or to lay the foundation for law school or graduate study in the justice field. Students obtain an overview of the justice system and develop advanced knowledge of selected features of the justice system.

Students should plan their course of study with a criminology, law and society advisor assigned by the program.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. No more than 6 credits of CRIM 485 Study Abroad can be applied to the minor. The minor must be approved by the advisor before graduation.

For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 15

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Core Course

Code	Title	Credits
CRIM 100	Introduction to Criminal Justice (Mason Core)	3

Electives

Code	Title	Credits
Select 12 credits from the following: [1]		12
CRIM courses [2]		
INTS 417	Human Trafficking and Smuggling [2]	
Total Credits		12

1. At least nine credits must be upper-level. CRIM 479 Preparation for Internship, CRIM 480 Internship, CRIM 498 Research Practicum, and CRIM 499 Independent Study may not be used to fulfill this requirement. A maximum of 6 credits of CRIM 485 Study Abroad can be applied to the minor.
2. A maximum of 6 credits of INTS 417 Human Trafficking and Smuggling and/or CRIM 490 Special Topics when topic is Human Trafficking can be applied to the minor.

Criminology, Law and Society, BA

Banner Code: LA-BA-CLS

354 Enterprise Hall
Fairfax Campus

Website: cls.gmu.edu/programs/la-ba-cls

The BA in Criminology, Law and Society provides a focused study of the justice system and social, human, and moral problems raised in the justice field. This course of study prepares students for careers in law enforcement, corrections, the courts, investigations, juvenile justice, private and homeland security, and related social and human services. The BA in Criminology, Law and Society is well-suited for students who wish to study the field while branching out into related areas of study.

Admissions & Policies

Policies

Students pursuing this degree must complete 42 credits within the major, with a minimum GPA of 2.00. Students may apply a maximum of 18 credits of transferable ADJ courses from the Virginia Community College System (VCCS) or comparable courses at another community college to fulfill the degree requirements. Once a student matriculates at Mason, no courses may be taken at another institution without prior written approval from the program and the dean.

No more than 12 credits of CRIM 485 Study Abroad can be applied to the major. No more than 15 credits of CRIM 490 Special Topics can be applied to the major.

For policies governing all undergraduate degrees, see AP.5 Undergraduate Policies.

Requirements

Degree Requirements

Total credits: minimum 120

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Core Courses in the Major

Code	Title	Credits
CRIM 100	Introduction to Criminal Justice (Mason Core)	3
CRIM 306	Criminal Justice Ethics	3
CRIM 315	Research Methods and Analysis in Criminology	3
CRIM 424	Constitutional Law: Criminal Process and Rights	3
CRIM 495	Capstone in Criminology, Law and Society (Mason Core)	3
Total Credits		15

Electives in the Major

Code	Title	Credits
Select nine electives from the following: [1]		27
CRIM 210	Introduction to Criminology	
CRIM 220	Introduction to Law and Society	
CRIM 230	Introduction to Homeland Security	
CRIM 301	Public Law and the Judicial Process	
or GOVT 301	Public Law and the Judicial Process	
CRIM 302	Delinquency and the Juvenile Justice System	
CRIM 304	Computer Crime, Forensics, and Auditing	
CRIM 305	Crime and Crime Policy	
CRIM 307	Social Inequality, Crime, and Justice	
CRIM 308	Human Rights and Justice	
CRIM 310	Introduction to the Intelligence Community	
CRIM 312	Intelligence Analysis Techniques	
CRIM 320	Crime and Place	
CRIM 325	Hate Crime	
CRIM 350	Counterintelligence	
CRIM 400	Applied Criminal Psychology	
CRIM 401	Policing in America	
CRIM 402	Punishment and Corrections	
CRIM 403	Community Corrections	
CRIM 404	Crime Victims and Victimization	
CRIM 405	Law and Justice around the World (Mason Core)	
CRIM 406	Family Law and the Justice System	
CRIM 407	Advanced Topics in Law and Society	
CRIM 408	Criminal Courts	
CRIM 409	Community Policing	
CRIM 410	Criminal Investigations	
CRIM 411	Innovations in Policing	
CRIM 422	Controversial Legal Issues	
CRIM 423	Constitutional Law: Civil Rights and Liberties	
or GOVT 423	Constitutional Law: Civil Rights and Liberties	
CRIM 425	Criminal Justice Management	
CRIM 430	Criminal Law	

CRIM 460	Surveillance and Privacy in Contemporary Society	
or GOVT 460	Surveillance and Privacy in Contemporary Society	
CRIM 462	Law Enforcement and Homeland Security	
CRIM 471	Prevention and Deterrence of Crime	
CRIM 475	Theory and Politics of Terrorism	
CRIM 485	Study Abroad	
CRIM 490	Special Topics [2]	
CRIM 491	Honors Seminar I	
CRIM 492	RS: Honors Seminar II	
CRIM 498	Research Practicum	
CRIM 499	Independent Study	
INTS 417	Human Trafficking and Smuggling [2]	
Total Credits		27

[1] Students may select an optional concentration to fulfill a portion of this required elective credit.

[2] A maximum of 6 credits of INTS 417 Human Trafficking and Smuggling and/or CRIM 490 Special Topics when topic is Human Trafficking can be applied to the major.

Optional Concentration in the Major

Criminology and society majors have the option of obtaining a concentration by completing 15 of their 27 elective credits within one of the following areas. Students can pursue only one concentration.

Available Concentrations

- Concentration in Criminal Justice (CJUS)
- Concentration in Law and Society (LAWS)
- Concentration in Homeland Security and Justice (HSJ)

Concentration in Criminal Justice (CJUS)

Code	Title	Credits
Select 15 credits from the following:		
CRIM 210	Introduction to Criminology	
CRIM 302	Delinquency and the Juvenile Justice System	
CRIM 304	Computer Crime, Forensics, and Auditing	
CRIM 305	Crime and Crime Policy	
CRIM 307	Social Inequality, Crime, and Justice	
CRIM 320	Crime and Place	
CRIM 325	Hate Crime	
CRIM 400	Applied Criminal Psychology	
CRIM 401	Policing in America	
CRIM 402	Punishment and Corrections	
CRIM 403	Community Corrections	
CRIM 404	Crime Victims and Victimization	
CRIM 408	Criminal Courts	
CRIM 409	Community Policing	
CRIM 410	Criminal Investigations	
CRIM 411	Innovations in Policing	
CRIM 425	Criminal Justice Management	
CRIM 462	Law Enforcement and Homeland Security	
CRIM 471	Prevention and Deterrence of Crime	
CRIM 490	Special Topics (when topic is appropriate with permission of undergraduate director) [1]	
INTS 417	Human Trafficking and Smuggling [1]	

[1] A maximum of 6 credits of INTS 417 Human Trafficking and Smuggling and/or CRIM 490 Special Topics when topic is Human Trafficking can be applied to the major.

Concentration in Law and Society (LAWS)

Code	Title	Credits
Select 15 credits from the following:		
CRIM 220	Introduction to Law and Society	
CRIM 301	Public Law and the Judicial Process	
or GOVT 301	Public Law and the Judicial Process	
CRIM 308	Human Rights and Justice	
CRIM 325	Hate Crime	
CRIM 405	Law and Justice around the World (Mason Core)	
CRIM 406	Family Law and the Justice System	
CRIM 407	Advanced Topics in Law and Society	
CRIM 408	Criminal Courts	
CRIM 422	Controversial Legal Issues	
CRIM 423	Constitutional Law: Civil Rights and Liberties	
or GOVT 423	Constitutional Law: Civil Rights and Liberties	
CRIM 430	Criminal Law	
CRIM 460	Surveillance and Privacy in Contemporary Society	
or GOVT 460	Surveillance and Privacy in Contemporary Society	
CRIM 490	Special Topics (when topic is appropriate with permission of undergraduate director) [1]	
INTS 417	Human Trafficking and Smuggling [1]	

[1] A maximum of 6 credits of INTS 417 Human Trafficking and Smuggling and/or CRIM 490 Special Topics when topic is Human Trafficking can be applied to the major.

Concentration in Homeland Security and Justice (HSJ)

Code	Title	Credits
Select 15 credits from the following:		
CRIM 230	Introduction to Homeland Security	
CRIM 310	Introduction to the Intelligence Community	
CRIM 312	Intelligence Analysis Techniques	
CRIM 350	Counterintelligence	
CRIM 405	Law and Justice around the World (Mason Core)	
CRIM 460	Surveillance and Privacy in Contemporary Society	
or GOVT 460	Surveillance and Privacy in Contemporary Society	
CRIM 462	Law Enforcement and Homeland Security	
CRIM 475	Theory and Politics of Terrorism	

CRIM 490	Special Topics (when topic is appropriate with permission of undergraduate director) [1]
INTS 417	Human Trafficking and Smuggling [1]

[1] A maximum of 6 credits of INTS 417 Human Trafficking and Smuggling and/or CRIM 490 Special Topics when topic is Human Trafficking can be applied to the major.

Writing-Intensive Requirement

The university requires all students to complete at least one course designated "writing intensive" in their majors at the 300 level or above. Students majoring in criminology, law and society fulfill this requirement by successfully completing CRIM 495 Capstone in Criminology, Law and Society (Mason Core). Students should complete ENGH 302 Advanced Composition (Mason Core) before taking the writing-intensive course in the major or take the two courses simultaneously.

Upper Level Requirement

Students seeking a bachelor's degree must apply at least 45 credits of upper-level courses (numbered 300 or above) toward graduation requirements.

Additional Electives

Any remaining credits may be completed with elective courses to bring the degree total to 120.

College Level Requirements for the BA Degree

In addition to the Mason Core program, students pursuing a BA degree must complete the coursework below. Except where expressly prohibited, a course used to fulfill a college level requirement may also be used simultaneously to satisfy other requirements (Mason Core requirements or requirements for the major).

Philosophy or Religious Studies

Code	Title	Credits
Select 3 credits from the following:		3
PHIL [1]		
RELI		

[1] Note that the following courses may not be used to fulfill this requirement:

- PHIL 323 Classical Western Political Theory
- PHIL 324 Modern Western Political Theory
- PHIL 327 Contemporary Western Political Theory
- PHIL 393 Humanities College to Career
- PHIL 460 Senior Seminar in Philosophy, Politics, and Economics

Additionally, PHIL 253 Philosophy and Literature (Mason Core), RELI 235 Religion and Literature (Mason Core), and RELI 333 Spiritual Autobiography (Mason Core) cannot be used to fulfill both the philosophy/religious studies requirement and the Mason Core literature requirement.

Social and Behavioral Sciences

Code	Title	Credits
Select 3 credits of social and behavioral sciences from the following (additional to the Mason Core social and behavioral sciences requirement) [1]		3
ANTH		
CRIM		
ECON		
GOVT		
HIST [2]		
LING		
PSYC		
SOCI		
Or choose from the following GGS courses:		
GGS 101	Major World Regions (Mason Core)	
GGS 103	Human Geography (Mason Core)	
GGS 110	Introduction to Geoinformation Technologies	
GGS 301	Political Geography (Mason Core)	
GGS 303	Geography of Resource Conservation (Mason Core)	
GGS 304	Population Geography (Mason Core)	
GGS 305	Economic Geography	
GGS 306	Urban Geography	
GGS 315	Geography of the United States	
GGS 316	Geography of Latin America	
GGS 320	Geography of Europe	
GGS 325	Geography of North Africa and the Middle East	
GGS 330	Geography of the Soviet Succession States	
GGS 357	Urban Planning	
GGS 380	Geography of Virginia	

[1] The two courses used to fulfill the combined college and Mason Core requirements must be from different disciplines in the social and behavioral sciences.

[2] HIST 100 History of Western Civilization (Mason Core) and HIST 125 Introduction to World History (Mason Core) may not be used to fulfill this requirement.

Foreign Language

Code	Title	Credits
Intermediate-level proficiency in one foreign language, fulfilled by: [1]		
Completing 3 credits in a foreign language numbered 202 (or higher level courses taught in the language)		
Or achieving a satisfactory score on an approved proficiency test		
Or completing the following ASL three course sequence:		
EDSE 115	American Sign Language (ASL) I	
EDSE 116	American Sign Language (ASL) II	
EDSE 219	American Sign Language (ASL) III	

[1] Students who are already proficient in a second language may be eligible for a waiver of this requirement. Additional information on waivers can be found at the Office of Undergraduate Academic Affairs (http://chssundergrad.gmu.edu/).

Non-Western Culture

Select 3 credits of an approved course in the study of a non-Western culture (additional to the Mason Core requirement in global understanding)

Code	Title	Credits
Select 3 credits (additional to Mason Core Global Understanding requirement) [1]		
ANTH 114	Introduction to Cultural Anthropology (Mason Core)	3
ANTH 300	Civilizations	3
ANTH 302	Peoples and Cultures of Latin America (Mason Core)	3
ANTH 307	Ancient Mesoamerica (Mason Core)	3
ANTH 308	Peoples and Cultures of the Middle East (Mason Core)	3
ANTH 309	Peoples and Cultures of India (Mason Core)	3
ANTH 313	Myth, Magic, and Mind (Mason Core)	3
ANTH 314	Zombies	3
ANTH 330	Peoples and Cultures of Selected Regions: Non-Western	3
ANTH 332	Cross-Cultural Perspectives on Globalization (Mason Core)	3
ANTH 381	Medical Anthropology	3
ANTH 396	Issues in Anthropology: Social Sciences (Mason Core)	3
ARAB 360	Topics in Arabic Cultural Production	3
ARAB 420	Survey of Arabic Literature	3
ARAB 440	Topics in Arabic Religious Thought and Texts (Mason Core)	3
ARTH 203	Survey of Asian Art (Mason Core)	3
ARTH 204	Survey of Latin American Art (Mason Core)	3
ARTH 206	Survey of African Art (Mason Core)	3
ARTH 318	Art and Archaeology of Ancient Egypt	3
ARTH 319	Art and Archaeology of the Ancient Near East (Mason Core)	3
ARTH 320	Art of the Islamic World (Mason Core)	3
ARTH 382	Arts of India (Mason Core)	3
ARTH 383	Arts of Southeast Asia (Mason Core)	3
ARTH 384	Arts of China (Mason Core)	3
ARTH 385	Arts of Japan (Mason Core)	3
ARTH 386	The Silk Road (Mason Core)	3
ARTH 482	RS: Advanced Studies in Asian Art	3
CHIN 318	Introduction to Classical Chinese (Mason Core)	3
CHIN 320	Contemporary Chinese Film	3
CHIN 325	Major Chinese Writers (Mason Core)	3
CHIN 470	Special Topics in Chinese Studies	3
DANC 118	World Dance (Mason Core)	3
ECON 361	Economic Development of Latin America (Mason Core)	3
ECON 362	African Economic Development (Mason Core)	3
FREN 451	Topics in Sub-Saharan Francophone Literature and Culture	3
FREN 454	Topics in Caribbean Francophone Literature and Culture	3
GGS 101	Major World Regions (Mason Core)	3
GGS 316	Geography of Latin America	3
GGS 317	Geography of China (Mason Core)	3
GGS 325	Geography of North Africa and the Middle East	3
GGS 330	Geography of the Soviet Succession States	3
GGS 399	Select Topics in GGS	3
GOVT 328	Global Political Theory	3
GOVT 332	Government and Politics of the Middle East and North Africa	3
GOVT 333	Government and Politics of Asia	3
GOVT 338	Government and Politics of Russia	3
GOVT 340	Central Asian Politics	3
GOVT 341	Chinese Foreign Policy	3
GOVT 345	Islam and Politics	3
GOVT 433	Political Economy of East Asia	3
HIST 251	Survey of East Asian History (Mason Core)	3
HIST 252	Survey of East Asian History (Mason Core)	3
HIST 261	Survey of African History (Mason Core)	3
HIST 262	Survey of African History (Mason Core)	3
HIST 271	Survey of Latin American History (Mason Core)	3
HIST 272	Survey of Latin American History (Mason Core)	3
HIST 281	Survey of Middle Eastern Civilization (Mason Core)	3
HIST 282	Survey of Middle Eastern Civilization (Mason Core)	3
HIST 326	Stalinism	3
HIST 327	The Soviet Union and Russia Since World War II	3
HIST 328	Rise of Russia (Mason Core)	3
HIST 329	Modern Russia and the Soviet Union (Mason Core)	3
HIST 353	History of Traditional China	3
HIST 354	Modern China (Mason Core)	3
HIST 356	Modern Japan (Mason Core)	3
HIST 357	Postwar Japan (Mason Core)	3
HIST 358	Post-1949 China (Mason Core)	3
HIST 360	History of South Africa (Mason Core)	3
HIST 364	Revolution and Radical Politics in Latin America (Mason Core)	3
HIST 365	Conquest and Colonization in Latin America (Mason Core)	3
HIST 366	Comparative Slavery	3
HIST 367	History, Fiction, and Film in Latin America	3
HIST 387	Topics in Global History (Mason Core)	3-6
HIST 426	The Russian Revolution	3
HIST 460	Modern Iran (Mason Core)	3
HIST 461	Arab-Israeli Conflict	3
HIST 462	Women in Islamic Society (Mason Core)	3

HIST 465	The Middle East in the 20th Century	3
JAPA 310	Japanese Culture in a Global World (Mason Core)	3
JAPA 340	Topics in Japanese Literature (Mason Core)	3
KORE 320	Korean Popular Culture in a Global World	3
MUSI 103	Musics of the World (Mason Core)	3
RELI 211	Religions of the West (Mason Core)	3
RELI 212	Religions of Asia (Mason Core)	3
RELI 240	Death and the Afterlife in World Religions	3
RELI 272	Islam	3
RELI 313	Hinduism (Mason Core)	3
RELI 314	Chinese Philosophies and Religious Traditions	3
RELI 315	Buddhism (Mason Core)	3
RELI 317	Daoism	3
RELI 337	Mysticism: East and West	3
RELI 365	Muhammad: Life and Legacy	3
RELI 374	Islamic Thought (Mason Core)	3
RELI 375	Qur'an and Hadith	3
RELI 379	Islamic Law, Society, and Ethics	3
RELI 387	Islam, Democracy, and Human Rights	3
RELI 490	Comparative Study of Religions (Mason Core)	3
RUSS 353	Russian Civilization (Mason Core)	3
RUSS 354	Contemporary Post-Soviet Life (Mason Core)	3

[1] A course used to fulfill the Mason Core global understanding requirement may not be simultaneously used to satisfy this college-level requirement. A course used to fulfill this requirement may be used simultaneously to fulfill any other requirements (Mason Core requirements, college-level requirements, or requirements for the major). Additional information on waivers can be found at the Office of Undergraduate Academic Affairs (http://chssundergrad.gmu.edu/).

Mason Core

Some Mason Core requirements may already be fulfilled by the major requirements listed above. Students are strongly encouraged to consult their advisors to ensure they fulfill all remaining Mason Core requirements.

Code	Title	Credits
Foundation Requirements		
Written Communication (ENGH 101)		3
Oral Communication		3
Quantitative Reasoning		3
Information Technology and Computing		3
Exploration Requirements		
Arts		3
Global Understanding		3
Literature		3
Natural Science		7
Social and Behavioral Sciences		3
Western Civilization/World History		3
Integration Requirements		
Written Communications (ENGH 302)		3
Writing-Intensive [1]		3
Synthesis/Capstone [2]		3
Total Credits		40

[1] Most programs include the writing-intensive course designated for the major as part of the major requirements; this course is therefore not counted towards the total required for Mason Core.

[2] Minimum 3 credits required.

4-Year Plan

Bachelor of Arts in Criminology, Law and Society Sample Plan of Study

A sample four year graduation plan and degree planning worksheet can be found at https://academicaffairs.chss.gmu.edu/undergraduate-students/advising/advising-sheets (https://academicaffairs.chss.gmu.edu/undergraduate-students/advising/advising-sheets/). The plan is a recommended sequencing of courses based on prerequisites and scheduling. This may not fit every student's needs and is a guideline, not a requirement. Students should confirm major requirements with their academic advisor each semester and with their PatriotWeb Degree Evaluation to ensure they enroll in the proper courses and are on track to graduate.

Honors

Honors in the Major

Highly-qualified students may pursue advanced work leading to graduation with honors in the major. Students admitted to the honors program in the major take a two-course sequence: CRIM 491 Honors Seminar I and CRIM 492 RS: Honors Seminar II. To graduate with honors in criminology, law and society, students must complete both courses with a minimum GPA of 3.50 in the two courses.

Criminology, Law and Society, BS

Banner Code: LA-BS-CLS

354 Enterprise Hall
Fairfax Campus

Website: cls.gmu.edu/programs/la-bs-cls

Criminology, Law and Society provides a focused study of the justice system and social, human, and moral problems raised in the justice field. This course of study prepares students for careers in law enforcement, corrections, the courts, investigations, juvenile justice, private and homeland security, and related social and human services. The BS degree provides students a focused approach, requiring more courses within the field of criminology. Students who earn the BS degree either gain work experience in a criminal justice agency or complete a minor in a related field to enhance their study of justice.

Admissions & Policies

Policies

Students pursuing this degree with an internship must complete 60 major credits. Students who complete an approved minor need 45 major credits, plus 15-20 credits in the minor, some of which may overlap with the major credits. Students who pursue a minor must meet with an advisor in the minor program to verify minor requirements and add the minor to their record.

A minimum GPA of 2.00 is required. Students may apply a maximum of 18 credits of transferable ADJ courses from the Virginia Community College System (VCCS) or comparable courses at another community college to fulfill the degree requirements. Once a student matriculates at Mason, no courses may be taken at another institution without prior written approval from the program and the dean.

No more than 12 credits of CRIM 485 Study Abroad can be applied to the major. No more than 15 credits of CRIM 490 Special Topics can be applied to the major. A maximum of 6 credits of INTS 417 Human Trafficking and Smuggling and/or CRIM 490 Special Topics can be applied to the major.

For policies governing all undergraduate degrees, see AP.5 Undergraduate Policies.

Requirements

Degree Requirements

Total credits: minimum 120

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Core Courses in the Major

Code	Title	Credits
CRIM 100	Introduction to Criminal Justice (Mason Core)	3
CRIM 306	Criminal Justice Ethics	3
CRIM 315	Research Methods and Analysis in Criminology	3
CRIM 424	Constitutional Law: Criminal Process and Rights	3
CRIM 495	Capstone in Criminology, Law and Society (Mason Core)	3
Total Credits		15

Internship or Minor in the Major

Code	Title	Credits
Select either 15 credits of internship or a minor:		15-20
Internship		
CRIM 479 & CRIM 480	Preparation for Internship and Internship	
Minor in a Related Field		
Atmospheric Science Minor (17 credits)		
Computational and Data Sciences Minor (15 credits)		
Computer Science Minor (19-20 credits)		
Data Analysis Minor (15 credits)		
Forensic Psychology Minor (15 credits)		
Forensic Science Minor (20 credits)		
Geographic Information Systems Minor (18-20 credits)		
Information Technology Minor (18 credits)		
Intelligence Studies Minor (18 credits)		
International Security Minor (18 credits)		
Legal Studies Minor (18 credits)		
Statistics Minor (15 credits)		
Total Credits		15-20

Electives in the Major

Code	Title	Credits
Select ten electives from the following: [1]		30
CRIM 210	Introduction to Criminology	
CRIM 220	Introduction to Law and Society	
CRIM 230	Introduction to Homeland Security	
CRIM 301	Public Law and the Judicial Process	
or GOVT 301	Public Law and the Judicial Process	
CRIM 302	Delinquency and the Juvenile Justice System	
CRIM 304	Computer Crime, Forensics, and Auditing	
CRIM 305	Crime and Crime Policy	
CRIM 307	Social Inequality, Crime, and Justice	
CRIM 308	Human Rights and Justice	
CRIM 310	Introduction to the Intelligence Community	
CRIM 312	Intelligence Analysis Techniques	
CRIM 320	Crime and Place	
CRIM 325	Hate Crime	
CRIM 350	Counterintelligence	
CRIM 400	Applied Criminal Psychology	
CRIM 401	Policing in America	
CRIM 402	Punishment and Corrections	
CRIM 403	Community Corrections	
CRIM 404	Crime Victims and Victimization	
CRIM 405	Law and Justice around the World (Mason Core)	
CRIM 406	Family Law and the Justice System	
CRIM 407	Advanced Topics in Law and Society	
CRIM 408	Criminal Courts	
CRIM 409	Community Policing	
CRIM 410	Criminal Investigations	
CRIM 411	Innovations in Policing	
CRIM 422	Controversial Legal Issues	
CRIM 423	Constitutional Law: Civil Rights and Liberties	
or GOVT 423	Constitutional Law: Civil Rights and Liberties	
CRIM 425	Criminal Justice Management	
CRIM 430	Criminal Law	
CRIM 460	Surveillance and Privacy in Contemporary Society	
or GOVT 460	Surveillance and Privacy in Contemporary Society	

CRIM 462	Law Enforcement and Homeland Security	
CRIM 471	Prevention and Deterrence of Crime	
CRIM 475	Theory and Politics of Terrorism	
CRIM 485	Study Abroad	
CRIM 490	Special Topics [2]	
CRIM 491	Honors Seminar I	
CRIM 492	RS: Honors Seminar II	
CRIM 498	Research Practicum	
CRIM 499	Independent Study	
INTS 417	Human Trafficking and Smuggling [2]	
Total Credits		30

1 Students may select an optional concentration to fulfill a portion of this required elective credit.

2 A maximum of 6 credits of INTS 417 Human Trafficking and Smuggling and/or CRIM 490 Special Topics when topic is Human Trafficking can be applied to the major.

Optional Concentrations in the Major

Criminology, law and society majors have the option of obtaining a concentration by completing 15 of their 30 elective credits within one of the following areas. Students can pursue only one concentration.

Available Concentrations

- Concentration in Criminal Justice (CJUS)
- Concentration in Homeland Security and Justice (HSJ)
- Concentration in Law and Society (LAWS)

Concentration in Criminal Justice (CJUS)

Code	Title	Credits
Select 15 credits from the following:		15
CRIM 210	Introduction to Criminology	
CRIM 302	Delinquency and the Juvenile Justice System	
CRIM 304	Computer Crime, Forensics, and Auditing	
CRIM 305	Crime and Crime Policy	
CRIM 307	Social Inequality, Crime, and Justice	
CRIM 320	Crime and Place	
CRIM 325	Hate Crime	
CRIM 400	Applied Criminal Psychology	
CRIM 401	Policing in America	
CRIM 402	Punishment and Corrections	
CRIM 403	Community Corrections	
CRIM 404	Crime Victims and Victimization	
CRIM 408	Criminal Courts	
CRIM 409	Community Policing	
CRIM 410	Criminal Investigations	
CRIM 411	Innovations in Policing	
CRIM 425	Criminal Justice Management	
CRIM 462	Law Enforcement and Homeland Security	
CRIM 471	Prevention and Deterrence of Crime	
CRIM 490	Special Topics (when topic is appropriate with permission of undergraduate director) [1]	
INTS 417	Human Trafficking and Smuggling [1]	
Total Credits		15

1 A maximum of 6 credits of INTS 417 Human Trafficking and Smuggling and/or CRIM 490 Special Topics when topic is Human Trafficking can be applied to the major.

Concentration in Homeland Security and Justice (HSJ)

Code	Title	Credits
Select 15 credits from the following:		15
CRIM 230	Introduction to Homeland Security	
CRIM 310	Introduction to the Intelligence Community	
CRIM 312	Intelligence Analysis Techniques	
CRIM 350	Counterintelligence	
CRIM 405	Law and Justice around the World (Mason Core)	
CRIM 460	Surveillance and Privacy in Contemporary Society	
or GOVT 460	Surveillance and Privacy in Contemporary Society	
CRIM 462	Law Enforcement and Homeland Security	
CRIM 475	Theory and Politics of Terrorism	
CRIM 490	Special Topics (when topic is appropriate with permission of undergraduate director) [1]	
INTS 417	Human Trafficking and Smuggling [1]	
Total Credits		15

1 A maximum of 6 credits of INTS 417 Human Trafficking and Smuggling and/or CRIM 490 Special Topics when topic is Human Trafficking can be applied to the major.

Concentration in Law and Society (LAWS)

Code	Title	Credits
Select 15 credits from the following:		15
CRIM 220	Introduction to Law and Society	
CRIM 301	Public Law and the Judicial Process	
or GOVT 301	Public Law and the Judicial Process	
CRIM 308	Human Rights and Justice	
CRIM 325	Hate Crime	
CRIM 405	Law and Justice around the World (Mason Core)	
CRIM 406	Family Law and the Justice System	
CRIM 407	Advanced Topics in Law and Society	
CRIM 408	Criminal Courts	
CRIM 422	Controversial Legal Issues	
CRIM 423	Constitutional Law: Civil Rights and Liberties	
or GOVT 423	Constitutional Law: Civil Rights and Liberties	
CRIM 430	Criminal Law	
CRIM 460	Surveillance and Privacy in Contemporary Society	
or GOVT 460	Surveillance and Privacy in Contemporary Society	
CRIM 490	Special Topics (when topic is appropriate with permission of undergraduate director) [1]	

INTS 417	Human Trafficking and Smuggling [1]	
Total Credits		15

[1] A maximum of 6 credits of INTS 417 Human Trafficking and Smuggling and/or CRIM 490 Special Topics when topic is Human Trafficking can be applied to the major.

Writing-Intensive Requirement

The university requires all students to complete at least one course designated "writing intensive" in their majors at the 300 level or above. Students majoring in criminology, law and society fulfill this requirement by successfully completing CRIM 495 Capstone in Criminology, Law and Society (Mason Core). Students should complete ENGH 302 Advanced Composition (Mason Core) before taking the writing-intensive course in the major or take the two courses simultaneously.

Upper Level Requirement

Students seeking a bachelor's degree must apply at least 45 credits of upper-level courses (numbered 300 or above) toward graduation requirements.

Additional Electives

Any remaining credits may be completed with elective courses to bring the degree total to 120.

Mason Core

Some Mason Core requirements may already be fulfilled by the major requirements listed above. Students are strongly encouraged to consult their advisors to ensure they fulfill all remaining Mason Core requirements.

Code	Title	Credits
Foundation Requirements		
Written Communication (ENGH 101)		3
Oral Communication		3
Quantitative Reasoning		3
Information Technology and Computing		3
Exploration Requirements		
Arts		3
Global Understanding		3
Literature		3
Natural Science		7
Social and Behavioral Sciences		3
Western Civilization/World History		3
Integration Requirements		
Written Communications (ENGH 302)		3
Writing-Intensive [1]		3
Synthesis/Capstone [2]		3
Total Credits		40

[1] Most programs include the writing-intensive course designated for the major as part of the major requirements; this course is therefore not counted towards the total required for Mason Core.

[2] Minimum 3 credits required.

4-Year Plan

Bachelor of Science in Criminology, Law and Society Sample Plan of Study

A sample four year graduation plan and degree planning worksheet can be found at https://academicaffairs.chss.gmu.edu/undergraduate-students/advising/advising-sheets (https://academicaffairs.chss.gmu.edu/undergraduate-students/advising/advising-sheets/). The plan is a recommended sequencing of courses based on prerequisites and scheduling. This may not fit every student's needs and is a guideline, not a requirement. Students should confirm major requirements with their academic advisor each semester and with their PatriotWeb Degree Evaluation to ensure they enroll in the proper courses and are on track to graduate.

Honors

Honors in the Major

Highly qualified students may pursue advanced work leading to graduation with honors in the major. Students admitted to the honors program in the major take a two-course sequence: CRIM 491 Honors Seminar I and CRIM 492 RS: Honors Seminar II. To graduate with honors in criminology, law and society, students must complete both courses with a minimum GPA of 3.50 in the two courses.

Criminology, Law and Society, MA

Banner Code: LA-MA-CLS

Academic Advising

354 Enterprise Hall
Fairfax Campus

Email: clsgrad@gmu.edu
Website: cls.gmu.edu/programs/la-ma-cls

The MA in Criminology, Law and Society prepares students to conduct high-quality scientific research in the criminal justice field. Students learn cutting-edge social science methods and data analysis skills for advancing knowledge in the social sciences and for making a difference in the development and evaluation of justice policies and practices. The MA in Criminology, Law and Society prepares students to pursue advanced graduate studies at the doctoral level or for positions that require rigorous research skills.

For a related program, see Criminology, Law and Society, PhD

Admissions & Policies

Admissions

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in the Admission section of this catalog. For information specific to the MA in Criminology, Law and Society, see Application Requirements and Deadlines (http://cls.gmu.edu/programs/la-ma-cls/application/) on the departmental web site.

Policies

For policies governing all graduate degrees, see AP.6 Graduate Policies.

Requirements

Degree Requirements

Total credits: 30

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Required Coursework

Core Courses

Code	Title	Credits
CRIM 700	Values, Ethics, and Criminal Justice Policy	3
CRIM 710	Criminological Theory	3
CRIM 720	Law and Social Science	3
CRIM 740	Justice Organizations	3
CRIM 760	Evidence-Based Crime Policy	3
Total Credits		15

Analytical Methods Courses

Code	Title	Credits
CRIM 780	Research Methods	3
CRIM 782	Statistics I	3
CRIM 783	Statistics II	3
Total Credits		9

Thesis

Students must apply 6 credits of thesis to the degree. A thesis proposal must be submitted to the graduate director prior to registering for thesis credits. The master's thesis must be defended orally before a committee of three faculty. The committee chair and at least one member must be CLS graduate faculty.

Students must follow the thesis enrollment policy of the university and once enrolled in CRIM 799 Master's Thesis, maintain continuous enrollment as specified in Academic Policies.

Code	Title	Credits
CRIM 799	Master's Thesis	6

Criminology, Law and Society, PhD

Banner Code: LA-PHD-CLS

Academic Advising

354 Enterprise Hall
Fairfax Campus

Email: clsgrad@gmu.edu
Website: cls.gmu.edu/programs/la-phd-cls

The PhD in Criminology, Law and Society is designed to produce top academic scholars and leaders in policy and applied settings. Students coming to this program seek to make a difference in the development and evaluation of policy using cutting edge social science methods. The program provides a rigorous course of study that will prepare students to do research, teach, develop and test policies, and administer agencies and programs designed to administer law, deliver justice, reduce crime, and enhance domestic security.

For a related program, see Criminology, Law and Society, MA

Admissions & Policies

Admissions

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions. For information specific to the PhD degree in Criminology, Law and Society, see Application Requirements and Deadlines (http://cls.gmu.edu/programs/application/LA-PHD-CLS/) on the departmental website.

Policies

For policies governing all graduate degrees, see Graduate Policies.

Master's Degree

Students admitted to the doctoral program without a master's degree need to earn the MA in Criminology, Law and Society as a component of the doctoral degree. The requirements for the MA degree are included in the requirements for the PhD listed below. When beginning the doctoral program students should add the master's degree as a secondary program using the Secondary Program Application (https://registrar.gmu.edu/wp-content/uploads/GSMA-Graduate-Secondary-Masters-Application-032020.pdf) and then apply online (http://registrar.gmu.edu/students/graduation/process/) to graduate the semester prior to meeting all requirements for the master's degree.

Requirements

Degree Requirements

Total credits: 72

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Core Courses

Code	Title	Credits
CRIM 700	Values, Ethics, and Criminal Justice Policy	3
CRIM 710	Criminological Theory	3
CRIM 720	Law and Social Science	3
CRIM 740	Justice Organizations	3
CRIM 760	Evidence-Based Crime Policy	3
Total Credits		15

Analytical Methods Courses

Code	Title	Credits
CRIM 780	Research Methods	3
CRIM 782	Statistics I	3
CRIM 783	Statistics II	3

Select one course from the following:		3
CRIM 781	Justice Program Evaluation	
CRIM 784	Experimental Criminology	
CRIM 795	Special Topics	
CRIM 796	Directed Reading	
EDRS 812	Qualitative Methods in Educational Research	
GGS 650	Introduction to GIS Algorithms and Programming	
GGS 754	Earth Science Data and Advanced Data Analysis	
PSYC 633	Evaluative Research in Psychology	
PSYC 640	Techniques in Industrial/Organizational Psychology	
PSYC 646	Longitudinal Data Analysis	
PSYC 652	Quantitative Methods II: Analysis of Variance	
PSYC 892	Special Topics in Psychology	
PUBP 754	Geographic Information Systems and Spatial Analysis for Public Policy	
SOCI 631	Survey Research	
SOCI 632	Evaluation Research for Social Programs	
SOCI 634	Qualitative Research Methods	
SOCI 655	Ethnography	
WMST 610	Feminist Approaches to Social Research	
Total Credits		12

Electives

Code	Title	Credits
Select 21-30 credits of electives from criminology, law and society courses offered by the department. [1]		21-30

[1] Students who take fewer than 30 elective credits will have accordingly more dissertation credits. Students may substitute 3-6 credits of non-CRIM courses with prior written approval of the director of the graduate program.

One Professionalization Course

Code	Title	Credits
CRIM 797	Professionalization Seminar	0
Total Credits		0

Major Area Paper

Students must write and have approved a major area paper.

Students are not eligible to submit a major area paper until they have successfully completed 36 credits.

Advancement to Candidacy

To advance to candidacy, students must complete all coursework required on their approved program of study. Students must also successfully write and have approved a major area paper. In addition, students must have a dissertation committee appointed by the Dean's Office and have defended their dissertation proposal.

Dissertation

Dissertation Committee

The student's committee is composed of at least four faculty members. Three of the four must be members of the graduate faculty in criminology, law and society. The fourth must be from another program at Mason or from outside the university. The faculty member serving as the chair of the committee must be a member of the graduate faculty in criminology, law and society.

Dissertation Research

Once enrolled in CRIM 998 Doctoral Dissertation Proposal, students in this degree program must maintain continuous registration in CRIM 998 Doctoral Dissertation Proposal or CRIM 999 Doctoral Dissertation Research each semester (excluding summers) until the dissertation is submitted to and accepted by the University Libraries. Once enrolled in CRIM 999 Doctoral Dissertation Research, students must follow the university's continuous registration policy as specified in AP.6.10.6 Dissertation Registration. Students who defend in the summer must be registered for at least 1 credit of CRIM 999 Doctoral Dissertation Research.

Students may apply to this degree a minimum of 3 and a maximum of 6 credits of CRIM 998 Doctoral Dissertation Proposal and a minimum of 12 and a maximum of 21 credits of CRIM 999 Doctoral Dissertation Research. They may apply a maximum of 24 dissertation credits (CRIM 998 Doctoral Dissertation Proposal and CRIM 999 Doctoral Dissertation Research combined) to the degree. Because of the continuous registration policy, students may be required to register for additional credits of these courses. Students who take fewer than 24 dissertation credits will have accordingly more elective credits.

Code	Title	Credits
Select 15-24 credits from the following:		15-24
CRIM 998	Doctoral Dissertation Proposal	
CRIM 999	Doctoral Dissertation Research	
Total Credits		15-24

The final requirement is a dissertation of original research representing a significant contribution to the field, which should be publishable in a referred journal or a quality press.

Intelligence Studies Minor

Banner Code: ISTU

Academic Advising

354 Enterprise Hall
Fairfax Campus

Website: https://cls.gmu.edu/programs/la-minor-cls-istu

This minor is designed for students who are interested in careers in homeland security or other intelligence-related fields. This minor focuses on developing the skills of intelligence analysis, including research, writing, briefing, and analytical tradecraft. Students explore ethical issues in the field and new developments in the analysis of intelligence information.

The curriculum fosters a broad knowledge of content in several disciplines valued by employers in homeland security and intelligence-related fields. The minor offers students sufficient flexibility to pursue

their primary interests while also preparing themselves for careers in intelligence analysis.

Students who are American citizens may apply for an internship in intelligence analysis at the Federal Bureau of Investigation or other agencies. Credits earned for an internship are in addition to those required for the minor and do not contribute toward completion of the minor. Students who intend to apply for the internship should begin the application process no later than September of their sophomore year, since the security clearance process can take a year or more. Students may wish to participate in the Clearance Ready Program offered through Career Services. Information can be found at https://careers.gmu.edu/students/find-job-or-internship/clearance-ready-program. (https://careers.gmu.edu/students/find-job-or-internship/clearance-ready-program/) Students in this minor are strongly encouraged to pursue advanced training in Arabic, Chinese, or Russian.

Admissions & Policies

Policies

Twelve credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. This minor is multidisciplinary in nature and requires coursework from at least two different academic departments. It must be approved by the advisor before graduation. A maximum of 6 credits of CRIM 485 Study Abroad can be applied to the minor.

For policies governing all minors, see AP.5.3.4 Minors.

Requirements

(formerly NTLA)

Minor Requirements

Total credits: 18

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Students should plan their course of study with a criminology, law and society advisor assigned by the program.

Core Courses in the Minor

Code	Title	Credits
CRIM 310	Introduction to the Intelligence Community	3
CRIM 312	Intelligence Analysis Techniques	3
Total Credits		6

Electives in the Minor

The electives must consist of courses from at least two different departments (two different subject prefixes).

Code	Title	Credits
Select four electives from the following:		12
ANTH 114	Introduction to Cultural Anthropology (Mason Core)	
ANTH 312	Political Anthropology (Mason Core)	
ANTH 380	Language and Culture	
COMM 200	Communication Theory	
COMM 305	Foundations of Intercultural Communication (Mason Core)	
CONF 340	Global Conflict Analysis and Resolution (Mason Core)	
CONF 345	Social Dynamics of Terrorism, Security, and Justice	
CRIM 230	Introduction to Homeland Security	
CRIM 304	Computer Crime, Forensics, and Auditing	
CRIM 350	Counterintelligence	
CRIM 400	Applied Criminal Psychology	
CRIM 460	Surveillance and Privacy in Contemporary Society	
or GOVT 460	Surveillance and Privacy in Contemporary Society	
CRIM 462	Law Enforcement and Homeland Security	
CRIM 475	Theory and Politics of Terrorism	
CYSE 101	Introduction to Cyber Security Engineering	
GGS 301	Political Geography (Mason Core)	
GGS 310	Cartographic Design	
GGS 311	Geographic Information Systems	
GGS 379	Remote Sensing	
GGS 411	Geovisualization	
GGS 412	Air Photography Interpretation	
GGS 416	Satellite Image Analysis	
GOVT 328	Global Political Theory	
GOVT 344	American Foreign Policy	
GOVT 345	Islam and Politics	
GOVT 346	American Security Policy	
GOVT 347	International Security	
GOVT 443	Law and Ethics of War	
GOVT 446	International Law and Organization	
INTS 404	Ethics and Leadership	
INTS 417	Human Trafficking and Smuggling [1]	
IT 357	Computer Crime, Forensics, and Auditing	
PHIL 173	Logic and Critical Thinking	
PSYC 379	Applied Cross-Cultural Psychology (Mason Core)	
PSYC 467	The Psychology of Working in Groups and Teams	
SOCI 307	Social Movements and Political Protest	
SOCI 320	Globalization and Social Change (Mason Core)	
SOCI 326	Conflict, Violence, and Peace	
SOCI 388	Violence and Religion	
SOCI 391	Big Data, Technology, and Society	
SOCI 405	Analysis of Social Data	
STAT 344	Probability and Statistics for Engineers and Scientists I	
STAT 350	Introductory Statistics II	
Special topics courses may be approved if they are relevant to the field of intelligence studies [2]		

Other courses as approved by minor director	
Total Credits	12

1 A maximum of 3 credits of INTS 417 can be applied to the minor.

2 Contact minor director for approval of specific sections of special topics courses.

Department of Economics

D150 Buchanan Hall
Fairfax Campus

Phone: 703-993-1151
Website: economics.gmu.edu

Undergraduate Programs

The department offers a bachelor of arts (BA) and a bachelor of science (BS) degree in economics. The bachelor of science degree program is designed for students who desire a more technical program with a stronger emphasis on economic and quantitative analysis. It is especially appropriate for students who anticipate a career as an economic analyst in government, consulting, trade associations, or private sector positions that emphasize economic research and analysis. The requirements are also suitable for students planning postgraduate education in economics or more quantitative business administration programs.

Students interested in careers in the business world can pursue a concentration in managerial economics within the BS in Economics.

The BA in Economics is designed for students with an interest in the liberal arts. It is appropriate for those who prefer a less quantitative degree program and may be especially suitable for students planning to attend law school or graduate programs in business or public administration.

Bachelor's/Accelerated Master's Program

The department offers highly qualified undergraduates the opportunity to apply to an accelerated master's degree program in economics. If accepted, students will be able to earn both an undergraduate and a graduate degree after satisfactory completion of 138 credits, generally within five years.

Graduate Programs

The department offers a master's and a doctoral degree in economics. The department is noted for its emphasis on comparative institutional analysis and its focus on the relations among economic, political, and legal institutions. This is reflected in the specializations associated with the department: experimental economics, Austrian economics, public choice, constitutional political economy, law and economics, and new institutional economics.

Funding

The department offers graduate teaching and research assistantships and fellowships that are awarded on a competitive basis. Other sources of funding such as grants, loans, and employment on campus are also available. Students with assistantships must register for a minimum of 6 credits a semester and, like all students, demonstrate satisfactory progress toward their degree.

Faculty

Department Faculty

Distinguished Professors Emeriti

Smith

Professors Emeriti

Chung, Phillips, Vaughn

Professors

Bennett, Boettke, Boudreaux, Caplan, Cowen, Coyne, Groseclose, Heiner, Houser (chair), Klein, Leeson, Levy, Martinelli, McCabe, Nye, Ramirez, Stratmann, Tabarrok, Wagner, White

Associate Professors

Hanson, Johnson, Jones, Koyama, Meyer, Mollerstrom, Storr

Assistant Professor

Beauchamp, Naumenko, Schulz

Term Associate Professor

Dunick, Rustici

Programs

- Economics Minor
- Economics, BA
- Economics, BS
- Economics, MA
- Economics, PhD

Economics Minor

Banner Code: ECON

Academic Advising

D150 Buchanan Hall
Fairfax Campus

Website: economics.gmu.edu/programs/la-minor-econ-econ

Economics is an essential tool for understanding the complexities of modern society. Economics analyzes how people with limited resources make choices and how we might make better choices. A minor in economics is an extremely flexible and marketable choice. Whether a student's primary interest is in business, communications, policy, data management, international studies, or engineering, a minor in economics provides an additional edge in the workplace.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 21

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Core Courses

Code	Title	Credits
ECON 103	Contemporary Microeconomic Principles (Mason Core) [1]	3
ECON 104	Contemporary Macroeconomic Principles (Mason Core) [1]	3
ECON 306	Intermediate Microeconomics	3
Total Credits		9

[1] Must be completed with a minimum grade of C.

Electives

Code	Title	Credits
Select four electives from courses in economics at the 3xx or 4xx level [1]		12
Total Credits		12

[1]
- ECON 385 International Economic Policy may not be used to fulfill this requirement.
- With permission of the department chair or undergraduate director, a course in a closely-related field may be substituted for 3 credits of economics electives. A course in statistics is highly-recommended, and BUS 210 Business Analytics I or STAT 344 Probability and Statistics for Engineers and Scientists I may be substituted for up to 3 credits of economics electives.
- A minimum of nine credits of upper-level economics courses must be taken at Mason.

Economics, BA

Banner Code: LA-BA-ECON

D150 Buchanan Hall
Fairfax Campus

Website: economics.gmu.edu/programs/la-ba-econ

Economics is about more than money and profits. It is a way of looking at the world through the lens of incentives, choices, and markets to help uncover new solutions to the persistent problems in our society. This economic perspective sheds light on important issues in the areas of production, education, crime, the environment, international trade, immigration, health care, economic growth, poverty, and more. The Bachelor of Arts in Economics is designed for students with a strong interest in the liberal arts. It is appropriate for those who prefer a less quantitative degree program than the Bachelor of Science in Economics and may be especially appropriate for students planning to attend law school or graduate programs in business or public administration.

Admissions & Policies

Policies

Students pursuing this degree must complete a minimum of 48 credits of required coursework with a minimum GPA of 2.00. Students in the concentration in philosophy, politics, and economics complete a minimum of 70 credits. Students must also complete ECON 103 Contemporary Microeconomic Principles (Mason Core) and ECON 104 Contemporary Macroeconomic Principles (Mason Core) with at least a 2.00 (C) in each.

For policies governing all undergraduate degrees, see AP.5 Undergraduate Policies.

Requirements

Degree Requirements

Total credits: minimum 120

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Some economics courses may fulfill the Mason Core requirement in global understanding or the college requirement in non-Western culture. Check with the departmental advising office for more information.

Core Courses without Concentration

Required Courses

Code	Title	Credits
ECON 103	Contemporary Microeconomic Principles (Mason Core)	3
ECON 104	Contemporary Macroeconomic Principles (Mason Core)	3
ECON 306	Intermediate Microeconomics	3
ECON 311	Intermediate Macroeconomics	3
ECON 309	Economic Problems and Public Policies	3
Select one from the following:		3
MATH 108	Introductory Calculus with Business Applications (Mason Core)	
HNRT 225	Applied Calculus	
MATH 113	Analytic Geometry and Calculus I (Mason Core)	
Total Credits		18

Statistics

Code	Title	Credits
Select 6 credits from the following:		6
BUS 210 & BUS 310	Business Analytics I and Business Analytics II	
STAT 250 & STAT 350	Introductory Statistics I (Mason Core) and Introductory Statistics II	
STAT 344 & STAT 354	Probability and Statistics for Engineers and Scientists I and Probability and Statistics for Engineers and Scientists II	
Total Credits		6

Electives without Concentration

Code	Title	Credits
Select 18 credits of electives from courses in economics at the 300 or 400 level [1]		18
Select 6 credits of electives from courses in economics at the 400 level or higher.		6
Total Credits		24

[1] ECON 385 International Economic Policy may not be used to fulfill this requirement.

Core Courses with Concentration in Philosophy, Politics, and Economics (PPE)

The 70-73 credit concentration in philosophy, politics, and economics offers students a program that explores the interdisciplinary connections between philosophy, political science, and economics.

Economics

Code	Title	Credits
ECON 103	Contemporary Microeconomic Principles (Mason Core)	3
ECON 104	Contemporary Macroeconomic Principles (Mason Core)	3
ECON 306	Intermediate Microeconomics	3
ECON 311	Intermediate Macroeconomics	3
Choose one of the following:		3
ECON 412	Game Theory and Economics of Institutions	
ECON 403	Austrian Economics	
ECON 410	Public Choice	
ECON 415	Law and Economics	
Select one from the following:		3
MATH 108	Introductory Calculus with Business Applications (Mason Core)	
HNRT 225	Applied Calculus	
MATH 113	Analytic Geometry and Calculus I (Mason Core)	
Total Credits		18

Statistics

Code	Title	Credits
Select one from the following:		4-6
BUS 210 & BUS 310	Business Analytics I and Business Analytics II	
STAT 250 & STAT 350	Introductory Statistics I (Mason Core) and Introductory Statistics II	
STAT 344 & STAT 354	Probability and Statistics for Engineers and Scientists I and Probability and Statistics for Engineers and Scientists II	
Total Credits		4-6

Electives with Concentration

Code	Title	Credits
Select 18 credits of electives in economics at the 300 and 400 level or higher. [1]		18
Total Credits		18

[1] ECON 385 International Economic Policy may not be used to fulfill this requirement.

Philosophy

Code	Title	Credits
PHIL/GOVT 324	Modern Western Political Theory	3
or PHIL/GOVT 327	Contemporary Western Political Theory	
PHIL 357	Philosophy of the Social Sciences	3
or PHIL 371	Philosophy of Natural Sciences	
PHIL 358	Ethics and Economics	3
or PHIL 311	Philosophy of Law	
PHIL 429	Advanced Topics in Social and Political Philosophy	3
Total Credits		12

Public and International Affairs

Code	Title	Credits
GOVT 103	Introduction to American Government (Mason Core)	3
GOVT/PHIL 323	Classical Western Political Theory	3
GOVT 422	Constitutional Interpretation	3
GOVT 467	Current Issues in Economic Policy	3
Total Credits		12

Capstone Experience Course

Code	Title	Credits
GOVT 469	Philosophy, Politics, and Economics	3
or PHIL/ECON 460	Senior Seminar in Philosophy, Politics, and Economics	
Total Credits		3

Writing-Intensive Requirement

The university requires all students to complete at least one course designated as "writing intensive" in their majors at the 300 level or above. Students majoring in economics fulfill this requirement by successfully completing one of the following courses:

Code	Title	Credits
ECON 355	The Political Economy of Nonprofit Institutions	
ECON 365	Topics in Economic History	
ECON 395	Effective Writing in Economics	
ECON 435	Economics of Energy	
ECON 470	Economics of Regulation	
ECON 485	Smithian Political Economy I	

Upper Level Requirements

Students seeking a bachelor's degree must apply at least 45 credits of upper-level courses (numbered 300 or above) toward graduation requirements.

Additional Electives

Any remaining credits may be completed with elective courses to bring the degree total to 120.

College Level Requirements for the BA Degree

In addition to the Mason Core program, students pursuing a BA degree must complete the coursework below. Except where expressly prohibited, a course used to fulfill a college level requirement may also be used simultaneously to satisfy other requirements (Mason Core requirements or requirements for the major).

Philosophy or Religious Studies

Code	Title	Credits
Select 3 credits from the following:		3
PHIL [1]		
RELI		

[1] Note that the following courses may not be used to fulfill this requirement:

- PHIL 323 Classical Western Political Theory
- PHIL 324 Modern Western Political Theory
- PHIL 327 Contemporary Western Political Theory
- PHIL 393 Humanities College to Career
- PHIL 460 Senior Seminar in Philosophy, Politics, and Economics

Additionally, PHIL 253 Philosophy and Literature (Mason Core), RELI 235 Religion and Literature (Mason Core), and RELI 333 Spiritual Autobiography (Mason Core) cannot be used to fulfill both the philosophy/religious studies requirement and the Mason Core literature requirement.

Social and Behavioral Sciences

Code	Title	Credits
Select 3 credits of social and behavioral sciences from the following (additional to the Mason Core social and behavioral sciences requirement) [1]		3
ANTH		
CRIM		
ECON		
GOVT		
HIST [2]		
LING		
PSYC		
SOCI		
Or choose from the following GGS courses:		
GGS 101	Major World Regions (Mason Core)	
GGS 103	Human Geography (Mason Core)	
GGS 110	Introduction to Geoinformation Technologies	
GGS 301	Political Geography (Mason Core)	
GGS 303	Geography of Resource Conservation (Mason Core)	
GGS 304	Population Geography (Mason Core)	
GGS 305	Economic Geography	
GGS 306	Urban Geography	
GGS 315	Geography of the United States	
GGS 316	Geography of Latin America	
GGS 320	Geography of Europe	
GGS 325	Geography of North Africa and the Middle East	
GGS 330	Geography of the Soviet Succession States	
GGS 357	Urban Planning	
GGS 380	Geography of Virginia	

[1] The two courses used to fulfill the combined college and Mason Core requirements must be from different disciplines in the social and behavioral sciences.

[2] HIST 100 History of Western Civilization (Mason Core) and HIST 125 Introduction to World History (Mason Core) may not be used to fulfill this requirement.

Foreign Language

Code	Title	Credits
Intermediate-level proficiency in one foreign language, fulfilled by: [1]		
Completing 3 credits in a foreign language numbered 202 (or higher level courses taught in the language)		
Or achieving a satisfactory score on an approved proficiency test		
Or completing the following ASL three course sequence:		
EDSE 115	American Sign Language (ASL) I	
EDSE 116	American Sign Language (ASL) II	
EDSE 219	American Sign Language (ASL) III	

[1] Students who are already proficient in a second language may be eligible for a waiver of this requirement. Additional information on waivers can be found at the Office of Undergraduate Academic Affairs (http://chssundergrad.gmu.edu/).

Non-Western Culture

Select 3 credits of an approved course in the study of a non-Western culture (additional to the Mason Core requirement in global understanding)

Code	Title	Credits
Select 3 credits (additional to Mason Core Global Understanding requirement) [1]		
ANTH 114	Introduction to Cultural Anthropology (Mason Core)	3
ANTH 300	Civilizations	3
ANTH 302	Peoples and Cultures of Latin America (Mason Core)	3
ANTH 307	Ancient Mesoamerica (Mason Core)	3
ANTH 308	Peoples and Cultures of the Middle East (Mason Core)	3
ANTH 309	Peoples and Cultures of India (Mason Core)	3
ANTH 313	Myth, Magic, and Mind (Mason Core)	3
ANTH 314	Zombies	3

ANTH 330	Peoples and Cultures of Selected Regions: Non-Western	3
ANTH 332	Cross-Cultural Perspectives on Globalization (Mason Core)	3
ANTH 381	Medical Anthropology	3
ANTH 396	Issues in Anthropology: Social Sciences (Mason Core)	3
ARAB 360	Topics in Arabic Cultural Production	3
ARAB 420	Survey of Arabic Literature	3
ARAB 440	Topics in Arabic Religious Thought and Texts (Mason Core)	3
ARTH 203	Survey of Asian Art (Mason Core)	3
ARTH 204	Survey of Latin American Art (Mason Core)	3
ARTH 206	Survey of African Art (Mason Core)	3
ARTH 318	Art and Archaeology of Ancient Egypt	3
ARTH 319	Art and Archaeology of the Ancient Near East (Mason Core)	3
ARTH 320	Art of the Islamic World (Mason Core)	3
ARTH 382	Arts of India (Mason Core)	3
ARTH 383	Arts of Southeast Asia (Mason Core)	3
ARTH 384	Arts of China (Mason Core)	3
ARTH 385	Arts of Japan (Mason Core)	3
ARTH 386	The Silk Road (Mason Core)	3
ARTH 482	RS: Advanced Studies in Asian Art	3
CHIN 318	Introduction to Classical Chinese (Mason Core)	3
CHIN 320	Contemporary Chinese Film	3
CHIN 325	Major Chinese Writers (Mason Core)	3
CHIN 470	Special Topics in Chinese Studies	3
DANC 118	World Dance (Mason Core)	3
ECON 361	Economic Development of Latin America (Mason Core)	3
ECON 362	African Economic Development (Mason Core)	3
FREN 451	Topics in Sub-Saharan Francophone Literature and Culture	3
FREN 454	Topics in Caribbean Francophone Literature and Culture	3
GGS 101	Major World Regions (Mason Core)	3
GGS 316	Geography of Latin America	3
GGS 317	Geography of China (Mason Core)	3
GGS 325	Geography of North Africa and the Middle East	3
GGS 330	Geography of the Soviet Succession States	3
GGS 399	Select Topics in GGS	3
GOVT 328	Global Political Theory	3
GOVT 332	Government and Politics of the Middle East and North Africa	3
GOVT 333	Government and Politics of Asia	3
GOVT 338	Government and Politics of Russia	3
GOVT 340	Central Asian Politics	3
GOVT 341	Chinese Foreign Policy	3
GOVT 345	Islam and Politics	3
GOVT 433	Political Economy of East Asia	3
HIST 251	Survey of East Asian History (Mason Core)	3
HIST 252	Survey of East Asian History (Mason Core)	3
HIST 261	Survey of African History (Mason Core)	3
HIST 262	Survey of African History (Mason Core)	3
HIST 271	Survey of Latin American History (Mason Core)	3
HIST 272	Survey of Latin American History (Mason Core)	3
HIST 281	Survey of Middle Eastern Civilization (Mason Core)	3
HIST 282	Survey of Middle Eastern Civilization (Mason Core)	3
HIST 326	Stalinism	3
HIST 327	The Soviet Union and Russia Since World War II	3
HIST 328	Rise of Russia (Mason Core)	3
HIST 329	Modern Russia and the Soviet Union (Mason Core)	3
HIST 353	History of Traditional China	3
HIST 354	Modern China (Mason Core)	3
HIST 356	Modern Japan (Mason Core)	3
HIST 357	Postwar Japan (Mason Core)	3
HIST 358	Post-1949 China (Mason Core)	3
HIST 360	History of South Africa (Mason Core)	3
HIST 364	Revolution and Radical Politics in Latin America (Mason Core)	3
HIST 365	Conquest and Colonization in Latin America (Mason Core)	3
HIST 366	Comparative Slavery	3
HIST 367	History, Fiction, and Film in Latin America	3
HIST 387	Topics in Global History (Mason Core)	3-6
HIST 426	The Russian Revolution	3
HIST 460	Modern Iran (Mason Core)	3
HIST 461	Arab-Israeli Conflict	3
HIST 462	Women in Islamic Society (Mason Core)	3
HIST 465	The Middle East in the 20th Century	3
JAPA 310	Japanese Culture in a Global World (Mason Core)	3
JAPA 340	Topics in Japanese Literature (Mason Core)	3
KORE 320	Korean Popular Culture in a Global World	3
MUSI 103	Musics of the World (Mason Core)	3
RELI 211	Religions of the West (Mason Core)	3
RELI 212	Religions of Asia (Mason Core)	3
RELI 240	Death and the Afterlife in World Religions	3
RELI 272	Islam	3
RELI 313	Hinduism (Mason Core)	3
RELI 314	Chinese Philosophies and Religious Traditions	3
RELI 315	Buddhism (Mason Core)	3

RELI 317	Daoism	3
RELI 337	Mysticism: East and West	3
RELI 365	Muhammad: Life and Legacy	3
RELI 374	Islamic Thought (Mason Core)	3
RELI 375	Qur'an and Hadith	3
RELI 379	Islamic Law, Society, and Ethics	3
RELI 387	Islam, Democracy, and Human Rights	3
RELI 490	Comparative Study of Religions (Mason Core)	3
RUSS 353	Russian Civilization (Mason Core)	3
RUSS 354	Contemporary Post-Soviet Life (Mason Core)	3

[1] A course used to fulfill the Mason Core global understanding requirement may not be simultaneously used to satisfy this college-level requirement. A course used to fulfill this requirement may be used simultaneously to fulfill any other requirements (Mason Core requirements, college-level requirements, or requirements for the major). Additional information on waivers can be found at the Office of Undergraduate Academic Affairs (http://chssundergrad.gmu.edu/).

Mason Core

Some Mason Core requirements may already be fulfilled by the major requirements listed above. Students are strongly encouraged to consult their advisors to ensure they fulfill all remaining Mason Core requirements.

Code	Title	Credits
Foundation Requirements		
Written Communication (ENGH 101)		3
Oral Communication		3
Quantitative Reasoning		3
Information Technology and Computing		3
Exploration Requirements		
Arts		3
Global Understanding		3
Literature		3
Natural Science		7
Social and Behavioral Sciences		3
Western Civilization/World History		3
Integration Requirements		
Written Communications (ENGH 302)		3
Writing-Intensive [1]		3
Synthesis/Capstone [2]		3
Total Credits		40

[1] Most programs include the writing-intensive course designated for the major as part of the major requirements; this course is therefore not counted towards the total required for Mason Core.

[2] Minimum 3 credits required.

4-Year Plan

Bachelor of Arts in Economics Sample Plan of Study

A sample four year graduation plan and degree planning worksheet can be found at https://academicaffairs.chss.gmu.edu/undergraduate-students/advising/advising-sheets (https://academicaffairs.chss.gmu.edu/undergraduate-students/advising/advising-sheets/). The plan is a recommended sequencing of courses based on prerequisites and scheduling. This may not fit every student's needs and is a guideline, not a requirement. Students should confirm major requirements with their academic advisor each semester and with their PatriotWeb Degree Evaluation to ensure they enroll in the proper courses and are on track to graduate.

Honors

Honors in the Major

Students pursuing departmental honors must complete 6 hours of ECON 495 RS: Honors Thesis in Economics (Mason Core) culminating with an original work of research and an oral presentation. Requirements for departmental honors are in addition to the coursework required for the major. Students must complete ECON 495 RS: Honors Thesis in Economics (Mason Core) with a grade of B or higher to receive departmental honors.

Economics majors who have completed 90 credits with an overall GPA of 3.50 and a GPA of 3.50 within the major are eligible to apply. Not all applicants who meet the minimum requirements are guaranteed acceptance.

Applications will be available starting May 1st of each year. Applications are due by August 1st.

To be accepted into the program and enroll in ECON 495 RS: Honors Thesis in Economics (Mason Core) students must submit a research proposal. Research proposals can be developed independently or by completing ECON 494 Introduction to Independent Research in Economics with a grade of B or higher. Completion of ECON 494 Introduction to Independent Research in Economics is not required for departmental honors.

Accelerated Master's

Many accelerated master's programs are available for any bachelor's degree at Mason, including this one. See the full list of degrees (http://catalog.gmu.edu/programs/#filter=filter_24) with accelerated programs at George Mason.

Bachelor's Degree (any)/Economics, Accelerated MA

Overview

Highly qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BA/BS in a chosen major and an MA in Economics in an accelerated time-frame after satisfactory completion of a minimum of 138 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degree for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Polices and Bachelor's/Accelerated Master's Degree policies. For information specific to this accelerated program, see Application Requirements and Deadlines (https://economics.gmu.edu/programs/LA-MA-ACEL-econ/) on the departmental website.

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits with a minimum overall GPA of 3.25, and a grade of B or better in coursework applied to the major.

The following courses are recommended as preparation for the graduate-level courses students will be able to take for advanced standing:

- ECON 306 Intermediate Microeconomics
- ECON 311 Intermediate Macroeconomics
- At least one semester of calculus with analytic geometry
- Two-semester sequence of statistics
- ECON 345 Introduction to Econometrics

Students who are accepted in the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MA in economics program if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- Minimum overall GPA of 3.25
- Minimum grade of B in each advanced standing course
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing courses (up to 12 credits with a minimum grade of B in each)

ECON 535 Survey of Applied Econometrics (3 credits)
ECON 611 Microeconomic Theory (3 credits)
ECON 612 Microeconomic Theory II (3 credits)
ECON 615 Macroeconomic Theory (3 credits)
ECON 630 Mathematical Economics I (3 credits)

Reserve Graduate Credit courses (up to 6 credits) taken while an undergraduate and will only count for the graduate degree program

ECON 535 Survey of Applied Econometrics (3 credits)
ECON 611 Microeconomic Theory (3 credits)
ECON 612 Microeconomic Theory II (3 credits)
ECON 615 Macroeconomic Theory (3 credits)
ECON 623 American Economic History (3 credits)
ECON 630 Mathematical Economics I (3 credits)
ECON 676 Comparative Economic Systems (3 credits)
ECON 695 Special Topics in Economics (3 credits)

For more detailed information on coursework and timeline requirements see AP.6.7 Bachelor's Accelerated Master's Degree policies.

Economics, BS

Banner Code: LA-BS-ECON

D150 Buchanan Hall
Fairfax Campus

Website: economics.gmu.edu/programs/la-bs-econ

Economics is about more than money and profits. It is a way of looking at the world through the lens of incentives, choices, and markets to help uncover new solutions to the persistent problems in our society. This economic perspective sheds light on important issues in the areas of production, education, crime, the environment, international trade, immigration, health care, economic growth, poverty, and more. The Bachelor of Science in Economics provides a stronger emphasis on quantitative analysis. Students prepare for a career as an analyst in government, consulting, trade associations, or other private sector positions, and for graduate school in economics or more quantitative business administration programs.

Admissions & Policies

Policies

Students pursuing this degree must complete a minimum of 59 credits of required coursework with a minimum GPA of 2.00. Students completing a concentration will complete additional credits.

For policies governing all undergraduate degrees, see AP.5 Undergraduate Policies.

Requirements

Degree Requirements

Total credits: minimum 120

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Some economics courses may fulfill the Mason Core requirement in global understanding. Check with the departmental advising office for more information.

Core Courses without Concentration

Required Courses

Code	Title	Credits
ECON 103	Contemporary Microeconomic Principles (Mason Core) (with a grade of C or above)	3
ECON 104	Contemporary Macroeconomic Principles (Mason Core) (with a grade of C or above)	3

ECON 306	Intermediate Microeconomics	3
ECON 309	Economic Problems and Public Policies	3
ECON 311	Intermediate Macroeconomics	3
ECON 345	Introduction to Econometrics	3
MATH 113	Analytic Geometry and Calculus I (Mason Core)	4
MATH 114	Analytic Geometry and Calculus II	4
Total Credits		26

Statistics

Code	Title	Credits
Select one from the following: [1]		6
STAT 250 & STAT 350	Introductory Statistics I (Mason Core) and Introductory Statistics II	
STAT 344 & STAT 354	Probability and Statistics for Engineers and Scientists I and Probability and Statistics for Engineers and Scientists II	
Total Credits		6

[1] With departmental permission, BUS 210 Business Analytics I and BUS 310 Business Analytics II may also be substituted for the two required courses in statistics; however, a two-course sequence of STAT 250 Introductory Statistics I (Mason Core) and STAT 350 Introductory Statistics II OR STAT 344 Probability and Statistics for Engineers and Scientists I and STAT 354 Probability and Statistics for Engineers and Scientists II is highly recommended for students who wish to pursue graduate study in economics.

Additional Course

Code	Title	Credits
ACCT 203	Survey of Accounting	3
or STAT 362	Introduction to Computer Statistical Packages	
Total Credits		3

Electives without Concentration

Code	Title	Credits
Electives		
Select 18 credits of electives from courses in economics at the 300 or 400 level [1]		18
Select 6 credits of electives from courses in economics at the 400 level or higher.		6
Total Credits		24

[1] ECON 385 International Economic Policy may not be used to fulfill this requirement.
If ECON 340 Introduction to Mathematical Economics is chosen as an elective, students need not take the 4-credit course MATH 114 Analytic Geometry and Calculus II; however, MATH 114 Analytic Geometry and Calculus II is strongly recommended for students considering graduate school in economics since it is required for admission to most graduate programs. An additional calculus course beyond MATH 114 Analytic Geometry and Calculus II is also advisable for students considering graduate study in economics.

Optional Concentrations

Students interested in a degree in economics with a concentration will complete the coursework for one of the concentrations below.

Available Concentrations

- Concentration in Managerial Economics (MECN)
- Concentration in Philosophy, Politics, and Economics (PPE)

Concentration in Managerial Economics (MECN)

Students who wish to focus their BS in economics for application in the business world may choose to pursue a concentration in managerial economics. They complete 62 credits, 10 of which may be used also to fulfill Mason Core requirements.

Required Courses

Code	Title	Credits
ECON 103	Contemporary Microeconomic Principles (Mason Core)	3
ECON 104	Contemporary Macroeconomic Principles (Mason Core)	3
ECON 306	Intermediate Microeconomics	3
ECON 308	Managerial Economics and Strategy	3
ECON 309	Economic Problems and Public Policies	3
ECON 310	Money and Banking	3
ECON 311	Intermediate Macroeconomics	3
ECON 345	Introduction to Econometrics	3
Total Credits		24

Statistics

Code	Title	Credits
Select one from the following: [1]		6
STAT 250 & STAT 350	Introductory Statistics I (Mason Core) and Introductory Statistics II	
STAT 344 & STAT 354	Probability and Statistics for Engineers and Scientists I and Probability and Statistics for Engineers and Scientists II	
Total Credits		6

[1] With departmental permission, BUS 210 Business Analytics I and BUS 310 Business Analytics II may also be substituted for the two required courses in statistics; however, a two-course sequence of STAT 250 Introductory Statistics I (Mason Core) and STAT 350 Introductory Statistics II OR STAT 344 Probability and Statistics for Engineers and Scientists I and STAT 354 Probability and Statistics for Engineers and Scientists II is highly recommended for students who wish to pursue graduate study in economics.

Required Courses in Math, Accounting, and Information Technology

Code	Title	Credits
ACCT 203	Survey of Accounting	3
MATH 113	Analytic Geometry and Calculus I (Mason Core)	4
MATH 114	Analytic Geometry and Calculus II [1]	4
Total Credits		11

[1] ECON 340 Introduction to Mathematical Economics may not be substituted for MATH 114 Analytic Geometry and Calculus II for the concentration

Two Required Courses in Business Writing

Code	Title	Credits
BUS 103	Develop Professional Skills I: Foundational Elements	3
BUS 303	Develop Professional Skills II: Advanced Elements	3
Total Credits		6

Electives in Economics [1]

Code	Title	Credits
Select 9 credits from the following:		9
ECON 321	Economics of Labor	
ECON 370	Economics of Industrial Organization	
ECON 390	International Economics	
ECON 412	Game Theory and Economics of Institutions	
ECON 415	Law and Economics	
ECON 420	International Money and Finance	
ECON 421	Financial Economics	
ECON 496	Special Topics in Economics	
Total Credits		9

Additional Electives in Economics

Code	Title	Credits
Select 6 credits of electives in economics from courses at the 300 and 400 level or higher. [2]		6
Total Credits		6

[1] At least 6 credits of electives in economics must be at the 400 level.

[2] ECON 385 International Economic Policy may not be used to fulfill this requirement.

Elective not in Economics

Code	Title	Credits
Select one elective from the following:		3
BULE 303	Legal Environment of Business	
FNAN 303	Financial Management	
MGMT 303	Principles of Management	
MKTG 303	Principles of Marketing	
MIS 303	Introduction to Business Information Systems	
OM 303	Operations Management	
Total Credits		3

Concentration in Philosophy, Politics, and Economics (PPE)

This is a high credit concentration for students interested in a program that explores the interdisciplinary connections between philosophy, political science, and economics.

Required Courses in Economics

Code	Title	Credits
ECON 103	Contemporary Microeconomic Principles (Mason Core)	3
ECON 104	Contemporary Macroeconomic Principles (Mason Core)	3
ECON 306	Intermediate Microeconomics	3
ECON 311	Intermediate Macroeconomics	3
ECON 345	Introduction to Econometrics	3
Choose one of the following:		3
ECON 412	Game Theory and Economics of Institutions	
ECON 403	Austrian Economics	
ECON 410	Public Choice	
ECON 415	Law and Economics	
Total Credits		18

Statistics

Code	Title	Credits
Select one from the following: [1]		6
STAT 250 & STAT 350	Introductory Statistics I (Mason Core) and Introductory Statistics II	
STAT 344 & STAT 354	Probability and Statistics for Engineers and Scientists I and Probability and Statistics for Engineers and Scientists II	
Total Credits		6

[1] With departmental permission, BUS 210 Business Analytics I and BUS 310 Business Analytics II may also be substituted for the two required courses in statistics; however, a two-course sequence of STAT 250 Introductory Statistics I (Mason Core) and STAT 350 Introductory Statistics II OR STAT 344 Probability and Statistics for Engineers and Scientists I and STAT 354 Probability and Statistics for Engineers and Scientists II is highly recommended for students who wish to pursue graduate study in economics.

Required Courses in Math and Information Technology

Code	Title	Credits
MATH 113	Analytic Geometry and Calculus I (Mason Core)	4
MATH 114	Analytic Geometry and Calculus II	4
Total Credits		8

Electives

Code	Title	Credits
Select 18 credits of electives in economics at the 300 and 400 level or higher. [1]		18
Total Credits		18

[1] ECON 385 International Economic Policy may no be used to fulfill this requirement. If ECON 340 Introduction to Mathematical Economics is chosen as an elective, students need not take the 4-credit course MATH 114 Analytic Geometry and Calculus II; however, MATH 114 Analytic Geometry and Calculus II is strongly recommended for students considering graduate school in economics since it is required for admission to most graduate programs. An additional calculus beyond MATH 114 Analytic Geometry and Calculus II is also advisable for students considering graduate study in economics.

Philosophy

Code	Title	Credits
PHIL/GOVT 324	Modern Western Political Theory	3
or PHIL/GOVT 327	Contemporary Western Political Theory	
PHIL 357	Philosophy of the Social Sciences	3
or PHIL 371	Philosophy of Natural Sciences	
PHIL 358	Ethics and Economics	3
or PHIL 311	Philosophy of Law	
PHIL 429	Advanced Topics in Social and Political Philosophy	3
Total Credits		12

Public and International Affairs

Code	Title	Credits
GOVT 103	Introduction to American Government (Mason Core)	3
GOVT/PHIL 323	Classical Western Political Theory	3
GOVT 422	Constitutional Interpretation	3
GOVT 467	Current Issues in Economic Policy	3
Total Credits		12

Capstone Experience Course

Code	Title	Credits
GOVT 469	Philosophy, Politics, and Economics	3
or PHIL/ECON 460	Senior Seminar in Philosophy, Politics, and Economics	
Total Credits		3

Writing-Intensive Requirement

The university requires all students to complete at least one course designated as "writing intensive" in their majors at the 300 level or above. Students majoring in economics fulfill this requirement by successfully completing:

Code	Title	Credits
Select one from the following:		3
ECON 355	The Political Economy of Nonprofit Institutions	
ECON 365	Topics in Economic History	
ECON 395	Effective Writing in Economics	
ECON 435	Economics of Energy	
ECON 470	Economics of Regulation	
ECON 485	Smithian Political Economy I	
Total Credits		3

Upper Level Requirements

Students seeking a bachelor's degree must apply at least 45 credits of upper-level courses (numbered 300 or above) toward graduation requirements.

Additional Electives

Any remaining credits may be completed with elective courses to bring the degree total to 120.

Mason Core

Some Mason Core requirements may already be fulfilled by the major requirements listed above. Students are strongly encouraged to consult their advisors to ensure they fulfill all remaining Mason Core requirements.

Code	Title	Credits
Foundation Requirements		
Written Communication (ENGH 101)		3
Oral Communication		3
Quantitative Reasoning		3
Information Technology and Computing		3
Exploration Requirements		
Arts		3
Global Understanding		3
Literature		3
Natural Science		7
Social and Behavioral Sciences		3
Western Civilization/World History		3
Integration Requirements		
Written Communications (ENGH 302)		3
Writing-Intensive [1]		3
Synthesis/Capstone [2]		3
Total Credits		40

1 Most programs include the writing-intensive course designated for the major as part of the major requirements; this course is therefore not counted towards the total required for Mason Core.

2 Minimum 3 credits required.

4-Year Plan

Bachelor of Science in Economics Sample Plan of Study

A sample four year graduation plan and degree planning worksheet can be found at https://academicaffairs.chss.gmu.edu/undergraduate-students/advising/advising-sheets (https://academicaffairs.chss.gmu.edu/undergraduate-students/advising/advising-sheets/). The plan is a recommended sequencing of courses based on prerequisites and scheduling. This may not fit every student's needs and is a guideline, not a requirement. Students should confirm major requirements with their academic advisor each semester and with their PatriotWeb Degree Evaluation to ensure they enroll in the proper courses and are on track to graduate.

Honors

Honors in the Major

Students pursuing departmental honors must complete 6 hours of ECON 495 RS: Honors Thesis in Economics (Mason Core) culminating with an original work of research and an oral presentation. Requirements for departmental honors are in addition to the coursework required for the major. Students must complete ECON 495 RS: Honors Thesis

in Economics (Mason Core) with a grade of B or higher to receive departmental honors.

Economics majors who have completed 90 credits with an overall GPA of 3.50 and a GPA of 3.50 within the major are eligible to apply. Not all applicants who meet the minimum requirements are guaranteed acceptance.

Applications will be available starting May 1st of each year. Applications are due by August 1st.

To be accepted into the program and enroll in ECON 495 RS: Honors Thesis in Economics (Mason Core) students must submit a research proposal. Research proposals can be developed independently or by completing ECON 494 Introduction to Independent Research in Economics with a grade of B or higher. Completion of ECON 494 Introduction to Independent Research in Economics is not required for departmental honors.

Accelerated Master's

The accelerated master's program below specifies the BS in Economics as a feeder degree for its program. It is important to note, however, that many accelerated master's programs are available for any bachelor's degree at Mason. See the full list of degrees (http://catalog.gmu.edu/programs/#filter=filter_24) with accelerated programs at George Mason.

Bachelor's Degree (any)/Economics, Accelerated MA

Overview

Highly qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BA/BS in a chosen major and an MA in Economics in an accelerated time-frame after satisfactory completion of a minimum of 138 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degree for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Polices and Bachelor's/Accelerated Master's Degree policies. For information specific to this accelerated program, see Application Requirements and Deadlines (https://economics.gmu.edu/programs/LA-MA-ACEL-econ/) on the departmental website.

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits with a minimum overall GPA of 3.25, and a grade of B or better in coursework applied to the major.

The following courses are recommended as preparation for the graduate-level courses students will be able to take for advanced standing:

- ECON 306 Intermediate Microeconomics
- ECON 311 Intermediate Macroeconomics
- At least one semester of calculus with analytic geometry
- Two-semester sequence of statistics
- ECON 345 Introduction to Econometrics

Students who are accepted in the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MA in economics program if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- Minimum overall GPA of 3.25
- Minimum grade of B in each advanced standing course
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing courses (up to 12 credits with a minimum grade of B in each)

ECON 535 Survey of Applied Econometrics (3 credits)
ECON 611 Microeconomic Theory (3 credits)
ECON 612 Microeconomic Theory II (3 credits)
ECON 615 Macroeconomic Theory (3 credits)
ECON 630 Mathematical Economics I (3 credits)

Reserve Graduate Credit courses (up to 6 credits) taken while an undergraduate and will only count for the graduate degree program

ECON 535 Survey of Applied Econometrics (3 credits)
ECON 611 Microeconomic Theory (3 credits)
ECON 612 Microeconomic Theory II (3 credits)
ECON 615 Macroeconomic Theory (3 credits)
ECON 623 American Economic History (3 credits)
ECON 630 Mathematical Economics I (3 credits)
ECON 676 Comparative Economic Systems (3 credits)
ECON 695 Special Topics in Economics (3 credits)

For more detailed information on coursework and timeline requirements see AP.6.7 Bachelor's Accelerated Master's Degree policies.

BS (selected)/Statistical Science, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program (BAM) and obtain an undergraduate BS degree and the Statistical Science, MS in an accelerated time-frame after satisfactory completion of a minimum of 138 credits.

Admitted students are able to use up to 12 graduate credits in partial satisfaction of requirements for the undergraduate degree. Upon completion and conferral of the bachelor's degree and with satisfactory performance (grade of 'B' or better) in each of the graduate courses, students are given advanced standing in the master's program.

See AP.6.7 Bachelor's/Accelerated Master's Degrees for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements

No specific undergraduate BS degree is required. Students enrolled in any BS degree may apply to the accelerated Statistical Science, MS program **if such an accelerated** Statistical Science, MS **pathway is allowable from the student's BS program, which will be determined by the academic advisors of both the BS and MS programs.**

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits with an overall GPA of 3.0.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific prerequisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the Statistical Science, MS program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- Completion of Mason's requirements for undergraduate degree conferral (graduation) and completion of application for graduation.
- An overall GPA of 3.00.
- Completion of the following Mason courses each with a grade of C or better.

Code	Title	Credits
MATH 213	Analytic Geometry and Calculus III	3
MATH 203	Linear Algebra	3
or MATH 321	Abstract Algebra	
STAT 250	Introductory Statistics I (Mason Core)	3
or STAT 344	Probability and Statistics for Engineers and Scientists I	
STAT 346	Probability for Engineers	3
or MATH 351	Probability	
STAT 362	Introduction to Computer Statistical Packages	3

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, students complete all credits satisfying degree requirements for the BS and MS programs, with up to twelve credits overlap chosen from the following graduate courses:

Code	Title	Credits
STAT 544	Applied Probability	3
STAT 554	Applied Statistics I	3
STAT 560	Biostatistical Methods	3
STAT 574	Survey Sampling I	3
STAT 663	Statistical Graphics and Data Exploration I	3

All graduate course prerequisites must be completed prior to enrollment. Each graduate course must be completed with a grade of B or better to apply toward the MS degree.

While still in undergraduate status, a maximum of 6 additional graduate credits may be taken as reserve graduate credit and applied to the master's program. Reserve graduate credits do not apply to the undergraduate degree.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees policies.

Degree Conferral

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and Graduate Recruitment and Enrollment Services. At the completion of MS requirements, a master's degree is conferred.

Economics, MA

Banner Code: LA-MA-ECON

Academic Advising

D150 Buchanan Hall
Fairfax Campus

Email: econgrad@gmu.edu
Website: economics.gmu.edu/programs/la-ma-econ

The Master of Arts in Economics is noted for its emphasis on comparative institutional analysis and its concentration on the relationships among economic, political, and legal institutions. The specific areas associated with the department include experimental economics, Austrian economics, public choice, constitutional political economy, law and economics, and new institutional economics. The program strengthens students' knowledge of economic theory and improves their skills in applying the theory to economic problems. Graduates are qualified to read and judge other research and conduct their own, either individually or as members of government or business teams. They are also prepared to write policy analyses. Students who plan to pursue a PhD in Economics should apply directly to the doctoral program.

The MA in Economics is offered as an on-campus delivery format or as a fully online delivery format. Separate application processes are used for each delivery format and students must matriculate though only one delivery format for the entire completion of degree. Students must complete the MA in Economics degree within six years from time of first admission.

Admissions & Policies

Admissions

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate

study as specified in Graduate Admissions. For information specific to the MA in economics, see Application Requirements and Deadlines (http://economics.gmu.edu/programs/application/LA-MA-ECON/) on the departmental website.

Policies

Students must earn a minimum GPA of 3.00 in coursework applied to the degree. No more than two courses with a grade of 2.00 may be applied toward the degree.

For policies governing all graduate degrees, see AP .6 Graduate Policies

Transfer Credits

Students may request to transfer a maximum of 12 credits for prior graduate course work (not applied to a previous graduate degree) subject to approval by the graduate director and dean in accordance with the Program Policies of the department and AP.6.5.3 Transfer of Credit.

Reduction of Credit

This program does not permit a reduction of credit based on a previously conferred graduate degree.

Requirements

Degree Requirements

Total credits: 30

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Core Courses

In place of core courses shown below, students admitted to the PhD in Economics who have added the MA as a secondary degree to their record must substitute ECON 637 Econometrics I, ECON 811 Microeconomic Theory I, ECON 812 Microeconomic Theory II, ECON 715 Macroeconomic Theory I, and ECON 830 Mathematical Economics I or ECON 831 Mathematical Economics II.

Code	Title	Credits
ECON 535	Survey of Applied Econometrics	3
ECON 611	Microeconomic Theory	3
ECON 612	Microeconomic Theory II	3
ECON 615	Macroeconomic Theory	3
ECON 630	Mathematical Economics I	3
Total Credits		15

Electives

Students complete 15 credits of electives.

Code	Title	Credits
On-Campus Students		
Select 15 credits of ECON electives [1]		15
Online Students		
Select 12 credits of restricted electives [2]		12
ECON 690	MA Economics Capstone	3

1. On-campus students may substitute up to a maximum of 6 credits or two courses outside economics in closely related fields with prior written approval of the MA director. On-campus students have the option of writing a thesis for 6 credits in lieu of 6 credits of electives.
2. Online students select electives from online ECON 695 Special Topics in Economics courses. The thesis option is not available for online students.

Students admitted to the PhD in Economics who have added the MA as a secondary degree to their record must apply ECON 816 Macroeconomic Theory II as one of the five electives applied to the MA degree.

Comprehensive Exam - On-campus Students

Students must pass one MA comprehensive exam in applied economic theory. This exam is offered twice each year. Students admitted to the PhD in Economics who are seeking the MA as secondary degree must pass both the PhD micro and the PhD macro qualifying exams, which will satisfy the requirement for the MA comprehensive exam.

Capstone Course - Online Students

Online students must successfully complete ECON 690 MA Economics Capstone in lieu of the comprehensive exam.

Thesis (Optional) - On-campus Students only

Students must complete a minimum of six credits of ECON 799 Master's Thesis. Once enrolled in 799, students in the economics master's program must maintain continuous registration each semester (excluding summers) until the thesis is submitted to and accepted by the University Libraries, as specified in AP.6.9.3 Master's Thesis. Because of the continuous registration policy, more than six ECON 799 credits may be required for thesis completion. Students who defend in the summer must be registered for at least one credit of 799.

Students who choose to complete a thesis take six fewer elective credits.

Code	Title	Credits
Thesis Option		6
ECON 799	Master's Thesis	
Total Credits		6

Accelerated Master's

Bachelor's Degree (any)/Economics, Accelerated MA

Overview

Highly qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BA/BS in a chosen major and an MA in Economics in an accelerated time-frame after satisfactory completion of a minimum of 138 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degree for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Polices and Bachelor's/Accelerated Master's Degree policies. For information specific to this accelerated program, see Application Requirements and Deadlines (https://economics.gmu.edu/programs/LA-MA-ACEL-econ/) on the departmental website.

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits with a minimum overall GPA of 3.25, and a grade of B or better in coursework applied to the major.

The following courses are recommended as preparation for the graduate-level courses students will be able to take for advanced standing:

- ECON 306 Intermediate Microeconomics
- ECON 311 Intermediate Macroeconomics
- At least one semester of calculus with analytic geometry
- Two-semester sequence of statistics
- ECON 345 Introduction to Econometrics

Students who are accepted in the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MA in economics program if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- Minimum overall GPA of 3.25
- Minimum grade of B in each advanced standing course
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing courses (up to 12 credits with a minimum grade of B in each)

ECON 535 Survey of Applied Econometrics (3 credits)
ECON 611 Microeconomic Theory (3 credits)
ECON 612 Microeconomic Theory II (3 credits)
ECON 615 Macroeconomic Theory (3 credits)
ECON 630 Mathematical Economics I (3 credits)

Reserve Graduate Credit courses (up to 6 credits) taken while an undergraduate and will only count for the graduate degree program

ECON 535 Survey of Applied Econometrics (3 credits)
ECON 611 Microeconomic Theory (3 credits)
ECON 612 Microeconomic Theory II (3 credits)
ECON 615 Macroeconomic Theory (3 credits)
ECON 623 American Economic History (3 credits)
ECON 630 Mathematical Economics I (3 credits)
ECON 676 Comparative Economic Systems (3 credits)
ECON 695 Special Topics in Economics (3 credits)

For more detailed information on coursework and timeline requirements see AP.6.7 Bachelor's Accelerated Master's Degree policies.

Economics, PhD

Banner Code: LA-PHD-ECON

Academic Advising

D150 Buchanan Hall
Fairfax Campus

Email: econgrad@gmu.edu
Website: economics.gmu.edu/programs/la-phd-econ

The economics PhD prepares students for careers in academia, business, and government. Core courses train students in modern theory and quantitative techniques, while field courses stress the application of theory to relevant economic problems. Dissertation work requires students to master and apply the skills of original research. With an emphasis on writing for publication, many students have had articles accepted and published in professional journals while in the graduate program. Research in the department covers a broad spectrum, from problems of immediate policy importance to fundamental questions of economic and social organization.

Admissions & Policies

Admissions

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions. For information specific to the PhD in economics, see Application Requirements and Deadlines (http://economics.gmu.edu/programs/application/LA-PHD-ECON/) on the departmental web site.

Policies

Students must earn a minimum GPA of 3.00 in coursework applied to the degree. No more than two courses with a grade of 2.00 may be applied toward the degree.

For policies governing all graduate degrees, see AP .6 Graduate Policies.

Reduction of Credit

Students who enter with a master's degree may have their credit requirement reduced by up to 30 credits, depending on the department's judgment about the degree of closeness of that work to work that would have been taken at George Mason University. Reduction also requires approval of the dean. Requests for reduction of credit are reviewed only after acceptance to the doctoral program.

Program of Study

All students must have an approved program of study as specified in AP.6.10.3 Program of Study.

Requirements

Degree Requirements

Total credits: 72

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Core Courses

Code	Title	Credits
ECON 637	Econometrics I	3
ECON 715	Macroeconomic Theory I	3
ECON 811	Microeconomic Theory I	3
ECON 812	Microeconomic Theory II	3
ECON 816	Macroeconomic Theory II	3
ECON 830	Mathematical Economics I	3
or ECON 831	Mathematical Economics II	
Total Credits		18

Electives

Code	Title	Credits
Select 30-42 credits of electives from economics courses in any of the fields offered by the department [1]		30-42
Total Credits		30-42

[1] Students may substitute up to a maximum of 6 credits of courses outside economics in closely related fields with prior written approval of the director of the graduate program. ECON 695 Special Topics in Economics cannot be applied toward PhD requirements.

Qualifying Exams

Students must successfully pass qualifying exams in microeconomics and macroeconomics.

Field Exams

Students must successfully pass field exams in two knowledge areas. Subject to course availability, the department offers courses in the following fields of study on which the knowledge area field exams will be based. Because the specific courses offered each year vary, students should consult the department for the courses that can be used for each field.

- Austrian economics
- Constitutional political economy
- Economic history
- Economic sociology and political economy
- Experimental economics
- Industrial organization
- Individualized field exam
- Institutions and development
- Law and economics
- Monetary theory
- Public choice
- Smithian political economy

Advancement to Candidacy

To advance to candidacy, students must complete all coursework required on their approved program of study and all exams. In addition, students must have a dissertation committee appointed by the dean as well as an approved proposal. Evidence of the approved proposal must be on file in the Dean's Office before a student can advance to candidacy.

Dissertation

Students must complete a minimum of 12 credits of doctoral proposal (998) and doctoral dissertation research (999), including at least three credits of 999. A maximum of 24 credits of 998 and 999 may be applied to the degree. Once enrolled in 998, students in the economics doctoral program must maintain continuous registration in 998 or 999 each semester (excluding summers) until the dissertation is submitted to and accepted by the University Libraries, as specified in AP.6.10.6 Dissertation Registration. Because of the continuous registration policy, students may be required to register for additional dissertation credits beyond the maximum 24 credits. Students who defend in the summer must be registered for at least one credit of 999.

Code	Title	Credits
Dissertation Research		12-24
ECON 998	Doctoral Dissertation Proposal Research.	
ECON 999	Doctoral Dissertation Research (minimum of 3 credits)	
Total Credits		12-24

Department of English

4200 Horizon Hall
Fairfax Campus

Phone: 703-993-1160
Website: english.gmu.edu

Undergraduate Programs

The department offers a bachelors of arts degree in English and a bachelor of fine arts degree in creative writing.

English, BA

The bachelors of arts degree in English is a versatile major with seven concentrations designed to meet students' individual interests and career objectives. English majors can also do an internship in technical writing or linguistics. Students interested in becoming teachers can participate in a program offered in conjunction with the College of Education and Human Development that allows undergraduates to simultaneously complete their BA in English and their licensure requirements to teach English at the secondary school level in Virginia.

English majors learn to read critically and write carefully in classes that are uniquely small for a university the size of Mason. Students develop these abilities not only through reading traditional texts but also through the use of technologies such as blogs, wikis, and multimedia production. Because English majors have excellent skills in written and oral communication, research, critical thinking, and focused creativity they are well prepared for any career - teaching, journalism, creative writing, management, law, and more.

Creative Writing, BFA

The bachelor of fine arts degree in creative writing encourages freedom of thought, speech, and inquiry. Through its innovative courses, the program enables students to exercise analytical and imaginative thinking. Through its combined classroom and work-world curriculum, it prepares students to make well-founded ethical decisions. The degree offers three concentrations allowing for the opportunity to learn the conventions of several genres.

300-level courses in English and linguistics teach the foundational principles for a field of study, include courses of broad scope, and provide an introduction to a genre, literary period, or methodology.

400-level courses in English and linguistics provide an in-depth approach to a field of study, a single genre, literary period, or methodology. They include special topics classes and English honors classes. Some 400-level courses require ENGH 305 Dimensions of Writing and Literature as a prerequisite.

English with a Second Major

Students can combine a major in English with a second major. Students interested in this option are encouraged to discuss their plans with their English advisor. See section AP.5.3.7 Credit for More than One Undergraduate Major in Undergraduate Policies.

Minors

The department offers a minor in English, which is available to students in any major at Mason.

Faculty from English coordinate or co-coordinate the minors: Film and Media Studies, Folklore and Mythology, Linguistics, Native American and Indigenous Studies, Professional and Technical Writing, and Teaching English as a Second Language.

Bachelor's/Accelerated Master's Program

The department offers highly qualified undergraduates in any major the opportunity to apply to an accelerated master's of arts degree program in English with a concentration in linguistics or a concentration in folklore studies (https://catalog.gmu.edu/colleges-schools/humanities-social-sciences/english/english-ma/#acceleratedmasterstext). If accepted, students will be able to earn an undergraduate degree in their chosen major and a graduate degree in English with a concentration in linguistics after satisfactory completion of 138 credits, generally within five years.

Undergraduates in Graduate Courses

The English Department permits qualified undergraduates to enroll in its graduate courses numbered 500 through 699. They may apply these credits to their undergraduate degree or mark them for reserve graduate credit. See the department for details on how to register.

Graduate Programs

The department offers graduate programs in the study and practice of literature, writing, rhetoric, and linguistics, as well as course work in related fields such as folklore, film, and cultural studies. The master's of arts degree in English provides concentrations in literature, cultural studies, professional writing and rhetoric, the teaching of writing and literature, and linguistics. The department also has a terminal degree, the master of fine arts in creative writing, with concentrations in fiction, poetry, and nonfiction. Also offered are doctoral programs in linguistics and writing and rhetoric.

The department offers graduate certificates in folklore studies, professional writing and editing with a concentration in professional and technical writing, college teaching with a concentration in English pedagogy, and teaching English as a second language. Students may take these as stand-alone certificates or pursue them concurrently with a graduate degree program. In many cases part of the course work for a certificate may also count toward a degree. Students must apply and be admitted to a graduate certificate program.

Faculty from the department coordinate the concentration in folklore studies in the master's degree in interdisciplinary studies (MAIS).

Funding

The department offers teaching assistantships and fellowships awarded on a competitive basis. Other sources of funding such as grants, loans, and employment on campus are also available. Students awarded assistantships must show satisfactory progress toward their degree.

Writing Center

The Writing Center (http://writingcenter.gmu.edu/) offers one-on-one conferencing during all stages of the writing process. Writing Center tutors, who are graduate teaching assistants in the English Department, have been trained in current methods of composition instruction. They help clients overcome writing anxiety, develop organizational and revision skills, and learn useful strategies for editing their own work. To learn more about the Writing Center services or to schedule an appointment, students should consult the Writing Center website (http://writingcenter.gmu.edu/).

Northern Virginia Writing Project

The Northern Virginia Writing Project (NVWP) (https://nvwp.gmu.edu/) is a professional development organization dedicated to improving writing instruction, writing practice, and learning at all educational levels, and to developing teacher leaders across the disciplines.

Each summer, selected teachers attend an intensive four-week institute where they demonstrate successful teaching methods, develop their own writing lives, and study the latest research and theory on the learning and teaching of writing. After the summer institute, participants receive the designation of Teacher Consultant and join over 900 other teachers in carrying out the work of the NVWP. The NVWP is an affiliate of the National Writing Project and one of the six sites of the Virginia Writing Project.

Faculty

Department Faculty

Professors

Albanese, Ardis, Atkinson, Blevins, Brkic, Clark, Foster, Gilman, Goodwin, Habila, Kaufmann, Keith, Matz, Mori, Pankey

Associate Professors

Amireh, Anderson, Burr, Eisner, Eyman, Gallehr, Gatling, Harvey, Hoefer, LaFrance, Lattanzi Shutika (chair), Lawrence, Lockwood, Malouf, Michals, Reid, Rogers, Samuelian, Scarlata, Streckfus, Weinberger, Wheelock, Wulf, Yadav

Assistant Professors
Burek, Denevi, Dorpenyo, El-Hibri, Hurley, James, Kwon, Monea, Narayanan, Schreiner, Walther, Wooten, Zhang

Term Professors
King, Koch, Matthews, Scott, Taciuch, Thompson

Term Associate Professors
Berg, Cho, Habib, Lawrence, Lister, Nanian, Rudnicki, Saunders, Taylor

Term Assistant Professors
Azar, Chism, Davis, Doetsch-Kidder, Don, Ferguson, Fernandez, Fitzpatrick, Flannagan, Folan, Foltz, Goetsch, Goldenthal, Haspel, Howell, Liberatore, Lukyanenko, Mack, Messier, O'Connor, Orlando, Paul, Pettibon, Photos, Rudnicki, Savage, Sorvillo, Villanueva, Wilhelm

Term Instructors
Auld, Hoy, Killiany, Rickless, Scolaro

Adjunct Assistant Professors
Allen, Benson, Broyles, Cabral, Carbo, Chen, DeFazio, Dutta, Ghafoerkhan, Greico, Gussow, Johnston, Larson, Lussos, Patrick, Tuszynska, Wood

Adjunct Instructors
Barton, Clements, Holcomb, Stryker, Swann

Administrative Faculty
Edalatishams, Massie, Oakleaf, Rigdon, Rippy

Programs

- College Teaching Graduate Certificate (ENGL)
- Creative Writing, BFA
- Creative Writing, MFA
- Digital Media and Web Design Minor (CHSS)
- English Minor
- English, BA
- English, MA
- Film and Media Studies Minor
- Folklore Studies Graduate Certificate
- Folklore and Mythology Minor
- Linguistics Minor
- Linguistics, PhD
- Literature and Composition Graduate Certificate
- Native American and Indigenous Studies Minor
- Professional Writing and Editing Graduate Certificate
- Professional and Technical Writing Minor
- Teaching English as a Second Language Graduate Certificate
- Teaching English as a Second Language Minor
- Writing and Rhetoric, PhD

College Teaching Graduate Certificate (ENGL)

Banner Code: LA-CERG-CTCH

Academic Advising

4200 Horizon Hall
Fairfax Campus

The certificate in College Teaching is designed for graduate students who are planning a career in undergraduate education. The program offers courses that enhance pedagogical skills and explore pedagogical assessment or scholarship with the use of technology in instruction.

This certificate program qualifies for Title IV Federal Financial Aid.

Admissions & Policies

Admissions

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions.

Policies

For policies governing all graduate certificates, see AP.6.8 Requirements for Graduate Certificates.

Concentration in English Pedagogy
This concentration in the graduate certificate in college teaching requires 18 credits. Students must achieve a minimum grade of 3.00 in each course.

Concentration in Higher Education Pedagogy
This concentration in the graduate certificate in college teaching requires 18 credits.

Requirements

Certificate Requirements

Total credits: 18

This certificate may be pursued on a full-or part-time basis.

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Students pursuing this graduate certificate must choose either a concentration in English pedagogy or a concentration in higher education pedagogy.

Concentration in English Pedagogy (EPGY)

Core Courses

Code	Title	Credits
ENGH 610	Proseminar in Teaching the Reading of Literature	3
ENGH 615	Proseminar in Composition Instruction	3
Pedagogy Courses		
Select two courses from the following:		6
ENGH 620	Topics in Pedagogy	
ENGH 695	Northern Virginia Writing Project Inservice Program [1]	
ENGH 697	Composition Theory	

ENGH 699	Visiting Writers [2]	
LING 521	Applied Linguistics: Teaching English to Speakers of Other Languages (TESOL)	
Total Credits		12

[1] Offered only to full-time teachers through school district contracts.

[2] Topic must be NVWP Summer Institute; open to full-time teachers on an invitation basis.

Electives

Code	Title	Credits
Select content-area coursework that supports their goals in developing pedagogical expertise. [1]		6
Total Credits		6

[1] Electives should be selected in consultation with an advisor.

Concentration in Higher Education Pedagogy (HEDP)

Core Courses

Code	Title	Credits
Choose 9 credits from the following courses:		9
HE 602	College Teaching	
HE 605	Learning Assessment	
HE 703	Higher Education in the Digital Age	
HE 704	The Scholarship of Teaching and Learning	
HE 712	Assessment and Program Evaluation in Higher Education	
Practicum		
HE 685	Practicum	3
Total Credits		12

Electives

Code	Title	Credits
Choose 6 credits from the following courses:		6
HE 601	The Community College	
HE 606	Cultural Pluralism in Higher Education	
HE 610	Research Methods in Higher Education	
HE 641	Introduction to Helping Skills	
HE 645	The Contemporary College Student	
HE 646	Student Development Theory	
HE 706	Students in Postsecondary Education	
HE 721	History of Higher Education	
Other HE courses, when relevant, with approval of director or advisor		
Total Credits		6

Creative Writing, BFA

Banner Code: LA-BFA-CW

4200 Horizon Hall
Fairfax Campus

Website: creativewriting.gmu.edu/programs/la-bfa-cw

The Bachelor of Fine Arts in Creative Writing is one of only thirty BFAs in creative writing available nationwide. With three concentrations to choose from (fiction, poetry, nonfiction), the BFA is structured to give students ample opportunity to learn to write and think creatively while also developing the vocational writing skills that are desperately needed in the workplace. All students pursuing a BFA are strongly advised to complete on-site workplace internships in writing-intensive environments, and finish the degree with a submission of a portfolio of work as part of a final-semester capstone course, with final approval from the faculty.

Admissions & Policies

Admissions

Acceptance into the program is competitive. Admission to the university does not guarantee admission to the BFA program.

After acceptance to Mason, students who wish to pursue a major in creative writing should inform the academic coordinator in the English department or the director of the creative writing program of their interest in the program and should seek evaluation of any prior coursework as well as guidance on courses to take and the sequence in which to take them. In the program, students enroll in a series of courses intended to introduce them to all forms of creative writing, and then they select a core set of courses built around a specialization in fiction, nonfiction or poetry, along with upper-level writing, literature and advanced studies courses.

Students planning to enter the BFA program are initially designated as "pre-BFA" until they have successfully completed the requirements for full admission. Full admission requires a minimum of three creative writing courses successfully completed with a grade point average (GPA) of 3.00 or higher in those courses. Alternatively, students who have taken creative writing courses at another institution or in their early undergraduate coursework at Mason may gain full admission status to the BFA program on the strength of recommendations from the instructors in those courses, subject to departmental approval, which is obtained from the Mason creative writing faculty and the director of the creative writing program.

A student admitted to the university and intending to enter the BFA program may designate a major in English and complete English major courses before attempting to move into admitted BFA status. Meeting minimum requirements does not guarantee admission to full BFA status.

Policies

For policies governing all undergraduate degrees, see AP.5 Undergraduate Policies.

Students pursuing this degree must complete 45 credits (15 courses) in English/Linguistics beyond ENGH 300 Cover to Cover (not including ENGH 302 Advanced Composition (Mason Core)) with a minimum GPA of 2.00.

At the discretion of the department, transfer students may substitute transferred lower level creative writing classes for some BFA requirements.

With permission of the department, BFA students may select a substitute for concentration required coursework from the list of courses approved for the writing or literature elective requirement. Substitutions must be justified as specifically relevant to the student's study. Concentration substitutions will not satisfy more than one requirement within the major.

Requirements

Degree Requirements

Total credits: minimum 120

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Students will complete 21 credits of BFA core requirements, 12 credits from one of 3 concentrations, and 12 credits in English department requirements. 300-level courses in English and linguistics teach the foundational principles for a field of study, include courses of broad scope, and provide an introduction to a genre, literary period, or methodology. 400-level courses in English and linguistics provide an in-depth approach to a field of study, a single genre, literary period, or methodology. They include special topics classes and English honors classes. Some 400-level courses require ENGH 305 Dimensions of Writing and Literature as a prerequisite.

Students should consult with an English department advisor to learn ways in which the Mason Core requirements can also satisfy college-level requirements or the BFA.

Core Courses in the Major

Code	Title	Credits
ENGH 301	The Fields of English	3
ENGH 305	Dimensions of Writing and Literature	3
ENGH 377	Digital Creative Writing	3
ENGH 396	Introduction to Creative Writing (Mason Core)	3
ENGH 495	Capstone and Thesis (Mason Core)	3
Total Credits		15

English Department Requirements

Literature before 1800

Code	Title	Credits
Select one course from the following:		3
ENGH 320	Literature of the Middle Ages	
ENGH 321	English Poetry and Prose of the 16th Century	
ENGH 322	Shakespeare	
ENGH 323	Shakespeare: Special Topics	
ENGH 324	English Renaissance Drama	
ENGH 325	English Poetry and Prose of the 17th Century	
ENGH 330	Augustan Age: 1660-1745	
ENGH 331	Age of Sensibility: 1745-1800	
ENGH 332	Restoration and 18th Century Drama	
ENGH 333	British Novel of the 18th Century	
ENGH 340	Early American Literature	
ENGH 421	Topics in Medieval and Renaissance Literature	
ENGH 422	Chaucer	
ENGH 428	Milton	
Total Credits		3

Literature before 1915

Code	Title	Credits
Select one course from the following:		3
ENGH 334	British Poetry of the Romantic Period	
ENGH 335	Prose and Poetry of the Victorian Period	
ENGH 336	British Novel of the 19th Century	
ENGH 341	Literature of the American Renaissance	
ENGH 342	Post-Civil War American Literature, 1865-1920	
ENGH 343	Development of the American Novel to 1914	
ENGH 348	Beginnings of African American Literature Through 1865	
ENGH 349	African American Literature: Reconstruction to 1903	
ENGH 360	Continental Fiction, 1770-1880	
ENGH 361	Continental Fiction, 1880-1950	
A second course from literature before 1800 list above		
Total Credits		3

Minority, Folkloric, or Popular Literary and Cultural Traditions

Code	Title	Credits
Select one course from the following:		3
ENGH 310	Topics: Women and Literature	
ENGH 315	Folklore and Folklife (Mason Core)	
ENGH 319	Popular Culture	
ENGH 348	Beginnings of African American Literature Through 1865	
ENGH 349	African American Literature: Reconstruction to 1903	
ENGH 350	African American Literature Through 1946	
ENGH 351	Contemporary African American Literature	
ENGH 352	Topics in Ethnic American Literature	
ENGH 362	Global Voices (Mason Core)	
ENGH 366	The Idea of a World Literature (Mason Core)	
ENGH 367	World Literatures in English	
ENGH 412	Topics in Folklore Studies	
ENGH 414	Folklore and the Supernatural	
ENGH 415	Folk Arts and Folk Artists	
ENGH 416	Ethnicity and Migration in Folklore	
ENGH 417	RS: Topics in Folklore Research (Mason Core)	
ENGH 419	Topics in Popular Literature	
ENGH 451	Science Fiction	
ENGH 452	Critical Study of Children's Literature	
ENGH 484	RS: Writing Ethnography (Mason Core)	
Total Credits		3

Writing or Literature Electives

Code	Title	Credits
Select one course from the following:		3
Additional Writing Courses		
ENGH 388	Professional and Technical Writing	

ENGH 402	Honors Independent Study
ENGH 459	Internship
ENGH 484	RS: Writing Ethnography (Mason Core)
ENGH 492	Advanced Fiction Writing Workshop
ENGH 493	Advanced Workshop in Nonfiction
ENGH 494	Advanced Poetry Writing Workshop
ENGH 497	Topics in Creative Writing
ENGH 499	Independent Study
ENGH 505	Document Design
Courses in Contemporary Literature	
ENGH 315	Folklore and Folklife (Mason Core)
ENGH 319	Popular Culture
ENGH 337	British Poetry after 1900
ENGH 338	British Novel after 1900
ENGH 339	British and Irish Drama after 1900
ENGH 344	Development of the American Novel since 1914
ENGH 345	American Drama of the 20th Century
ENGH 346	American Poetry of the 20th Century
ENGH 351	Contemporary African American Literature
ENGH 368	Modern Drama
ENGH 412	Topics in Folklore Studies
ENGH 414	Folklore and the Supernatural
ENGH 415	Folk Arts and Folk Artists
ENGH 419	Topics in Popular Literature
ENGH 451	Science Fiction
ENGH 452	Critical Study of Children's Literature
ENGH 453	Topics in Fiction
ENGH 454	Topics in Poetry
ENGH 455	Topics in Drama
ENGH 456	Topics in Literary Nonfiction (for fiction and poetry concentrators only)
Course in Writing for other Arts	
AVT 395	Writing for Artists
THR 380	Playwriting I
THR 381	Playwriting II
THR 382	Screenplay Workshop
THR 480	Advanced Playwriting
Total Credits	3

Required Workshop Courses

The workshops are in the two areas outside of the chosen concentration. The remaining workshop is included as part of the concentration requirements.

Code	Title	Credits
Select 6 credits from the following:		6
ENGH 397	Poetry Writing	
ENGH 398	Fiction Writing	
ENGH 399	Creative Nonfiction Writing	
Total Credits		6

Concentrations in the Major

Students must complete one of the following concentrations.

Available Concentrations

- Concentration in Fiction (FIC)
- Concentration in Nonfiction (NFIC)
- Concentration in Poetry (POE)

Concentration in Fiction (FIC)

Code	Title	Credits
ENGH 398	Fiction Writing	3
ENGH 392	Forms of Fiction	3
ENGH 355	Recent American Fiction	3
ENGH 492	Advanced Fiction Writing Workshop	3
Total Credits		12

Concentration in Nonfiction (NFIC)

Code	Title	Credits
ENGH 399	Creative Nonfiction Writing	3
ENGH 393	Forms of Nonfiction	3
ENGH 456	Topics in Literary Nonfiction	3
ENGH 493	Advanced Workshop in Nonfiction	3
Total Credits		12

Concentration in Poetry (POE)

Code	Title	Credits
ENGH 397	Poetry Writing	3
ENGH 391	Forms of Poetry	3
ENGH 356	Recent American Poetry	3
ENGH 494	Advanced Poetry Writing Workshop	3
Total Credits		12

Writing-Intensive Requirement

The university requires all students to complete at least one course designated "writing intensive" in their majors at the 300 level or above. Students majoring in creative writing may fulfill this requirement by successfully completing ENGH 305 Dimensions of Writing and Literature.

Upper Level Requirement

Students seeking a bachelor's degree must apply at least 45 credits of upper-level courses (numbered 300 or above) toward graduation requirements.

Additional Electives

Any remaining credits may be completed with elective courses to bring the degree total to 120.

College Level Requirements for the BA Degree

In addition to the Mason Core program, students pursuing a BA degree must complete the coursework below. Except where expressly prohibited, a course used to fulfill a college level requirement may also be used simultaneously to satisfy other requirements (Mason Core requirements or requirements for the major).

Philosophy or Religious Studies

Code	Title	Credits
Select 3 credits from the following:		3
PHIL [1]		
RELI		

[1] Note that the following courses may not be used to fulfill this requirement:
- PHIL 323 Classical Western Political Theory
- PHIL 324 Modern Western Political Theory
- PHIL 327 Contemporary Western Political Theory
- PHIL 393 Humanities College to Career
- PHIL 460 Senior Seminar in Philosophy, Politics, and Economics

Additionally, PHIL 253 Philosophy and Literature (Mason Core), RELI 235 Religion and Literature (Mason Core), and RELI 333 Spiritual Autobiography (Mason Core) cannot be used to fulfill both the philosophy/religious studies requirement and the Mason Core literature requirement.

Social and Behavioral Sciences

Code	Title	Credits
Select 3 credits of social and behavioral sciences from the following (additional to the Mason Core social and behavioral sciences requirement) [1]		3
ANTH		
CRIM		
ECON		
GOVT		
HIST [2]		
LING		
PSYC		
SOCI		
Or choose from the following GGS courses:		
GGS 101	Major World Regions (Mason Core)	
GGS 103	Human Geography (Mason Core)	
GGS 110	Introduction to Geoinformation Technologies	
GGS 301	Political Geography (Mason Core)	
GGS 303	Geography of Resource Conservation (Mason Core)	
GGS 304	Population Geography (Mason Core)	
GGS 305	Economic Geography	
GGS 306	Urban Geography	
GGS 315	Geography of the United States	
GGS 316	Geography of Latin America	
GGS 320	Geography of Europe	
GGS 325	Geography of North Africa and the Middle East	
GGS 330	Geography of the Soviet Succession States	
GGS 357	Urban Planning	
GGS 380	Geography of Virginia	

[1] The two courses used to fulfill the combined college and Mason Core requirements must be from different disciplines in the social and behavioral sciences.

[2] HIST 100 History of Western Civilization (Mason Core) and HIST 125 Introduction to World History (Mason Core) may not be used to fulfill this requirement.

Foreign Language

Code	Title	Credits
Intermediate-level proficiency in one foreign language, fulfilled by: [1]		
Completing 3 credits in a foreign language numbered 202 (or higher level courses taught in the language)		
Or achieving a satisfactory score on an approved proficiency test		
Or completing the following ASL three course sequence:		
EDSE 115	American Sign Language (ASL) I	
EDSE 116	American Sign Language (ASL) II	
EDSE 219	American Sign Language (ASL) III	

[1] Students who are already proficient in a second language may be eligible for a waiver of this requirement. Additional information on waivers can be found at the Office of Undergraduate Academic Affairs (http://chssundergrad.gmu.edu/).

Non-Western Culture

Select 3 credits of an approved course in the study of a non-Western culture (additional to the Mason Core requirement in global understanding)

Code	Title	Credits
Select 3 credits (additional to Mason Core Global Understanding requirement) [1]		
ANTH 114	Introduction to Cultural Anthropology (Mason Core)	3
ANTH 300	Civilizations	3
ANTH 302	Peoples and Cultures of Latin America (Mason Core)	3
ANTH 307	Ancient Mesoamerica (Mason Core)	3
ANTH 308	Peoples and Cultures of the Middle East (Mason Core)	3
ANTH 309	Peoples and Cultures of India (Mason Core)	3
ANTH 313	Myth, Magic, and Mind (Mason Core)	3
ANTH 314	Zombies	3
ANTH 330	Peoples and Cultures of Selected Regions: Non-Western	3
ANTH 332	Cross-Cultural Perspectives on Globalization (Mason Core)	3
ANTH 381	Medical Anthropology	3
ANTH 396	Issues in Anthropology: Social Sciences (Mason Core)	3
ARAB 360	Topics in Arabic Cultural Production	3
ARAB 420	Survey of Arabic Literature	3
ARAB 440	Topics in Arabic Religious Thought and Texts (Mason Core)	3
ARTH 203	Survey of Asian Art (Mason Core)	3
ARTH 204	Survey of Latin American Art (Mason Core)	3
ARTH 206	Survey of African Art (Mason Core)	3

ARTH 318	Art and Archaeology of Ancient Egypt	3
ARTH 319	Art and Archaeology of the Ancient Near East (Mason Core)	3
ARTH 320	Art of the Islamic World (Mason Core)	3
ARTH 382	Arts of India (Mason Core)	3
ARTH 383	Arts of Southeast Asia (Mason Core)	3
ARTH 384	Arts of China (Mason Core)	3
ARTH 385	Arts of Japan (Mason Core)	3
ARTH 386	The Silk Road (Mason Core)	3
ARTH 482	RS: Advanced Studies in Asian Art	3
CHIN 318	Introduction to Classical Chinese (Mason Core)	3
CHIN 320	Contemporary Chinese Film	3
CHIN 325	Major Chinese Writers (Mason Core)	3
CHIN 470	Special Topics in Chinese Studies	3
DANC 118	World Dance (Mason Core)	3
ECON 361	Economic Development of Latin America (Mason Core)	3
ECON 362	African Economic Development (Mason Core)	3
FREN 451	Topics in Sub-Saharan Francophone Literature and Culture	3
FREN 454	Topics in Caribbean Francophone Literature and Culture	3
GGS 101	Major World Regions (Mason Core)	3
GGS 316	Geography of Latin America	3
GGS 317	Geography of China (Mason Core)	3
GGS 325	Geography of North Africa and the Middle East	3
GGS 330	Geography of the Soviet Succession States	3
GGS 399	Select Topics in GGS	3
GOVT 328	Global Political Theory	3
GOVT 332	Government and Politics of the Middle East and North Africa	3
GOVT 333	Government and Politics of Asia	3
GOVT 338	Government and Politics of Russia	3
GOVT 340	Central Asian Politics	3
GOVT 341	Chinese Foreign Policy	3
GOVT 345	Islam and Politics	3
GOVT 433	Political Economy of East Asia	3
HIST 251	Survey of East Asian History (Mason Core)	3
HIST 252	Survey of East Asian History (Mason Core)	3
HIST 261	Survey of African History (Mason Core)	3
HIST 262	Survey of African History (Mason Core)	3
HIST 271	Survey of Latin American History (Mason Core)	3
HIST 272	Survey of Latin American History (Mason Core)	3
HIST 281	Survey of Middle Eastern Civilization (Mason Core)	3
HIST 282	Survey of Middle Eastern Civilization (Mason Core)	3
HIST 326	Stalinism	3
HIST 327	The Soviet Union and Russia Since World War II	3
HIST 328	Rise of Russia (Mason Core)	3
HIST 329	Modern Russia and the Soviet Union (Mason Core)	3
HIST 353	History of Traditional China	3
HIST 354	Modern China (Mason Core)	3
HIST 356	Modern Japan (Mason Core)	3
HIST 357	Postwar Japan (Mason Core)	3
HIST 358	Post-1949 China (Mason Core)	3
HIST 360	History of South Africa (Mason Core)	3
HIST 364	Revolution and Radical Politics in Latin America (Mason Core)	3
HIST 365	Conquest and Colonization in Latin America (Mason Core)	3
HIST 366	Comparative Slavery	3
HIST 367	History, Fiction, and Film in Latin America	3
HIST 387	Topics in Global History (Mason Core)	3-6
HIST 426	The Russian Revolution	3
HIST 460	Modern Iran (Mason Core)	3
HIST 461	Arab-Israeli Conflict	3
HIST 462	Women in Islamic Society (Mason Core)	3
HIST 465	The Middle East in the 20th Century	3
JAPA 310	Japanese Culture in a Global World (Mason Core)	3
JAPA 340	Topics in Japanese Literature (Mason Core)	3
KORE 320	Korean Popular Culture in a Global World	3
MUSI 103	Musics of the World (Mason Core)	3
RELI 211	Religions of the West (Mason Core)	3
RELI 212	Religions of Asia (Mason Core)	3
RELI 240	Death and the Afterlife in World Religions	3
RELI 272	Islam	3
RELI 313	Hinduism (Mason Core)	3
RELI 314	Chinese Philosophies and Religious Traditions	3
RELI 315	Buddhism (Mason Core)	3
RELI 317	Daoism	3
RELI 337	Mysticism: East and West	3
RELI 365	Muhammad: Life and Legacy	3
RELI 374	Islamic Thought (Mason Core)	3
RELI 375	Qur'an and Hadith	3
RELI 379	Islamic Law, Society, and Ethics	3
RELI 387	Islam, Democracy, and Human Rights	3
RELI 490	Comparative Study of Religions (Mason Core)	3
RUSS 353	Russian Civilization (Mason Core)	3
RUSS 354	Contemporary Post-Soviet Life (Mason Core)	3

[1] A course used to fulfill the Mason Core global understanding requirement may not be simultaneously used to satisfy this college-level requirement. A course used to fulfill this requirement may be used simultaneously to fulfill any other requirements (Mason Core requirements, college-level requirements, or requirements for the major). Additional information on waivers can be found at the Office of Undergraduate Academic Affairs (http://chssundergrad.gmu.edu/).

Mason Core

Some Mason Core requirements may already be fulfilled by the major requirements listed above. Students are strongly encouraged to consult their advisors to ensure they fulfill all remaining Mason Core requirements.

Code	Title	Credits
Foundation Requirements		
Written Communication (ENGH 101)		3
Oral Communication		3
Quantitative Reasoning		3
Information Technology and Computing		3
Exploration Requirements		
Arts		3
Global Understanding		3
Literature		3
Natural Science		7
Social and Behavioral Sciences		3
Western Civilization/World History		3
Integration Requirements		
Written Communications (ENGH 302)		3
Writing-Intensive [1]		3
Synthesis/Capstone [2]		3
Total Credits		40

[1] Most programs include the writing-intensive course designated for the major as part of the major requirements; this course is therefore not counted towards the total required for Mason Core.

[2] Minimum 3 credits required.

4-Year Plan

Bachelor of Fine Arts in Creative Writing Sample Plan of Study

A sample four year graduation plan and degree planning worksheet can be found at https://academicaffairs.chss.gmu.edu/undergraduate-students/advising/advising-sheets (https://academicaffairs.chss.gmu.edu/undergraduate-students/advising/advising-sheets/). The plan is a recommended sequencing of courses based on prerequisites and scheduling. This may not fit every student's needs and is a guideline, not a requirement. Students should confirm major requirements with their academic advisor each semester and with their PatriotWeb Degree Evaluation to ensure they enroll in the proper courses and are on track to graduate.

Honors

Honors in the Major

Highly qualified students in the BFA in Creative Writing program may pursue advanced work leading to graduation with honors in the major. To graduate with honors in the major, students must complete a two-course honors sequence and receive a minimum GPA of 3.50 in all courses counted toward the major and, separately, a minimum GPA of 3.50 in their honors courses. Honors courses may simultaneously satisfy concentration and distribution requirements in the major.

Students may satisfy the honors course sequence in one of the following ways:

- BFA students may take two sections of ENGH 400 Honors Seminar
- BFA students may take one section of ENGH 400 Honors Seminar and ENGH 401 RS: Honors Thesis Writing Seminar (Mason Core)

BFA students may write a creative honors thesis in ENGH 401 RS: Honors Thesis Writing Seminar (Mason Core). BFA students may substitute ENGH 495 Capstone and Thesis (Mason Core) for ENGH 401.

Students interested in pursuing honors in the major should consult the English Department for more information.

Accelerated Master's

The accelerated master's program listed below specifies the BFA in creative writing as a feeder degree for its program. It is important to note, however, that many accelerated master's programs are available for any bachelor's degree at Mason. See the full list of degrees (http://catalog.gmu.edu/programs/#filter=filter_24) with accelerated programs at George Mason. In addition, as a student with a BFA in creative writing you may be particularly interested in the accelerated MA in English with a concentration in linguistics.

English, BA or Creative Writing, BFA/ Curriculum and Instruction, Accelerated MEd (Secondary Education English Concentration)

Overview

Highly-qualified Mason undergraduates may be admitted to the bachelor's/accelerated master's option and obtain a BA in English or a BFA in Creative Writing and an MEd in Curriculum and Instruction (Secondary Education English concentration) (https://catalog.gmu.edu/colleges-schools/education-human-development/school-education/curriculum-instruction-med/)in an accelerated time-frame after satisfactory completion of a minimum of 143 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degree for policies related to this program.

This accelerated option is offered jointly by the Department of English and the School of Education (https://catalog.gmu.edu/colleges-schools/education-human-development/school-education/).

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies (https://catalog.gmu.edu/admissions/graduate-policies/) and Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies. For information specific to this accelerated master's program, see Application Requirements and Deadlines (https://cehd.gmu.edu/bachelors-accelerated-masters-program/).

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits, and additional unit-specific criteria.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MEd program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- 3.0 overall GPA
- Completion of specific undergraduate coursework
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following which can be taken as Advanced Standing or Reserve Graduate credit (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) (to be determined by the student and their advisor):

Code	Title	Credits
EDCI 570	Teaching Young Adult Literacy in a Multicultural Setting	3
EDRD 619	Literacy in the Content Areas	3
SEED 522	Foundations of Secondary Education	3
SEED 540	Human Development and Learning: Secondary Education	3
SEED 569	Teaching English in the Secondary School	3
SEED 669	Advanced Methods of Teaching English in the Secondary School	3
SEED approved elective		

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies.

Creative Writing, MFA

Banner Code: LA-MFA-CW

Academic Advising

4200 Horizon Hall
Fairfax Campus

Email: englgrad@gmu.edu
Website: creativewriting.gmu.edu/programs/la-mfa-cw

The MFA in creative writing is a three-year residency program offering tracks in fiction, nonfiction, and poetry. Students in the program are members of a literary community that includes a student-organized program of readings, potluck dinners with faculty, three journals, a student-run publisher—Stillhouse Press—and the annual Fall for the Book literary festival. Resident faculty members include recipients of prestigious writing awards such as the Guggenheim Foundation, the Yale Series of Younger Poets, the Lannan Foundation, the Whiting Foundation and the National Endowment for the Arts, among others.

Admissions & Policies

Admissions

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions. For information specific to the MFA in creative writing, see Application Requirements and Deadlines (http://english.gmu.edu/programs/application/LA-MFA-CW/) on the departmental website.

Policies

For policies governing all graduate degrees, see AP.6 Graduate Policies.

Reduction of Credit

With the approval of the MFA faculty, the program director, and the dean, the number of credits required for an MFA may be reduced by a maximum of 23 credits on the basis of graduate course work before admission.

Requirements

Degree Requirements

Total credits: 48

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Core Courses

Literature

Code	Title	Credits
Literature		
Select two to four courses in consultation with an advisor [1]		6-12
Craft Seminars		
Six to twelve credits of		6-12
ENGH 608	Craft Seminars [2]	
Workshop		**1**

ENGH 699	Visiting Writers	
Total Credits		13-25

1 ENGH 798 Directed Reading and Research may not be used to fulfill this requirement.

2 This course may be repeated for credit.

Concentration in Fiction (FIC)

Code	Title	Credits
ENGH 566	Forms of Fiction	3
Writing Workshops		9
ENGH 618	Fiction Writing Workshop	
ENGH 751	Advanced Workshop in Fiction Writing	
Total Credits		12

Concentration in Nonfiction Writing (NFW)

Code	Title	Credits
ENGH 506	Research for Narrative Writing [1]	3
ENGH 565	Forms of Nonfiction	3
Writing Workshops		9
ENGH 616	Nonfiction Writing Workshop	
ENGH 752	Advanced Workshop in Nonfiction Writing	
Total Credits		15

1 Students should enroll the first semester it is offered after they enter the program.

Concentration in Poetry (POE)

Code	Title	Credits
ENGH 564	Form of Poetry	3
Writing Workshops		9
ENGH 617	Poetry Writing Workshop	
ENGH 750	Advanced Workshop in Poetry Writing	
Select at least one course in another genre (fiction or nonfiction) [1]		3
Total Credits		15

1 This requirement may be filled by a section of ENGH 608 Craft Seminars in another genre.

Poetry Exam

Students in poetry must pass a written MFA exam based on the authors they have chosen. The authors are selected in collaboration with the writing faculty any time after completing 12 credits of course work and before completing 32 credits. The exam must be completed at least one semester before the student registers for the final 3 credits of thesis.

Electives

Code	Title	Credits
Select up to 15 credits from electives in consultation with the writing program faculty [1]		15
Total Credits		15

1 The number of electives will vary according to the number of literature courses and workshops that students take.

Thesis

ENGH 798 Directed Reading and Research may not be used as thesis preparation. Students who want to register for thesis credits in the summer need the permission of the thesis committee.

Students should be aware of the university policies governing theses. They must follow the thesis enrollment policy and once enrolled in ENGH 799 Thesis, maintain continuous enrollment. These policies are specified in AP.6.9.3 Master's Thesis.

Code	Title	Credits
Thesis		6
ENGH 799	Thesis	
Total Credits		6

Digital Media and Web Design Minor (CHSS)

Banner Code: DMWD

Academic Advising

4200 Horizon Hall
Fairfax Campus

Email: english@gmu.edu
Website: english.gmu.edu/programs/

This minor provides students with opportunities to learn and apply advanced strategies for website design, content development, and user interaction and accessibility in website creation. Students interested in pursuing a career in digital media and web content design and management will develop a portfolio that demonstrates their skills, competencies and products produced throughout the minor.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must earn a minimum grade of 2.00 in all courses applied to the minor. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 18

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Coursework

Code	Title	Credits
Core		
Select one course from the following:		3
AVT 217	Introduction to Web Design	
ENGH 375	Web Authoring and Design	
IT 213	Multimedia and Web Design	

Design		
Select one course from the following:		3
AVT 180	New Media in the Creative Arts	
AVT 215	Typography (Mason Core)	
AVT 311	Graphic Design Methods and Principles	
IT 415	Information Visualization	
User Experience Design or Accessibility		
Select one course from the following:		3
AVT 415	Web Design and Usability	
EDIT 426	Web Accessibility and Design	
SWE 205	Software Usability Analysis and Design	
Content Development		
Select one course from the following:		3
COMM 208	Introduction to Media Production	
COMM 435	Digital Communication	
ENGH 376	Rhetoric and New Media	
ENGH 377	Digital Creative Writing	
Elective		
Select one course not already taken as a required course above from the following:		3
AVT 180	New Media in the Creative Arts	
AVT 215	Typography (Mason Core)	
AVT 311	Graphic Design Methods and Principles	
AVT 319	Mobile App Design	
AVT 411	Motion Design	
AVT 415	Web Design and Usability	
AVT 420	Advanced Web Design	
COMM 208	Introduction to Media Production	
COMM 360	Digital Postproduction	
COMM 435	Digital Communication	
EDIT 426	Web Accessibility and Design	
ENGH 376	Rhetoric and New Media	
ENGH 377	Digital Creative Writing	
IT 315	Mobile Development	
IT 331	Web I: Web Development	
IT 332	Web Server Administration	
IT 335	Web Development using Content Management Systems	
IT 415	Information Visualization	
SWE 205	Software Usability Analysis and Design	
Capstone		
IT/AVT/COMM 479	Digital Media and Web Design Capstone	3
Total Credits		18

English Minor

Banner Code: ENGL

Academic Advising

4200 Horizon Hall
Fairfax Campus

Website: english.gmu.edu/programs/la-minor-engl-engl

This minor provides students with a strong background in writing and critical thinking and will also introduce them to significant literary and cultural documents.

Admissions & Policies

Policies

Prerequisite for the minor in English is satisfaction of the Mason Core requirement in literature. The minor must be approved by the English department academic coordinator before graduation.

ENGH 302 Advanced Composition (Mason Core) may not be applied to the minor.

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 18

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

ENGH 305 Dimensions of Writing and Literature is not required for the minor but is strongly encouraged.

Core Courses

Code	Title	Credits
Select 3-6 credits of 200-level courses from the following:		3-6
ENGH 201	Reading and Writing about Texts (Mason Core)	
ENGH 202	Texts and Contexts (Mason Core)	
ENGH 203	Western Literary Tradition (Mason Core)	
ENGH 204	Western Literary Traditions (Mason Core)	
Total Credits		3-6

Electives

Code	Title	Credits
Select 12-15 credits in 300- or 400-level ENGH or LING courses [1]		12-15
ENGH		
LING		
Total Credits		12-15

Students have the option of choosing courses to form a focus for the minor. Examples include: American literature, British literature, creative writing, cultural studies, drama, fiction, film and media studies, folklore, literary criticism, poetry, and world literature. Students should consult with the English undergraduate advisor to design a minor program to meet their educational goals and interests.

[1] ENGH 302 Advanced Composition (Mason Core) **may not** be applied to the minor.

English, BA

Banner Code: LA-BA-ENGL

4200 Horizon Hall
Fairfax Campus

Website: english.gmu.edu/programs/la-ba-engl

The Bachelor of Arts in English offers students the opportunity to study literature, creative writing, film and media studies, writing and rhetoric, linguistics, folklore and mythology, and cultural studies. Of these seven concentrations, students pursue one or two that best match their interests and career objectives. Students are encouraged to pursue internships related to their concentrations and receive faculty mentorship throughout that process. In fact, English classes are kept small so faculty members may provide students with personalized attention. Students write in a range of traditional and digital forms and in a variety of contexts; student work culminates in a research project written for the major capstone course in their concentration. For students who want to challenge themselves even further, there is an Honors Program in English, which includes a thesis option, as well as other opportunities to pursue advanced research or creative projects; for those who want to become teachers, there is a bachelor's/accelerated master's program that English offers in conjunction with the College of Education and Human Development.

Admissions & Policies

Policies

Students pursuing this degree must complete 36 credits in English/Linguistics beyond ENGH 300 (not including ENGH 302) with a minimum GPA of 2.00. At least 12 credits (including the capstone requirement) must be at the 400 level.

For policies governing all undergraduate degrees, see AP.5 Undergraduate Policies.

Requirements

Degree Requirements

Total credits: minimum 120

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

300-level courses in English and linguistics teach the foundational principles for a field of study, include courses of broad scope, and provide an introduction to a genre, literary period, or methodology.

400-level courses in English and linguistics provide an in-depth approach to a field of study, a single genre, literary period, or methodology. They include special topics classes and English honors classes. Some 400 level courses require ENGH 305 Dimensions of Writing and Literature as a prerequisite.

Students choose at least one and no more than two of seven concentrations.

Students should consult with an English Department advisor to learn ways in which the Mason Core requirements can also satisfy college-level requirements for the English major.

Core Courses in the Major

Required Courses

Code	Title	Credits
Threshold Course		
ENGH 301	The Fields of English	3
Field Introduction Courses		
ENGH 305	Dimensions of Writing and Literature	3
Select 3 credits from the following: [1]		3
LING 306	General Linguistics (Mason Core)	
ENGH 315	Folklore and Folklife (Mason Core)	
ENGH 318	Introduction to Cultural Studies	
ENGH 372	Introduction to Film (Mason Core)	
ENGH 380	Introduction to Writing and Rhetoric	
ENGH 396	Introduction to Creative Writing (Mason Core)	
Theory Course		
ENGH 308	Theory and Inquiry	3
Capstone Course		
Select 3 credits from the following:		3
ENGH 401	RS: Honors Thesis Writing Seminar (Mason Core)	
ENGH 417	RS: Topics in Folklore Research (Mason Core)	
ENGH 458	RS: Topics in Literary Research (Mason Core)	
ENGH 470	RS: Topics in Film/Media History (Mason Core)	
LING 480	RS: First Language Acquisition (Mason Core)	
ENGH 484	RS: Writing Ethnography (Mason Core)	
ENGH 486	RS: Writing Nonfiction for Publication (Mason Core)	
Total Credits		15

[1] For many students this requirement will be met within the concentration. Those students will complete an additional 3 credit ENGH course above ENGH 302 Advanced Composition (Mason Core).

English Department Requirements

Courses taken to fulfill this requirement may simultaneously satisfy a concentration. Special topics courses, when relevant, may be used to fulfill this requirement with the prior written approval of the department.

Code	Title	Credits
Literature before 1800		
Select 3 credits from the following:		3
ENGH 320	Literature of the Middle Ages	
ENGH 321	English Poetry and Prose of the 16th Century	
ENGH 322	Shakespeare	
ENGH 323	Shakespeare: Special Topics	
ENGH 324	English Renaissance Drama	

ENGH 325	English Poetry and Prose of the 17th Century	
ENGH 330	Augustan Age: 1660-1745	
ENGH 331	Age of Sensibility: 1745-1800	
ENGH 332	Restoration and 18th Century Drama	
ENGH 333	British Novel of the 18th Century	
ENGH 340	Early American Literature	
ENGH 421	Topics in Medieval and Renaissance Literature	
ENGH 422	Chaucer	
ENGH 428	Milton	
Literature before 1915		
Select 3 credits from courses listed above and the following:		3
ENGH 334	British Poetry of the Romantic Period	
ENGH 335	Prose and Poetry of the Victorian Period	
ENGH 336	British Novel of the 19th Century	
ENGH 341	Literature of the American Renaissance	
ENGH 342	Post-Civil War American Literature, 1865-1920	
ENGH 343	Development of the American Novel to 1914	
ENGH 348	Beginnings of African American Literature Through 1865	
ENGH 349	African American Literature: Reconstruction to 1903	
ENGH 360	Continental Fiction, 1770-1880	
ENGH 361	Continental Fiction, 1880-1950	
Minority, Folkloric, or Popular Literary and Cultural Traditions		
Select 3 credits from the following:		3
ENGH 310	Topics: Women and Literature	
ENGH 315	Folklore and Folklife (Mason Core)	
ENGH 319	Popular Culture	
ENGH 348	Beginnings of African American Literature Through 1865	
ENGH 349	African American Literature: Reconstruction to 1903	
ENGH 350	African American Literature Through 1946	
ENGH 351	Contemporary African American Literature	
ENGH 352	Topics in Ethnic American Literature	
ENGH 362	Global Voices (Mason Core)	
ENGH 366	The Idea of a World Literature (Mason Core)	
ENGH 367	World Literatures in English	
ENGH 412	Topics in Folklore Studies	
ENGH 414	Folklore and the Supernatural	
ENGH 415	Folk Arts and Folk Artists	
ENGH 416	Ethnicity and Migration in Folklore	
ENGH 417	RS: Topics in Folklore Research (Mason Core)	
ENGH 419	Topics in Popular Literature	
ENGH 451	Science Fiction	
ENGH 452	Critical Study of Children's Literature	
ENGH 484	RS: Writing Ethnography (Mason Core)	
Total Credits		9

Electives in the Major

Code	Title	Credits
Students must take 0-12 elective credits in the major as needed to meet the 36-credit requirement.		0-12
Total Credits		0-12

Concentrations in the Major

Students choose one and no more than two concentrations. Special topics courses may be used to fulfill the requirements for a concentration when so designated by department.

Available Concentrations

- Concentration in Creative Writing (CW)
- Concentration in Cultural Studies (CULT)
- Concentration in Film and Media Studies (FILM)
- Concentration in Folklore and Mythology (FOLK)
- Concentration in Linguistics (LING)
- Concentration in Literature (LIT)
- Concentration in Writing and Rhetoric (WRTR)

Concentration in Creative Writing (CW)

Code	Title	Credits
Select four courses from the following:		12
ENGH 377	Digital Creative Writing	
ENGH 397	Poetry Writing	
ENGH 398	Fiction Writing	
ENGH 399	Creative Nonfiction Writing	
ENGH 492	Advanced Fiction Writing Workshop	
ENGH 493	Advanced Workshop in Nonfiction	
ENGH 494	Advanced Poetry Writing Workshop	
ENGH 497	Topics in Creative Writing	
Total Credits		12

Concentration in Cultural Studies (CULT)

Code	Title	Credits
Select four courses from the following:		12
ENGH 310	Topics: Women and Literature	
ENGH 315	Folklore and Folklife (Mason Core)	
ENGH 318	Introduction to Cultural Studies	
ENGH 319	Popular Culture	
ENGH 348	Beginnings of African American Literature Through 1865	
ENGH 349	African American Literature: Reconstruction to 1903	
ENGH 350	African American Literature Through 1946	
ENGH 351	Contemporary African American Literature	
ENGH 352	Topics in Ethnic American Literature	
ENGH 362	Global Voices (Mason Core)	
ENGH 372	Introduction to Film (Mason Core)	
ENGH 412	Topics in Folklore Studies	
ENGH 414	Folklore and the Supernatural	

ENGH 415	Folk Arts and Folk Artists
ENGH 416	Ethnicity and Migration in Folklore
ENGH 418	Cultural Constructions of Sexualities
ENGH 419	Topics in Popular Literature
ENGH 452	Critical Study of Children's Literature
ENGH 474	Topics in Film/Media Studies
May include one course from outside the English Department chosen from:	
COMM 465	Topics in Communication and Gender
CULT 320	Globalization and Culture
PSYC 362	Psychology of Gender
SOCI 315	Contemporary Gender Relations (Mason Core)
WMST 300	Current Issues in Women and Gender Studies
WMST 330	Feminist Theories of Gender, Sexuality, and Race
Total Credits	12

Concentration in Film and Media Studies (FILM)

Code	Title	Credits
Select four courses from the following:		12
ENGH 318	Introduction to Cultural Studies	
ENGH 319	Popular Culture (with department approval)	
ENGH 362	Global Voices (Mason Core) (with department approval)	
ENGH 370	Introduction to Documentary (Mason Core)	
ENGH 371	Television Studies (Mason Core)	
ENGH 372	Introduction to Film (Mason Core)	
ENGH 418	Cultural Constructions of Sexualities (with department approval)	
ENGH 470	RS: Topics in Film/Media History (Mason Core)	
ENGH 472	Topics in Film/Media Theory	
ENGH 474	Topics in Film/Media Studies	
May include one course from outside the English Department chosen from:		
AVT 377	Cyberpunk	
COMM 201	Small Group Communication	
COMM 365	Gender, Race, and Class in the Media	
COMM 366	Visual Communication	
COMM 380	Media Criticism	
COMM 465	Topics in Communication and Gender	
FAVS 225	Introduction to World Cinema (Mason Core)	
FAVS 300	Global Horror Film (Mason Core)	
FAVS 352	Ethics of Film and Video (Mason Core)	
FREN 470	French and Francophone Cinema	
FRLN 331	Contexts for Global Cinema (Mason Core)	
JAPA 320	Japanese Cinema	
MUSI 301	Music in Motion Pictures (Mason Core)	
RUSS 470	Topics in (Post) Soviet Film	
Total Credits		12

Concentration in Folklore and Mythology (FOLK)

Code	Title	Credits
Select 6 credits in folklore and mythology from the following:		6
ENGH 315	Folklore and Folklife (Mason Core)	
ENGH 316	Topics in Myth and Literature	
ENGH 412	Topics in Folklore Studies	
ENGH 414	Folklore and the Supernatural	
ENGH 415	Folk Arts and Folk Artists	
ENGH 416	Ethnicity and Migration in Folklore	
ENGH 417	RS: Topics in Folklore Research (Mason Core)	
ENGH 459	Internship	
ENGH 484	RS: Writing Ethnography (Mason Core)	
ENGH 591	Topics in Folklore Studies	
May include one course from outside the English Department chosen from:		
ANTH 450	Qualitative Methods: Nonstatistical Approaches in Culture and Social Research	
CLAS 340	Greek and Roman Epic (Mason Core)	
Select up to 6 credits related to folklore and mythology from the following:		6
ENGH 318	Introduction to Cultural Studies	
ENGH 320	Literature of the Middle Ages	
ENGH 322	Shakespeare	
ENGH 323	Shakespeare: Special Topics	
ENGH 339	British and Irish Drama after 1900	
ENGH 348	Beginnings of African American Literature Through 1865	
ENGH 349	African American Literature: Reconstruction to 1903	
ENGH 350	African American Literature Through 1946	
ENGH 351	Contemporary African American Literature	
ENGH 362	Global Voices (Mason Core)	
ENGH 422	Chaucer	
ENGH 428	Milton	
May include one course from outside the English Department chosen from:		
ANTH 302	Peoples and Cultures of Latin America (Mason Core)	
ANTH 307	Ancient Mesoamerica (Mason Core)	
ANTH 308	Peoples and Cultures of the Middle East (Mason Core)	
ANTH 313	Myth, Magic, and Mind (Mason Core)	
ANTH 332	Cross-Cultural Perspectives on Globalization (Mason Core)	
ARTH 319	Art and Archaeology of the Ancient Near East (Mason Core)	
ARTH 321	Greek Art and Archaeology (Mason Core)	
ARTH 322	Roman Art and Archaeology (Mason Core)	

ARTH 340	Early Renaissance Art in Italy, 1300-1500 (Mason Core)	
ARTH 342	High Renaissance Art in Italy, 1480-1570 (Mason Core)	
ARTH 345	Northern Baroque Art, 1600-1750 (Mason Core)	
ARTH 382	Arts of India (Mason Core)	
ARTH 383	Arts of Southeast Asia (Mason Core)	
ARTH 384	Arts of China (Mason Core)	
ARTH 385	Arts of Japan (Mason Core)	
Total Credits		12

Concentration in Linguistics (LING)

Code	Title	Credits
LING 306	General Linguistics (Mason Core)	3
LING 480	RS: First Language Acquisition (Mason Core)	3
Select 6 credits from the following:		6
LING 307	English Grammar	
LING 450	Introduction to Sociolinguistics	
LING 485	Semantics and Pragmatics	
LING 486	Syntax I	
LING 490	Generative Phonology	
LING 499	Independent Study	
LING 507	Field Work in Applied Linguistics	
LING 521	Applied Linguistics: Teaching English to Speakers of Other Languages (TESOL)	
LING 523	English Pronunciation and Pedagogy	
LING 581	Psycholinguistics	
LING 582	Second Language Acquisition	
Total Credits		12

Concentration in Literature (LIT)

When relevant, ENGH 400 Honors Seminar, ENGH 401 RS: Honors Thesis Writing Seminar (Mason Core), and ENGH 402 Honors Independent Study may be applied to this concentration.

Code	Title	Credits
Select four courses from the following:		12
ENGH 304	Topics: Literary Surveys	
ENGH 309	Topics in Literature	
ENGH 310	Topics: Women and Literature	
ENGH 320	Literature of the Middle Ages	
ENGH 321	English Poetry and Prose of the 16th Century	
ENGH 322	Shakespeare	
ENGH 323	Shakespeare: Special Topics	
ENGH 324	English Renaissance Drama	
ENGH 325	English Poetry and Prose of the 17th Century	
ENGH 330	Augustan Age: 1660-1745	
ENGH 331	Age of Sensibility: 1745-1800	
ENGH 332	Restoration and 18th Century Drama	
ENGH 333	British Novel of the 18th Century	
ENGH 334	British Poetry of the Romantic Period	
ENGH 335	Prose and Poetry of the Victorian Period	
ENGH 336	British Novel of the 19th Century	
ENGH 337	British Poetry after 1900	
ENGH 338	British Novel after 1900	
ENGH 339	British and Irish Drama after 1900	
ENGH 340	Early American Literature	
ENGH 341	Literature of the American Renaissance	
ENGH 342	Post-Civil War American Literature, 1865-1920	
ENGH 343	Development of the American Novel to 1914	
ENGH 344	Development of the American Novel since 1914	
ENGH 345	American Drama of the 20th Century	
ENGH 346	American Poetry of the 20th Century	
ENGH 348	Beginnings of African American Literature Through 1865	
ENGH 349	African American Literature: Reconstruction to 1903	
ENGH 350	African American Literature Through 1946	
ENGH 351	Contemporary African American Literature	
ENGH 352	Topics in Ethnic American Literature	
ENGH 355	Recent American Fiction	
ENGH 356	Recent American Poetry	
ENGH 360	Continental Fiction, 1770-1880	
ENGH 361	Continental Fiction, 1880-1950	
ENGH 362	Global Voices (Mason Core) (when topic is relevant, with departmental approval)	
ENGH 366	The Idea of a World Literature (Mason Core)	
ENGH 367	World Literatures in English	
ENGH 368	Modern Drama	
ENGH 408	Topics in Criticism (when topic is relevant, with departmental approval)	
ENGH 409	Literary Modes	
ENGH 419	Topics in Popular Literature	
ENGH 421	Topics in Medieval and Renaissance Literature	
ENGH 422	Chaucer	
ENGH 428	Milton	
ENGH 431	Topics: British Literary Periods	
ENGH 432	Topics: British Authors	
ENGH 441	Topics: American Authors	
ENGH 442	Topics: American Literary Periods	
ENGH 451	Science Fiction	
ENGH 452	Critical Study of Children's Literature	
ENGH 453	Topics in Fiction	
ENGH 454	Topics in Poetry	
ENGH 455	Topics in Drama	
ENGH 456	Topics in Literary Nonfiction	

ENGH 458	RS: Topics in Literary Research (Mason Core)	
Total Credits		12

Concentration in Writing and Rhetoric (WRTR)

Code	Title	Credits
Select four courses from the following:		12
ENGH 375	Web Authoring and Design	
ENGH 376	Rhetoric and New Media	
ENGH 380	Introduction to Writing and Rhetoric	
ENGH 382	Writing Nonfiction Genres	
ENGH 386	Editing for Audience, Style, and Voice	
ENGH 388	Professional and Technical Writing	
ENGH 399	Creative Nonfiction Writing	
ENGH 459	Internship	
ENGH 483	Technical Editing	
ENGH 484	RS: Writing Ethnography (Mason Core)	
ENGH 485	Document Design	
ENGH 486	RS: Writing Nonfiction for Publication (Mason Core)	
ENGH 488	Topics in Writing and Rhetoric	
ENGH 489	Proposal Writing and Development	
Total Credits		12

Writing Intensive Requirement

The university requires all students to complete at least one course designated "writing intensive" in their majors at the 300 level or above. Students majoring in English fulfill this requirement by successfully completing:

Code	Title	Credits
ENGH 305	Dimensions of Writing and Literature	3
Total Credits		3

Upper Level Courses

Students seeking a bachelor's degree must apply at least 45 credits of upper-level courses (numbered 300 or above) toward graduation requirements.

Additional Electives

Any remaining credits may be completed with elective courses to bring the degree total to 120.

College Level Requirements for the BA Degree

In addition to the Mason Core program, students pursuing a BA degree must complete the coursework below. Except where expressly prohibited, a course used to fulfill a college level requirement may also be used simultaneously to satisfy other requirements (Mason Core requirements or requirements for the major).

Philosophy or Religious Studies

Code	Title	Credits
Select 3 credits from the following:		3
PHIL [1]		
RELI		

1 Note that the following courses may not be used to fulfill this requirement:

- PHIL 323 Classical Western Political Theory
- PHIL 324 Modern Western Political Theory
- PHIL 327 Contemporary Western Political Theory
- PHIL 393 Humanities College to Career
- PHIL 460 Senior Seminar in Philosophy, Politics, and Economics

Additionally, PHIL 253 Philosophy and Literature (Mason Core), RELI 235 Religion and Literature (Mason Core), and RELI 333 Spiritual Autobiography (Mason Core) cannot be used to fulfill both the philosophy/religious studies requirement and the Mason Core literature requirement.

Social and Behavioral Sciences

Code	Title	Credits
Select 3 credits of social and behavioral sciences from the following (additional to the Mason Core social and behavioral sciences requirement) [1]		3
ANTH		
CRIM		
ECON		
GOVT		
HIST [2]		
LING		
PSYC		
SOCI		
Or choose from the following GGS courses:		
GGS 101	Major World Regions (Mason Core)	
GGS 103	Human Geography (Mason Core)	
GGS 110	Introduction to Geoinformation Technologies	
GGS 301	Political Geography (Mason Core)	
GGS 303	Geography of Resource Conservation (Mason Core)	
GGS 304	Population Geography (Mason Core)	
GGS 305	Economic Geography	
GGS 306	Urban Geography	
GGS 315	Geography of the United States	
GGS 316	Geography of Latin America	
GGS 320	Geography of Europe	
GGS 325	Geography of North Africa and the Middle East	
GGS 330	Geography of the Soviet Succession States	
GGS 357	Urban Planning	
GGS 380	Geography of Virginia	

1 The two courses used to fulfill the combined college and Mason Core requirements must be from different disciplines in the social and behavioral sciences.

2 HIST 100 History of Western Civilization (Mason Core) and HIST 125 Introduction to World History (Mason Core) may not be used to fulfill this requirement.

Foreign Language

Code	Title	Credits
Intermediate-level proficiency in one foreign language, fulfilled by: [1]		
Completing 3 credits in a foreign language numbered 202 (or higher level courses taught in the language)		
Or achieving a satisfactory score on an approved proficiency test		
Or completing the following ASL three course sequence:		
EDSE 115	American Sign Language (ASL) I	
EDSE 116	American Sign Language (ASL) II	
EDSE 219	American Sign Language (ASL) III	

[1] Students who are already proficient in a second language may be eligible for a waiver of this requirement. Additional information on waivers can be found at the Office of Undergraduate Academic Affairs (http://chssundergrad.gmu.edu/).

Non-Western Culture

Select 3 credits of an approved course in the study of a non-Western culture (additional to the Mason Core requirement in global understanding)

Code	Title	Credits
Select 3 credits (additional to Mason Core Global Understanding requirement) [1]		
ANTH 114	Introduction to Cultural Anthropology (Mason Core)	3
ANTH 300	Civilizations	3
ANTH 302	Peoples and Cultures of Latin America (Mason Core)	3
ANTH 307	Ancient Mesoamerica (Mason Core)	3
ANTH 308	Peoples and Cultures of the Middle East (Mason Core)	3
ANTH 309	Peoples and Cultures of India (Mason Core)	3
ANTH 313	Myth, Magic, and Mind (Mason Core)	3
ANTH 314	Zombies	3
ANTH 330	Peoples and Cultures of Selected Regions: Non-Western	3
ANTH 332	Cross-Cultural Perspectives on Globalization (Mason Core)	3
ANTH 381	Medical Anthropology	3
ANTH 396	Issues in Anthropology: Social Sciences (Mason Core)	3
ARAB 360	Topics in Arabic Cultural Production	3
ARAB 420	Survey of Arabic Literature	3
ARAB 440	Topics in Arabic Religious Thought and Texts (Mason Core)	3
ARTH 203	Survey of Asian Art (Mason Core)	3
ARTH 204	Survey of Latin American Art (Mason Core)	3
ARTH 206	Survey of African Art (Mason Core)	3
ARTH 318	Art and Archaeology of Ancient Egypt	3
ARTH 319	Art and Archaeology of the Ancient Near East (Mason Core)	3
ARTH 320	Art of the Islamic World (Mason Core)	3
ARTH 382	Arts of India (Mason Core)	3
ARTH 383	Arts of Southeast Asia (Mason Core)	3
ARTH 384	Arts of China (Mason Core)	3
ARTH 385	Arts of Japan (Mason Core)	3
ARTH 386	The Silk Road (Mason Core)	3
ARTH 482	RS: Advanced Studies in Asian Art	3
CHIN 318	Introduction to Classical Chinese (Mason Core)	3
CHIN 320	Contemporary Chinese Film	3
CHIN 325	Major Chinese Writers (Mason Core)	3
CHIN 470	Special Topics in Chinese Studies	3
DANC 118	World Dance (Mason Core)	3
ECON 361	Economic Development of Latin America (Mason Core)	3
ECON 362	African Economic Development (Mason Core)	3
FREN 451	Topics in Sub-Saharan Francophone Literature and Culture	3
FREN 454	Topics in Caribbean Francophone Literature and Culture	3
GGS 101	Major World Regions (Mason Core)	3
GGS 316	Geography of Latin America	3
GGS 317	Geography of China (Mason Core)	3
GGS 325	Geography of North Africa and the Middle East	3
GGS 330	Geography of the Soviet Succession States	3
GGS 399	Select Topics in GGS	3
GOVT 328	Global Political Theory	3
GOVT 332	Government and Politics of the Middle East and North Africa	3
GOVT 333	Government and Politics of Asia	3
GOVT 338	Government and Politics of Russia	3
GOVT 340	Central Asian Politics	3
GOVT 341	Chinese Foreign Policy	3
GOVT 345	Islam and Politics	3
GOVT 433	Political Economy of East Asia	3
HIST 251	Survey of East Asian History (Mason Core)	3
HIST 252	Survey of East Asian History (Mason Core)	3
HIST 261	Survey of African History (Mason Core)	3
HIST 262	Survey of African History (Mason Core)	3
HIST 271	Survey of Latin American History (Mason Core)	3
HIST 272	Survey of Latin American History (Mason Core)	3
HIST 281	Survey of Middle Eastern Civilization (Mason Core)	3
HIST 282	Survey of Middle Eastern Civilization (Mason Core)	3
HIST 326	Stalinism	3
HIST 327	The Soviet Union and Russia Since World War II	3

HIST 328	Rise of Russia (Mason Core)	3
HIST 329	Modern Russia and the Soviet Union (Mason Core)	3
HIST 353	History of Traditional China	3
HIST 354	Modern China (Mason Core)	3
HIST 356	Modern Japan (Mason Core)	3
HIST 357	Postwar Japan (Mason Core)	3
HIST 358	Post-1949 China (Mason Core)	3
HIST 360	History of South Africa (Mason Core)	3
HIST 364	Revolution and Radical Politics in Latin America (Mason Core)	3
HIST 365	Conquest and Colonization in Latin America (Mason Core)	3
HIST 366	Comparative Slavery	3
HIST 367	History, Fiction, and Film in Latin America	3
HIST 387	Topics in Global History (Mason Core)	3-6
HIST 426	The Russian Revolution	3
HIST 460	Modern Iran (Mason Core)	3
HIST 461	Arab-Israeli Conflict	3
HIST 462	Women in Islamic Society (Mason Core)	3
HIST 465	The Middle East in the 20th Century	3
JAPA 310	Japanese Culture in a Global World (Mason Core)	3
JAPA 340	Topics in Japanese Literature (Mason Core)	3
KORE 320	Korean Popular Culture in a Global World	3
MUSI 103	Musics of the World (Mason Core)	3
RELI 211	Religions of the West (Mason Core)	3
RELI 212	Religions of Asia (Mason Core)	3
RELI 240	Death and the Afterlife in World Religions	3
RELI 272	Islam	3
RELI 313	Hinduism (Mason Core)	3
RELI 314	Chinese Philosophies and Religious Traditions	3
RELI 315	Buddhism (Mason Core)	3
RELI 317	Daoism	3
RELI 337	Mysticism: East and West	3
RELI 365	Muhammad: Life and Legacy	3
RELI 374	Islamic Thought (Mason Core)	3
RELI 375	Qur'an and Hadith	3
RELI 379	Islamic Law, Society, and Ethics	3
RELI 387	Islam, Democracy, and Human Rights	3
RELI 490	Comparative Study of Religions (Mason Core)	3
RUSS 353	Russian Civilization (Mason Core)	3
RUSS 354	Contemporary Post-Soviet Life (Mason Core)	3

[1] A course used to fulfill the Mason Core global understanding requirement may not be simultaneously used to satisfy this college-level requirement. A course used to fulfill this requirement may be used simultaneously to fulfill any other requirements (Mason Core requirements, college-level requirements, or requirements for the major). Additional information on waivers can be found at the Office of Undergraduate Academic Affairs (http://chssundergrad.gmu.edu/).

Mason Core

Some Mason Core requirements may already be fulfilled by the major requirements listed above. Students are strongly encouraged to consult their advisors to ensure they fulfill all remaining Mason Core requirements.

Code	Title	Credits
Foundation Requirements		
Written Communication (ENGH 101)		3
Oral Communication		3
Quantitative Reasoning		3
Information Technology and Computing		3
Exploration Requirements		
Arts		3
Global Understanding		3
Literature		3
Natural Science		7
Social and Behavioral Sciences		3
Western Civilization/World History		3
Integration Requirements		
Written Communications (ENGH 302)		3
Writing-Intensive [1]		3
Synthesis/Capstone [2]		3
Total Credits		40

[1] Most programs include the writing-intensive course designated for the major as part of the major requirements; this course is therefore not counted towards the total required for Mason Core.

[2] Minimum 3 credits required.

4-Year Plan

Bachelor of Arts in English Sample Plan of Study

A sample four year graduation plan and degree planning worksheet can be found at https://academicaffairs.chss.gmu.edu/undergraduate-students/advising/advising-sheets (https://academicaffairs.chss.gmu.edu/undergraduate-students/advising/advising-sheets/). The plan is a recommended sequencing of courses based on prerequisites and scheduling. This may not fit every student's needs and is a guideline, not a requirement. Students should confirm major requirements with their academic advisor each semester and with their PatriotWeb Degree Evaluation to ensure they enroll in the proper courses and are on track to graduate.

Honors

Honors in the Major

Highly qualified students in the BA in English program may pursue advanced work leading to graduation with honors in the major. To graduate with honors in the major, students must complete a two-course honors sequence and receive a minimum GPA of 3.50 in all courses counted toward the major and, separately, a minimum GPA of 3.50 in their honors courses. Honors courses may simultaneously satisfy concentration and distribution requirements in the major.

Students may satisfy the honors course sequence in one of the following ways:

- BA students may take two sections of ENGH 400 Honors Seminar
- BA students may take one section of ENGH 400 Honors Seminar and ENGH 401 RS: Honors Thesis Writing Seminar (Mason Core)

BA students with a concentration in creative writing may write a creative honors thesis in ENGH 401 RS: Honors Thesis Writing Seminar (Mason Core). In special cases, BA students with a concentration in creative writing may apply to the Honors Coordinator and ENGH 495 instructor for permission to use ENGH 495 as a substitute for ENGH 401.

Students interested in pursuing honors in the major should consult the English Department for more information.

Accelerated Master's

The accelerated master's program below specifies the BA in English as a feeder degree for its program. Many accelerated master's programs are available for any bachelor's degree at Mason. See the full list of degrees (http://catalog.gmu.edu/programs/#filter=filter_24) with accelerated programs at George Mason. In addition, as a student with a BA in English you may be particularly interested in the accelerated MA in English with a concentration in folklore studies or a concentration in linguistics.

English, BA or Creative Writing, BFA/ Curriculum and Instruction, Accelerated MEd (Secondary Education English Concentration)

Overview

Highly-qualified Mason undergraduates may be admitted to the bachelor's/accelerated master's option and obtain a BA in English or a BFA in Creative Writing and an MEd in Curriculum and Instruction (Secondary Education English concentration) (https://catalog.gmu.edu/colleges-schools/education-human-development/school-education/curriculum-instruction-med/)in an accelerated time-frame after satisfactory completion of a minimum of 143 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degree for policies related to this program.

This accelerated option is offered jointly by the Department of English and the School of Education (https://catalog.gmu.edu/colleges-schools/education-human-development/school-education/).

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies (https://catalog.gmu.edu/admissions/graduate-policies/) and Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies. For information specific to this accelerated master's program, see Application Requirements and Deadlines (https://cehd.gmu.edu/bachelors-accelerated-masters-program/).

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits, and additional unit-specific criteria.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MEd program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- 3.0 overall GPA
- Completion of specific undergraduate coursework
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following which can be taken as Advanced Standing or Reserve Graduate credit (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) (to be determined by the student and their advisor):

Code	Title	Credits
EDCI 570	Teaching Young Adult Literacy in a Multicultural Setting	3
EDRD 619	Literacy in the Content Areas	3
SEED 522	Foundations of Secondary Education	3
SEED 540	Human Development and Learning: Secondary Education	3
SEED 569	Teaching English in the Secondary School	3
SEED 669	Advanced Methods of Teaching English in the Secondary School	3
SEED approved elective		

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies.

Bachelor's Degree (any)/English, Accelerated MA (Folklore Studies Concentration)

Overview

Highly qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BA/BS in their chosen major and an MA in English with a concentration in folklore studies in an accelerated time-frame after satisfactory completion of a minimum of 138 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degree for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Polices and Bachelor's/Accelerated Master's Degree policies. For information specific to this accelerated master's program, see the department's website.

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits and a minimum overall GPA of 3.50 or above.

Students who are accepted in the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MA program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- Minimum overall GPA of 3.50
- Minimum grade of B in each advanced standing course
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing courses (up to 12 credits with a minimum grade of B in each)

- FOLK 501 Advanced Introduction to Folklore and Folklife
- FOLK 510 Folklore and Ethnographic Research Methods
- FOLK 550 Topics in Public and Applied Folklore
- FOLK 560 Topics in Genre and Theory
- FOLK 570 Topics in Regional Folklore Studies
- FOLK 601 Folklore Theory and History
- FOLK 690 Field School for Cultural Documentation

Reserve Graduate Credit courses (up to 6 credits) taken while an undergraduate and will only count for the graduate degree program

- FOLK 501 Advanced Introduction to Folklore and Folklife
- FOLK 510 Folklore and Ethnographic Research Methods
- FOLK 550 Topics in Public and Applied Folklore
- FOLK 560 Topics in Genre and Theory
- FOLK 570 Topics in Regional Folklore Studies
- FOLK 601 Folklore Theory and History
- FOLK 690 Field School for Cultural Documentation

For more detailed information on coursework and timeline requirements see AP.6.7 Bachelor's Accelerated Master's Degree policies.

Bachelor's Degree (any)/English, Accelerated MA (Linguistics Concentration)

Overview

Highly qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BA/BS in a chosen major and an MA in English with a concentration in linguistics in an accelerated time-frame after satisfactory completion of a minimum of 138 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degree for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Polices and Bachelor's/Accelerated Master's Degree policies. For information specific to this accelerated master's program, see Application Requirements and Deadlines (https://linguistics.gmu.edu/programs/LA-MA-ACEL-ENGL/) on the departmental website.

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits

Students who are accepted in the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MA program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- Minimum overall GPA of 3.25
- Completion of LING 306 General Linguistics (Mason Core) and one other upper-division LING course.
- Minimum grade of B in each advanced standing course
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing courses (up to 12 credits with a minimum grade of B in each)

Students who have already taken the undergraduate equivalents of these courses, before entering the BAM program, can substitute other graduate-level LING courses, as needed, with the approval of the academic advisor.

LING 580 First Language Acquisition (3 credits)
LING 687 Syntax I (3 credits)
LING 688 Semantics and Pragmatics I (3 credits)
LING 689 Morphology (3 credits)
LING 690 Phonology I (3 credits)
LING 693 Phonetics (3 credits)

Reserve Graduate Credit courses (up to 6 credits) taken while an undergraduate and will only count for the graduate degree program

500- or 600-level LING courses (https://catalog.gmu.edu/courses/ling/)

For more detailed information on coursework and timeline requirements see AP.6.7 Bachelor's Accelerated Master's Degree policies.

English, MA

Banner Code: LA-MA-ENGL

Academic Advising

4200 Horizon Hall
Fairfax Campus

Email: englgrad@gmu.edu
Website: english.gmu.edu/programs/la-ma-engl

The Master of Arts in English at Mason offers students the opportunity to enhance their skills of reading, writing, research and teaching with courses that encompass the wide range of contemporary English studies. Students can work in and across concentrations in literature, professional writing, rhetoric, cultural studies, film, folklore, linguistics, and the teaching of writing and literature. It offers the MA in field-specific concentrations as well as the opportunity to combine a concentration in one field with a certificate from another one. Many students use the MA for professional enhancement, or as an entry into teaching, professional writing, or doctoral study.

Admissions & Policies

Admissions

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions. For information specific to the MA in English, see Application Requirements and Deadlines (http://english.gmu.edu/programs/application/LA-MA-ENGL/) on the departmental website.

Policies

For policies governing all graduate degrees, see AP.6 Graduate Policies.

Satisfactory Progress

Students have six years to complete the MA. Students writing a thesis must have an approved proposal by the end of their fifth year as an MA candidate in English and may not make significant changes to that proposal during their sixth year. By the end of the first semester of their sixth year, thesis students need to demonstrate that they have completed their research and are well advanced in developing their analysis and argument, generally by submitting to their advisors a completed rough draft of the thesis or evidence that they have completed their fieldwork and analysis. A student may be dropped from the program if, in the judgment of the thesis advisor and graduate director, evidence of satisfactory progress on the thesis has not been provided by the end of the first semester of a student's sixth year.

Requirements

Degree Requirements

Total credits: 30

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Students pursuing this degree must successfully complete 30 credits in one concentration as specified below.

Students in the concentrations of cultural studies, linguistics, literature, and teaching of writing and literature must demonstrate intermediate proficiency in a foreign language in one of the following ways: submitting an undergraduate (or continuing education) transcript that includes courses corresponding to intermediate proficiency; completing a Mason foreign language course numbered 202 or higher; passing a proficiency exam administered by the English department.

Concentration in Cultural Studies (CULT)

Code	Title	Credits
Required Courses		
ENGH 500	Research in English Studies	3
ENGH 676	Introduction to Cultural Studies	3
CULT 802	Histories of Cultural Studies	3
Two Courses		
Select 6 credits from the following:		6
ENGH 551	Introduction to Literary Theory	
ENGH 665	Seminar in Global Culture	
ENGH 670	Seminar in Film and Media Studies	
ENGH 675	Feminist Theory and Criticism	
ENGH 685	Selected Topics, Movements, or Genres of Literature in English [1]	
ENGH 705	Literary Theory and Criticism [1]	
Three to Five Courses of Literature		
Select 9-15 credits from the following:		9-15
ENGH 511	Graduate Literature Survey	
ENGH 513	Topics in Literary and Cultural Studies	
ENGH 526	Special Topics in the History and Criticism of Children's Literature	

ENGH 590	Topics in Folk Narrative	
ENGH 591	Topics in Folklore Studies	
ENGH 642	Seminar in British Literature	
ENGH 644	Seminar in American Literature	
ENGH 646	Seminar in Advanced Research	
ENGH 661	Seminar in African-American Literature	
ENGH 665	Seminar in Global Culture	
ENGH 670	Seminar in Film and Media Studies	
ENGH 681	Advanced Topics in Folklore Studies	
ENGH 685	Selected Topics, Movements, or Genres of Literature in English	
ENGH 705	Literary Theory and Criticism	
ENGH 790	Projects in Literary Studies	
Optional Project or Thesis		
Select 3-6 credits of a project or a thesis from the following:		3-6
Project: [2]		
ENGH 790	Projects in Literary Studies (3 credits)	
Thesis: [3]		
ENGH 799	Thesis (6 credits)	
Total Credits		30

1. ENGH 685 Selected Topics, Movements, or Genres of Literature in English, and ENGH 705 Literary Theory and Criticism may be repeated once with permission of the director of graduate studies.
2. Students who choose a project take 3 fewer credits of literature.
3. Students who choose a thesis take 6 fewer credits of literature.

Concentration in Folklore Studies (FLKS)

Code	Title	Credits
Core Courses		
FOLK 501	Advanced Introduction to Folklore and Folklife	3
FOLK 510	Folklore and Ethnographic Research Methods	3
FOLK 601	Folklore Theory and History	3
Required Courses		
FOLK 550	Topics in Public and Applied Folklore	3
FOLK 560	Topics in Genre and Theory	3
FOLK 570	Topics in Regional Folklore Studies	3
Electives		
Choose 6 credits from the following. These topics courses can be repeated for credit when topic differs from the topic taken to meet the required course requirement above.		6
FOLK 550	Topics in Public and Applied Folklore	
FOLK 560	Topics in Genre and Theory	
FOLK 570	Topics in Regional Folklore Studies	
Courses outside of FOLK when topic is related and with approval of graduate director.		
Experiential Learning		
FOLK 690	Field School for Cultural Documentation	3
or FOLK 699	Internship	
Capstone		
FOLK 790	Project	3
or FOLK 799	Thesis	
Total Credits		30

Concentration in Linguistics (LING)

The linguistics concentration combines courses in linguistics with courses in some related area of language study, such as teaching English as a second language, bilingual education, or foreign language teaching. This course of study is designed to prepare students for teaching in one of these fields or for doctoral work. The certificate in teaching English as a second language (TESL) can be earned concurrently.

Code	Title	Credits
Core Courses		
LING 580	First Language Acquisition	3
LING 690	Phonology I	3
LING 692	Phonology II	3
LING 785	Semantics and Pragmatics	3
LING 786	Syntax I	3
LING 787	Syntax II	3
Electives		
Select 12 credits of electives [1]		12
Total Credits		30

1. In consultation with an advisor, chosen from courses that reflect one or more areas of language study. Electives can be in such areas as linguistics, the teaching of reading or writing, literary criticism, bilingual education, or a foreign language, and may include 6 credits of thesis.

Concentration in Literature (LIT)

Code	Title	Credits
Required Courses [1]		
ENGH 500	Research in English Studies	3
ENGH 551	Introduction to Literary Theory	3
Literature		
Select 18 credits from the following: [2]		18
ENGH 511	Graduate Literature Survey	
ENGH 513	Topics in Literary and Cultural Studies	
ENGH 526	Special Topics in the History and Criticism of Children's Literature	
ENGH 590	Topics in Folk Narrative	
ENGH 591	Topics in Folklore Studies	
ENGH 642	Seminar in British Literature	
ENGH 644	Seminar in American Literature	
ENGH 646	Seminar in Advanced Research	
ENGH 661	Seminar in African-American Literature	
ENGH 665	Seminar in Global Culture	
ENGH 670	Seminar in Film and Media Studies	
ENGH 681	Advanced Topics in Folklore Studies	
ENGH 685	Selected Topics, Movements, or Genres of Literature in English	
ENGH 705	Literary Theory and Criticism	
ENGH 790	Projects in Literary Studies	
Two Electives or Thesis		**6**
Select 6 credits of Electives [3]		

ENGH 799	Thesis	
Total Credits		30

1 Must be taken in the first 12 credits of the degree. Another course in literary theory and criticism may substitute for ENGH 551 Introduction to Literary Theory with prior written approval of the graduate director.

2 Courses fulfilling this requirement must include at least three 600-level ENGH seminars. Graduate seminars involve focused study of a topic with significant attention to scholarship in the field.

3 Electives taught within the English department may be taken without permission of the graduate director. A maximum of six credits of related study outside the department may substitute for the equivalent number of elective credits, with permission of the graduate director.

4 Students who choose a thesis take 6 fewer credits of literature or electives.

Concentration in Professional and Technical Writing (PTW)

Code	Title	Credits
Required Courses		
ENGH 501	Introduction to Professional and Technical Writing [1]	3
ENGH 502	Research Methods in Professional and Technical Writing	3
ENGH 503	Theory and Practice of Editing	3
ENGH 505	Document Design	3
Professional Writing		
Select 9 credits from the following:		9
ENGH 504	Internship	
ENGH 506	Research for Narrative Writing	
ENGH 507	Web Authoring and Design	
ENGH 508	Digital Rhetoric	
ENGH 509	Proposal Writing and Development	
ENGH 609	Online Writing	
ENGH 611	Studies in Rhetoric	
ENGH 612	Cultures of Professional Writing	
ENGH 613	Technical Communication	
ENGH 615	Proseminar in Composition Instruction	
ENGH 689	Advanced Proposal Writing	
ENGH 690	Special Topics in Writing and Rhetoric	
ENGH 696	Northern Virginia Writing Project Teacher/ Research Seminar	
ENGH 697	Composition Theory	
Theory		
Select 3 credits from the following:		3
ENGH 508	Digital Rhetoric	
ENGH 551	Introduction to Literary Theory	
ENGH 611	Studies in Rhetoric	
ENGH 675	Feminist Theory and Criticism	
ENGH 676	Introduction to Cultural Studies	
Electives in English		
Select 0-3 credits of electives in English		0-3
Project or Thesis		
Select 3-6 credits of a project or thesis		3-6
Project: [2]		
ENGH 797	Projects in Professional Writing and Rhetoric (3 credits)	
Thesis:		
ENGH 799	Thesis (6 credits)	
Total Credits		30

1 ENGH 501 Introduction to Professional and Technical Writing should be taken in the first semester of study, if possible.

2 Students who choose a project take one additional elective of 3 credits.

Concentration in the Teaching of Writing and Literature (TWL)

Code	Title	Credits
Research Courses		
ENGH 500	Research in English Studies	3
ENGH 602	Pedagogical Research	3
Teaching Writing		
Select 3 credits from the following:		3
ENGH 615	Proseminar in Composition Instruction	
ENGH 695	Northern Virginia Writing Project Inservice Program [1]	
ENGH 699	Visiting Writers [2]	
Teaching Literature		
Select 3 credits from the following:		3
ENGH 610	Proseminar in Teaching the Reading of Literature [3]	
ENGH 695	Northern Virginia Writing Project Inservice Program [1]	
Composition Theory		
ENGH 697	Composition Theory	3
or ENGH 611	Studies in Rhetoric	
Literature Courses		
Select 6 credits from courses in the Literature Concentration		6
Linguistics Course		
Select 3 credits from the following. [4]		3
LING 520	Introduction to Linguistics	
LING 507	Field Work in Applied Linguistics	
LING 521	Applied Linguistics: Teaching English to Speakers of Other Languages (TESOL)	
LING 522	English Grammar and Pedagogy	
EDCI 519	Methods of Teaching Culturally and Linguistically Diverse Learners	
LING 581	Psycholinguistics	
Electives		
6 credits of electives		6
Optional Thesis		
Select 6 credits of thesis in place of elective requirement.		
ENGH 799	Thesis (6 credits)	
Total Credits		30

[1] Offered only to full-time teachers through school district contracts.

[2] NVWP Summer Institute, open to full-time teachers on an invitation basis.

[3] Open to non-TAs in the spring semester.

[4] Note all courses, with exception of LING 520 Introduction to Linguistics, have prerequisites.

Accelerated Master's

Bachelor's Degree (any)/English, Accelerated MA (Folklore Studies Concentration)

Overview

Highly qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BA/BS in their chosen major and an MA in English with a concentration in folklore studies in an accelerated time-frame after satisfactory completion of a minimum of 138 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degree for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Polices and Bachelor's/Accelerated Master's Degree policies. For information specific to this accelerated master's program, see the department's website.

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits and a minimum overall GPA of 3.50 or above.

Students who are accepted in the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MA program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- Minimum overall GPA of 3.50
- Minimum grade of B in each advanced standing course
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing courses (up to 12 credits with a minimum grade of B in each)

- FOLK 501 Advanced Introduction to Folklore and Folklife
- FOLK 510 Folklore and Ethnographic Research Methods
- FOLK 550 Topics in Public and Applied Folklore
- FOLK 560 Topics in Genre and Theory
- FOLK 570 Topics in Regional Folklore Studies
- FOLK 601 Folklore Theory and History
- FOLK 690 Field School for Cultural Documentation

Reserve Graduate Credit courses (up to 6 credits) taken while an undergraduate and will only count for the graduate degree program

- FOLK 501 Advanced Introduction to Folklore and Folklife
- FOLK 510 Folklore and Ethnographic Research Methods
- FOLK 550 Topics in Public and Applied Folklore
- FOLK 560 Topics in Genre and Theory
- FOLK 570 Topics in Regional Folklore Studies
- FOLK 601 Folklore Theory and History
- FOLK 690 Field School for Cultural Documentation

For more detailed information on coursework and timeline requirements see AP.6.7 Bachelor's Accelerated Master's Degree policies.

Bachelor's Degree (any)/English, Accelerated MA (Linguistics Concentration)

Overview

Highly qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BA/BS in a chosen major and an MA in English with a concentration in linguistics in an accelerated time-frame after satisfactory completion of a minimum of 138 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degree for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Polices and Bachelor's/Accelerated Master's Degree policies. For information specific to this accelerated master's program, see Application Requirements and Deadlines (https://linguistics.gmu.edu/programs/LA-MA-ACEL-ENGL/) on the departmental website.

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits

Students who are accepted in the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MA program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- Minimum overall GPA of 3.25
- Completion of LING 306 General Linguistics (Mason Core) and one other upper-division LING course.
- Minimum grade of B in each advanced standing course
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing courses (up to 12 credits with a minimum grade of B in each)

Students who have already taken the undergraduate equivalents of these courses, before entering the BAM program, can substitute other graduate-level LING courses, as needed, with the approval of the academic advisor.

LING 580 First Language Acquisition (3 credits)
LING 687 Syntax I (3 credits)
LING 688 Semantics and Pragmatics I (3 credits)
LING 689 Morphology (3 credits)
LING 690 Phonology I (3 credits)
LING 693 Phonetics (3 credits)

Reserve Graduate Credit courses (up to 6 credits) taken while an undergraduate and will only count for the graduate degree program

500- or 600-level LING courses (https://catalog.gmu.edu/courses/ling/)

For more detailed information on coursework and timeline requirements see AP.6.7 Bachelor's Accelerated Master's Degree policies.

Film and Media Studies Minor

Banner Code: FILM

Academic Advising

4200 Horizon Hall
Fairfax Campus

Phone: 703-993-2768
Website: english.gmu.edu/programs/la-minor-la-film

This interdisciplinary minor explores mass culture in its visual manifestations and helps students develop an informed awareness of culture and media, ideological tendencies, and effects on daily experience. Committed to interdisciplinary studies, the program addresses the increasing complexity and multiplicity of visual cultures and offers students the tools with which to read a variety of texts, including film, television, video, and new media.

Most coursework is offered through the Departments of Communication and English, with other courses available through the Department of Modern and Classical Languages and the Film and Video Studies Program. The two required courses provide an introduction to the languages of film and popular media and modes of analysis appropriate to each. They are prerequisites for all advanced work in the minor. Students select four additional courses designed to introduce a more specialized level of study. Students may decide to focus on film, television, or the study of mass culture, or they may choose some mix of courses that suits their interests.

Faculty

Cynthia Fuchs, Program Director

Thomas Britt, Film and Video Studies; Giovanna Chesler, Film and Video Studies; Mark Cooley, Art and Visual Technology; Jeremy Freer, School of Music; Timothy Gibson, Communication; Carma Hinton, Robinson Professor; Alison Landsberg, History and Art History; Carla Marcantonio, English; David Miller, Communication; Janine Ricouart, Modern and Classical Languages; Jessica Scarlata, English; Benjamin Steger, Film and Video Studies; Gail Scott White, Art and Visual Technology; Martin Winkler, Modern and Classical Languages.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 18

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Core Courses

Code	Title	Credits
ENGH 372	Introduction to Film (Mason Core)	3
COMM 380	Media Criticism	3
Total Credits		6

Electives

AVT, COMM, and FAVS majors can only use 6 elective credits from their home department toward the Film and Media Studies minor. Only six credits total for any students may be FAVS courses.

Code	Title	Credits
Select 12 credits from the following:		12
AVT 377	Cyberpunk	
CHIN 320	Contemporary Chinese Film	
COMM 208	Introduction to Media Production	
COMM 302	Media Theory	
COMM 350	Mass Communication and Public Policy	
COMM 358	Multi-Camera Studio Production	
COMM 360	Digital Postproduction	
COMM 364	Videography	
COMM 365	Gender, Race, and Class in the Media	

COMM 366	Visual Communication
COMM 372	Sports and the Media
COMM 452	Media Production Practicum
COMM 456	Comparative Mass Media (Mason Core)
ENGH 318	Introduction to Cultural Studies [1]
ENGH 319	Popular Culture [1, 2]
ENGH 362	Global Voices (Mason Core) [1, 2]
ENGH 370	Introduction to Documentary (Mason Core)
ENGH 371	Television Studies (Mason Core)
ENGH 418	Cultural Constructions of Sexualities [1]
ENGH 419	Topics in Popular Literature [1]
ENGH 470	RS: Topics in Film/Media History (Mason Core) [2]
ENGH 472	Topics in Film/Media Theory [2]
ENGH 474	Topics in Film/Media Studies [2]
ENGH 499	Independent Study [1]
FAVS 225	Introduction to World Cinema (Mason Core)
FAVS 250	Business of Film and Television
FAVS 300	Global Horror Film (Mason Core)
FAVS 352	Ethics of Film and Video (Mason Core)
FAVS 399	Special Topics in Film and Video Studies [2]
FREN 470	French and Francophone Cinema [1]
FRLN 331	Contexts for Global Cinema (Mason Core)
JAPA 320	Japanese Cinema
MUSI 301	Music in Motion Pictures (Mason Core)
RUSS 470	Topics in (Post) Soviet Film [1]
Total Credits	12

1 Requires prior written approval of the FAMS director.

2 May be repeated when topic is different.

3 Cannot be used by FAVS majors towards this minor.

Folklore and Mythology Minor

Banner Code: FOLK

Academic Advising

4200 Horizon Hall
Fairfax Campus

Website: english.gmu.edu/programs/la-minor-la-folk

Stories told in both sacred and secular contexts, along with festivals, foods, music, material objects, and other traditional art forms, continue to influence our lives. This interdisciplinary minor offers students tools to explore the compelling meanings within these seemingly simple, everyday cultural texts, and helps them become more aware of the ways these texts are used by individuals and institutions for various goals. Students study folklore and mythology by juxtaposing the multiple viewpoints of anthropology, art history, classical studies, literary studies, and religious studies.

Faculty

Burek, Dakake, Decaroli, Gatling (coordinator), Gilman, Lattanzi Shutika, Usher, Winkler

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. A course used to fulfill the 3 credits of literature required for Mason Core may not also be applied to the minor. To avoid duplication of courses, English majors who choose this minor may not select the English Department's folklore and mythology concentration.

For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: minimum 18

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Core Courses

Code	Title	Credits
Required course:		3
ENGH 315	Folklore and Folklife (Mason Core)	
Select at least one course from the following:		3-15
ENGH 316	Topics in Myth and Literature	
ENGH 412	Topics in Folklore Studies	
ENGH 414	Folklore and the Supernatural	
ENGH 415	Folk Arts and Folk Artists	
ENGH 416	Ethnicity and Migration in Folklore	
Total Credits		6-18

Elective

Code	Title	Credits
Select at most four courses from the following:		0-12
ANTH 114	Introduction to Cultural Anthropology (Mason Core)	
ANTH 313	Myth, Magic, and Mind (Mason Core)	
ANTH 345	Ritual and Power in Social Life	
ANTH 375	Culture, Power, History	
ANTH 380	Language and Culture	
ARTH 102	Symbols and Stories in Art (Mason Core)	
ARTH 319	Art and Archaeology of the Ancient Near East (Mason Core)	
ARTH 321	Greek Art and Archaeology (Mason Core)	
ARTH 322	Roman Art and Archaeology (Mason Core)	
ARTH 382	Arts of India (Mason Core)	
ARTH 383	Arts of Southeast Asia (Mason Core)	
ARTH 384	Arts of China (Mason Core)	
CLAS 250	Classical Mythology (Mason Core)	

CLAS 340	Greek and Roman Epic (Mason Core)
CLAS 390	Topics in Classical Literature and Culture (when the topic is Greek Myth and Literature)
ENGH 417	RS: Topics in Folklore Research (Mason Core)
ENGH 459	Internship (when an approved internship in folklore)
ENGH 484	RS: Writing Ethnography (Mason Core)
ENGH 499	Independent Study
RELI 100	The Human Religious Experience (Mason Core)
RELI 211	Religions of the West (Mason Core)
RELI 212	Religions of Asia (Mason Core)
RELI 240	Death and the Afterlife in World Religions
Total Credits	0-12

Folklore Studies Graduate Certificate

Banner Code: LA-CERG-FLKS

Academic Advising

4200 Horizon Hall
Fairfax Campus

Website: english.gmu.edu/programs/la-cerg-flks

The certificate in folklore studies enables students to explore the processes of tradition that move through multiple expressive forms, such as folktales, folk beliefs, folk medicine, folk art, folksong, and literature. A discipline based on ethnographic fieldwork, folklore studies offers students a chance to work in communities and collect living traditional materials that are critical to human identity and values. Interdisciplinary by nature, folklore thrives on local particularities as well as compelling global connections.

This certificate prepares students for careers in cultural agencies, governmental organizations, and teaching institutions, and advanced study in folklore and in the humanities.

Admissions & Policies

Admissions

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions. For information specific to the graduate certificate in folklore studies, see Application Requirements and Deadlines (http://english.gmu.edu/programs/la-cerg-flks/application/).

Policies

For policies governing all graduate certificates, see AP.6.8 Requirements for Graduate Certificates.

Requirements

Certificate Requirements

Total credits: 18

This certificate may be pursued on a full-or part-time basis.

For policies governing all graduate certificates, see AP.6.8 Requirements for Graduate Certificates.

Core Courses

Code	Title	Credits
FOLK 501	Advanced Introduction to Folklore and Folklife	3
FOLK 510	Folklore and Ethnographic Research Methods	3
FOLK 601	Folklore Theory and History	3
Total Credits		9

Electives

Code	Title	Credits
Select 3 courses (9 credits) from the following: [1]		9
FOLK 550	Topics in Public and Applied Folklore	
FOLK 560	Topics in Genre and Theory	
FOLK 570	Topics in Regional Folklore Studies	
FOLK 690	Field School for Cultural Documentation	
Total Credits		9

[1] FOLK 550, 560, and 570 may be repeated for credit when the topic is different.

Linguistics Minor

Banner Code: LING

Academic Advising

4200 Horizon Hall
Fairfax Campus

Email: english@gmu.edu
Website: english.gmu.edu/programs/la-minor-la-ling

Linguistics is the scientific study of language. Language is studied descriptively, theoretically, computationally, psychologically, and as a social phenomenon. The field of linguistics thus informs and is informed by many other areas of study, including philosophy, psychology, sociology, computer science, the study of individual languages and literature, literary studies, and education.

This minor introduces the fundamental concepts of modern linguistic theory and explores how these concepts relate to various other disciplines.

Faculty

Back, Goldin, Jones, Leeman, Levine, Morrill, Roman-Mendoza, Serafini, Weinberger (director), Wulf

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 15

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Core Courses

General Linguistics

Code	Title	Credits
LING 306	General Linguistics (Mason Core)	3
Total Credits		3

Syntactic Theory, Phonological Theory, or Linguistic Semantics

Code	Title	Credits
Select one course from the following:		3
LING 486	Syntax I	
LING 490	Generative Phonology	
LING 485	Semantics and Pragmatics	
Total Credits		3

Electives

Code	Title	Credits
Select three from the following: [1]		9
Any LING course		
ANTH 114	Introduction to Cultural Anthropology (Mason Core)	
COMM 305	Foundations of Intercultural Communication (Mason Core)	
FRLN 380	Topics in the Sociopolitics of Language	
FRLN 385	Multilingualism, Identity, and Power (Mason Core)	
Any foreign language course beyond 202		
Total Credits		9

[1] Other elective courses, when topic is relevant, may be applied to the minor with the prior written approval of the director.

Linguistics, PhD

Banner Code: LA-PHD-LING

Academic Advising

4200 Horizon Hall
Fairfax Campus

Email: english@gmu.edu

Website: english.gmu.edu/programs/la-phd-ling

The PhD in Linguistics trains students in the science of language. Students become specialists in the core areas of linguistics-- phonology, syntax, and semantics --and learn to integrate this core with the study of second language acquisition. The program prepares students for positions in academia, industry, government, and a host of organizations concerned with language and second language acquisition. Graduates may become research and teaching professors, administrators of language-learning programs, and consultants in computational linguistic research.

Admissions & Policies

Admissions

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions.

For specific information, see Application Requirements and Deadlines (http://linguistics.gmu.edu/programs/application/LA-PHD-LING/).

Policies

For policies governing all graduate degrees, see Graduate Policies.

Reduction of Credit

For students entering the doctoral program with a master's degree, the number of required credits may be reduced by a maximum of 30 credits, subject to approval of the program faculty and the dean. Requests for reduction of credit are reviewed only after acceptance to the doctoral program.

Requirements

Degree Requirements

Total credits: 72

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Core Courses

Code	Title	Credits
Phonology		
LING 690	Phonology I	3
LING 692	Phonology II	3
LING 890	Advanced Phonology Seminar	3
Syntax		
LING 786	Syntax I	3
LING 787	Syntax II	3
LING 886	Advanced Syntax Seminar	3
Semantics/Pragmatics		
LING 785	Semantics and Pragmatics	3
LING 788	Semantics and Pragmatics II	3
Language Acquisition		
Select two courses from the following:		6
LING 582	Second Language Acquisition	

LING 782	Second Language Acquisition II	
LING 882	Seminar in Language Acquisition	
Research Methodology		
LING 770	Research Methods	3
Qualifying Papers		**6**
LING 898	Advanced Qualifying Seminar (Students register for this course twice)	
Total Credits		39

Two Seminars

Code	Title	Credits
Select 6 credits from the following: [1]		6
LING 882	Seminar in Language Acquisition	
LING 886	Advanced Syntax Seminar	
LING 890	Advanced Phonology Seminar	
Total Credits		6

[1] Students take two seminar courses in two chosen fields. Seminar topics change every time they are offered. They may be repeated for credit.

Electives

Code	Title	Credits
Select five electives from the following:		15
LING 507	Field Work in Applied Linguistics	
LING 521	Applied Linguistics: Teaching English to Speakers of Other Languages (TESOL)	
LING 522	English Grammar and Pedagogy	
LING 523	English Pronunciation and Pedagogy	
LING 525	Practicum in ESL	
LING 580	First Language Acquisition	
LING 581	Psycholinguistics	
LING 650	Introduction to Sociolinguistics	
LING 691	Theories of Language	
LING 798	Directed Reading and Research	
ENGH 592		
FREN 575	Grammatical Analysis	
FRLN 565	Theory of Translation	
SOCI 636	Statistical Reasoning	
SPAN 500	History of the Spanish Language	
SPAN 501	Applied Spanish Grammar	
SPAN 502	Hispanic Sociolinguistics	
PSYC 615	Language Development	
CS 580	Introduction to Artificial Intelligence	
CSI 600	Quantitative Foundations for Computational Sciences	
CSS 600	Introduction to Computational Social Science	
NEUR 604	Ethics in Scientific Research	
EDCI 516	Bilingualism and Language Acquisition Research	
EDCI 569	Teaching English in the Secondary School	
Total Credits		15

Advancement to Candidacy

To advance to candidacy, students must complete all coursework required on their approved program of study. Students must also successfully pass a written qualifying exam and an oral qualifying exam. In addition, students must have a dissertation committee appointed by the Dean's Office as well as an approved proposal. Evidence of the approved proposal must be on file in the Dean's Office before a student can advance to candidacy.

Dissertation

Once enrolled in LING 999 Doctoral Dissertation, students must follow the university's continuous registration policy as specified in AP.6.10.6 Dissertation Research. Students who defend in the summer must be registered for at least 1 credit of LING 999 Doctoral Dissertation.

Students apply to this degree a minimum of 12 dissertation credits (LING 998 Doctoral Dissertation Proposal and LING 999 Doctoral Dissertation combined) with at least 3 credits of LING 999 Doctoral Dissertation. Because of the continuous registration policy, students may be required to register for additional credits of these courses.

Code	Title	Credits
Dissertation Research		12
LING 998	Doctoral Dissertation Proposal	
LING 999	Doctoral Dissertation	
Total Credits		12

Literature and Composition Graduate Certificate

Banner Code: LA-CERG-LTCO

Academic Advising

4200 Horizon Hall
Fairfax Campus

Website: https://english.gmu.edu/programs/LA-CERG-LTCO

The Graduate Certificate in Literature and Composition prepares students for teaching literature and composition at the college level. Students will learn about specific subject areas of literature (American, British, World) and theories of composition.

Admissions & Policies

Policies

For policies governing all graduate programs, see AP.6 Graduate Policies.

Requirements

Certificate Requirements

Total credits: 18

This certificate may be pursued on a full-or part-time basis.

Required Courses

Code	Title	Credits
ENGH 610	Proseminar in Teaching the Reading of Literature	3
ENGH 697	Composition Theory	3
ENGH 500	Research in English Studies	3
Total Credits		9

Electives

Code	Title	Credits
Choose three courses from the following:		9
ENGH 511	Graduate Literature Survey	
ENGH 513	Topics in Literary and Cultural Studies	
ENGH 526	Special Topics in the History and Criticism of Children's Literature	
ENGH 551	Introduction to Literary Theory	
ENGH 590	Topics in Folk Narrative	
ENGH 620	Topics in Pedagogy	
ENGH 642	Seminar in British Literature	
ENGH 644	Seminar in American Literature	
ENGH 661	Seminar in African-American Literature	
ENGH 665	Seminar in Global Culture	
ENGH 685	Selected Topics, Movements, or Genres of Literature in English	
ENGH 696	Northern Virginia Writing Project Teacher/ Research Seminar	
Total Credits		9

Native American and Indigenous Studies Minor

Banner Code: NAIS

Academic Advising

4200 Horizon Hall
Fairfax Campus

Website: english.gmu.edu/programs/la-minor-la-nais

Native American and indigenous studies is an interdisciplinary field of study committed to understanding both the unity and the diversity of present and past Native American tribes, cultures, and experiences. This interdisciplinary minor will help students think critically and respectfully about the complex dynamics of Native American cultures, considered both individually and comparatively. In addition to practicing and developing critical thinking and writing skills, students in this interdisciplinary minor will learn how value systems operate in different cultures, examine the roots of conflict and resolution across a broad historical and cultural spectrum, better understand the importance of language as a means of cultural expression, and heighten their appreciation of the unique status of present-day Native American tribes as nations with certain sovereign powers within the boundaries of the United States.

In addition to a required course that introduces key concepts, events, figures, and methodological approaches, students take five 3-credit elective courses from no fewer than three departments. The coursework for this minor enables students to examine Native American cultures from a variety of disciplinary perspectives, including those that are anthropological, historical, artistic, philosophical, and political.

Faculty

Anderson (coordinator), Benitez, Bristol, Karush, Scully, Snead

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. For policies governing all minors, see AP.5.3.4 Minors.

No more than two courses from a single department can be applied to the minor. No more than 3 credits can be applied to both Mason Core requirements and the minor.

Requirements

Minor Requirements

Total credits: 18

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Core Courses

Code	Title	Credits
NAIS 201	Introduction to Native American and Indigenous Studies	3
Total Credits		3

Electives

Code	Title	Credits
Select five electives (15 credits) from the following: [1]		15
ANTH 302	Peoples and Cultures of Latin America (Mason Core)	
ANTH 307	Ancient Mesoamerica (Mason Core)	
ANTH 399	Issues in Anthropology (with permission of coordinator)	
ENGH 315	Folklore and Folklife (Mason Core)	
ENGH 484	RS: Writing Ethnography (Mason Core)	
HIST 391	History of Virginia to 1800	
HIST 401	Colonial America	
HIST 403	Revolutionary Era in American History, 1763-1812	
HIST 404	Jacksonian America, 1812-1854	
MUSI 103	Musics of the World (Mason Core)	
SOCI 308	Race and Ethnicity in a Changing World (Mason Core)	
Total Credits		15

[1] Special topics courses and summer field work offerings, when relevant, may be used to fulfill elective credits for the minor with prior written approval of the NAIS coordinator.

Professional and Technical Writing Minor

Banner Code: PTW

Academic Advising

4200 Horizon Hall
Fairfax Campus

Website: english.gmu.edu/programs/la-minor-la-ptw

This minor provides students with opportunities to learn and apply advanced strategies for writing academic, professional, and civic documents. Students examine the theoretical, interdisciplinary, and professional aspects of writing and develop their expository, persuasive, organizational, and stylistic skills through close analysis of rhetorical situations and the features and approaches of successful writing. The strong communication and analytical skills developed while earning this minor contribute to student success in a wide variety of professional careers as well as graduate education.

The minor is a valuable asset for students interested in working in media organizations, trade and professional associations, and non-profit organizations related to the arts, schools, and social change. It is also beneficial to students interested in careers in business, science, engineering, accounting, and many others that demand strong writing and communication skills for promotion and advancement.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

(formerly PW)

Minor Requirements

Total credits: 15

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Core Courses

Code	Title	Credits
ENGH 388	Professional and Technical Writing	3
Total Credits		3

Capstone Experience

Code	Title	Credits
Select one of the following:		3
ENGH 488	Topics in Writing and Rhetoric (when offered as "Advanced Technical Writing")	
ENGH 459	Internship (with permission of minor coordinator)	
Total Credits		3

Electives

Code	Title	Credits
Students must take 3 electives: either 3 ENGH courses, or 2 ENGH courses and 1 elective from outside the department.		9
English Courses		
ENGH 375	Web Authoring and Design	
ENGH 376	Rhetoric and New Media	
ENGH 380	Introduction to Writing and Rhetoric	
ENGH 382	Writing Nonfiction Genres	
ENGH 386	Editing for Audience, Style, and Voice	
ENGH 393	Forms of Nonfiction	
ENGH 399	Creative Nonfiction Writing	
ENGH 483	Technical Editing	
ENGH 484	RS: Writing Ethnography (Mason Core)	
ENGH 485	Document Design	
ENGH 486	RS: Writing Nonfiction for Publication (Mason Core)	
ENGH 488	Topics in Writing and Rhetoric	
ENGH 489	Proposal Writing and Development	
Interdisciplinary Courses		
AVT 395	Writing for Artists	
AVT 396	Writing for Designers	
COMM 303	Writing across the Media	
COMM 320	Business and Professional Communication	
COMM 401	Interpersonal Communication in the Workplace	
COMM 435	Digital Communication	
COS 300	Professional Preparation for STEM Disciplines	
PSYC 406	Psychology of Communication (Mason Core)	
PSYC 427	Community Engagement for Social Change (Mason Core)	
GAME 332	RS: Story Design for Computer Games	
HEAL 372	Health Communication	
Total Credits		9

Professional Writing and Editing Graduate Certificate

Banner Code: LA-CERG-PWE

Academic Advising

4200 Horizon Hall

Fairfax Campus

Admissions & Policies

Admissions

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions.

Policies

For policies governing all graduate certificates, see AP.6.8 Requirements for Graduate Certificates.

Concentration in Professional and Technical Writing

This concentration in the graduate certificate in professional writing and editing may be pursued concurrently with any of several programs in English and elsewhere. Part of the coursework toward the concentration may be applied to those degrees with the approval of the director of the degree program. Students pursuing the certificate in professional and writing and editing with a concentration in professional and technical writing must complete 18 credits of English graduate courses with a minimum grade of 3.00 in each course.

Requirements

Certificate Requirements

Total credits: 18

This certificate may be pursued on a full-or part-time basis.

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Concentration in Professional and Technical Writing (PTW)

This concentration in the graduate certificate in professional writing and editing may be pursued on a part-time basis only.

Coursework

Code	Title	Credits
ENGH 501	Introduction to Professional and Technical Writing [1]	3
ENGH 502	Research Methods in Professional and Technical Writing	3
ENGH 503	Theory and Practice of Editing	3
ENGH 505	Document Design	3
Total Credits		12

[1] ENGH 501 Introduction to Professional and Technical Writing should be taken in the first semester of study, if possible.

Emphasis in Technical Writing or Proposal Writing

Code	Title	Credits
Take courses from one of the following emphases:		6
Technical Writing Emphasis		
ENGH 613	Technical Communication	
Select one elective ENGH course (3 credits) chosen in consultation with an advisor		
Proposal Writing Emphasis		
ENGH 509	Proposal Writing and Development	
ENGH 689	Advanced Proposal Writing	
Total Credits		6

Teaching English as a Second Language Graduate Certificate

Banner Code: LA-CERG-TESL

Academic Advising

4200 Horizon Hall
Fairfax Campus

Website: english.gmu.edu/programs/la-cerg-tesl

The graduate certificate in teaching English as a second language (TESL) prepares students to teach non-native speakers of English in the United States or abroad. Certificate courses fulfill, in part, requirements for an endorsement in English as a second language to the Virginia state teaching credential. Students who want to earn this endorsement should consult with an advisor.

The certificate may be pursued concurrently with any of several degree programs offered through the College of Education and Human Development, the English Department, and the Modern and Classical Languages Department. Part of the coursework toward the certificate may be applied toward degrees in those departments.

This certificate program qualifies for Title IV Federal Financial Aid.

Admissions & Policies

Admissions

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions. For information specific to the graduate certificate in teaching English as a second language, see Application Requirements and Deadlines (http://linguistics.gmu.edu/programs/LA-CERG-TESL/application/).

Policies

Students pursuing this certificate must complete 18 credits, earning a minimum grade of 3.00 in each course.

For policies governing all graduate certificates, see AP.6.8 Requirements for Graduate Certificates.

Requirements

Certificate Requirements

Total credits: 18

This certificate may be pursued on a full-or part-time basis.

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Coursework

Code	Title	Credits
LING 520	Introduction to Linguistics [1]	3
LING 521	Applied Linguistics: Teaching English to Speakers of Other Languages (TESOL)	3
LING 522	English Grammar and Pedagogy	3
LING 523	English Pronunciation and Pedagogy	3
LING 525	Practicum in ESL	3
LING 582	Second Language Acquisition	3
Total Credits		18

[1] This course may be waived if student is concurrently pursuing the English, MA with a concentration in linguistics.

Teaching English as a Second Language Minor

Banner Code: TESL

Academic Advising

4200 Horizon Hall
Fairfax Campus

Website: english.gmu.edu/programs/la-minor-engl-tesl

This minor helps prepare undergraduate students to teach non-native speakers of English in the United States or abroad. This course of study combines linguistic theory, second language acquisition theory, and ESL teaching methodology.

The minor may be pursued concurrently with any undergraduate major. English majors concentrating in linguistics can apply up to nine credits in LING used for the major to the TESL minor.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 18

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Core Courses

Code	Title	Credits
LING 306	General Linguistics (Mason Core)	3
LING 307	English Grammar	3
LING 521	Applied Linguistics: Teaching English to Speakers of Other Languages (TESOL) [1]	3
LING 523	English Pronunciation and Pedagogy [1]	3
LING 582	Second Language Acquisition [1]	3
Total Credits		15

[1] Students must have approval from the linguistics director to register for 500-level courses.

Elective

Code	Title	Credits
Select one elective course from the following: [1]		3
Any course in a foreign language beyond the college requirement for the BA degree		
ANTH 114	Introduction to Cultural Anthropology (Mason Core)	
COMM 305	Foundations of Intercultural Communication (Mason Core)	
ENGH 318	Introduction to Cultural Studies	
LING 450	Introduction to Sociolinguistics	
LING 485	Semantics and Pragmatics	
LING 486	Syntax I	
LING 490	Generative Phonology	
LING 499	Independent Study	
LING 525	Practicum in ESL [2]	
Total Credits		3

[1] Other relevant courses may be applied to the minor with the prior written approval of the director.

[2] Students must have approval from the linguistics director to register for 500-level courses.

Writing and Rhetoric, PhD

Banner Code: LA-PHD-WRTR

Academic Advising

4200 Horizon Hall
Fairfax Campus

Email: wrphd@gmu.edu
Website: http://english.gmu.edu/programs/la-phd-wrtr

The doctoral program in writing and rhetoric offers a curriculum that emphasizes theoretical, practical, and productive approaches to composition, professional writing, and public rhetoric. The program is built on the premise that writing and teaching in twenty-first century organizations require the rigorous, integrated study of rhetoric, technology, pedagogy, culture, and research methodologies. In addition to our core curriculum, the program's proximity to Washington, D.C. makes it uniquely situated to provide opportunities for research and internships that go beyond and enrich the student's writing and rhetoric coursework.

Admissions & Policies

Admissions

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions. Applicants to the PhD in Writing and Rhetoric must already have earned a master's degree in a relevant field before being admitted to the program.

For further information specific to the PhD in Writing and Rhetoric, see Application Requirements and Deadlines (http://english.gmu.edu/programs/la-phd-wrtr/application/) on the college website.

Policies

For policies governing all graduate programs, see AP.6 Graduate Policies.

Reduction of Credit

Students must have a master's degree before being admitted to the PhD in Writing and Rhetoric. Most students receive a reduction of study of 30 credits based on their previous master's degree.

Program Requirements

To receive the PhD in Writing and Rhetoric, students complete a minimum of 78 credits of coursework, 48 beyond the master's degree. Beyond the basic coursework, a dissertation is required.

Requirements

Degree Requirements

Total credits: 78

Doctoral Coursework

Core Courses

Code	Title	Credits
ENGH 720	Histories of Institutional Rhetorics	3
ENGH 722	Composition Pedagogies and Programs in Context	3
ENGH 724	Professional Writing Theory and Research	3
ENGH 726	Rhetorical Theory and Public Spaces	3
Total Credits		12

Required Research Methods Course

Code	Title	Credits
ENGH 702	Research Methods in Rhetoric and Writing	3
Total Credits		3

Primary Focus Area

With a faculty advisor, students complete any combination of the following courses totaling 12 credits. The selected courses should form a consistent area of research around a specific object, practice, method, set of theories, or sub-field.

Code	Title	Credits
Select four courses from the following:		12
ENGH 602	Pedagogical Research	
ENGH 611	Studies in Rhetoric	
ENGH 615	Proseminar in Composition Instruction	
ENGH 620	Topics in Pedagogy	
ENGH 689	Advanced Proposal Writing	
ENGH 690	Special Topics in Writing and Rhetoric	
ENGH 697	Composition Theory	
ENGH 710	Core Readings in Writing Studies	
ENGH 820	Studies in Rhetorical Theory and Practice [1]	
ENGH 821	Writing Program Design and Administration	
ENGH 822	Studies in Composition [1]	
ENGH 824	Studies in Professional Writing [1]	
ENGH 826	Studies in Public Rhetorics [1]	
Total Credits		12

[1] May be repeated up to four times when topic differs.

Secondary Focus Area

The selected courses form a consistent secondary area of research that supports the student's primary area and developing research interests. It is strongly suggested that the secondary focus courses be taken in other programs or disciplines.

Code	Title	Credits
Select 3 courses from another program or discipline (see below) and/or the primary area courses, in consultation with advisor		9
Art and Visual Technology		
Communication		
Computer Game Design		
Conflict Analysis and Resolution		
Counseling and Development		
Cultural Studies		
Education Instructional Technology		
Education Leadership		
Educational Policy		
Global and Community Health		
Higher Education		
History		
Linguistics		
Philosophy		
Policy and Government		
Psychology		
Public Administration		
Public Policy		
Reading		
Social Work		
Sociology		
Social and Anthropology		
Statistics		
Women and Gender Studies		
Total Credits		9

Electives

Code	Title	Credits
Students receiving a reduction of credit of less than 30 will complete the remaining credits through additional elective courses chosen in consultation with an advisor.		0-30
Total Credits		0-30

Advancement to Candidacy

Prior to beginning dissertation research (normally after completion of 66 hours of coursework), students will take a written examination, successful completion of which will demonstrate a qualification for advancement to candidacy. The examination will cover foundation knowledge acquired in the writing and rhetoric core courses and in the student's area of primary focus.

Dissertation

The dissertation process, which begins after the student has completed 66 credit hours and passed the written qualifying exam, includes an oral exam on the dissertation proposal, the production of the dissertation, and an oral defense of the dissertation. The student's progress at all stages will be evaluated by the dissertation committee. The dissertation should use theoretical, historical, qualitative, and/or quantitative methods to address a rhetorical problem within an institutional or public context that is framed within a disciplinary field. While these projects are often multidisciplinary in approach, they should address a gap in a discipline's research as well as solve a public rhetorical problem.

Once enrolled in ENGH 998 Doctoral Dissertation Proposal, students in this degree program must maintain continuous registration in ENGH 998 or ENGH 999 Doctoral Dissertation each semester (excluding summers) until the dissertation is submitted to and accepted by the University Libraries. Once enrolled in ENGH 999, students must follow the university's continuous registration policy as specified in the Academic Policies section of the catalog. Students who defend in the summer must be registered for at least 1 credit of ENGH 999.

Code	Title	Credits
At least 3 credits of		3
ENGH 998	Doctoral Dissertation Proposal (3 credits required)	
At least 9 credits of		9
ENGH 999	Doctoral Dissertation (minimum of 9 credits)	
Total Credits		12

Department of History and Art History

3200 Horizon Hall
Fairfax Campus

Phone: 703-993-1250
Website: historyarthistory.gmu.edu

The department offers a number of degree programs, including undergraduate majors and minors in both history and art history, traditional and accelerated master of arts programs in both history and art history, and a doctoral degree in history. Additional programs include a dual master of arts in art history and arts management, and a graduate certificate in digital public humanities. The department coordinates the ancient history and Mediterranean archaeology minor. The minor in sport and American culture (https://historyarthistory.gmu.edu/programs/e1-minor-rht-samc/) is offered jointly by the Department of History and Art History and the School of Recreation, Health and Tourism.

Undergraduate Programs

History

Students in the Bachelor of Arts in History study a variety of places, from Africa to Asia to the Americas, Europe, and the Middle East, and historical time periods, from Greek and Roman antiquity to the late twentieth-century. They learn to interpret and evaluate the past by analyzing a variety of sources, from historical books and novels to images, films, oral interviews, newspapers, and other texts.

History majors have the opportunity to study with faculty who are internationally known for their work on the use of technology in the study of history. They can do an internship with one of them in the Center for History and New Media or at places like the Smithsonian Institution, the Library of Congress, or one of many other institutions in the Washington, D.C. area. There are also many opportunities to study abroad while earning credit towards the history major.

Advising

Students majoring or minoring in history are advised by the undergraduate director and a team of faculty advisors. History majors are urged to discuss their program of study periodically with the director.

Bachelor's/Accelerated Master's Programs

History, MA

The department offers highly qualified undergraduate majors in history the opportunity to apply to an accelerated master's degree program in history. If accepted, students will be able to earn both the undergraduate and graduate degrees after satisfactory completion of 138 credits. The BA and MA earned separately require 120 and 30 credits respectively.

MEd in Curriculum and Instruction (concentration in secondary education history and social science)

The Department of History and Art History and the Graduate School of Education jointly offer an accelerated MEd option for history majors. A BA in History and an MEd in Curriculum and Instruction with a concentration in secondary education history and social science can be earned after satisfactory completion of 138 credits.

Art History

The department offers highly qualified undergraduates in any major the opportunity to apply to an accelerated master's degree program in art history. If accepted, students will be able to earn both the undergraduate and graduate degrees after satisfactory completion of 138 credits, generally within five years.

Graduate Programs

History

The department offers a master's and a doctoral degree in history. In both programs, students select a specialization in American history, European history, or world history. Master's degree students choose from one of five concentrations: predoctoral history, applied history, enrichment, higher education, or teaching. Doctoral students focus their studies in one of four areas: college/university teaching, new media and information technology, public and applied history, or preprofessional development.

Graduate students in history have the opportunity to take courses in new media, studying with faculty who are internationally known for their use of technology in the study of history. Many students work alongside the faculty in the Center for History and New Media (https://rrchnm.org/), a leader in the use of digital media and computer technology to democratize history. The center uses digital media and technology to preserve and present history online, transform scholarship across the humanities, and advance historical education and understanding.

Students can do an internship in applied history at one of the many institutions in the Washington, D.C. area or study abroad while earning credit towards their degrees.

Art History

The department offers a richly interdisciplinary master's degree in art history. It draws on faculty strengths in traditional research and new media and the vast cultural resources of the Washington, D.C. area. Students learn methods of art historical analysis, a variety of art historical interpretations, and practical applications of the field. The program places a special emphasis on the development of skills in new media, museology, and pre-professional internships - program features that are unique to this region.

The master's degree in art history is designed to meet the needs of a student population with diverse interests and career goals. Because of the focus on skill building in traditional research as well as new media, graduates of this program have the tools necessary for independent research, professional work, and the dissemination of knowledge in art history.

Funding

The department offers teaching and research assistantships, which are awarded on a competitive basis. Other sources of funding such as grants, loans, and employment on campus are also available. Students awarded assistantships must register for a minimum of six credits a semester and show satisfactory progress toward their degree.

Faculty

Department Faculty

Professor Emeriti

History: Bakhash, J. Censer, J.T. Censer, Deshmukh, ffolliott, Henriques, Holt, Horton, Jensen, Lytton, Petrik, Wade
Art History: Butler, Mattusch, Todd

Robinson Professors

History: Crew
Art History: Hinton

Professors

History: Karush (chair), Kelly, Kierner, Landsberg, O'Malley, Ritterhouse, Robertson, Schrag, Sherwin, Smith, Stearns, Zagarri
Art History: DeCaroli, Greet

Associate Professors

History: Barnes, Bristol, Carton, Chang, Collins, Copelman, Genetin-Pilawa, Hamdani, Hamner, Hooper, Jordan, Lair, Lebovic, Manuel-Scott, Mullen, Pichichero, Platt, Scully, Takats, Tayac, Yilmaz
Art History: Ho, Schulman

Assistant Professors

History: Huneke, Otis, Park
Art History: Gearhart, Schulman, Williamson

Affiliate Faculty

History: D'Amico, Ferreiro, Harris-Scott, Wiggins

Term Faculty

History: Elzey, McCord, Mullen, Orens, Schulze, Staklo
Art History: Bauman, Gregg, McGuire

Term Assistant Professor

History: Oberle
Art History: McGuire

Programs

- Ancient History and Mediterranean Archaeology Minor
- Art History Minor
- Art History, BA
- Art History, MA
- Digital Humanities Minor
- Digital Public Humanities Graduate Certificate
- Health, Disease, and Culture Minor
- History Minor
- History, BA
- History, MA
- History, PhD
- Medieval Studies Minor
- STEM in Society Minor (CHSS)
- Sport and American Culture Minor (CHSS)

Ancient History and Mediterranean Archaeology Minor

Banner Code: AHMA

Academic Advising

3200 Horizon Hall
Fairfax Campus

Website: https://historyarthistory.gmu.edu/programs/la-minor-hist-ahma

This interdisciplinary minor is for students with diverse interests in the material culture of the ancient world. Coursework combines the study of archaeology, literature, art, history, philosophy, myth, and religion. The scope of the minor is not limited to Greece and Rome but touches on all the ancient civilizations of the Mediterranean and the heirs of late antiquity such as Byzantium and early Islam.

The minor represents foundation work crucial to graduate study in traditional departments of classical, near Eastern, or Mediterranean art and archaeology. Students should consult with the director for help in choosing a program of study that will complement their major.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Total credits: 18

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Core Courses

Select one course (3 credits) from each of the four categories below:

Code	Title	Credits
Near East and Northern Africa		**3**
ARTH 318	Art and Archaeology of Ancient Egypt	
ARTH 319	Art and Archaeology of the Ancient Near East (Mason Core)	
RELI 350	Religion and History of Ancient Israel	
RELI 381	Beginnings of Christianity	
Greece		**3**
HIST 301	Classical Greece	
ARTH 321	Greek Art and Archaeology (Mason Core)	
ARTH 324	From Alexander the Great to Cleopatra: The Hellenistic World (Mason Core)	
Rome/Late Antiquity		**3**
HIST 302	Classical Rome	
HIST 388	Topics in European History (when topic is Fall of the Roman Empire)	
ARTH 322	Roman Art and Archaeology (Mason Core)	
ARTH 333	Early Christian and Byzantine Art (Mason Core)	
Archaeological Methods		**3**
ANTH 114	Introduction to Cultural Anthropology (Mason Core)	
ANTH 325	Field Techniques in Archaeology	
ANTH 377	Mortuary Archaeology	
Total Credits		12

Electives

Code	Title	Credits
Select 6 credits from the following:		6
ANTH 357	Bioarchaeology	
ANTH 388	Human Osteology	
ANTH 389	Human Osteology Lab	
ANTH 393	Paleopathology	
ARTH 320	Art of the Islamic World (Mason Core)	
ARTH 420	Advanced Studies in Ancient Art	
HIST 281	Survey of Middle Eastern Civilization (Mason Core)	
RELI 352	Judaism from Exile to Talmud	
RELI 356	Jesus and the Gospels	
RELI 365	Muhammad: Life and Legacy	
PHIL 301	History of Western Philosophy: Ancient	
CLAS 240	Greek and Latin Elements in English	
CLAS 250	Classical Mythology (Mason Core)	
CLAS 260	The Legacy of Greece and Rome (Mason Core)	
CLAS 330	Roman Law and Society	
CLAS 340	Greek and Roman Epic (Mason Core)	
CLAS 350	Greek and Roman Tragedy (Mason Core)	
CLAS 360	Greek and Roman Comedy (Mason Core)	
CLAS 380	Greek and Roman Novels (Mason Core)	
CLAS 390	Topics in Classical Literature and Culture	
Course in core requirement list above but not used to meet the core requriement		
Study Abroad course approved by the minor director		
Any undergraduate course in a relevant academic language (Arabic, French, German, Latin, ancient Greek) beyond the language requirement for the BA in the College of Humanities and Social Sciences		
Total Credits		6

Art History Minor

Banner Code: AH

Academic Advising

3200 Horizon Hall
Fairfax Campus

Website: historyarthistory.gmu.edu/programs/la-minor-hist-arth

This minor covers a broad spectrum of periods, cultures, and themes, with an emphasis on historical context.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. A maximum of 6 credits of ARTH 398 Study Abroad in the History of Art may be applied to the minor with permission of department.

For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 18

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Students are strongly encouraged to participate in a study abroad program. ARTH 394 The Museum (Mason Core) is not required for the minor but is strongly encouraged.

Coursework

Code	Title	Credits
Select one to two 100- or 200-level courses in art history		3-6
Select four to five 300- or 400-level courses in art history		12-15
Total Credits		18

Art History, BA

Banner Code: LA-BA-AH

3200 Horizon Hall
Fairfax Campus

Website: historyarthistory.gmu.edu/programs/la-ba-ah

Art History emphasizes the analysis of visual data in a historical context. Faculty expertise extends to many world regions—the United States, Latin America, Europe, the Mediterranean, South and Southeast Asia, China, and the Islamic world—and over all historical periods. Students apply what they learn through internship opportunities available in the Washington DC area, including the world-famous collections of the National Gallery of Art and the Smithsonian Institutions. Students go on to work in areas including museums, arts institutions, galleries, government and managerial positions. They also pursue further studies in fields including art history, library science, design technology, historic preservation, and fashion.

Admissions & Policies

Policies

Students pursuing this degree must complete 33 to 34 credits within the major, with a minimum GPA of 2.00. Up to 6 credits in art history internships may be applied toward ARTH requirements for the major, with permission of the art history undergraduate director. A maximum of 6 credits of ARTH 398 Study Abroad in the History of Art may be applied to the major with permission of department.

For policies governing all undergraduate degrees, see AP.5 Undergraduate Policies.

Requirements

Degree Requirements

Total credits: minimum 120

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

All art history majors are encouraged to pursue internships in art history (ARTH 393 Art History Internships) in their junior or senior year. Students are strongly encouraged to participate in a study abroad program. Students contemplating graduate study in art history should acquire a reading knowledge of French, German, or other appropriate research languages in consultation with an advisor.

Core Courses in the Major

Code	Title	Credits
Select one 3-credit survey course from the following:		3
ARTH 200	History of Western Art I (Mason Core)	
ARTH 201	History of Western Art II (Mason Core)	
ARTH 203	Survey of Asian Art (Mason Core)	
ARTH 204	Survey of Latin American Art (Mason Core)	
ARTH 394	The Museum (Mason Core)	3
Select 15 credits from ARTH courses at the 300 level [1]		15
Total Credits		21

[1] In addition to ARTH courses, art history majors may use 3 credits of a 300-level HIST course to fulfill this requirement.

Code	Title	Credits
400-Level ARTH Courses		
Select 6 credits in ARTH at the 400 level or above:		6
ARTH 400	Historiography and Methods of Research in Art History (Topic Varies)	
ARTH 420	Advanced Studies in Ancient Art	
ARTH 430	Advanced Studies in Medieval or Islamic Art	
ARTH 440	RS: Advanced Studies in Renaissance and Baroque Art	
ARTH 460	RS: Advanced Studies in 20th-Century European Art	
ARTH 471	Advanced Studies in Art of the United States	
ARTH 472	RS: Advanced Studies in 20th-Century Latin American Art	
ARTH 474	Advanced Studies in Contemporary Art	
ARTH 482	RS: Advanced Studies in Asian Art	
ARTH 495	RS: Objects and Archives in Art History	
ARTH 499	Advanced Studies in Art History	
Art and Visual Technology Course		
Select one from the following:		3-4
AVT 103	Introduction to the Artist's Studio (Mason Core)	
AVT 104	Two-Dimensional Design and Color (Mason Core)	
AVT 222	Drawing I (Mason Core)	
AVT 232	Painting I (Mason Core)	
AVT 243	Printmaking I (Mason Core)	
AVT 252	Darkroom Photography I (Mason Core)	
AVT 253	Digital Photography I (Mason Core)	
AVT 262	Sculpture I (Mason Core)	
Total Credits		9-10

Elective in the Major

Code	Title	Credits
Select one 3-credit elective from any art history course		3
Total Credits		3

Writing-Intensive Requirement

The university requires all students to complete at least one course designated as "writing intensive" in their majors at the 300 level or above. Students majoring in art history fulfill the university's writing-intensive requirement by successfully completing 3 credits in any 400-level ARTH course.

Additional Electives

Any remaining credits may be completed with elective courses to bring the degree total to 120.

Upper Level Requirement

Students seeking a bachelor's degree must apply at least 45 credits of upper-level courses (numbered 300 or above) toward graduation requirements.

College Level Requirements for the BA Degree

In addition to the Mason Core program, students pursuing a BA degree must complete the coursework below. Except where expressly prohibited, a course used to fulfill a college level requirement may also be used simultaneously to satisfy other requirements (Mason Core requirements or requirements for the major).

Philosophy or Religious Studies

Code	Title	Credits
Select 3 credits from the following:		3
PHIL [1]		
RELI		

[1] Note that the following courses may not be used to fulfill this requirement:

- PHIL 323 Classical Western Political Theory
- PHIL 324 Modern Western Political Theory
- PHIL 327 Contemporary Western Political Theory
- PHIL 393 Humanities College to Career
- PHIL 460 Senior Seminar in Philosophy, Politics, and Economics

Additionally, PHIL 253 Philosophy and Literature (Mason Core), RELI 235 Religion and Literature (Mason Core), and RELI 333 Spiritual Autobiography (Mason Core) cannot be used to fulfill both the philosophy/religious studies requirement and the Mason Core literature requirement.

Social and Behavioral Sciences

Code	Title	Credits
Select 3 credits of social and behavioral sciences from the following (additional to the Mason Core social and behavioral sciences requirement) [1]		3
ANTH		
CRIM		
ECON		
GOVT		
HIST [2]		
LING		
PSYC		
SOCI		
Or choose from the following GGS courses:		
GGS 101	Major World Regions (Mason Core)	
GGS 103	Human Geography (Mason Core)	
GGS 110	Introduction to Geoinformation Technologies	
GGS 301	Political Geography (Mason Core)	
GGS 303	Geography of Resource Conservation (Mason Core)	
GGS 304	Population Geography (Mason Core)	
GGS 305	Economic Geography	
GGS 306	Urban Geography	
GGS 315	Geography of the United States	
GGS 316	Geography of Latin America	
GGS 320	Geography of Europe	
GGS 325	Geography of North Africa and the Middle East	
GGS 330	Geography of the Soviet Succession States	
GGS 357	Urban Planning	
GGS 380	Geography of Virginia	

[1] The two courses used to fulfill the combined college and Mason Core requirements must be from different disciplines in the social and behavioral sciences.

[2] HIST 100 History of Western Civilization (Mason Core) and HIST 125 Introduction to World History (Mason Core) may not be used to fulfill this requirement.

Foreign Language

Code	Title	Credits
Intermediate-level proficiency in one foreign language, fulfilled by: [1]		
Completing 3 credits in a foreign language numbered 202 (or higher level courses taught in the language)		
Or achieving a satisfactory score on an approved proficiency test		
Or completing the following ASL three course sequence:		
EDSE 115	American Sign Language (ASL) I	
EDSE 116	American Sign Language (ASL) II	
EDSE 219	American Sign Language (ASL) III	

[1] Students who are already proficient in a second language may be eligible for a waiver of this requirement. Additional information on waivers can be found at the Office of Undergraduate Academic Affairs (http://chssundergrad.gmu.edu/).

Non-Western Culture

Select 3 credits of an approved course in the study of a non-Western culture (additional to the Mason Core requirement in global understanding)

Code	Title	Credits
Select 3 credits (additional to Mason Core Global Understanding requirement) [1]		
ANTH 114	Introduction to Cultural Anthropology (Mason Core)	3
ANTH 300	Civilizations	3
ANTH 302	Peoples and Cultures of Latin America (Mason Core)	3
ANTH 307	Ancient Mesoamerica (Mason Core)	3

ANTH 308	Peoples and Cultures of the Middle East (Mason Core)	3
ANTH 309	Peoples and Cultures of India (Mason Core)	3
ANTH 313	Myth, Magic, and Mind (Mason Core)	3
ANTH 314	Zombies	3
ANTH 330	Peoples and Cultures of Selected Regions: Non-Western	3
ANTH 332	Cross-Cultural Perspectives on Globalization (Mason Core)	3
ANTH 381	Medical Anthropology	3
ANTH 396	Issues in Anthropology: Social Sciences (Mason Core)	3
ARAB 360	Topics in Arabic Cultural Production	3
ARAB 420	Survey of Arabic Literature	3
ARAB 440	Topics in Arabic Religious Thought and Texts (Mason Core)	3
ARTH 203	Survey of Asian Art (Mason Core)	3
ARTH 204	Survey of Latin American Art (Mason Core)	3
ARTH 206	Survey of African Art (Mason Core)	3
ARTH 318	Art and Archaeology of Ancient Egypt	3
ARTH 319	Art and Archaeology of the Ancient Near East (Mason Core)	3
ARTH 320	Art of the Islamic World (Mason Core)	3
ARTH 382	Arts of India (Mason Core)	3
ARTH 383	Arts of Southeast Asia (Mason Core)	3
ARTH 384	Arts of China (Mason Core)	3
ARTH 385	Arts of Japan (Mason Core)	3
ARTH 386	The Silk Road (Mason Core)	3
ARTH 482	RS: Advanced Studies in Asian Art	3
CHIN 318	Introduction to Classical Chinese (Mason Core)	3
CHIN 320	Contemporary Chinese Film	3
CHIN 325	Major Chinese Writers (Mason Core)	3
CHIN 470	Special Topics in Chinese Studies	3
DANC 118	World Dance (Mason Core)	3
ECON 361	Economic Development of Latin America (Mason Core)	3
ECON 362	African Economic Development (Mason Core)	3
FREN 451	Topics in Sub-Saharan Francophone Literature and Culture	3
FREN 454	Topics in Caribbean Francophone Literature and Culture	3
GGS 101	Major World Regions (Mason Core)	3
GGS 316	Geography of Latin America	3
GGS 317	Geography of China (Mason Core)	3
GGS 325	Geography of North Africa and the Middle East	3
GGS 330	Geography of the Soviet Succession States	3
GGS 399	Select Topics in GGS	3
GOVT 328	Global Political Theory	3
GOVT 332	Government and Politics of the Middle East and North Africa	3
GOVT 333	Government and Politics of Asia	3
GOVT 338	Government and Politics of Russia	3
GOVT 340	Central Asian Politics	3
GOVT 341	Chinese Foreign Policy	3
GOVT 345	Islam and Politics	3
GOVT 433	Political Economy of East Asia	3
HIST 251	Survey of East Asian History (Mason Core)	3
HIST 252	Survey of East Asian History (Mason Core)	3
HIST 261	Survey of African History (Mason Core)	3
HIST 262	Survey of African History (Mason Core)	3
HIST 271	Survey of Latin American History (Mason Core)	3
HIST 272	Survey of Latin American History (Mason Core)	3
HIST 281	Survey of Middle Eastern Civilization (Mason Core)	3
HIST 282	Survey of Middle Eastern Civilization (Mason Core)	3
HIST 326	Stalinism	3
HIST 327	The Soviet Union and Russia Since World War II	3
HIST 328	Rise of Russia (Mason Core)	3
HIST 329	Modern Russia and the Soviet Union (Mason Core)	3
HIST 353	History of Traditional China	3
HIST 354	Modern China (Mason Core)	3
HIST 356	Modern Japan (Mason Core)	3
HIST 357	Postwar Japan (Mason Core)	3
HIST 358	Post-1949 China (Mason Core)	3
HIST 360	History of South Africa (Mason Core)	3
HIST 364	Revolution and Radical Politics in Latin America (Mason Core)	3
HIST 365	Conquest and Colonization in Latin America (Mason Core)	3
HIST 366	Comparative Slavery	3
HIST 367	History, Fiction, and Film in Latin America	3
HIST 387	Topics in Global History (Mason Core)	3-6
HIST 426	The Russian Revolution	3
HIST 460	Modern Iran (Mason Core)	3
HIST 461	Arab-Israeli Conflict	3
HIST 462	Women in Islamic Society (Mason Core)	3
HIST 465	The Middle East in the 20th Century	3
JAPA 310	Japanese Culture in a Global World (Mason Core)	3
JAPA 340	Topics in Japanese Literature (Mason Core)	3
KORE 320	Korean Popular Culture in a Global World	3
MUSI 103	Musics of the World (Mason Core)	3
RELI 211	Religions of the West (Mason Core)	3
RELI 212	Religions of Asia (Mason Core)	3

RELI 240	Death and the Afterlife in World Religions	3
RELI 272	Islam	3
RELI 313	Hinduism (Mason Core)	3
RELI 314	Chinese Philosophies and Religious Traditions	3
RELI 315	Buddhism (Mason Core)	3
RELI 317	Daoism	3
RELI 337	Mysticism: East and West	3
RELI 365	Muhammad: Life and Legacy	3
RELI 374	Islamic Thought (Mason Core)	3
RELI 375	Qur'an and Hadith	3
RELI 379	Islamic Law, Society, and Ethics	3
RELI 387	Islam, Democracy, and Human Rights	3
RELI 490	Comparative Study of Religions (Mason Core)	3
RUSS 353	Russian Civilization (Mason Core)	3
RUSS 354	Contemporary Post-Soviet Life (Mason Core)	3

[1] A course used to fulfill the Mason Core global understanding requirement may not be simultaneously used to satisfy this college-level requirement. A course used to fulfill this requirement may be used simultaneously to fulfill any other requirements (Mason Core requirements, college-level requirements, or requirements for the major). Additional information on waivers can be found at the Office of Undergraduate Academic Affairs (http://chssundergrad.gmu.edu/).

Mason Core

Some Mason Core requirements may already be fulfilled by the major requirements listed above. Students are strongly encouraged to consult their advisors to ensure they fulfill all remaining Mason Core requirements.

Code	Title	Credits
Foundation Requirements		
Written Communication (ENGH 101)		3
Oral Communication		3
Quantitative Reasoning		3
Information Technology and Computing		3
Exploration Requirements		
Arts		3
Global Understanding		3
Literature		3
Natural Science		7
Social and Behavioral Sciences		3
Western Civilization/World History		3
Integration Requirements		
Written Communications (ENGH 302)		3
Writing-Intensive [1]		3
Synthesis/Capstone [2]		3
Total Credits		40

[1] Most programs include the writing-intensive course designated for the major as part of the major requirements; this course is therefore not counted towards the total required for Mason Core.

[2] Minimum 3 credits required.

4-Year Plan

Bachelor of Arts in Art History Sample Plan of Study

A sample four year graduation plan and degree planning worksheet can be found at https://academicaffairs.chss.gmu.edu/undergraduate-students/advising/advising-sheets (https://academicaffairs.chss.gmu.edu/undergraduate-students/advising/advising-sheets/). The plan is a recommended sequencing of courses based on prerequisites and scheduling. This may not fit every student's needs and is a guideline, not a requirement. Students should confirm major requirements with their academic advisor each semester and with their PatriotWeb Degree Evaluation to ensure they enroll in the proper courses and are on track to graduate.

Honors

Honors in the Major

Eligibility

Majors who have completed 75 credits (a minimum of 15 credits in art history, with 6 credits taken at Mason) with an overall GPA of 3.50 and a GPA of 3.80 in art history are eligible to apply to graduate with honors in art history. Eligible students should apply to the undergraduate director by November 15 or April 15 with a statement of application including the names of two references from Mason art history faculty members. Transfer students should also submit transcripts. Not all applicants who meet the minimum requirements are guaranteed acceptance into honors in the major.

Honors Requirements

Students pursuing honors in the major complete ARTH 492 Honors Directed Readings and ARTH 493 Honors Directed Research, linked individualized courses that culminate in a research paper. Students must have completed at least 3 credits in the field (or with the professor) chosen for these honors courses. ARTH 492 Honors Directed Readings should be taken before ARTH 493 Honors Directed Research, but they may be taken concurrently. To graduate with honors in the major, students must earn a minimum GPA of 3.50 in honors courses and a minimum GPA of 3.50 in art history courses applied to the degree. The two honors courses (6 credits) may be applied toward the requirement of 33- to 34-credits in art history, but they cannot replace the 6 required credits in the following:

Code	Title	Credits
ARTH 400	Historiography and Methods of Research in Art History (Topic Varies)	3
ARTH 420	Advanced Studies in Ancient Art	3
ARTH 430	Advanced Studies in Medieval or Islamic Art	3
ARTH 440	RS: Advanced Studies in Renaissance and Baroque Art	3

ARTH 460	RS: Advanced Studies in 20th-Century European Art	3
ARTH 471	Advanced Studies in Art of the United States	3
ARTH 472	RS: Advanced Studies in 20th-Century Latin American Art	3
ARTH 474	Advanced Studies in Contemporary Art	3
ARTH 482	RS: Advanced Studies in Asian Art	3
ARTH 495	RS: Objects and Archives in Art History	3
ARTH 499	Advanced Studies in Art History	3
ARTH 599	Special Topics in Art History	1-6

Accelerated Master's

Many accelerated master's programs are available for any bachelor's degree at Mason, including this one. See the full list of degrees (http://catalog.gmu.edu/programs/#filter=filter_24) with accelerated programs at George Mason.

Bachelor's Degree (any)/Art History, Accelerated MA

Overview

Highly qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BA/BS in a chosen major and an MA in Art History in an accelerated time-frame after satisfactory completion of a minimum of 138 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degree for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Polices and Bachelor's/Accelerated Master's Degree policies. For information specific to the accelerated MA in Art History, see Application Requirements and Deadlines (https://historyarthistory.gmu.edu/programs/LA-MA-ACEL-AH/application/) on the departmental website.

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits and meeting with the Art History BAM coordinator, undergraduate director and graduate director.

Students who are accepted in the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MA program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- Minimum overall GPA of 3.50
- Completion of at least two 300-level art history courses with a minimum grade of B+ in each
- Minimum grade of B in each advanced standing course
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing courses (up to 12 credits with a minimum grade of B in each)

ARTH 599 Special Topics in Art History (may be repeated for up to 12 credits when topic differs)
ARTH 600 Methods and Research in Art History (3 credits)

Reserve Graduate Credit courses (up to 6 credits) taken while an undergraduate and will only count for the graduate degree program

ARTH 599 Special Topics in Art History (may be repeated for up to 6 credits when topic differs)

For more detailed information on coursework and timeline requirements see AP.6.7 Bachelor's Accelerated Master's Degree policies.

Art History, MA

Banner Code: LA-MA-AH

Academic Advising

3200 Horizon Hall
Fairfax Campus

Website: historyarthistory.gmu.edu/programs/la-ma-ah

Art History MA students combine traditional research with the application of new media, while accessing the opportunities offered through the cultural resources of the Washington, D.C. area. The program emphasizes new media skills, museum studies, and pre-professional internship training. Students study a broad range of art-historical periods, theory, and research methods. Faculty specialize in periods from ancient to contemporary, and in areas covering Europe, North and South America, Asia, and the Middle East. Graduates are well-prepared for art museum and gallery professional work, where a master's degree is now routinely required, or for further study in doctoral programs.

Admissions & Policies

Admissions

Application Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in the Admissions section of this catalog. For information specific to the MA in Art History, see Application Requirements and Deadlines (http://historyarthistory.gmu.edu/programs/la-ma-ah/application/).

Policies

For policies governing all graduate degrees, see Graduate Policies.

This program does not permit a reduction of credit based on a previously-conferred graduate degree.

Requirements

Degree Requirements

Total credits: 30

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Core Courses

Code	Title	Credits
ARTH 600	Methods and Research in Art History	3
ARTH 601	Colloquium in Art History	3
ARTH 599	Special Topics in Art History	3
or ARTH 699	Topics in Art History	
Total Credits		9

Applied Preprofessional Learning

Code	Title	Credits
Three credits in one of the following:		3
ARTH 593	Internship in Art History	
ARTH 594	The Museum	
Other coursework approved by the program director [1]		
Total Credits		3

[1] Students who enter the MA program through the accelerated MA option, and received credit for ARTH 394 The Museum (Mason Core) as an undergraduate, are expected to fulfill this requirement with an internship or alternate course rather than ARTH 594 The Museum.

Technology and New Media

Code	Title	Credits
HIST 696	Clio Wired: An Introduction to History and New Media	3
or HIST 697	Creating Historical Knowledge using Digital Methods	
or HIST 680	Introduction to Digital Humanities	
Total Credits		3

Electives

Code	Title	Credits
Select four to five electives [1]		12-15
HIST courses		
ARTH courses		
AVT courses [2]		
ANTH courses [2]		
CULT courses [2]		
Total Credits		12-15

[1] Students who choose to write a thesis complete 12 elective credits; others complete 15.

[2] Students may choose electives in AVT, ANTH, or CULT with prior written permission of the graduate director.

Research Language Proficiency

Students must demonstrate reading ability in one relevant research language that must be approved by the graduate director. To meet this requirement, students must either achieve a satisfactory score on a proficiency exam or present coursework equivalent to a grade of B or better in an intermediate-level foreign language course (202 or higher at George Mason).

Written Comprehensive Exam

Students who do not pass may retake the exam once, following the original process. The second exam must be taken within 12 months of the first exam.

Optional Thesis

Students who choose to write a thesis should be aware of the policies governing theses as stated in AP.6.9.3 Master's Thesis policies. They must follow the thesis enrollment policy of the university and once enrolled in ARTH 799 Master's Thesis, maintain continuous enrollment.

Code	Title	Credits
Three credits of		3
ARTH 799	Master's Thesis	
Total Credits		3

Accelerated Master's

Bachelor's Degree (any)/Art History, Accelerated MA

Overview

Highly qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BA/BS in a chosen major and an MA in Art History in an accelerated time-frame after satisfactory completion of a minimum of 138 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degree for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Polices and Bachelor's/Accelerated Master's Degree policies. For information specific to the accelerated MA in Art History, see Application Requirements and Deadlines (https://historyarthistory.gmu.edu/programs/LA-MA-ACEL-AH/application/) on the departmental website.

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits and meeting with the Art History BAM coordinator, undergraduate director and graduate director.

Students who are accepted in the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MA program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- Minimum overall GPA of 3.50
- Completion of at least two 300-level art history courses with a minimum grade of B+ in each
- Minimum grade of B in each advanced standing course
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing courses (up to 12 credits with a minimum grade of B in each)

ARTH 599 Special Topics in Art History (may be repeated for up to 12 credits when topic differs)
ARTH 600 Methods and Research in Art History (3 credits)

Reserve Graduate Credit courses (up to 6 credits) taken while an undergraduate and will only count for the graduate degree program

ARTH 599 Special Topics in Art History (may be repeated for up to 6 credits when topic differs)

For more detailed information on coursework and timeline requirements see AP.6.7 Bachelor's Accelerated Master's Degree policies.

Digital Humanities Minor

Banner Code: DGH

Abby Mullen

473 Research Hall
Fairfax Campus

Email: amullen2@gmu.edu
Website: https://historyarthistory.gmu.edu/programs/la-minor-la-dgh

Overview

The Digital Humanities minor is designed to help students expand their ability to make humanities arguments using digital tools. This minor takes an interdisciplinary, expansive view of the humanities, including courses from across the college. Students will learn how to interpret, analyze, and use digital methods to communicate in new and innovative ways, including skills such as digital rhetoric, podcast creation, mapping, and data visualization.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00.

For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 16

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Required Courses

Code	Title	Credits
HIST 390	The Digital Past	3
CHSS 405	Digital Humanities Project	1
Total Credits		4

Electives

Code	Title	Credits
Students will take at least two courses from the methods list and at least one course from the topics list. A total of 12 credits of electives is required.		12
Methods		
Select at least two courses from the following:		
COMM 302	Media Theory	
ENGH 370	Introduction to Documentary (Mason Core)	
ENGH 375	Web Authoring and Design	
ENGH 376	Rhetoric and New Media	
INTS 348	Digital Futures	
SOCI 313	Statistics for the Behavioral Sciences (Mason Core)	
SOCI 391	Big Data, Technology, and Society	
Other courses as approved by the minor director		
Topics		
Select at least one course from the following:		
ENGH 377	Digital Creative Writing	
ENGH 458	RS: Topics in Literary Research (Mason Core)	
HIST 395	Topics in Digital History	
Other courses as approved by the minor director		
Total Credits		12

Digital Public Humanities Graduate Certificate

Banner Code: LA-CERG-DPH

Academic Advising

3200 Horizon Hall
Fairfax Campus

Website: historyarthistory.gmu.edu/programs/la-cerg-dph

The graduate certificate in digital public humanities is a fully online program that trains students in a wide range of digital tools that are in increasingly high demand in humanities careers. Students will use these tools in developing their own digital projects, thus enhancing their professional portfolio. Students will also gain professional experience through an internship with the Smithsonian Institution, focused on applying skills learned from coursework. Internships will be coordinated remotely, allowing students to work from their locations.

Admissions & Policies

Admissions

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions. For information specific to the graduate certificate in cognitive neuroscience, see Application Requirements and Deadlines (http://historyarthistory.gmu.edu/programs/la-cerg-dph/application/).

Policies

Students pursuing this certificate must complete 15 credits of history graduate courses with a minimum grade of 3.00 in each course.

For policies governing all certificates, see AP.6.8 Requirements for Graduate Certificates.

Requirements

Certificate Requirements

Total credits: 15

This certificate may be pursued on a part-time basis only.

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Core Requirements

Code	Title	Credits
HIST 680	Introduction to Digital Humanities	3
HIST 689	Teaching and Learning History in the Digital Age	3
HIST 694	Digital Public History	3
Total Credits		9

Internship Requirement

Code	Title	Credits
Six credits of		6
HIST 794	Internship in Applied History	
Total Credits		6

Health, Disease, and Culture Minor

Banner Code: HDC

Academic Advising

3200 Horizon Hall
Fairfax Campus

Website: https://historyarthistory.gmu.edu/programs/la-minor-hist-hdc

The Health, Disease, and Culture minor provides students with a multidisciplinary understanding of the social construction of health and diseases in modern and historical societies. A combination of courses in health, humanities, and social sciences allows for a view of health and disease from both a contemporary and historical lens with a variety of disciplinary perspectives.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00.

For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 15

Core Courses

Code	Title	Credits
Social and Cultural Constructions of Health and Disease		
Select two courses from the following:		6
ANTH 363	Humans, Disease, and Death (Mason Core)	
ANTH 381	Medical Anthropology	
COMM 304	Foundations of Health Communication	
COMM 334	Family and Health Communication	
HEAL 230	Introduction to Health Behavior (Mason Core)	
HEAL 372	Health Communication	
HIST 387	Topics in Global History (Mason Core) (when topic is GLobal History of Disease)	
INTS 440	Death, Dying, and Decision Making	
PHIL 344	Ethical Issues in Global Health	
PSYC 381	Mental Illness and Criminal Justice	
PSYC 418	Death, Dying, and Grieving	
RELI 240	Death and the Afterlife in World Religions	
RELI 341	Global Perspectives on Spirituality and Healing (Mason Core)	
WMST 319	Gender, Health, and Culture in the United States	
Science of Health and Disease		
Select two courses from the following:		6

EVPP 409	Medical Mycology
EVPP 427	Conservation Medicine
GCH 205	Global Health (Mason Core)
GCH 300	Introduction to Public Health
GCH 305	Introduction to OneHealth
GCH 310	Health Behavior Theories
GCH 332	Health and Disease
GCH 360	Health and Environment
GCH 405	Global Health Interventions: History and Systems
GCH 406	Global Health Interventions: Emerging Issues
GCH 412	Fundamentals of Epidemiology
GCH 426	Global Emerging Infectious Diseases
GCH 445	Social Determinants of Health
or SOCW 445	Social Determinants of Health
GCH 450	Culture, Sexuality and the Global AIDS Epidemic
GCH 491	Study Abroad in Public Health
INTS 355	Mindfulness, Meaning Well-Being
INTS 356	Foundations of Resilience and Well-Being
INTS 410	Contemporary Health Issues
PSYC 325	Abnormal Psychology
PSYC 417	Science of Well Being
Total Credits	12

Elective Course

Code	Title	Credits
Select course from above lists that was not used to meet another requirement or complete an internship with a health-related focus		3
ANTH 495	Internship	
COMM 450	Internship in Communication	
GLOA 495	Global Experiential Learning	
HHS 480	Research Internship in Public Health	
HIST 399	Internship	
INTS 390	International Internship (Mason Core)	
PHIL 306	Philosophy Internship	
RELI 426	Religious Studies Internship	
SOCI 416	Internship in Sociology I (Mason Core)	
WMST 400	Internship in Women and Gender Studies	
Total Credits		3

History Minor

Banner Code: HIST

Academic Advising

3200 Horizon Hall
Fairfax Campus

Website: historyarthistory.gmu.edu/programs/la-minor-hist-hist

The history minor allows majors in other disciplines to round out their education by completing a three-course concentration in the history of a world region and taking three additional history courses of their own choosing. History minors have opportunities to conduct independent research, engage in globally relevant activities through coursework and language study at Mason and abroad, and prepare for their future careers through internships and other college-to-career activities.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. Of the 18 credits applied to the minor, 12 credits must be at the 300 or 400-level.

For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 18

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Core Courses

Code	Title	Credits
Select three courses (9 credits) concentrated in a region or topic.		9
Total Credits		9

Students choose courses to meet this requirement that are concentrated in a region or topic. The region or topic should relate, if possible, to their major. Lists of courses, by region, can be found in the BA in history without concentration degree requirements. Students should review their plan with the director of the minor.

Electives

Code	Title	Credits
Select three electives (9 credits) in History		9
Total Credits		9

In addition to HIST courses, students may use HNRS 240 Reading the Past (Topic Varies) to fulfill this requirement.

History, BA

Banner Code: LA-BA-HIST

3200 Horizon Hall
Fairfax Campus

Website: historyarthistory.gmu.edu/programs/la-ba-hist

The Bachelor of Arts in History looks at the range of human experience: how people have lived in the past, how they live and coexist in the present, and the links between the two. Students learn to interpret the past by examining a variety of original sources: newspapers, letters and diaries, literature, government records, images, films, oral interviews,

and more. Majors hone their skills in collecting, interpreting, and communicating information. Majors move on to careers in government, law, and management, as well as teaching and graduate study.

Admissions & Policies

Policies

Students pursuing this degree must complete 36 credits within the major with at least 18 credits at the 300 and 400 levels. Additional credits of history in excess of 36 may be presented as elective credits to be counted toward graduation. Students must have a minimum GPA of 2.00 in courses applied to the major.

HIST 300 Introduction to Historical Method (Mason Core) and HIST 499 RS: Senior Seminar in History (Mason Core) may not be used to satisfy the geographic distribution requirements in U.S. history, European history, and global, Latin American, African, Asian, or Middle Eastern history. No more than 3 credits of ARTH coursework may apply to the History BA. For policies governing all undergraduate degrees, see AP.5 Undergraduate Policies.

Requirements

Degree Requirements

Total credits: minimum 120

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Before registering, students should see an advisor to help plan their history program to meet Mason Core and college-level requirements. The advisor also can help students choose electives or a minor.

Major without Concentration

Code	Title	Credits
HIST 300	Introduction to Historical Method (Mason Core)	3
HIST 499	RS: Senior Seminar in History (Mason Core)	3
Total Credits		6

U.S. History

Code	Title	Credits
Select two courses from the following:		6
HIST 121	Formation of the American Republic (Mason Core)	
HIST 122	Development of Modern America (Mason Core)	
HIST 335	The African American Experience in the United States: African Background to 1885	
HIST 334	American Scriptures (Mason Core)	
HIST 336	The African American Experience in the United States: Reconstruction to the Present	
HIST 339	History of Baseball	
HIST 340	Basketball and the American Experience	
HIST 341	History of Sport in the United States	
HIST 342	History of the Olympics and the United States	
HIST 343	Women during the Enslavement Era	
HIST 344	Black Social Movements	
HIST 345	Women's Activism: From Jim Crow to Black Power	
HIST 350	U.S. Women's History	
HIST 351	History of the Old South	
HIST 352	The South since 1865	
HIST 370	War and American Society	
HIST 373	The Civil War and Reconstruction	
HIST 377	The Vietnam War	
HIST 378	History of Aviation	
HIST 380	Uncovering the U.S. Past Through Film	
HIST 389	Topics in U.S. History	
HIST 391	History of Virginia to 1800	
HIST 392	History of Virginia Since 1800	
HIST 401	Colonial America	
HIST 403	Revolutionary Era in American History, 1763-1812	
HIST 404	Jacksonian America, 1812-1854	
Total Credits		6

European History

Code	Title	Credits
Select two courses from the following:		6
HIST 100	History of Western Civilization (Mason Core) [1]	
HIST 101	Foundations of Western Civilization	
HIST 102	Development of Western Civilization	
HIST 301	Classical Greece	
HIST 302	Classical Rome	
HIST 304	Western Europe in the Middle Ages	
HIST 305	The Renaissance	
HIST 306	The Reformation	
HIST 307	Old Regime and Revolutionary Europe	
HIST 308	Nineteenth-Century Europe	
HIST 309	Europe in Crisis: 1914-1948	
HIST 312	Nationalism in Eastern Europe	
HIST 314	History of Germany	
HIST 321	Modern France	
HIST 322	Modern Britain	
HIST 326	Stalinism	
HIST 327	The Soviet Union and Russia Since World War II	
HIST 328	Rise of Russia (Mason Core)	
HIST 329	Modern Russia and the Soviet Union (Mason Core)	
HIST 388	Topics in European History	
HIST 426	The Russian Revolution	

HIST 436	European Society and Culture: 19th and 20th Centuries	
Total Credits		6

[1] Used to fulfill the Mason Core requirement in Western civilization may also fulfill 3 credits of this requirement

Global, Latin American, African, Asian, or Middle Eastern History

Approved courses in history used to fulfill the Mason Core requirement in global understanding and the college-level requirement in non-Western culture may be used to fulfill this requirement.

Code	Title	Credits
Select two courses from the following:		6
HIST 125	Introduction to World History (Mason Core)	
HIST 202	Freshman/Sophomore Seminar in Global History	
HIST 251	Survey of East Asian History (Mason Core)	
HIST 252	Survey of East Asian History (Mason Core)	
HIST 261	Survey of African History (Mason Core)	
HIST 262	Survey of African History (Mason Core)	
HIST 271	Survey of Latin American History (Mason Core)	
HIST 272	Survey of Latin American History (Mason Core)	
HIST 281	Survey of Middle Eastern Civilization (Mason Core)	
HIST 282	Survey of Middle Eastern Civilization (Mason Core)	
HIST 353	History of Traditional China	
HIST 354	Modern China (Mason Core)	
HIST 356	Modern Japan (Mason Core)	
HIST 357	Postwar Japan (Mason Core)	
HIST 358	Post-1949 China (Mason Core)	
HIST 359	Modern Iraq	
HIST 360	History of South Africa (Mason Core)	
HIST 364	Revolution and Radical Politics in Latin America (Mason Core)	
HIST 365	Conquest and Colonization in Latin America (Mason Core)	
HIST 366	Comparative Slavery	
HIST 367	History, Fiction, and Film in Latin America	
HIST 384	Global History of Christianity (Mason Core)	
HIST 387	Topics in Global History (Mason Core)	
HIST 394	Globalization and History	
HIST 460	Modern Iran (Mason Core)	
HIST 461	Arab-Israeli Conflict	
HIST 462	Women in Islamic Society (Mason Core)	
HIST 465	The Middle East in the 20th Century	
Total Credits		6

Electives in the Major

Students may also meet the elective requirement by completing an optional concentration.

Code	Title	Credits
Select four electives in history [1]		12
Total Credits		12

[1] Students should choose courses in history at the 300 or 400 levels to meet this requirement if they need credits to complete the 18-credit, upper-level history requirement. In addition to HIST courses, history majors may use one 300-level ARTH course and HNRS 240 Reading the Past (Topic Varies) to fulfill this requirement.

Major with Concentration

Available Concentrations

- Concentration in Digital History (HISD)
- Concentration in Public History (HISP)
- Concentration in Global History (HISG)
- Concentration in U.S. History (HISU)
- Individualized Concentration (IND)

Concentration in Digital History (HISD)

In this concentration, students explore and develop skills in using digital methods for the research, analysis, and presentation of history. Students interested in graduate education or careers in the digital humanities and new media or in working with digital methods in museums, archives, and other public history institutions should consider this concentration.

Core Courses

Code	Title	Credits
HIST 300	Introduction to Historical Method (Mason Core)	3
HIST 499	RS: Senior Seminar in History (Mason Core)	3
HIST 390	The Digital Past	3
Select three electives with at least 6 credits in HIST from the following:		9
HIST 395	Topics in Digital History	
ENGH 375	Web Authoring and Design	
ENGH 376	Rhetoric and New Media	
other coursework, including internships, approved by the program director		
Total Credits		18

U.S. History

Code	Title	Credits
Select two courses from the following:		6
HIST 121	Formation of the American Republic (Mason Core)	
HIST 122	Development of Modern America (Mason Core)	
HIST 334	American Scriptures (Mason Core)	
HIST 335	The African American Experience in the United States: African Background to 1885	

HIST 336	The African American Experience in the United States: Reconstruction to the Present
HIST 339	History of Baseball
HIST 340	Basketball and the American Experience
HIST 341	History of Sport in the United States
HIST 342	History of the Olympics and the United States
HIST 343	Women during the Enslavement Era
HIST 344	Black Social Movements
HIST 345	Women's Activism: From Jim Crow to Black Power
HIST 350	U.S. Women's History
HIST 351	History of the Old South
HIST 352	The South since 1865
HIST 370	War and American Society
HIST 373	The Civil War and Reconstruction
HIST 377	The Vietnam War
HIST 378	History of Aviation
HIST 380	Uncovering the U.S. Past Through Film
HIST 389	Topics in U.S. History
HIST 391	History of Virginia to 1800
HIST 392	History of Virginia Since 1800
HIST 401	Colonial America
HIST 403	Revolutionary Era in American History, 1763-1812
HIST 404	Jacksonian America, 1812-1854
Total Credits	6

European History

Code	Title	Credits
Select two courses from the following:		6
HIST 100	History of Western Civilization (Mason Core) [1]	
HIST 101	Foundations of Western Civilization	
HIST 102	Development of Western Civilization	
HIST 301	Classical Greece	
HIST 302	Classical Rome	
HIST 304	Western Europe in the Middle Ages	
HIST 305	The Renaissance	
HIST 306	The Reformation	
HIST 307	Old Regime and Revolutionary Europe	
HIST 308	Nineteenth-Century Europe	
HIST 309	Europe in Crisis: 1914-1948	
HIST 312	Nationalism in Eastern Europe	
HIST 314	History of Germany	
HIST 321	Modern France	
HIST 322	Modern Britain	
HIST 326	Stalinism	
HIST 327	The Soviet Union and Russia Since World War II	
HIST 328	Rise of Russia (Mason Core)	
HIST 329	Modern Russia and the Soviet Union (Mason Core)	
HIST 388	Topics in European History	
HIST 426	The Russian Revolution	
HIST 436	European Society and Culture: 19th and 20th Centuries	
Total Credits		6

[1] Used to fulfill the Mason Core requirement in Western civilization may also fulfill 3 credits of this requirement

Global, Latin American, African, Asian, or Middle Eastern History

Approved courses in history used to fulfill the Mason Core requirement in global understanding and the college-level requirement in non-Western culture may be used to fulfill this requirement.

Code	Title	Credits
Select two courses from the following:		6
HIST 125	Introduction to World History (Mason Core)	
HIST 202	Freshman/Sophomore Seminar in Global History	
HIST 251	Survey of East Asian History (Mason Core)	
HIST 252	Survey of East Asian History (Mason Core)	
HIST 261	Survey of African History (Mason Core)	
HIST 262	Survey of African History (Mason Core)	
HIST 271	Survey of Latin American History (Mason Core)	
HIST 272	Survey of Latin American History (Mason Core)	
HIST 281	Survey of Middle Eastern Civilization (Mason Core)	
HIST 282	Survey of Middle Eastern Civilization (Mason Core)	
HIST 353	History of Traditional China	
HIST 354	Modern China (Mason Core)	
HIST 356	Modern Japan (Mason Core)	
HIST 357	Postwar Japan (Mason Core)	
HIST 358	Post-1949 China (Mason Core)	
HIST 359	Modern Iraq	
HIST 360	History of South Africa (Mason Core)	
HIST 364	Revolution and Radical Politics in Latin America (Mason Core)	
HIST 365	Conquest and Colonization in Latin America (Mason Core)	
HIST 366	Comparative Slavery	
HIST 367	History, Fiction, and Film in Latin America	
HIST 384	Global History of Christianity (Mason Core)	
HIST 387	Topics in Global History (Mason Core)	
HIST 394	Globalization and History	
HIST 460	Modern Iran (Mason Core)	
HIST 461	Arab-Israeli Conflict	
HIST 462	Women in Islamic Society (Mason Core)	

HIST 465	The Middle East in the 20th Century	
Total Credits		6

Concentration in Public History (HISP)

In this concentration, students explore a variety of issues related to preserving historical materials and presenting historical information to a broader public. Students interested in graduate education in public history or in working in public history institutions such as museums, libraries, archives, and historic sites should consider this concentration.

Core Courses

Code	Title	Credits
HIST 300	Introduction to Historical Method (Mason Core)	3
HIST 499	RS: Senior Seminar in History (Mason Core)	3
HIST 396	Introduction to Public History	3
HIST 390	The Digital Past	3
HIST 399	Internship [1]	3
Select one elective from the following:		3
HIST 397	Topics in Public History	
HIST 380	Uncovering the U.S. Past Through Film	
ARTH 394	The Museum (Mason Core)	
ENGH 370	Introduction to Documentary (Mason Core)	
other coursework, not including internships, approved by the program director		
Total Credits		18

[1] Students work individually with the department's internship coordinator to find appropriate internships. HIST 399 may be repeated up to a maximum of 9 credits, and students in the public history concentration are encouraged to take more than 3 credits of internships, with additional credits beyond the first 3 counting as general electives.

U.S. History

Code	Title	Credits
Select two courses from the following:		6
HIST 121	Formation of the American Republic (Mason Core)	
HIST 122	Development of Modern America (Mason Core)	
HIST 334	American Scriptures (Mason Core)	
HIST 335	The African American Experience in the United States: African Background to 1885	
HIST 336	The African American Experience in the United States: Reconstruction to the Present	
HIST 339	History of Baseball	
HIST 340	Basketball and the American Experience	
HIST 341	History of Sport in the United States	
HIST 342	History of the Olympics and the United States	
HIST 343	Women during the Enslavement Era	
HIST 344	Black Social Movements	
HIST 345	Women's Activism: From Jim Crow to Black Power	
HIST 350	U.S. Women's History	
HIST 351	History of the Old South	
HIST 352	The South since 1865	
HIST 370	War and American Society	
HIST 373	The Civil War and Reconstruction	
HIST 377	The Vietnam War	
HIST 378	History of Aviation	
HIST 380	Uncovering the U.S. Past Through Film	
HIST 389	Topics in U.S. History	
HIST 391	History of Virginia to 1800	
HIST 392	History of Virginia Since 1800	
HIST 401	Colonial America	
HIST 403	Revolutionary Era in American History, 1763-1812	
HIST 404	Jacksonian America, 1812-1854	
Total Credits		6

European History

Code	Title	Credits
Select two courses from the following:		6
HIST 100	History of Western Civilization (Mason Core) [1]	
HIST 101	Foundations of Western Civilization	
HIST 102	Development of Western Civilization	
HIST 301	Classical Greece	
HIST 302	Classical Rome	
HIST 304	Western Europe in the Middle Ages	
HIST 305	The Renaissance	
HIST 306	The Reformation	
HIST 307	Old Regime and Revolutionary Europe	
HIST 308	Nineteenth-Century Europe	
HIST 309	Europe in Crisis: 1914-1948	
HIST 312	Nationalism in Eastern Europe	
HIST 314	History of Germany	
HIST 321	Modern France	
HIST 322	Modern Britain	
HIST 326	Stalinism	
HIST 327	The Soviet Union and Russia Since World War II	
HIST 328	Rise of Russia (Mason Core)	
HIST 329	Modern Russia and the Soviet Union (Mason Core)	
HIST 388	Topics in European History	
HIST 426	The Russian Revolution	
HIST 436	European Society and Culture: 19th and 20th Centuries	
Total Credits		6

[1] Used to fulfill the Mason Core requirement in Western civilization may also fulfill 3 credits of this requirement

Global, Latin American, African, Asian, or Middle Eastern History

Approved courses in history used to fulfill the Mason Core requirement in global understanding and the college-level requirement in non-Western culture may be used to fulfill this requirement.

Code	Title	Credits
Select two courses from the following:		6
HIST 125	Introduction to World History (Mason Core)	
HIST 202	Freshman/Sophomore Seminar in Global History	
HIST 251	Survey of East Asian History (Mason Core)	
HIST 252	Survey of East Asian History (Mason Core)	
HIST 261	Survey of African History (Mason Core)	
HIST 262	Survey of African History (Mason Core)	
HIST 271	Survey of Latin American History (Mason Core)	
HIST 272	Survey of Latin American History (Mason Core)	
HIST 281	Survey of Middle Eastern Civilization (Mason Core)	
HIST 282	Survey of Middle Eastern Civilization (Mason Core)	
HIST 353	History of Traditional China	
HIST 354	Modern China (Mason Core)	
HIST 356	Modern Japan (Mason Core)	
HIST 357	Postwar Japan (Mason Core)	
HIST 358	Post-1949 China (Mason Core)	
HIST 359	Modern Iraq	
HIST 360	History of South Africa (Mason Core)	
HIST 364	Revolution and Radical Politics in Latin America (Mason Core)	
HIST 365	Conquest and Colonization in Latin America (Mason Core)	
HIST 366	Comparative Slavery	
HIST 367	History, Fiction, and Film in Latin America	
HIST 384	Global History of Christianity (Mason Core)	
HIST 387	Topics in Global History (Mason Core)	
HIST 394	Globalization and History	
HIST 460	Modern Iran (Mason Core)	
HIST 461	Arab-Israeli Conflict	
HIST 462	Women in Islamic Society (Mason Core)	
HIST 465	The Middle East in the 20th Century	
Total Credits		6

Concentration in Global History (HISG)

In this concentration, students explore the interconnected histories of major world regions beyond the United States and Europe. Students interested in graduate education in global history or careers in government or business or with non-governmental organizations or other employers operating in the international arena should consider this concentration. Students in the global history concentration are especially encouraged to study abroad as part of their undergraduate program.

Core Courses

Code	Title	Credits
HIST 300	Introduction to Historical Method (Mason Core)	3
HIST 499	RS: Senior Seminar in History (Mason Core)	3
HIST 394	Globalization and History	3
Select five courses chosen from the following lists. Three of the five courses must be chosen from one of the following areas: Asian, African, Latin American, Middle Eastern and North African, or Russian and Central Asian history. No more than 3 credits of ARTH coursework may apply to the History BA.		15
Asian History		
HIST 251	Survey of East Asian History (Mason Core)	
HIST 252	Survey of East Asian History (Mason Core)	
HIST 353	History of Traditional China	
HIST 354	Modern China (Mason Core)	
HIST 356	Modern Japan (Mason Core)	
HIST 357	Postwar Japan (Mason Core)	
HIST 358	Post-1949 China (Mason Core)	
HIST 387	Topics in Global History (Mason Core) [1]	
Other HIST coursework approved by the program director		
ARTH 203	Survey of Asian Art (Mason Core)	
ARTH 382	Arts of India (Mason Core)	
ARTH 383	Arts of Southeast Asia (Mason Core)	
ARTH 384	Arts of China (Mason Core)	
ARTH 385	Arts of Japan (Mason Core)	
African History		
HIST 261	Survey of African History (Mason Core)	
HIST 262	Survey of African History (Mason Core)	
HIST 360	History of South Africa (Mason Core)	
HIST 366	Comparative Slavery	
HIST 387	Topics in Global History (Mason Core) [1]	
Other HIST coursework approved by the program director		
ARTH 206	Survey of African Art (Mason Core)	
Latin American History		
HIST 271	Survey of Latin American History (Mason Core)	
HIST 272	Survey of Latin American History (Mason Core)	
HIST 364	Revolution and Radical Politics in Latin America (Mason Core)	
HIST 365	Conquest and Colonization in Latin America (Mason Core)	
HIST 366	Comparative Slavery	
HIST 367	History, Fiction, and Film in Latin America	
HIST 387	Topics in Global History (Mason Core) [1]	
Other HIST coursework approved by the program director		
ARTH 204	Survey of Latin American Art (Mason Core)	
Middle Eastern & North African History		

HIST 281	Survey of Middle Eastern Civilization (Mason Core)	
HIST 282	Survey of Middle Eastern Civilization (Mason Core)	
HIST 359	Modern Iraq	
HIST 460	Modern Iran (Mason Core)	
HIST 461	Arab-Israeli Conflict	
HIST 462	Women in Islamic Society (Mason Core)	
HIST 465	The Middle East in the 20th Century	
HIST 387	Topics in Global History (Mason Core) [1]	
Other HIST coursework approved by the program director		
ARTH 318	Art and Archaeology of Ancient Egypt	
ARTH 319	Art and Archaeology of the Ancient Near East (Mason Core)	
ARTH 320	Art of the Islamic World (Mason Core)	
Russian & Central Asian History		
HIST 326	Stalinism	
HIST 327	The Soviet Union and Russia Since World War II	
HIST 328	Rise of Russia (Mason Core)	
HIST 329	Modern Russia and the Soviet Union (Mason Core)	
HIST 426	The Russian Revolution	
HIST 387	Topics in Global History (Mason Core) [1]	
Other HIST coursework approved by the program director		
ARTH 386	The Silk Road (Mason Core)	
World History		
HIST 125	Introduction to World History (Mason Core)	
HIST 384	Global History of Christianity (Mason Core)	
HIST 387	Topics in Global History (Mason Core) [1]	
Other HIST coursework approved by the program director		
Optional foreign language skills development course in history [2]		1
HIST 386	Topics in History	
Select four electives in history [3]		11-12
Total Credits		36

1 Depending on topic.

2 Working individually with their instructor for an upper-level HIST course, students may pursue historical reading or other work to develop skills in an appropriate foreign language in which they have already met the CHSS requirement for intermediate-level proficiency.

3 Students should choose courses in history at the 300- or 400-levels to meet this requirement if they need to complete the 18-credit, upper-level history requirement. In addition to HIST courses, students may apply HNRS 240 Reading the Past (Topic Varies) and/or one 300-level ARTH course not counted above toward this requirement. In total, no more than 3 credits of ARTH may be applied to the history BA.

Concentration in U.S. History (HISU)

In this concentration, students focus in-depth on the history of the United States while developing research and writing skills and completing at least one course in applied history. Students interested in law, government, and other career paths or in graduate education in U.S. history should consider this concentration.

Core Courses

Code	Title	Credits
HIST 300	Introduction to Historical Method (Mason Core)	3
HIST 499	RS: Senior Seminar in History (Mason Core)	3
Select one applied history elective from the following:		3
HIST 390	The Digital Past	
HIST 395	Topics in Digital History	
HIST 396	Introduction to Public History	
HIST 397	Topics in Public History	
HIST 399	Internship	
Total Credits		9

U.S. History

Code	Title	Credits
Select five U.S. history courses from the following, with at least two from each list.		15
Origins to 1877		
HIST 121	Formation of the American Republic (Mason Core)	
HIST 335	The African American Experience in the United States: African Background to 1885	
HIST 350	U.S. Women's History	
HIST 351	History of the Old South	
HIST 370	War and American Society	
HIST 373	The Civil War and Reconstruction	
HIST 391	History of Virginia to 1800	
HIST 401	Colonial America	
HIST 403	Revolutionary Era in American History, 1763-1812	
HIST 404	Jacksonian America, 1812-1854	
HIST 389	Topics in U.S. History [1]	
1877 - Present		
HIST 122	Development of Modern America (Mason Core)	
HIST 334	American Scriptures (Mason Core)	
HIST 336	The African American Experience in the United States: Reconstruction to the Present	
HIST 339	History of Baseball	
HIST 340	Basketball and the American Experience	
HIST 341	History of Sport in the United States	
HIST 342	History of the Olympics and the United States	
HIST 343	Women during the Enslavement Era	
HIST 344	Black Social Movements	
HIST 345	Women's Activism: From Jim Crow to Black Power	
HIST 350	U.S. Women's History	
HIST 352	The South since 1865	

HIST 370	War and American Society	
HIST 377	The Vietnam War	
HIST 378	History of Aviation	
HIST 380	Uncovering the U.S. Past Through Film	
HIST 392	History of Virginia Since 1800	
HIST 389	Topics in U.S. History [1]	
Total Credits		15

[1] When topic applies and with department approval.

European History

Code	Title	Credits
Select two courses from the following:		6
HIST 100	History of Western Civilization (Mason Core) [1]	
HIST 101	Foundations of Western Civilization	
HIST 102	Development of Western Civilization	
HIST 301	Classical Greece	
HIST 302	Classical Rome	
HIST 304	Western Europe in the Middle Ages	
HIST 305	The Renaissance	
HIST 306	The Reformation	
HIST 307	Old Regime and Revolutionary Europe	
HIST 308	Nineteenth-Century Europe	
HIST 309	Europe in Crisis: 1914-1948	
HIST 312	Nationalism in Eastern Europe	
HIST 314	History of Germany	
HIST 321	Modern France	
HIST 322	Modern Britain	
HIST 326	Stalinism	
HIST 327	The Soviet Union and Russia Since World War II	
HIST 328	Rise of Russia (Mason Core)	
HIST 329	Modern Russia and the Soviet Union (Mason Core)	
HIST 388	Topics in European History	
HIST 426	The Russian Revolution	
HIST 436	European Society and Culture: 19th and 20th Centuries	
Total Credits		6

[1] Used to fulfill the Mason Core requirement in Western civilization may also fulfill 3 credits of this requirement

Global, Latin American, African, Asian, or Middle Eastern History

Students in the concentration in U.S. History are encouraged to take at least one course with a broadly global perspective such as HIST 394 Globalization and History. Approved courses in history used to fulfill the Mason Core requirement in global understanding and the college-level requirement in non-Western culture may be used to fulfill this requirement.

Code	Title	Credits
Select two courses from the following:		6
HIST 125	Introduction to World History (Mason Core)	
HIST 202	Freshman/Sophomore Seminar in Global History	
HIST 251	Survey of East Asian History (Mason Core)	
HIST 252	Survey of East Asian History (Mason Core)	
HIST 261	Survey of African History (Mason Core)	
HIST 262	Survey of African History (Mason Core)	
HIST 271	Survey of Latin American History (Mason Core)	
HIST 272	Survey of Latin American History (Mason Core)	
HIST 281	Survey of Middle Eastern Civilization (Mason Core)	
HIST 282	Survey of Middle Eastern Civilization (Mason Core)	
HIST 353	History of Traditional China	
HIST 354	Modern China (Mason Core)	
HIST 356	Modern Japan (Mason Core)	
HIST 357	Postwar Japan (Mason Core)	
HIST 358	Post-1949 China (Mason Core)	
HIST 359	Modern Iraq	
HIST 360	History of South Africa (Mason Core)	
HIST 364	Revolution and Radical Politics in Latin America (Mason Core)	
HIST 365	Conquest and Colonization in Latin America (Mason Core)	
HIST 366	Comparative Slavery	
HIST 367	History, Fiction, and Film in Latin America	
HIST 384	Global History of Christianity (Mason Core)	
HIST 387	Topics in Global History (Mason Core)	
HIST 394	Globalization and History	
HIST 460	Modern Iran (Mason Core)	
HIST 461	Arab-Israeli Conflict	
HIST 462	Women in Islamic Society (Mason Core)	
HIST 465	The Middle East in the 20th Century	
Total Credits		6

Individualized Concentration (IND)

Students who wish to design their own concentration must submit a one-page proposal and create a curriculum plan to be approved by the program director. This option may be particularly appropriate for students who want to focus on U.S. history or European history without emphasis on digital or public history methods.

All students in the individualized concentration will be required to complete HIST 300 Introduction to Historical Method (Mason Core), HIST 499 RS: Senior Seminar in History (Mason Core), and 15-18 credits of breadth requirements modeled on the geographic distribution coursework in the history BA without concentration. For their remaining 12-15 credits in history, students will work with the program director to plan coursework that explores their chosen concentration across time periods and geographical lines as appropriate.

Writing-Intensive Requirement

The university requires all students to complete at least one course designated as "writing intensive" in their majors at the 300 level or above. Students majoring in history may fulfill this requirement by successfully completing:

Code	Title	Credits
HIST 300	Introduction to Historical Method (Mason Core)	3
or HIST 499	RS: Senior Seminar in History (Mason Core)	
Total Credits		3

Upper Level Requirement

Students seeking a bachelor's degree must apply at least 45 credits of upper-level courses (numbered 300 or above) toward graduation requirements.

Additional Electives

Any remaining credits may be completed with elective courses to bring the degree total to 120.

College Level Requirements for the BA Degree

In addition to the Mason Core program, students pursuing a BA degree must complete the coursework below. Except where expressly prohibited, a course used to fulfill a college level requirement may also be used simultaneously to satisfy other requirements (Mason Core requirements or requirements for the major).

Philosophy or Religious Studies

Code	Title	Credits
Select 3 credits from the following:		3
PHIL [1]		
RELI		

[1] Note that the following courses may not be used to fulfill this requirement:

- PHIL 323 Classical Western Political Theory
- PHIL 324 Modern Western Political Theory
- PHIL 327 Contemporary Western Political Theory
- PHIL 393 Humanities College to Career
- PHIL 460 Senior Seminar in Philosophy, Politics, and Economics

Additionally, PHIL 253 Philosophy and Literature (Mason Core), RELI 235 Religion and Literature (Mason Core), and RELI 333 Spiritual Autobiography (Mason Core) cannot be used to fulfill both the philosophy/religious studies requirement and the Mason Core literature requirement.

Social and Behavioral Sciences

Code	Title	Credits
Select 3 credits of social and behavioral sciences from the following (additional to the Mason Core social and behavioral sciences requirement) [1]		3
ANTH		
CRIM		
ECON		
GOVT		
HIST [2]		
LING		
PSYC		
SOCI		
Or choose from the following GGS courses:		
GGS 101	Major World Regions (Mason Core)	
GGS 103	Human Geography (Mason Core)	
GGS 110	Introduction to Geoinformation Technologies	
GGS 301	Political Geography (Mason Core)	
GGS 303	Geography of Resource Conservation (Mason Core)	
GGS 304	Population Geography (Mason Core)	
GGS 305	Economic Geography	
GGS 306	Urban Geography	
GGS 315	Geography of the United States	
GGS 316	Geography of Latin America	
GGS 320	Geography of Europe	
GGS 325	Geography of North Africa and the Middle East	
GGS 330	Geography of the Soviet Succession States	
GGS 357	Urban Planning	
GGS 380	Geography of Virginia	

[1] The two courses used to fulfill the combined college and Mason Core requirements must be from different disciplines in the social and behavioral sciences.

[2] HIST 100 History of Western Civilization (Mason Core) and HIST 125 Introduction to World History (Mason Core) may not be used to fulfill this requirement.

Foreign Language

Code	Title	Credits
Intermediate-level proficiency in one foreign language, fulfilled by: [1]		
Completing 3 credits in a foreign language numbered 202 (or higher level courses taught in the language)		
Or achieving a satisfactory score on an approved proficiency test		
Or completing the following ASL three course sequence:		
EDSE 115	American Sign Language (ASL) I	
EDSE 116	American Sign Language (ASL) II	
EDSE 219	American Sign Language (ASL) III	

[1] Students who are already proficient in a second language may be eligible for a waiver of this requirement. Additional information on waivers can be found at the Office of Undergraduate Academic Affairs (http://chssundergrad.gmu.edu/).

Non-Western Culture

Select 3 credits of an approved course in the study of a non-Western culture (additional to the Mason Core requirement in global understanding)

Code	Title	Credits
Select 3 credits (additional to Mason Core Global Understanding requirement) [1]		

ANTH 114	Introduction to Cultural Anthropology (Mason Core)	3
ANTH 300	Civilizations	3
ANTH 302	Peoples and Cultures of Latin America (Mason Core)	3
ANTH 307	Ancient Mesoamerica (Mason Core)	3
ANTH 308	Peoples and Cultures of the Middle East (Mason Core)	3
ANTH 309	Peoples and Cultures of India (Mason Core)	3
ANTH 313	Myth, Magic, and Mind (Mason Core)	3
ANTH 314	Zombies	3
ANTH 330	Peoples and Cultures of Selected Regions: Non-Western	3
ANTH 332	Cross-Cultural Perspectives on Globalization (Mason Core)	3
ANTH 381	Medical Anthropology	3
ANTH 396	Issues in Anthropology: Social Sciences (Mason Core)	3
ARAB 360	Topics in Arabic Cultural Production	3
ARAB 420	Survey of Arabic Literature	3
ARAB 440	Topics in Arabic Religious Thought and Texts (Mason Core)	3
ARTH 203	Survey of Asian Art (Mason Core)	3
ARTH 204	Survey of Latin American Art (Mason Core)	3
ARTH 206	Survey of African Art (Mason Core)	3
ARTH 318	Art and Archaeology of Ancient Egypt	3
ARTH 319	Art and Archaeology of the Ancient Near East (Mason Core)	3
ARTH 320	Art of the Islamic World (Mason Core)	3
ARTH 382	Arts of India (Mason Core)	3
ARTH 383	Arts of Southeast Asia (Mason Core)	3
ARTH 384	Arts of China (Mason Core)	3
ARTH 385	Arts of Japan (Mason Core)	3
ARTH 386	The Silk Road (Mason Core)	3
ARTH 482	RS: Advanced Studies in Asian Art	3
CHIN 318	Introduction to Classical Chinese (Mason Core)	3
CHIN 320	Contemporary Chinese Film	3
CHIN 325	Major Chinese Writers (Mason Core)	3
CHIN 470	Special Topics in Chinese Studies	3
DANC 118	World Dance (Mason Core)	3
ECON 361	Economic Development of Latin America (Mason Core)	3
ECON 362	African Economic Development (Mason Core)	3
FREN 451	Topics in Sub-Saharan Francophone Literature and Culture	3
FREN 454	Topics in Caribbean Francophone Literature and Culture	3
GGS 101	Major World Regions (Mason Core)	3
GGS 316	Geography of Latin America	3
GGS 317	Geography of China (Mason Core)	3
GGS 325	Geography of North Africa and the Middle East	3
GGS 330	Geography of the Soviet Succession States	3
GGS 399	Select Topics in GGS	3
GOVT 328	Global Political Theory	3
GOVT 332	Government and Politics of the Middle East and North Africa	3
GOVT 333	Government and Politics of Asia	3
GOVT 338	Government and Politics of Russia	3
GOVT 340	Central Asian Politics	3
GOVT 341	Chinese Foreign Policy	3
GOVT 345	Islam and Politics	3
GOVT 433	Political Economy of East Asia	3
HIST 251	Survey of East Asian History (Mason Core)	3
HIST 252	Survey of East Asian History (Mason Core)	3
HIST 261	Survey of African History (Mason Core)	3
HIST 262	Survey of African History (Mason Core)	3
HIST 271	Survey of Latin American History (Mason Core)	3
HIST 272	Survey of Latin American History (Mason Core)	3
HIST 281	Survey of Middle Eastern Civilization (Mason Core)	3
HIST 282	Survey of Middle Eastern Civilization (Mason Core)	3
HIST 326	Stalinism	3
HIST 327	The Soviet Union and Russia Since World War II	3
HIST 328	Rise of Russia (Mason Core)	3
HIST 329	Modern Russia and the Soviet Union (Mason Core)	3
HIST 353	History of Traditional China	3
HIST 354	Modern China (Mason Core)	3
HIST 356	Modern Japan (Mason Core)	3
HIST 357	Postwar Japan (Mason Core)	3
HIST 358	Post-1949 China (Mason Core)	3
HIST 360	History of South Africa (Mason Core)	3
HIST 364	Revolution and Radical Politics in Latin America (Mason Core)	3
HIST 365	Conquest and Colonization in Latin America (Mason Core)	3
HIST 366	Comparative Slavery	3
HIST 367	History, Fiction, and Film in Latin America	3
HIST 387	Topics in Global History (Mason Core)	3-6
HIST 426	The Russian Revolution	3
HIST 460	Modern Iran (Mason Core)	3
HIST 461	Arab-Israeli Conflict	3
HIST 462	Women in Islamic Society (Mason Core)	3
HIST 465	The Middle East in the 20th Century	3
JAPA 310	Japanese Culture in a Global World (Mason Core)	3

JAPA 340	Topics in Japanese Literature (Mason Core)	3
KORE 320	Korean Popular Culture in a Global World	3
MUSI 103	Musics of the World (Mason Core)	3
RELI 211	Religions of the West (Mason Core)	3
RELI 212	Religions of Asia (Mason Core)	3
RELI 240	Death and the Afterlife in World Religions	3
RELI 272	Islam	3
RELI 313	Hinduism (Mason Core)	3
RELI 314	Chinese Philosophies and Religious Traditions	3
RELI 315	Buddhism (Mason Core)	3
RELI 317	Daoism	3
RELI 337	Mysticism: East and West	3
RELI 365	Muhammad: Life and Legacy	3
RELI 374	Islamic Thought (Mason Core)	3
RELI 375	Qur'an and Hadith	3
RELI 379	Islamic Law, Society, and Ethics	3
RELI 387	Islam, Democracy, and Human Rights	3
RELI 490	Comparative Study of Religions (Mason Core)	3
RUSS 353	Russian Civilization (Mason Core)	3
RUSS 354	Contemporary Post-Soviet Life (Mason Core)	3

[1] A course used to fulfill the Mason Core global understanding requirement may not be simultaneously used to satisfy this college-level requirement. A course used to fulfill this requirement may be used simultaneously to fulfill any other requirements (Mason Core requirements, college-level requirements, or requirements for the major). Additional information on waivers can be found at the Office of Undergraduate Academic Affairs (http://chssundergrad.gmu.edu/).

Mason Core

Some Mason Core requirements may already be fulfilled by the major requirements listed above. Students are strongly encouraged to consult their advisors to ensure they fulfill all remaining Mason Core requirements.

Code	Title	Credits
Foundation Requirements		
Written Communication (ENGH 101)		3
Oral Communication		3
Quantitative Reasoning		3
Information Technology and Computing		3
Exploration Requirements		
Arts		3
Global Understanding		3
Literature		3
Natural Science		7
Social and Behavioral Sciences		3
Western Civilization/World History		3
Integration Requirements		
Written Communications (ENGH 302)		3
Writing-Intensive [1]		3
Synthesis/Capstone [2]		3
Total Credits		40

[1] Most programs include the writing-intensive course designated for the major as part of the major requirements; this course is therefore not counted towards the total required for Mason Core.

[2] Minimum 3 credits required.

4-Year Plan

Bachelor of Arts in History Sample Plan of Study

A sample four year graduation plan and degree planning worksheet can be found at https://academicaffairs.chss.gmu.edu/undergraduate-students/advising/advising-sheets (https://academicaffairs.chss.gmu.edu/undergraduate-students/advising/advising-sheets/). The plan is a recommended sequencing of courses based on prerequisites and scheduling. This may not fit every student's needs and is a guideline, not a requirement. Students should confirm major requirements with their academic advisor each semester and with their PatriotWeb Degree Evaluation to ensure they enroll in the proper courses and are on track to graduate.

Honors

Honors in the Major

History majors who have completed 75 credits (a minimum of 15 in history, 6 of which must have been taken at Mason) with an overall GPA of 3.50 and a GPA of 3.50 in history courses are eligible to apply to graduate with honors in history. Applicants must have completed or be enrolled in HIST 300 Introduction to Historical Method (Mason Core). The statement of application should include references from at least one Mason history faculty member. If a major part of the student's work includes transfer credit, transcripts may be required. Not all applicants who meet the minimum requirements are guaranteed acceptance into honors in the major.

Students pursuing honors in the major will take a two-semester course sequence: HIST 490 Honors Directed Readings and HIST 491 Honors Directed Research. HIST 490 Honors Directed Readings will focus on the design of a major research project and HIST 491 Honors Directed Research will focus on completing that project. To graduate with honors in the major, students must earn a minimum GPA of 3.50 in the honors courses and a minimum GPA of 3.50 in history courses applied to the degree. A grade of B or higher in HIST 490 Honors Directed Readings is required to proceed to HIST 491 Honors Directed Research. The two honors courses (6 credits) may be applied to the requirement of 36 credits in history and successful completion of HIST 491 Honors Directed Research satisfies the seminar course requirement in place of HIST 499 RS: Senior Seminar in History (Mason Core).

Accelerated Master's

The accelerated master's programs listed below specify the BA in history as a feeder degree for their programs. Many other accelerated master's programs are also available for any bachelor's degree at

Mason. See the full list of degrees (http://catalog.gmu.edu/programs/#filter=filter_24) with accelerated programs at George Mason.

History, BA/History, Accelerated MA

Overview

Highly-qualified Mason undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BA in History and an MA in History in an accelerated time-frame after satisfactory completion of a minimum of 138 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degrees for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/).

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's Accelerated Master's Degree policies. For information specific to this accelerated master's program, see Application Requirements and Deadlines (http://historyarthistory.gmu.edu/programs/la-ma-acel-hist/application/) on the departmental website.

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits, including HIST 300 Introduction to Historical Method (Mason Core) with a minimum grade of B+.

Students who are accepted in the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits.

Accelerated Master's Admissions Requirements

Students already admitted in the BAM Pathway will be admitted to the MA program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- Minimum overall GPA of 3.25
- Completion of a HIST 499 RS: Senior Seminar in History (Mason Core) or HIST 491 Honors Directed Research
- Minimum grade of B in each advanced standing course
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing courses (up to 12 credits with a minimum grade of B in each)

500- or 600-level HIST courses (https://catalog.gmu.edu/courses/hist/)
HIST 610 The Study and Writing of History is preferred, but not required

Reserve Graduate Credit courses (up to 6 credits) taken while an undergraduate and will only count for the graduate degree program

500- or 600-level HIST courses (https://catalog.gmu.edu/courses/hist/)

For more detailed information on coursework and timeline requirements see AP.6.7 Bachelor's Accelerated Master's Degree policies.

History, BA/Curriculum and Instruction, Accelerated MEd (Secondary Education History and Social Science Concentration)

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's option and obtain a BA in History and an MEd in Curriculum and Instruction (Secondary Education History and Social Science concentration) (https://catalog.gmu.edu/colleges-schools/education-human-development/school-education/curriculum-instruction-med/)in an accelerated time-frame after satisfactory completion of a minimum of 143 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degree for policies related to this program.

This accelerated option is offered jointly by the Department of History and Art History and the School of Education.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies (https://catalog.gmu.edu/admissions/graduate-policies/) and Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies. For information specific to this accelerated master's program, see Application Requirements and Deadlines (https://cehd.gmu.edu/bachelors-accelerated-masters-program/).

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits, and additional unit-specific criteria.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MEd program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- 3.0 overall GPA
- Completion of specific undergraduate coursework
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following which can

be taken as Advanced Standing or Reserve Graduate credit (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) (to be determined by the student and their advisor):

Code	Title	Credits
EDRD 619	Literacy in the Content Areas	3
SEED 522	Foundations of Secondary Education	3
SEED 540	Human Development and Learning: Secondary Education	3
SEED 567	Teaching Social Studies in the Secondary School	3
SEED 667	Advanced Methods of Teaching Social Sciences in the Secondary School	3
SEED approved elective		

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies.

History, MA

Banner Code: LA-MA-HIST

Academic Advising

3200 Horizon Hall
Fairfax Campus

Website: historyarthistory.gmu.edu/programs/la-ma-hist

The faculty in the Master of Arts in History program are at the forefront of traditional historical study, digital approaches to the past, and applied history. Students select from a variety of course topics while also selecting an area of historical specialization that accommodates their interests and furthers their career objectives. Students come to the program with diverse career objectives, and the program is designed with that diversity in mind. Students take classes in which they discuss history alongside future academics, public historians, teachers, military officers, non-profit professionals, government officials, entrepreneurs, and future academics.

Admissions & Policies

Admissions

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions. For specific information, see Application Requirements and Deadlines (http://historyarthistory.gmu.edu/programs/application/LA-MA-HIST/) on the departmental website.

Policies

For policies governing all graduate degrees, see Graduate Policies.

Reduction of Credit

The program does not permit a reduction of credit based on a previously conferred graduate degree. Students may apply no more than 6 credits earned through study abroad courses toward their degree.

Satisfactory Progress

According to university policy, students may be terminated if they fail to achieve satisfactory progress toward their degree. Students in the program are judged as having failed to achieve satisfactory progress toward their degree for any one of the following reasons:

- Fail to complete HIST 610 The Study and Writing of History with a satisfactory grade within 2 semesters of first enrolling as degree-seeking students in the MA in history program.
- Accumulate grades of F in two graduate courses or 9 credits of unsatisfactory grades in graduate courses.
- Accumulate 12 credits of grades of B- or below in graduate courses.

Requirements

Degree Requirements

Total credits: 30 or 36

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Students pursuing this degree must complete the requirements for one of the concentrations below. The concentrations in higher education and teaching require 36 credits, all others require 30 credits.

Concentrations

- Concentration in Predoctoral History (AH1, EH1, WH1)
- Concentration in Applied History (AH2, EH2, WH2)
- Concentration in Applied History with New Media and Information Technology Emphasis (AH4, EH4, WH4)
- Concentration in Enrichment (AH3, EH3, WH3)
- Concentration in Higher Education (HEDU)
- Concentration in Teaching (HS4)

Concentration in Predoctoral History (AH1, EH1, WH1)

This concentration is for students planning to pursue doctoral studies. Students choose one of three geographic specializations and a chronological or thematic minor field within that specialization. Students complete coursework and a research seminar in their geographic specialization and an additional independent project or thesis in their minor field.

Required Course

Code	Title	Credits
HIST 610	The Study and Writing of History [1]	3
Total Credits		3

[1] Must be taken within the first 9 credits

Specialization

Students complete one of the following geographic specializations.

Specialization in U.S. History

Code	Title	Credits
Select four courses from the following: [1]		12
Origins to 1861		
HIST 613	Colonial North America	
HIST 618	The Age of Jackson, 1815-1854	

HIST 620	Development of the Early Republic, 1783-1815
HIST 627	Disasters in U.S. History
HIST 631	Era of the American Revolution
HIST 661	Religion in North America to 1870
HIST 664	Indigenous North America
HIST 615	Problems in American History (when topic applies and with department approval)
Other appropriate course with department approval	
1861-1914	
HIST 617	Topics in the American Civil War Era
HIST 622	U.S. South Since 1865
HIST 627	Disasters in U.S. History
HIST 629	The Gilded Age and Progressive Era
HIST 633	Reconstruction Era
HIST 662	U.S. Religion since 1870
HIST 664	Indigenous North America
HIST 615	Problems in American History (when topic applies and with department approval)
Other appropriate course with department approval	
1914 World War I to the Present	
HIST 622	U.S. South Since 1865
HIST 623	Recent U.S. History, 1945 to Present
HIST 627	Disasters in U.S. History
HIST 634	Interwar America: 1918-1939
HIST 662	U.S. Religion since 1870
HIST 664	Indigenous North America
HIST 677	The Vietnam War
HIST 615	Problems in American History (when topic applies and with department approval)
Other appropriate course with department approval	

[1] Select at least 3 credits from each group

Specialization in European History

Code	Title	Credits
Select four courses from the following: [1]		12
Ancient, Medieval, Early Modern to 1789		
HIST 576	The Crusades	
HIST 642	Humanism and the Renaissance	
HIST 644	Society and Culture in Early Modern Europe	
HIST 635	Problems in European History (when topic applies and with department approval)	
Other appropriate course with department approval		
1789-1914		
HIST 639	Society and Politics in Western Europe, 1750-1914	
HIST 640	Metropolitan Cities of Europe in the Nineteenth and Twentieth Centuries	
HIST 635	Problems in European History (when topic applies and with department approval)	
Other appropriate course with department approval		
1914 to the Present		
HIST 640	Metropolitan Cities of Europe in the Nineteenth and Twentieth Centuries	
HIST 646	Stalinism	
HIST 635	Problems in European History (when topic applies with department approval)	
Other appropriate course with department approval		

[1] Select at least 3 credits from each group.

Specialization in World History

Code	Title	Credits
Select four courses from the following: [1]		12
World		
HIST 510	Approaches to Modern World History	
HIST 535	Problems in Comparative World History	
Africa		
HIST 565	Problems in African History	
Other appropriate course with department approval		
Asia		
HIST 555	Problems in Asian History	
Other appropriate course with department approval		
Middle East		
HIST 575	Approaches to Middle East and Islamic History	
HIST 576	The Crusades	
HIST 585	Problems in Middle Eastern History	
Other appropriate course with department approval		
Latin America		
HIST 525	Problems in Latin American History	
Other appropriate course with department approval		

[1] Select at least 3 credits from two regions.

Research Seminar

Code	Title	Credits
HIST 797	Research Seminar in History	3
Total Credits		3

Minor Field Concentration

Code	Title	Credits
In consultation with the graduate director and other faculty, students identify a chronological or topical subspecialty and select two courses that relate directly to that subspecialty.		6
Total Credits		6

Language Proficiency

Language proficiency sufficient to conduct primary source research in the student's intended area of concentration, as demonstrated by thesis or independent research project.

Project or Thesis

Code	Title	Credits
Select 6 credits of Project or Thesis		6
Project and additional Elective		
HIST 798	Directed Research and Writing in History [1]	
Additional 3 credits from Specialization		
Thesis		

HIST 799	Thesis	
Total Credits		6

[1] Requires the completion of a major paper that is a substantial and original contribution to historical knowledge on the model of an article in a scholarly journal. If students choose to take , they complete an additional 3 credits in their specialization.

Concentration in Applied History (AH2, EH2, WH2)

This concentration is for students seeking expertise in applied history fields, such as archival management, museum studies, historic preservation, and historical editing. It is also suitable for professionally employed historians who desire to further their careers.

Required Course

Code	Title	Credits
HIST 610	The Study and Writing of History [1]	3
Total Credits		3

[1] Must be taken within the first 9 credits

Specialization

Students complete one of the following geographic specializations.

Specialization in U.S. History

Code	Title	Credits
Select four courses from the following: [1]		12
Origins to 1861		
HIST 613	Colonial North America	
HIST 618	The Age of Jackson, 1815-1854	
HIST 620	Development of the Early Republic, 1783-1815	
HIST 627	Disasters in U.S. History	
HIST 631	Era of the American Revolution	
HIST 661	Religion in North America to 1870	
HIST 664	Indigenous North America	
HIST 615	Problems in American History (when topic applies and with department approval)	
Other appropriate course with department approval		
1861-1914		
HIST 617	Topics in the American Civil War Era	
HIST 622	U.S. South Since 1865	
HIST 627	Disasters in U.S. History	
HIST 629	The Gilded Age and Progressive Era	
HIST 633	Reconstruction Era	
HIST 662	U.S. Religion since 1870	
HIST 664	Indigenous North America	
HIST 615	Problems in American History (when topic applies and with department approval)	
Other appropriate course with department approval		
1914 World War I to the Present		
HIST 622	U.S. South Since 1865	
HIST 623	Recent U.S. History, 1945 to Present	
HIST 627	Disasters in U.S. History	
HIST 634	Interwar America: 1918-1939	
HIST 662	U.S. Religion since 1870	
HIST 664	Indigenous North America	
HIST 677	The Vietnam War	
HIST 615	Problems in American History (when topic applies and with department approval)	
Other appropriate course with department approval		

[1] Select at least 3 credits from each group.

Specialization in European History

Code	Title	Credits
Select four courses from the following: [1]		12
Ancient, Medieval, Early Modern to 1789		
HIST 576	The Crusades	
HIST 642	Humanism and the Renaissance	
HIST 644	Society and Culture in Early Modern Europe	
HIST 635	Problems in European History (when topic applies and with department approval)	
Other appropriate course with department approval		
1789-1914		
HIST 639	Society and Politics in Western Europe, 1750-1914	
HIST 640	Metropolitan Cities of Europe in the Nineteenth and Twentieth Centuries	
HIST 635	Problems in European History (when topic applies and with department approval)	
Other appropriate course with department approval		
1914 to the Present		
HIST 640	Metropolitan Cities of Europe in the Nineteenth and Twentieth Centuries	
HIST 646	Stalinism	
HIST 635	Problems in European History (when topic applies with department approval)	
Other appropriate course with department approval		

[1] Select at least 3 credits from each group.

Specialization in World History

Code	Title	Credits
Select four courses from the following: [1]		12
World		
HIST 510	Approaches to Modern World History	
HIST 535	Problems in Comparative World History	
Africa		
HIST 565	Problems in African History	
Other appropriate course with department approval		
Asia		
HIST 555	Problems in Asian History	
Other appropriate course with department approval		
Middle East		
HIST 575	Approaches to Middle East and Islamic History	
HIST 576	The Crusades	
HIST 585	Problems in Middle Eastern History	
Other appropriate course with department approval		
Latin America		

HIST 525	Problems in Latin American History	
Other appropriate course with department approval		

[1] Select at least 3 credits from two regions.

Research Seminar

Code	Title	Credits
HIST 797	Research Seminar in History	3
Total Credits		3

Applied History

Students take 12 credits of coursework in historic preservation, museum studies, archives, historical editing, or new media and information technology. At least 6 credits must be taken as coursework other than internship.

Code	Title	Credits
Professional Experience		
Students may meet this requirement through a minimum of 3 credits of internship or with professional experience in applied history, with documentation and approval of department. Students with professional experience will take 12 credits of coursework from the list below to meet the applied history requirement.		
HIST 794	Internship in Applied History	
Select 6-12 credits from the following:		**6-12**
HIST 679	War and Remembrance	
HIST 680	Introduction to Digital Humanities	
HIST 685	Topics in Applied History	
HIST 688	Topics in History and New Media	
HIST 689	Teaching and Learning History in the Digital Age	
HIST 690	The Administration of Archives and Manuscripts	
HIST 691	Museum Studies	
HIST 692	Historical Editing	
HIST 693	Historic Preservation	
HIST 694	Digital Public History	
HIST 696	Clio Wired: An Introduction to History and New Media	
HIST 697	Creating Historical Knowledge using Digital Methods	
HIST 698	Programming for History	
Other appropriate course with department approval		

Proficiency in a Relevant Research Tool

Code	Title	Credits
Students fulfill the requirement by completing one of the following:		
Coursework, work or internship experience, or exam in computers, statistics, or a modern foreign language.		
HIST 680	Introduction to Digital Humanities	
HIST 696	Clio Wired: An Introduction to History and New Media	
Other course by approval of department		

Concentration in Applied History with New Media and Information Technology Emphasis (AH4, EH4, WH4)

Students pursuing this concentration take:

Required Course

Code	Title	Credits
HIST 610	The Study and Writing of History [1]	3
Total Credits		3

[1] Must be taken within the first 9 credits

Specialization

Students complete one of the following geographic specializations.

Specialization in U.S. History

Code	Title	Credits
Select four courses from the following: [1]		12
Origins to 1861		
HIST 613	Colonial North America	
HIST 618	The Age of Jackson, 1815-1854	
HIST 620	Development of the Early Republic, 1783-1815	
HIST 627	Disasters in U.S. History	
HIST 631	Era of the American Revolution	
HIST 661	Religion in North America to 1870	
HIST 664	Indigenous North America	
HIST 615	Problems in American History (when topic applies and with department approval)	
Other appropriate course with department approval		
1861-1914		
HIST 617	Topics in the American Civil War Era	
HIST 622	U.S. South Since 1865	
HIST 627	Disasters in U.S. History	
HIST 629	The Gilded Age and Progressive Era	
HIST 633	Reconstruction Era	
HIST 662	U.S. Religion since 1870	
HIST 664	Indigenous North America	
HIST 615	Problems in American History (when topic applies and with department approval)	
Other appropriate course with department approval		
1914 World War I to the Present		
HIST 622	U.S. South Since 1865	
HIST 623	Recent U.S. History, 1945 to Present	
HIST 627	Disasters in U.S. History	
HIST 634	Interwar America: 1918-1939	
HIST 662	U.S. Religion since 1870	
HIST 664	Indigenous North America	
HIST 677	The Vietnam War	
HIST 615	Problems in American History (when topic applies and with department approval)	
Other appropriate course with department approval		

[1] Select at least 3 credits from each group.

Specialization in European History

Code	Title	Credits
Select four courses from the following: [1]		12
Ancient, Medieval, Early Modern to 1789		
HIST 576	The Crusades	
HIST 642	Humanism and the Renaissance	
HIST 644	Society and Culture in Early Modern Europe	
HIST 635	Problems in European History (when topic applies and with department approval)	
Other appropriate course with department approval		
1789-1914		
HIST 639	Society and Politics in Western Europe, 1750-1914	
HIST 640	Metropolitan Cities of Europe in the Nineteenth and Twentieth Centuries	
HIST 635	Problems in European History (when topic applies and with department approval)	
Other appropriate course with department approval		
1914 to the Present		
HIST 640	Metropolitan Cities of Europe in the Nineteenth and Twentieth Centuries	
HIST 646	Stalinism	
HIST 635	Problems in European History (when topic applies with department approval)	
Other appropriate course with department approval		

[1] Select at least 3 credits from each group.

Specialization in World History

Code	Title	Credits
Select four courses from the following: [1]		12
World		
HIST 510	Approaches to Modern World History	
HIST 535	Problems in Comparative World History	
Africa		
HIST 565	Problems in African History	
Other appropriate course with department approval		
Asia		
HIST 555	Problems in Asian History	
Other appropriate course with department approval		
Middle East		
HIST 575	Approaches to Middle East and Islamic History	
HIST 576	The Crusades	
HIST 585	Problems in Middle Eastern History	
Other appropriate course with department approval		
Latin America		
HIST 525	Problems in Latin American History	
Other appropriate course with department approval		

[1] Select at least 3 credits from two regions.

Research Seminar

Code	Title	Credits
HIST 797	Research Seminar in History	3
Total Credits		3

New Media and Information Technology

Code	Title	Credits
Select two courses in new media and information technology [1]		6
Total Credits		6

[1] Students should consult the department for relevant courses.

Internship in Information Technology

If students chose to do a 3-credit internship, they will take an additional 3 credits in applied history course work from courses numbered HIST 680 - HIST 698.

Code	Title	Credits
HIST 794	Internship in Applied History	3-6
Total Credits		3-6

Proficiency in a Relevant Research Tool

Code	Title	Credits
Students fulfill the requirement by completing one of the following:		
Coursework, work or internship experience, or exam in computers, statistics, or a modern foreign language.		
HIST 680	Introduction to Digital Humanities	
HIST 696	Clio Wired: An Introduction to History and New Media	
Other course by approval of department		

Concentration in Enrichment (AH3, EH3, WH3)

This concentration is for students who want to study history for intellectual self-fulfillment or vocational reasons. It allows more flexibility in the selection of courses and does not have a foreign language requirement.

Required Course

Code	Title	Credits
HIST 610	The Study and Writing of History [1]	3
Total Credits		3

[1] Must be taken within the first 9 credits.

Specialization

Students complete one of the following specializations.

Specialization in U.S. History

Code	Title	Credits
Select four courses from the following: [1]		12
Origins to 1861		
HIST 613	Colonial North America	
HIST 618	The Age of Jackson, 1815-1854	
HIST 620	Development of the Early Republic, 1783-1815	
HIST 627	Disasters in U.S. History	
HIST 631	Era of the American Revolution	

HIST 661	Religion in North America to 1870
HIST 664	Indigenous North America
HIST 615	Problems in American History (when topic applies and with department approval)
Other appropriate course with department approval	
1861-1914	
HIST 617	Topics in the American Civil War Era
HIST 622	U.S. South Since 1865
HIST 627	Disasters in U.S. History
HIST 629	The Gilded Age and Progressive Era
HIST 633	Reconstruction Era
HIST 662	U.S. Religion since 1870
HIST 664	Indigenous North America
HIST 615	Problems in American History (when topic applies and with department approval)
Other appropriate course with department approval	
1914 World War I to the Present	
HIST 622	U.S. South Since 1865
HIST 623	Recent U.S. History, 1945 to Present
HIST 627	Disasters in U.S. History
HIST 634	Interwar America: 1918-1939
HIST 662	U.S. Religion since 1870
HIST 664	Indigenous North America
HIST 677	The Vietnam War
HIST 615	Problems in American History (when topic applies and with department approval)
Other appropriate course with department approval	

[1] Select at least 3 credits from each group.

Specialization in European History

Code	Title	Credits
Select four courses from the following: [1]		12
Ancient, Medieval, Early Modern to 1789		
HIST 576	The Crusades	
HIST 642	Humanism and the Renaissance	
HIST 644	Society and Culture in Early Modern Europe	
HIST 635	Problems in European History (when topic applies and with department approval)	
Other appropriate course with department approval		
1789-1914		
HIST 639	Society and Politics in Western Europe, 1750-1914	
HIST 640	Metropolitan Cities of Europe in the Nineteenth and Twentieth Centuries	
HIST 635	Problems in European History (when topic applies and with department approval)	
Other appropriate course with department approval		
1914 to the Present		
HIST 640	Metropolitan Cities of Europe in the Nineteenth and Twentieth Centuries	
HIST 646	Stalinism	
HIST 635	Problems in European History (when topic applies with department approval)	
Other appropriate course with department approval		

[1] Select at least 3 credits from each group.

Specialization in World History

Code	Title	Credits
Select four courses from the following: [1]		12
World		
HIST 510	Approaches to Modern World History	
HIST 535	Problems in Comparative World History	
Africa		
HIST 565	Problems in African History	
Other appropriate course with department approval		
Asia		
HIST 555	Problems in Asian History	
Other appropriate course with department approval		
Middle East		
HIST 575	Approaches to Middle East and Islamic History	
HIST 576	The Crusades	
HIST 585	Problems in Middle Eastern History	
Other appropriate course with department approval		
Latin America		
HIST 525	Problems in Latin American History	
Other appropriate course with department approval		

[1] Select at least 3 credits from two regions.

Research Seminar

Code	Title	Credits
HIST 797	Research Seminar in History	3
Total Credits		3

Course in a Field Outside of Geographic Specialization

Code	Title	Credits
Select one course from U.S., European, or world history (listed above) that is not in their chosen specialization.		3
Total Credits		3

Elective Courses

Code	Title	Credits
Students can choose to pursue a Thesis in lieu of two electives		9
Select three elective courses		
Thesis		
HIST 799	Thesis	
Select one elective course		
Total Credits		9

Concentration in Higher Education (HEDU)

The concentration in higher education is intended for students who want to teach history at community college. It includes coursework in both history and education, including a course on college teaching. Students are required to take at least one history course in each of three areas

(U.S., European, and world history), and they are encouraged to take two courses in each area to prepare them to teach the U.S., western civilization, and world history survey courses most commonly offered at the community college level.

Required Course

Code	Title	Credits
HIST 610	The Study and Writing of History [1]	3
Total Credits		3

[1] Must be taken with the first 9 credits.

Additional Courses in History

Code	Title	Credits
Select six courses in history [1]		18
Total Credits		18

[1] Must include at least one course each from U.S. European, and world history.

Research Seminar

Code	Title	Credits
HIST 797	Research Seminar in History	3
Total Credits		3

Graduate Education

Code	Title	Credits
Select four courses from the following:		12
HE 602	College Teaching	
HE 685	Practicum	
Six credits of HE electives		
Total Credits		12

Concentration in Teaching (HS4)

This concentration offers students interested in a career in secondary education the option to devote part of their History MA to graduate coursework that can be applied toward the requirements for licensure in the Commonwealth of Virginia. Students who have an interest in obtaining licensure to teach should meet with a pre-Education advisor in the College Of Education and Human Development at the beginning of their program to create a plan for completion of the required content-coursework prerequisites (Endorsements). You can view information here: https://cehd.gmu.edu/endorse/ or contact the Pre-Education Advising Coordinator at endorse@gmu.edu. Students seeking licensure must also enroll in the Secondary Education Licensure Graduate Certificate (E1-CERG-SELC), a state-approved educator preparation program. Upon completion of the discipline-specific content competencies coursework; the MA in History, concentration in teaching; and the Secondary Education Licensure Graduate Certificate, students will be eligible for recommendation for an initial teaching license in Secondary Education History and Social Science.

Required Course

Code	Title	Credits
HIST 610	The Study and Writing of History [1]	3
Total Credits		3

[1] Must be taken within the first 9 credits.

History

Code	Title	Credits
Select six courses in history, at least one course each from U.S., European, and world history		18
Total Credits		18

Research Seminar

Code	Title	Credits
HIST 797	Research Seminar in History	3
Total Credits		3

College of Education and Human Development Graduate Courses

Code	Title	Credits
EDCI 567	Teaching Social Studies in the Secondary School	3
EDUC 522	Foundations of Secondary Education	3
EDRD 619	Literacy in the Content Areas	3
EDUC 672	Human Development and Learning: Secondary Education	3
Total Credits		12

Accelerated Master's

History, BA/History, Accelerated MA

Overview

Highly-qualified Mason undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BA in History and an MA in History in an accelerated time-frame after satisfactory completion of a minimum of 138 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degrees for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/).

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's Accelerated Master's Degree policies. For information specific to this accelerated master's program, see Application Requirements and Deadlines (http://historyarthistory.gmu.edu/programs/la-ma-acel-hist/application/) on the departmental website.

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits, including HIST 300 Introduction to Historical Method (Mason Core) with a minimum grade of B+.

Students who are accepted in the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits.

Accelerated Master's Admissions Requirements

Students already admitted in the BAM Pathway will be admitted to the MA program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- Minimum overall GPA of 3.25
- Completion of a HIST 499 RS: Senior Seminar in History (Mason Core) or HIST 491 Honors Directed Research
- Minimum grade of B in each advanced standing course
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing courses (up to 12 credits with a minimum grade of B in each)

500- or 600-level HIST courses (https://catalog.gmu.edu/courses/hist/)
HIST 610 The Study and Writing of History is preferred, but not required

Reserve Graduate Credit courses (up to 6 credits) taken while an undergraduate and will only count for the graduate degree program

500- or 600-level HIST courses (https://catalog.gmu.edu/courses/hist/)

For more detailed information on coursework and timeline requirements see AP.6.7 Bachelor's Accelerated Master's Degree policies.

History, PhD

Banner Code: LA-PHD-HIST

Academic Advising

3200 Horizon Hall
Fairfax Campus

Website: historyarthistory.gmu.edu/programs/la-phd-hist

The History, PhD prepares students for careers in college teaching, digital media, publishing, educational administration, public history, and historical research. Students gain expertise in conventional historical methods and web-based technologies. Major fields include U.S. history, European history, and world history. Minor fields are chosen by the student and may include such areas as public history, constitutional studies, and new media and information technology.

The PhD program allows students to develop programs of study to fit with a variety of career goals and interests - preparation to teach and research at the community college, college, or university level; work in the fields of digital humanities, new media and technology; work in the fields of public and applied history, such as museums, archives, preservation, and editing; and professional development.

Admissions & Policies

Admissions

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions. For specific information see Application Requirements and Deadlines (http://historyarthistory.gmu.edu/programs/application/LA-PHD-HIST/) on the departmental web site.

Policies

For policies governing all graduate programs, see AP.6 Graduate Policies.

Reduction of Credit

For students entering the doctoral program with a master's degree, the number of required credits may be reduced by a maximum of 30 credits, subject to approval of the program faculty and the dean. Requests for reduction of credit are reviewed only after acceptance to the doctoral program.

Requirements

Degree Requirements

Total credits: 72

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Students will be terminated from the program if they receive more than one unsatisfactory grade (C or F). No more than 6 credits earned through study abroad courses may be applied towards the degree.

Core Courses

Code	Title	Credits
HIST 610	The Study and Writing of History	3
HIST 696	Clio Wired: An Introduction to History and New Media	3
Choose one of the following:		3
HIST 697	Creating Historical Knowledge using Digital Methods	
HIST 698	Programming for History	
HIST 688	Topics in History and New Media	
HIST 810	History Doctoral Colloquium [1]	1-6
HIST 811	Doctoral Research Seminar	3
HIST 797	Research Seminar in History	3
Total Credits		16-21

[1] Students take 1 credit a semester until they advance to candidacy or reach a maximum of 6 credits.

Major Field

Code	Title	Credits
Select 15 credits of courses in one of three possible fields:		15
U.S. History		
European History		

Comparative World History	
Total Credits	15

Minor Fields

Code	Title	Credits
Select two minor fields and take 9 credits in each [1]		18
Total Credits		18

[1] Minor fields may include areas such as public history, digital history, cultural history, women's and gender history, the Atlantic World.

Doctoral Research Skills

Students must demonstrate basic competency in computers. Students whose research requires knowledge of a foreign language must also demonstrate a reading knowledge of one foreign language. The department sets specific research skills requirements for students, depending on their field of study.

Comprehensive Exam

Students need to pass a comprehensive exam that consists of a written field exam for each minor field and an oral exam for the major field.

Advancement to Candidacy

To advance to candidacy, students must complete all coursework required on their approved program of study. Students must also successfully complete and pass an oral comprehensive exam in a major field and written examinations in two minor fields. In addition, students must have a dissertation committee appointed by the Dean's Office as well as an approved proposal. Evidence of the approved proposal must be on file in the Dean's Office before a student can be advanced to candidacy.

Dissertation

Once enrolled in HIST 998 Doctoral Dissertation Proposal, students in this degree program must maintain continuous registration in HIST 998 Doctoral Dissertation Proposal or HIST 999 Doctoral Dissertation Research each semester (excluding summers) until the dissertation is submitted to and accepted by the University Libraries. Once enrolled in HIST 999 Doctoral Dissertation Research, students must follow the university's continuous registration policy as specified in AP.6.10.6 Dissertation Research. Students who defend in the summer must be registered for at least 1 credit of HIST 999 Doctoral Dissertation Research.

Students who complete less than 6 credits of HIST 810 History Doctoral Colloquium must take additional credits of HIST 998 Doctoral Dissertation Proposal or HIST 999 Doctoral Dissertation Research to reach the 72 credits required for the program.

Students may apply to this degree a minimum of 3 and a maximum of 6 credits of HIST 998 Doctoral Dissertation Proposal and a minimum of 15 credits of HIST 999 Doctoral Dissertation Research.

Code	Title	Credits
Dissertation Research		18
HIST 998	Doctoral Dissertation Proposal (minimum of 3 credits)	
HIST 999	Doctoral Dissertation Research (minimum of 15 credits)	
Total Credits		18

Medieval Studies Minor

Banner Code: MEST

Academic Advising

3200 Horizon Hall
Fairfax Campus

Website: https://historyarthistory.gmu.edu/programs/la-minor-hist-mest

The Medieval Studies minor is an interdisciplinary study of the Middle Ages and allows focused study within the parameters of a single methodology or discipline.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. Of the 18 credits applied to the minor, 12 credits must be at the 300- or 400-level.

For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 18

Core Courses

Code	Title	Credits
Select 9 credits from the following courses		9
Material Culture and History		
ARTH 320	Art of the Islamic World (Mason Core)	
ARTH 333	Early Christian and Byzantine Art (Mason Core)	
ARTH 334	Western Medieval Art (Mason Core)	
HIST 281	Survey of Middle Eastern Civilization (Mason Core)	
HIST 304	Western Europe in the Middle Ages	
RELI 363	Catholicism	
RELI 374	Islamic Thought (Mason Core)	
Literacy and Intellectural Culture		
ENGH 320	Literature of the Middle Ages	
ENGH 422	Chaucer	
FREN 415	Topics in Medieval French Literature and Culture	
FRLN 431	Medieval Intellectual Topics	
SPAN 483	Medieval and Early Modern Literature of Spain	
Total Credits		9

Electives

Code	Title	Credits
Select 9 credits from the following:		9
ARTH 335	Arts of Medieval England (Mason Core)	
ARTH 340	Early Renaissance Art in Italy, 1300-1500 (Mason Core)	
ARTH 386	The Silk Road (Mason Core)	
ARTH 430	Advanced Studies in Medieval or Islamic Art	
ENGH 309	Topics in Literature (when topic is applicable to medieval studies with approval of minor director)	
ENGH 421	Topics in Medieval and Renaissance Literature (when topic is applicable to medieval studies with approval of minor director)	
HIST 387	Topics in Global History (Mason Core) (when topic is applicable to medieval studies with approval of minor director)	
HIST 388	Topics in European History (when topic is applicable to medieval studies with approval of minor director)	
HIST 462	Women in Islamic Society (Mason Core)	
ARAB 325	Major Arab Writers/Stories (Mason Core)	
ARAB 440	Topics in Arabic Religious Thought and Texts (Mason Core)	
CHIN 310	Survey of Chinese Literature (Mason Core)	
CHIN 325	Major Chinese Writers (Mason Core)	
CLAS 260	The Legacy of Greece and Rome (Mason Core)	
FRLN 330	Topics in World Literature (Mason Core) (when topic is applicable to medieval studies with approval of minor director)	
FREN 325	Major French Writers (Topic Varies) (Mason Core) (when topic is applicable to medieval studies with approval of minor director)	
FREN 450	Special Topics Related to French Literature and Culture (when topic is applicable to medieval studies with approval of minor director)	
GERM 325	Major Writers (Mason Core) (when topic is applicable to medieval studies with approval of minor director)	
ITAL 325	Major Italian Writers (Mason Core) (when topic is applicable to medieval studies with approval of minor director)	
JAPA 340	Topics in Japanese Literature (Mason Core) (when topic is applicable to medieval studies with approval of minor director)	
KORE 310	Traditional Korean Literature in Translation	
LATN 451	Studies in Roman Literature (when topic is applicable to medieval studies with approval of minor director)	
LATN 452	Studies in Roman Literature (when topic is applicable to medieval studies with approval of minor director)	
RUSS 325	Major Russian Writers (Mason Core) (when topic is applicable to medieval studies with approval of minor director)	
SPAN 325	Major Hispanic Writers (Mason Core) (when topic is applicable to medieval studies with approval of minor director)	
RELI 337	Mysticism: East and West	
RELI 352	Judaism from Exile to Talmud	
RELI 355	Sufism	
RELI 365	Muhammad: Life and Legacy	
RELI 370	Judaism (Mason Core)	
RELI 375	Qur'an and Hadith	
RELI 381	Beginnings of Christianity	
Total Credits		9

Sport and American Culture Minor (CHSS)

Banner Code: SAMC

Phone: 703-993-1250
Email: histarth@gmu.edu
Website: https://sportculture.gmu.edu

This interdisciplinary minor is offered jointly by the School of Sport, Recreation, and Tourism Management and the Department of History and Art History. This minor is for students who want to immerse themselves in the study of sport, sociology, and history. Students must take two required and four elective courses (two from Sport Management and two from History).

Admissions & Policies

Admissions

This minor is available to all Mason undergraduate students.

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 18

Coursework

Code	Title	Credits
HIST 341	History of Sport in the United States	3
SPMT 304	Sport, Culture, and Society	3
Total Credits		6

Electives (Sport Management)

Code	Title	Credits
Select two courses from the following:		6
SPMT 318	Diversity and Inclusion Issues in Sport	
SPMT 321	America Through Baseball	
SPMT 322	Football and American Culture	
SPMT 323	America and the Modern Olympics	
Total Credits		6

Electives (History)

Code	Title	Credits
HIST 339	History of Baseball	3
HIST 340	Basketball and the American Experience	3
Total Credits		6

STEM in Society Minor (CHSS)

Banner Code: STEM

Academic Advising

3200 Horizon Hall
Fairfax Campus

Website: historyarthistory.gmu.edu/programs/la-minor-hist-stem

The STEM in Society minor develops strategic and critical thinking capabilities to better understand how science, technology, engineering, and mathematics (STEM), as well as medicine, impact the human experience - past, present, and future. It provides a broad perspective of the STEM fields, to include how advances are developed, how they fit into the wider context of society and culture, and how historical contexts have in turn shaped advances in these fields.

The skills and competencies gained from this minor are useful to those seeking work in the tech and health care industries, as well as fields like international development and public policy or in non-profits, the government, or think tanks.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must earn a minimum grade of 2.00 in all courses applied to the minor. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 15

Required Course

Code	Title	Credits
HIST 315	STEM and Society: A History	3
Total Credits		3

Electives

Code	Title	Credits
Select 12 credits from any of the following courses		12
Historical		
HIST 202	Freshman/Sophomore Seminar in Global History	
HIST 378	History of Aviation	
HIST 390	The Digital Past	
BIOL 301	Biology and Society (Mason Core)	
COS 301	Great Ideas in Science (Mason Core)	
Medicine and Health		
PHIL 344	Ethical Issues in Global Health	
ANTH 363	Humans, Disease, and Death (Mason Core)	
ANTH 365	Scientific Racism and Human Variation	
ANTH 381	Medical Anthropology	
GCH 445	Social Determinants of Health	
or SOCW 445	Social Determinants of Health	
GCH 205	Global Health (Mason Core)	
GCH 360	Health and Environment	
Environment		
PHIL 243	Global Environmental Ethics (Mason Core)	
ANTH 370	Environment and Culture	
CEIE 100	Environmental Engineering around the World (Mason Core)	
CLIM 101	Global Warming: Weather, Climate, and Society (Mason Core)	
EVPP 436	The Human Dimensions of Global Climate Change	
GGS 307	Geographic Approaches for Sustainable Development	
Science and Technology		
PHIL 377	Darwin: Biology and Beyond (Mason Core)	
ANTH 395	Work, Technology, and Society: An IT Perspective	
ANTH 314	Zombies	
SOCI 391	Big Data, Technology, and Society	
INTS 301	Science in the News (Mason Core)	
INTS 348	Digital Futures	
IT 304	IT in the Global Economy	
COS 400	Problem Solving and Leadership in STEAM	
Policy		
EVPP 432	Energy Policy	
EVPP 361	Introduction to Environmental Policy	
NUTR 318	Global Nutrition and Food Security	
NUTR 440	Nutrition Policy	
BENG 475		
Special Topics Courses (with permission of minor director when topic is related to STEM in Society)		
HIST 387	Topics in Global History (Mason Core)	
ANTH 396	Issues in Anthropology: Social Sciences (Mason Core)	

ANTH 399	Issues in Anthropology
SOCI 395	Special Topics in Sociology
GLOA 400	Global Affairs Capstone (Mason Core)
GLOA 450	Topics in Global Affairs
ENGR 499	Special Topics in Engineering
INTS 375	Special Topics
INTS 475	Special Topics
NUTR 495	Nutrition and Food Studies Capstone
GCH 494	Special Topics in Global and Community Health
Total Credits	12

Department of Modern and Classical Languages

5100 Horizon Hall
Fairfax Campus

Phone: 703-993-1220
Website: mcl.gmu.edu

Undergraduate Programs

The department offers a Bachelor of Arts in Foreign Languages with concentrations in Arabic, Chinese, French, Korean, and Spanish.

Concentrations

The concentration in Arabic has an emphasis on developing strong language skills, including literacy and oral communication, along with an in-depth understanding of modern Arabic culture and society. Students concentrating in Arabic are expected to gain fluency in Modern Standard Arabic and a working knowledge of at least one Arabic dialect. Additionally, students will graduate with a strong background in Arab intellectual history, literature, and culture.

The concentration in Chinese enables students to become proficient in listening, speaking, reading, and writing Chinese while learning about Chinese literature, history, traditions, and culture. Students in this program are encouraged to study abroad or to do an internship. Students in Chinese are also encouraged to complete a double major.

The concentration in French is designed for students who want to increase their proficiency in French language and culture while learning about the history, politics, and economics of the many French-speaking countries around the world. Students can take a study abroad course or spend a summer in Paris or Quebec, earning credit towards their degree. They can participate in the many French-speaking activities sponsored by Mason's French Club.

The concentration in Korean prepares students to perform professional work in the field of translation, international relations, local and federal government, transnational enterprise, cultural industry, and teaching careers in Korea or at local public schools and to pursue graduate studies in Korean or Korean studies. The concentration in Korean has an emphasis on developing solid Korean language proficiency skills, technical translation skills, and in-depth understanding of both South and North Korean society and culture.

The concentration in Spanish enables students to become proficient in speaking, reading, and writing Spanish while learning about Latin American, Latino and Spanish languages practices, literatures, histories, and cultures. Students are encouraged to do an internship or service learning project, where they can draw on their knowledge of Spanish and gain valuable work experience while working for social change in their communities. Students have many opportunities to study Spanish abroad for as little as a week and as long as a semester and, at the same time, earn credit toward their degree.

All concentrations prepare students for teaching careers at the secondary school level, graduate study in languages, and research and professional work in government and private enterprise.

Faculty in the department participate in the interdisciplinary Russian and Eurasian Studies, BA.

Foreign Languages with a Second Major

Majors in foreign language are encouraged to complete a second major in another field. Students who want to pursue a second undergraduate major should plan a program of study in consultation with advisors from both degrees and be familiar with the relevant policies on more than one major. See the Academic Policies section of the catalog.

Minors

Language majors are encouraged to complete a minor in another field.

The department offers minors in Arabic, Chinese, French, German Studies, Latin, Russian, Spanish, Classical Studies, Italian Studies, Japanese Studies, and Korean Studies. They are available to students in any major at Mason. Except for Classical Studies, all the minors have as a prerequisite the completion of 202 (or equivalent) in the relevant language.

Bachelor's/Accelerated Master's Programs

The department offers highly qualified undergraduates concentrating in Spanish the opportunity to apply to an accelerated master's degree program in Foreign Languages with a concentration in Spanish or a concentration in Spanish/bilingual-multicultural education. If accepted, students will be able to earn an undergraduate degree and a graduate degree in Foreign Languages after satisfactory completion of 144-150 credits, generally within five years.

Graduate Programs

The department offers a distinctive interdisciplinary master's degree in foreign languages designed to meet the needs and interests of prospective and practicing teachers and other professionals. It also prepares students for doctoral study at other institutions. Within the master's degree, students choose one of four concentrations: French, Spanish, French and Spanish, and Spanish/bilingual-multicultural education.

Funding

The department has a limited number of teaching assistantships for highly qualified graduate students with excellent language preparation. Students develop valuable language teaching experience by working with faculty experts in language teaching pedagogy.

Faculty

Department Faculty

Professors

Berroa (chair), Leeman, Román-Mendoza, Winkler

Emeriti

Agüera, Christensen, Elstun, Francescato, Gilbert, Goldin, Ricouart, Wagner

Associate Professors

Carreño-Rodríguez, Greenberg, Leeman, Levine, Markx (associate chair), Olson, Pichichero, Rabin, Repinecz, Serafini, Sun, Vivancos-Pérez, K. Zhang

Assistant Professors

Chanethom, Jung, Serigos

Term Associate Professors

Dudnik, Sweet

Term Assistant Professors

Arans, Bonilla, Burns, J. Chen, Di Nino, Fujiwara, Kanesaka, Mahmoud, Hussein, Moon, Romaniuc, Vikis, Zach

Term Instructors

Ashraf-Hassen, X. Chen, Guglielmi, D. Kim

Postdoctoral R & T Fellow

Mangold

Affiliate Faculty

Anderson

Adjunct Faculty

Aldhobhani, Aprile, Ay, Borges, Brody, Cornejo, Creed, Cuestas, DeMonte, Giraldo, Gonzalez, Hyden, Iampramoon, Jones, Jordan, Lamothe, Lee, Li, Linares, Z. Liu, Luna, Mirsharif, Moon Painter, Mulholland, Poliakoff, Queenan, Quintana, Rabinowitch, Rosenthal, Russell, Saito Kobayashi, Saltzman, Samaha, Santoro, Skooti, Tritt, Valamotamed, Vargas-Gonzales, Velasco, Yi, Yoo, Zayed, Zelensky

Programs

- Arabic Minor
- Chinese Minor
- Classical Studies Minor
- Foreign Languages, BA
- Foreign Languages, MA
- French Minor
- German Studies Minor
- Italian Studies Minor
- Japanese Studies Minor
- Korean Studies Minor
- Latin Minor
- Russian Minor
- Spanish Minor

Arabic Minor

Banner Code: ARBC

Academic Advising

5100 Horizon Hall
Fairfax Campus

Email: language@gmu.edu
Website: mcl.gmu.edu/programs/la-minor-mcl-arab

The minor has an emphasis on developing strong language skills: oral communication and the reading of texts. Students are also introduced to important works of Arabic literature and culture. A minor in Arabic can easily and effectively be combined with majors in other disciplines. It is especially valuable in combination with global affairs, international relations, security, journalism, philosophy, and religion.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor. Students must complete 18 credits at the 300-level or above with a minimum grade of 2.00 in each course. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 18

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Core Courses

Code	Title	Credits
Select three courses from the following:		9
ARAB 300	Advanced Arabic	
ARAB 330	Reading and Conversation I	
ARAB 331	Reading and Conversation II	
ARAB 350	Media Arabic I (Written Media)	
ARAB 351	Media Arabic II (Spoken Media) (Mason Core)	
ARAB 355	Advanced Arabic Media: Debates Context (Mason Core)	
ARAB 375	Study Abroad - Arab World	
ARAB 390	Translation Methods: Arabic to English	
Total Credits		9

400-level Language Course

Code	Title	Credits
Select one course from the following:		3
ARAB 420	Survey of Arabic Literature	

ARAB 430	Advanced Arabic Grammar	
ARAB 440	Topics in Arabic Religious Thought and Texts (Mason Core)	
Total Credits		3

Electives

Additional ARAB Course

Code	Title	Credits
Select one additional ARAB course (3 credits) from any 300 or 400-level course taught in Arabic		3
Total Credits		3

English

Code	Title	Credits
Select one course in English from the following:		3
ARAB 325	Major Arab Writers/Stories (Mason Core)	
ARAB 470	Special Topics in Modern Arabic Studies	
ARTH 320	Art of the Islamic World (Mason Core)	
GOVT 332	Government and Politics of the Middle East and North Africa	
GOVT 345	Islam and Politics	
HIST 461	Arab-Israeli Conflict	
HIST 462	Women in Islamic Society (Mason Core)	
HIST 465	The Middle East in the 20th Century	
RELI 374	Islamic Thought (Mason Core)	
RELI 375	Qur'an and Hadith	
Total Credits		3

Chinese Minor

Banner Code: CHIN

Academic Advising

5100 Horizon Hall
Fairfax Campus

Email: language@gmu.edu
Website: mcl.gmu.edu/programs/la-minor-mcl-chin

The minor in Chinese offers students the opportunity to study one of the rapidly developing ancient cultures of the world. The emphasis is on developing strong language skills: oral communication and the reading of texts.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor. Students must complete 18 credits at the 300-level or above with a minimum grade of 2.00 in each course. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 18

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Students complete coursework with a language emphasis or a history and cultural emphasis.

Language Emphasis

Code	Title	Credits
Select three courses in language from the following:		9
CHIN 300	Reading Skills Development	
CHIN 301	Advanced Grammar and Syntax	
CHIN 305	Chinese for the Business World	
CHIN 480	Fourth-Year Chinese I	
CHIN 481	Fourth-Year Chinese II	
Select two courses in content taught in Chinese from the following:		6
CHIN 318	Introduction to Classical Chinese (Mason Core)	
CHIN 355	Readings in Chinese Poetry and Poetics (Mason Core)	
CHIN 365	Readings in Chinese Fiction after Mao	
CHIN 475	Chinese Popular Culture (Mason Core)	
CHIN 485	China on Stage: Introduction to Chinese Theatrical Dramas in the 20th Century	
Select one course from the following: [1]		3
CHIN 310	Survey of Chinese Literature (Mason Core)	
CHIN 311	Modern Chinese Literature in Translation (Mason Core)	
CHIN 320	Contemporary Chinese Film	
CHIN 325	Major Chinese Writers (Mason Core)	
CHIN 470	Special Topics in Chinese Studies	
ARTH 384	Arts of China (Mason Core)	
GGS 317	Geography of China (Mason Core)	
HIST 353	History of Traditional China	
HIST 354	Modern China (Mason Core)	
HIST 358	Post-1949 China (Mason Core)	
RELI 314	Chinese Philosophies and Religious Traditions	
Total Credits		18

[1] Relevant courses offered by other departments may be allowed with Chinese program director's approval.

History and Cultural Emphasis

Code	Title	Credits
Select two courses in language from the following:		6
CHIN 300	Reading Skills Development	
CHIN 301	Advanced Grammar and Syntax	
CHIN 480	Fourth-Year Chinese I	

CHIN 481	Fourth-Year Chinese II	
Select two courses in content taught in Chinese from the following:		6
CHIN 305	Chinese for the Business World	
CHIN 318	Introduction to Classical Chinese (Mason Core)	
CHIN 355	Readings in Chinese Poetry and Poetics (Mason Core)	
CHIN 365	Readings in Chinese Fiction after Mao	
CHIN 475	Chinese Popular Culture (Mason Core)	
CHIN 485	China on Stage: Introduction to Chinese Theatrical Dramas in the 20th Century	
Select two courses taught in English from the following: [1]		6
CHIN 310	Survey of Chinese Literature (Mason Core)	
CHIN 311	Modern Chinese Literature in Translation (Mason Core)	
CHIN 320	Contemporary Chinese Film	
CHIN 325	Major Chinese Writers (Mason Core)	
CHIN 470	Special Topics in Chinese Studies	
ARTH 384	Arts of China (Mason Core)	
GGS 317	Geography of China (Mason Core)	
HIST 353	History of Traditional China	
HIST 354	Modern China (Mason Core)	
HIST 358	Post-1949 China (Mason Core)	
RELI 314	Chinese Philosophies and Religious Traditions	
Total Credits		18

[1] Relevant courses offered by other departments may be allowed with Chinese program director's approval.

Classical Studies Minor

Banner Code: CLA

Academic Advising

5100 Horizon Hall
Fairfax Campus

Email: language@gmu.edu
Website: mcl.gmu.edu/programs/LA-MINOR-MCL-CLA/requirements

The minor is designed for students who wish to become familiar with Classical cultures and broaden their knowledge of the foundations of Western civilization. It is especially relevant to students who are studying other areas of the humanities such as English, languages, comparative literature, history, art history, philosophy, or religious studies. The requirements of the minor provide flexibility so students can choose courses that are relevant to their primary interests.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum grade of 2.00. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 18

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Core Courses

Classics

Code	Title	Credits
CLAS 250	Classical Mythology (Mason Core)	3
Select one from the following:		3
CLAS 260	The Legacy of Greece and Rome (Mason Core)	
CLAS 340	Greek and Roman Epic (Mason Core)	
CLAS 350	Greek and Roman Tragedy (Mason Core)	
CLAS 360	Greek and Roman Comedy (Mason Core)	
CLAS 380	Greek and Roman Novels (Mason Core)	
CLAS 390	Topics in Classical Literature and Culture	
Total Credits		6

Classical History

Code	Title	Credits
Select one course from the following:		3
HIST 301	Classical Greece	
HIST 302	Classical Rome	
HIST 388	Topics in European History (when the topic deals with antiquity)	
Total Credits		3

Classical Art History or Classical Philosophy

Code	Title	Credits
Select one course from the following:		3
ARTH 321	Greek Art and Archaeology (Mason Core)	
ARTH 322	Roman Art and Archaeology (Mason Core)	
ARTH 333	Early Christian and Byzantine Art (Mason Core)	
ARTH 399	Special Topics in the History of Art (when the topic is relevant to Classical art history)	
ARTH 420	Advanced Studies in Ancient Art	
PHIL 301	History of Western Philosophy: Ancient	
Total Credits		3

Electives

Code	Title	Credits
Electives may be chosen from any of the courses above not used to fulfill another requirement for the minor.		6
Total Credits		6

Foreign Languages, BA

Banner Code: LA-BA-FRLN

5100 Horizon Hall
Fairfax Campus

Email: language@gmu.edu
Website: mcl.gmu.edu/programs/LA-BA-FRLN

The Bachelor of Arts in Foreign Languages prepares students for teaching, graduate study in languages and cultures, research, professional work, as well as service in government, nonprofits, or business. Our graduates are particularly valued for their multilingual and cross-cultural knowledge. Majors are encouraged to complete a minor or a second major in another field. Concentrations are offered in Arabic, Chinese, French, Korean, and Spanish. Minors are offered in Arabic, Chinese, Classical Studies, French, German Studies, Italian Studies, Japanese Studies, Korean Studies, Latin, Russian and Spanish.

Double majors in foreign language and another subject should plan a program of study with advisors from both disciplines and follow the steps outlined in AP.5.3.3 Second Bachelor's Degree.

Admissions & Policies

Policies

Students pursuing this degree must complete 30-33 credits within the major, with a minimum GPA of 2.00

For policies governing all undergraduate degrees, see AP.5 Undergraduate Policies.

Requirements

Degree Requirements

Total credits: minimum 120

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Concentrations in the Major

In addition to the other college and university requirements for a degree, provided in the tabs below, students pursuing this degree complete a 30-33 credit concentration chosen from the following:

- Concentration in Arabic (ARBC)
- Concentration in Chinese (CHIN)
- Concentration in French (FRN)
- Concentration in Korean (KORE)
- Concentration in Spanish (SPN)

Concentration in Arabic (ARBC)

The concentration in Arabic has an emphasis on developing strong language skills, including literacy and oral communication, along with an in-depth understanding of modern Arabic culture and society. Students concentrating in Arabic are expected to gain fluency in Modern Standard Arabic and a working knowledge of at least one Arabic dialect. Additionally, students will graduate with a strong background in Arab intellectual history, literature, and culture.

Students pursuing the concentration in Arabic must complete a minimum of 30 credits in Arabic at the 300 level and above, each with a minimum grade of C. Only two courses (6 credits) taught in English may be applied to the major. Students are highly encouraged to participate in study abroad.

A minor in Arabic is also offered, which can easily and effectively be combined with majors in other disciplines, such as global affairs, international relations, government, journalism, philosophy, and religion.

Code	Title	Credits
Core Courses		
Select eight courses from the following:		24
ARAB 300	Advanced Arabic	
ARAB 330	Reading and Conversation I	
ARAB 331	Reading and Conversation II	
ARAB 350	Media Arabic I (Written Media)	
ARAB 351	Media Arabic II (Spoken Media) (Mason Core)	
ARAB 355	Advanced Arabic Media: Debates Context (Mason Core)	
ARAB 375	Study Abroad - Arab World	
ARAB 380	Arabic Dialects	
ARAB 390	Translation Methods: Arabic to English	
ARAB 420	Survey of Arabic Literature	
ARAB 430	Advanced Arabic Grammar	
ARAB 440	Topics in Arabic Religious Thought and Texts (Mason Core)	
ARAB 498	Independent Study	
Electives		
Select two courses from the following:		6
ARAB 325	Major Arab Writers/Stories (Mason Core)	
ARAB 360	Topics in Arabic Cultural Production	
ARAB 470	Special Topics in Modern Arabic Studies	
ANTH [1]		
ARTH [1]		
ENGH [1]		
GOVT [1]		
HIST [1]		
PHIL [1]		
RELI [1]		

SOCI [1]	
Total Credits	30

[1] Requires approval of advisor and the director; relevant courses only.

Concentration in Chinese (CHIN)

The concentration in Chinese prepares students for research and professional work in government and private enterprise, teaching careers at the secondary school level, and graduate study in Chinese. Language majors with the Chinese concentration are encouraged to complete a minor or, if possible, a second major in another field.

Students pursuing the concentration in Chinese must complete a minimum of 30 credits in Chinese at the 300 level and above, each with a minimum grade of C. Students are expected to complete a balanced program that includes courses in language, culture and civilization, and literature. Only two courses (6 credits) taught in English may be applied to the major. Students are highly encouraged to participate in study abroad.

A minor in Chinese is also offered, which can easily and effectively be combined with majors in other disciplines, such as global affairs, international relations, government, journalism, philosophy, and religion.

Code	Title	Credits
Core Courses		
Select eight courses from the following:		24
CHIN 300	Reading Skills Development	
CHIN 301	Advanced Grammar and Syntax	
CHIN 305	Chinese for the Business World	
CHIN 318	Introduction to Classical Chinese (Mason Core)	
CHIN 355	Readings in Chinese Poetry and Poetics (Mason Core)	
CHIN 365	Readings in Chinese Fiction after Mao	
CHIN 475	Chinese Popular Culture (Mason Core)	
CHIN 480	Fourth-Year Chinese I	
CHIN 481	Fourth-Year Chinese II	
CHIN 485	China on Stage: Introduction to Chinese Theatrical Dramas in the 20th Century	
Electives		
Select two courses from the following: [1]		6
CHIN 310	Survey of Chinese Literature (Mason Core)	
CHIN 311	Modern Chinese Literature in Translation (Mason Core)	
CHIN 320	Contemporary Chinese Film	
CHIN 325	Major Chinese Writers (Mason Core)	
CHIN 328	Asian American Women Writers (Mason Core)	
CHIN 470	Special Topics in Chinese Studies	
CHIN 490	Internship in Chinese Studies	
ARTH 384	Arts of China (Mason Core)	
GGS 317	Geography of China (Mason Core)	
HIST 353	History of Traditional China	
HIST 354	Modern China (Mason Core)	
HIST 358	Post-1949 China (Mason Core)	
RELI 314	Chinese Philosophies and Religious Traditions	
Total Credits		30

[1] Relevant courses offered by other departments may be allowed with Chinese program director's approval.

Concentration in French (FRN)

Students pursuing the concentration in French must complete a minimum of 33 credits in French at the 300 level and above, each with a minimum grade of C. No more than two courses (6 credits) conducted in English may be used to fulfill requirements for the concentration. These may be chosen from FREN 325 Major French Writers (Topic Varies) (Mason Core) or FREN 329 Problems of Western Civilization in French Literature (Mason Core) or a FRLN or non-MCL course at the 300- or 400- level with approval. Students are expected to complete a balanced program that includes courses in language, culture and civilization, and literature.

Code	Title	Credits
Advanced Language Course		
FREN 309	Reading and Writing Skills Development	3
Literature and Civilization		
FREN 380	The Making of Modern France	3
FREN 340	Francophone Identities	3
or FREN 385	Introduction to French Linguistics	
FREN at the 300-level or Above		
Select four courses in FREN at the 300-level or above		12
FREN at the 400-level or above		
Select four courses in FREN at the 400-level or above		12
Total Credits		33

Concentration in Korean (KORE)

The major in Korean prepares students to perform professional work in the field of translation, international relations, local and federal government, transnational enterprise, cultural industry and teaching careers in Korea or at local public schools and to pursue graduate studies in Korean or Korean studies. The concentration in Korean has an emphasis on developing solid Korean language proficiency skills, technical translation skills, and in-depth understanding of both South and North Korean society and culture.

Students majoring in Korean need to complete a minimum of 30 credits in Korean at the 300 level and above, each with a minimum grade of C. Students are expected to take well-balanced courses including language, culture, literature and translation. Only two courses (6 credits) taught in English are applied to the major requirements. Students are strongly recommended to participate in study abroad.

The major in Korean can ideally be combined with majors or minors in other disciplines, such as global affairs, international relations, government, journalism, conflict analysis and resolution, philosophy, religion, and education.

Code	Title	Credits
Core Courses		
Select eight courses from the following. Some courses may be repeated for credit.		24
KORE 301	Advanced Korean Language and Culture	
KORE 305	Business Korean	

KORE 321	Korean Proficiency through Visual Culture	
KORE 331	Special Topics in Advanced Korean Reading	
KORE 332	Special Topics in Advanced Korean Speaking	
KORE 340	Transformation of Language and Culture in North and South Korea	
KORE 370	Advanced Korean Writing	
KORE 410	Special Topics in Korean Linguistics	
KORE 440	Special Topics in Translation of Korean	
KORE 450	Korean Cultural Studies	
KORE 490	Internship in Korean Studies	
Electives		
Select two courses taught in English on Korean subject matter from the following:		6
KORE 300	Korean Culture and Society	
KORE 310	Traditional Korean Literature in Translation	
KORE 311	Modern Korean Literature in Translation (Mason Core)	
KORE 320	Korean Popular Culture in a Global World	
KORE 325	Major North and South Korean Writers	
KORE 385	Introduction to Korean Linguistics	
GOVT 333	Government and Politics of Asia	
GOVT 433	Political Economy of East Asia	
RELI 315	Buddhism (Mason Core)	
RELI 317	Daoism	
RELI 318	Korean Philosophy and Religions	
Total Credits		**30**

Concentration in Spanish (SPN)

With more than 400 million people speaking Spanish worldwide - nearly 40 million in the US - and the growing influence of Hispanic cultures around the globe, knowledge of Spanish and the Spanish-speaking world has never been more important. The Spanish courses and degree programs provide students with the opportunity for language development and interdisciplinary study of the cultures, film, history, linguistics and literature of the 20 Spanish-speaking countries, including the United States. Students can also receive Spanish credit through participation in study-abroad programs.

Students pursuing the concentration in Spanish must complete a minimum of 33 credits in Spanish courses at the 300-level and above, each with a minimum grade of C. Two courses taught in English (6 credits) may be applied toward the concentration, only one of which may be taught outside the department. FRLN topics courses and outside elective courses taught in English require pre-approval by the Spanish program coordinator.

Code	Title	Credits
Core Courses (Select one of the following options)		**6**
Option 1		
SPAN 305	Spanish in Context I	
SPAN 306	Spanish in Context II	
Option 2		
SPAN 309	Intensive Spanish in Context	
Option 3		
SPAN 315	Spanish in Context for Heritage Speakers	
One additional 300- or 400-level SPAN course		
Additional Required Courses		
SPAN 370	Spanish Writing and Stylistics	3
SPAN 385	Introduction to Spanish Linguistics	3
SPAN 390	Introduction to Hispanic Literary Analysis	3
Spanish at the 400 Level		
Select four courses in Spanish at the 400 level		12
Electives		
Select two courses from the following:		6
SPAN 322	Introduction to Latin American Culture (Mason Core)	
SPAN 325	Major Hispanic Writers (Mason Core)	
SPAN 329	Special Topics in Spanish and Latin American Literature	
Other SPAN courses at the 300- or 400- level		
FRLN 385	Multilingualism, Identity, and Power (Mason Core)	
FRLN topics courses with pre-approval of Spanish Program Coordinator		
Other relevant elective courses taught in English with pre-approval of Spanish Program Coordinator [1]		
Total Credits		33

[1] Prefixes for elective courses (with pre-approval) include ANTH, ARTH, ENGH, GGS, GOVT, HIST, RELI, and SOCI.

Writing-Intensive Requirement

The university requires all students to complete at least one course designated "writing intensive" in their majors at the 300 level or above. Students majoring in foreign language may fulfill this requirement by successfully completing ARAB 331 Reading and Conversation II, CHIN 480 Fourth-Year Chinese I, FREN 309 Reading and Writing Skills Development, KORE 370 Advanced Korean Writing, or SPAN 370 Spanish Writing and Stylistics.

Upper Level Requirement

Students seeking a bachelor's degree must apply at least 45 credits of upper-level courses (numbered 300 or above) toward graduation requirements.

Additional Electives

Any remaining credits may be completed with elective courses to bring the degree total to 120.

College Level Requirements for the BA Degree

In addition to the Mason Core program, students pursuing a BA degree must complete the coursework below. Except where expressly prohibited, a course used to fulfill a college level requirement may also be used simultaneously to satisfy other requirements (Mason Core requirements or requirements for the major).

Philosophy or Religious Studies

Code	Title	Credits
Select 3 credits from the following:		3
PHIL [1]		
RELI		

[1] Note that the following courses may not be used to fulfill this requirement:

- PHIL 323 Classical Western Political Theory
- PHIL 324 Modern Western Political Theory
- PHIL 327 Contemporary Western Political Theory
- PHIL 393 Humanities College to Career
- PHIL 460 Senior Seminar in Philosophy, Politics, and Economics

Additionally, PHIL 253 Philosophy and Literature (Mason Core), RELI 235 Religion and Literature (Mason Core), and RELI 333 Spiritual Autobiography (Mason Core) cannot be used to fulfill both the philosophy/religious studies requirement and the Mason Core literature requirement.

Social and Behavioral Sciences

Code	Title	Credits
Select 3 credits of social and behavioral sciences from the following (additional to the Mason Core social and behavioral sciences requirement) [1]		3
ANTH		
CRIM		
ECON		
GOVT		
HIST [2]		
LING		
PSYC		
SOCI		
Or choose from the following GGS courses:		
GGS 101	Major World Regions (Mason Core)	
GGS 103	Human Geography (Mason Core)	
GGS 110	Introduction to Geoinformation Technologies	
GGS 301	Political Geography (Mason Core)	
GGS 303	Geography of Resource Conservation (Mason Core)	
GGS 304	Population Geography (Mason Core)	
GGS 305	Economic Geography	
GGS 306	Urban Geography	
GGS 315	Geography of the United States	
GGS 316	Geography of Latin America	
GGS 320	Geography of Europe	
GGS 325	Geography of North Africa and the Middle East	
GGS 330	Geography of the Soviet Succession States	
GGS 357	Urban Planning	
GGS 380	Geography of Virginia	

[1] The two courses used to fulfill the combined college and Mason Core requirements must be from different disciplines in the social and behavioral sciences.

[2] HIST 100 History of Western Civilization (Mason Core) and HIST 125 Introduction to World History (Mason Core) may not be used to fulfill this requirement.

Foreign Language

Code	Title	Credits
Intermediate-level proficiency in one foreign language, fulfilled by: [1]		
Completing 3 credits in a foreign language numbered 202 (or higher level courses taught in the language)		
Or achieving a satisfactory score on an approved proficiency test		
Or completing the following ASL three course sequence:		
EDSE 115	American Sign Language (ASL) I	
EDSE 116	American Sign Language (ASL) II	
EDSE 219	American Sign Language (ASL) III	

[1] Students who are already proficient in a second language may be eligible for a waiver of this requirement. Additional information on waivers can be found at the Office of Undergraduate Academic Affairs (http://chssundergrad.gmu.edu/).

Non-Western Culture

Select 3 credits of an approved course in the study of a non-Western culture (additional to the Mason Core requirement in global understanding)

Code	Title	Credits
Select 3 credits (additional to Mason Core Global Understanding requirement) [1]		
ANTH 114	Introduction to Cultural Anthropology (Mason Core)	3
ANTH 300	Civilizations	3
ANTH 302	Peoples and Cultures of Latin America (Mason Core)	3
ANTH 307	Ancient Mesoamerica (Mason Core)	3
ANTH 308	Peoples and Cultures of the Middle East (Mason Core)	3
ANTH 309	Peoples and Cultures of India (Mason Core)	3
ANTH 313	Myth, Magic, and Mind (Mason Core)	3
ANTH 314	Zombies	3
ANTH 330	Peoples and Cultures of Selected Regions: Non-Western	3
ANTH 332	Cross-Cultural Perspectives on Globalization (Mason Core)	3
ANTH 381	Medical Anthropology	3
ANTH 396	Issues in Anthropology: Social Sciences (Mason Core)	3
ARAB 360	Topics in Arabic Cultural Production	3
ARAB 420	Survey of Arabic Literature	3
ARAB 440	Topics in Arabic Religious Thought and Texts (Mason Core)	3
ARTH 203	Survey of Asian Art (Mason Core)	3
ARTH 204	Survey of Latin American Art (Mason Core)	3
ARTH 206	Survey of African Art (Mason Core)	3
ARTH 318	Art and Archaeology of Ancient Egypt	3
ARTH 319	Art and Archaeology of the Ancient Near East (Mason Core)	3
ARTH 320	Art of the Islamic World (Mason Core)	3

ARTH 382	Arts of India (Mason Core)	3
ARTH 383	Arts of Southeast Asia (Mason Core)	3
ARTH 384	Arts of China (Mason Core)	3
ARTH 385	Arts of Japan (Mason Core)	3
ARTH 386	The Silk Road (Mason Core)	3
ARTH 482	RS: Advanced Studies in Asian Art	3
CHIN 318	Introduction to Classical Chinese (Mason Core)	3
CHIN 320	Contemporary Chinese Film	3
CHIN 325	Major Chinese Writers (Mason Core)	3
CHIN 470	Special Topics in Chinese Studies	3
DANC 118	World Dance (Mason Core)	3
ECON 361	Economic Development of Latin America (Mason Core)	3
ECON 362	African Economic Development (Mason Core)	3
FREN 451	Topics in Sub-Saharan Francophone Literature and Culture	3
FREN 454	Topics in Caribbean Francophone Literature and Culture	3
GGS 101	Major World Regions (Mason Core)	3
GGS 316	Geography of Latin America	3
GGS 317	Geography of China (Mason Core)	3
GGS 325	Geography of North Africa and the Middle East	3
GGS 330	Geography of the Soviet Succession States	3
GGS 399	Select Topics in GGS	3
GOVT 328	Global Political Theory	3
GOVT 332	Government and Politics of the Middle East and North Africa	3
GOVT 333	Government and Politics of Asia	3
GOVT 338	Government and Politics of Russia	3
GOVT 340	Central Asian Politics	3
GOVT 341	Chinese Foreign Policy	3
GOVT 345	Islam and Politics	3
GOVT 433	Political Economy of East Asia	3
HIST 251	Survey of East Asian History (Mason Core)	3
HIST 252	Survey of East Asian History (Mason Core)	3
HIST 261	Survey of African History (Mason Core)	3
HIST 262	Survey of African History (Mason Core)	3
HIST 271	Survey of Latin American History (Mason Core)	3
HIST 272	Survey of Latin American History (Mason Core)	3
HIST 281	Survey of Middle Eastern Civilization (Mason Core)	3
HIST 282	Survey of Middle Eastern Civilization (Mason Core)	3
HIST 326	Stalinism	3
HIST 327	The Soviet Union and Russia Since World War II	3
HIST 328	Rise of Russia (Mason Core)	3
HIST 329	Modern Russia and the Soviet Union (Mason Core)	3
HIST 353	History of Traditional China	3
HIST 354	Modern China (Mason Core)	3
HIST 356	Modern Japan (Mason Core)	3
HIST 357	Postwar Japan (Mason Core)	3
HIST 358	Post-1949 China (Mason Core)	3
HIST 360	History of South Africa (Mason Core)	3
HIST 364	Revolution and Radical Politics in Latin America (Mason Core)	3
HIST 365	Conquest and Colonization in Latin America (Mason Core)	3
HIST 366	Comparative Slavery	3
HIST 367	History, Fiction, and Film in Latin America	3
HIST 387	Topics in Global History (Mason Core)	3-6
HIST 426	The Russian Revolution	3
HIST 460	Modern Iran (Mason Core)	3
HIST 461	Arab-Israeli Conflict	3
HIST 462	Women in Islamic Society (Mason Core)	3
HIST 465	The Middle East in the 20th Century	3
JAPA 310	Japanese Culture in a Global World (Mason Core)	3
JAPA 340	Topics in Japanese Literature (Mason Core)	3
KORE 320	Korean Popular Culture in a Global World	3
MUSI 103	Musics of the World (Mason Core)	3
RELI 211	Religions of the West (Mason Core)	3
RELI 212	Religions of Asia (Mason Core)	3
RELI 240	Death and the Afterlife in World Religions	3
RELI 272	Islam	3
RELI 313	Hinduism (Mason Core)	3
RELI 314	Chinese Philosophies and Religious Traditions	3
RELI 315	Buddhism (Mason Core)	3
RELI 317	Daoism	3
RELI 337	Mysticism: East and West	3
RELI 365	Muhammad: Life and Legacy	3
RELI 374	Islamic Thought (Mason Core)	3
RELI 375	Qur'an and Hadith	3
RELI 379	Islamic Law, Society, and Ethics	3
RELI 387	Islam, Democracy, and Human Rights	3
RELI 490	Comparative Study of Religions (Mason Core)	3
RUSS 353	Russian Civilization (Mason Core)	3
RUSS 354	Contemporary Post-Soviet Life (Mason Core)	3

[1] A course used to fulfill the Mason Core global understanding requirement may not be simultaneously used to satisfy this college-level requirement. A course used to fulfill this requirement may be used simultaneously to fulfill any other requirements (Mason Core requirements, college-level requirements, or requirements for the major). Additional information on waivers can be found at the Office of Undergraduate Academic Affairs (http://chssundergrad.gmu.edu/).

Mason Core

Some Mason Core requirements may already be fulfilled by the major requirements listed above. Students are strongly encouraged to consult their advisors to ensure they fulfill all remaining Mason Core requirements.

Code	Title	Credits
Foundation Requirements		
Written Communication (ENGH 101)		3
Oral Communication		3
Quantitative Reasoning		3
Information Technology and Computing		3
Exploration Requirements		
Arts		3
Global Understanding		3
Literature		3
Natural Science		7
Social and Behavioral Sciences		3
Western Civilization/World History		3
Integration Requirements		
Written Communications (ENGH 302)		3
Writing-Intensive [1]		3
Synthesis/Capstone [2]		3
Total Credits		40

[1] Most programs include the writing-intensive course designated for the major as part of the major requirements; this course is therefore not counted towards the total required for Mason Core.

[2] Minimum 3 credits required.

4-Year Plan

Bachelor of Arts in Foreign Languages Sample Plan of Study

A sample four year graduation plan and degree planning worksheet can be found at https://academicaffairs.chss.gmu.edu/undergraduate-students/advising/advising-sheets (https://academicaffairs.chss.gmu.edu/undergraduate-students/advising/advising-sheets/). The plan is a recommended sequencing of courses based on prerequisites and scheduling. This may not fit every student's needs and is a guideline, not a requirement. Students should confirm major requirements with their academic advisor each semester and with their PatriotWeb Degree Evaluation to ensure they enroll in the proper courses and are on track to graduate.

Accelerated Master's

The accelerated master's programs below specify the BA in foreign languages with a Spanish concentration as a feeder degree for their programs. It is important to note, however, that many accelerated master's programs are available for any bachelor's degree at Mason. See the full list of degrees (http://catalog.gmu.edu/programs/#filter=filter_24) with accelerated programs at George Mason.

Foreign Languages, BA (Spanish Concentration)/Foreign Languages, Accelerated MA (Spanish Concentration)

Overview

Highly-qualified Mason undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BA in Foreign Languages with a concentration in Spanish and an MA in Foreign Languages with a concentration in Spanish in an accelerated time-frame after satisfactory completion of a minimum of 138 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degrees for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/).

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's Accelerated Master's Degree policies. For information specific to this accelerated master's program, see Application Requirements and Deadlines (http://mcl.gmu.edu/programs/la-ma-acel-frln-span/) on the departmental website.

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits.

Students who are accepted in the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits.

Accelerated Master's Admissions Requirements

Students already admitted in the BAM Pathway will be admitted to the MA program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- Minimum overall GPA of 3.00
- Minimum grade of B in each advanced standing course
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing courses (up to 12 credits with a minimum grade of B in each)

500-level SPAN courses (https://catalog.gmu.edu/courses/span/)
500-level FRLN courses (https://catalog.gmu.edu/courses/frln/)

Advanced standing courses may substitute for some or all (up to 12 credits) of the 400-level requirements in the BA in Foreign Languages with a concentration in Spanish.

Reserve Graduate Credit courses (up to 6 credits) taken while an undergraduate and will only count for the graduate degree program

500-level SPAN courses (https://catalog.gmu.edu/courses/span/)
500-level FRLN courses (https://catalog.gmu.edu/courses/frln/)

For more detailed information on coursework and timeline requirements see AP.6.7 Bachelor's Accelerated Master's Degree policies.

Foreign Languages, BA (Spanish Concentration)/Foreign Languages, Accelerated MA (Spanish/Bilingual-Multicultural Education Concentration)

Overview

Highly-qualified Mason undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BA in Foreign Languages with a concentration in Spanish and an MA in Foreign Languages with a concentration in Spanish/Bilingual Multicultural Education in an accelerated time-frame after satisfactory completion of a minimum of 144 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degrees for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/).

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's Accelerated Master's Degree policies. For information specific to this accelerated master's program, see Application Requirements and Deadlines (http://mcl.gmu.edu/programs/la-ma-acel-frln-sbm/) on the departmental website.

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits.

Students who are accepted in the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits.

Accelerated Master's Admissions Requirements

Students already admitted in the BAM Pathway will be admitted to the MA program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- Minimum overall GPA of 3.00
- Minimum grade of B in each advanced standing course
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing courses (up to 12 credits with a minimum grade of B in each)

500-level SPAN courses (https://catalog.gmu.edu/courses/span/)
500-level FRLN courses (https://catalog.gmu.edu/courses/frln/)

Advanced standing courses may substitute for some or all (up to 12 credits) of the 400-level requirements in the BA in Foreign Languages with a concentration in Spanish.

Reserve Graduate Credit courses (up to 6 credits) taken while an undergraduate and will only count for the graduate degree program

500-level SPAN courses (https://catalog.gmu.edu/courses/span/)
500-level FRLN courses (https://catalog.gmu.edu/courses/frln/)

For more detailed information on coursework and timeline requirements see AP.6.7 Bachelor's Accelerated Master's Degree policies.

Foreign Languages, MA

Banner Code: LA-MA-FRLN

Academic Advising

5100 Horizon Hall
Fairfax Campus

Email: language@gmu.edu
Website: https://mcl.gmu.edu/programs/la-ma-frln

The Master of Arts in Foreign Languages aims to enhance the linguistic and cultural proficiency of students through courses in sociolinguistics and second language acquisition, film studies, cultural studies and literary studies. Students may select from four concentrations: French, Spanish, French and Spanish, and Spanish/bilingual-multicultural education. Located only miles from Washington, D.C., students take advantage of the program's existing relationships with schools, embassies, federal agencies, and international businesses—providing opportunity for internships and other educational experiences outside the classroom.

Admissions & Policies

Admissions

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions. For specific information, see Application Requirements and Deadlines (http://mcl.gmu.edu/programs/application/LA-MA-FRLN/) on the departmental website.

Policies

For policies governing all graduate degrees, see AP.6 Graduate Policies.

Requirements

Degree Requirements

Total credits: 30-42

For policies governing all graduate degrees, see AP.6 Graduate Policies.

Each concentration has a different number of required credits. In all four concentrations, 6 of the total credits may be earned with a thesis. Regardless of the concentration selected, all students must meet the core and distribution requirements given below and pass a comprehensive exam or write a thesis.

Concentration in French (FRN)

18 credits must be in courses with the subject code FREN.

Code	Title	Credits
Literature		
Select two courses in literature chosen in consultation with an advisor and cover two different literary periods or Francophone regions.		6
French Language and Linguistics		
Select two courses in French language and linguistics chosen in consultation with an advisor.		6
French		
Select two additional courses in French literature or language in consultation with an advisor.		6
Electives		
Select four electives in consultation with an advisor. A maximum of 6 credits may be used for directed reading and research or thesis.		12
FREN 798	Directed Reading and Thesis Research	
FREN 799	Thesis	
Total Credits		30

Concentration in Spanish (SPN)

Code	Title	Credits
Required Core Courses [1]		
SPAN 502	Hispanic Sociolinguistics	3
SPAN 510	Methods of Literary and Cultural Studies	3
Latino, Latin American, or Spanish cultures, literatures, or linguistics		
Select any five courses with the SPAN subject code.		15
Electives		
Select three electives in consultation with an advisor. [2]		9
SPAN 798	Directed Reading and Research	
SPAN 799	Thesis	
Total Credits		30

[1] Students must take the core courses within their first 15 credits.

[2] They can include additional courses in Latin American or Spanish culture, linguistics, or literature, courses with the subject code FRLN, up to 6 credits of courses in related fields, and up to 6 credits of thesis research and writing. Students who do not complete their thesis during one semester of SPAN 799 will need to register for additional credits. Independent studies courses are not available for graduate students of Spanish.

Concentration in Spanish and French (SF)

Code	Title	Credits
French		
Select six required courses (not electives) specified under the concentration in French.		18
Latino, Latin American, or Spanish cultures, literatures, or linguistics		
Take the two required core courses specified under the concentration in Spanish, plus four electives with the SPAN subject code.		18
Electives		
Select two electives with the FREN, FRLN, and SPAN subject codes. [1]		6
FREN 798	Directed Reading and Thesis Research	
SPAN 798	Directed Reading and Research	
FREN 799	Thesis	
SPAN 799	Thesis	
Total Credits		42

[1] Students who elect to complete a thesis may apply 6 credits of 798 and 799 to fulfill this requirement.

Concentration in Spanish/Bilingual-Multicultural Education (SBM)

Code	Title	Credits
Required Core Courses [1]		
SPAN 502	Hispanic Sociolinguistics	3
SPAN 510	Methods of Literary and Cultural Studies	3
Latino, Latin American or Spanish cultures, literatures, or linguistics		
Select four courses with the SPAN subject code.		12
Education Courses		
Select two courses from the following list in consultation with an advisor.		6
EDUC 511	Child and Adolescent Development in Global Contexts	
EDUC 537	Introduction to Culturally Linguistically Diverse Learners	
EDCI 516	Bilingualism and Language Acquisition Research	
EDCI 520	Assessment of Language Learners	
EDCI 560	Methods of Teaching in Foreign/World Languages	
EDCI 684	Advanced Methods of Teaching Foreign/ Second Languages in PK-12 Schools	
EDRD 620	Reading/Writing in Foreign/World Languages	

Electives [2]	
Select four electives in consultation with an advisor.	12
Total Credits	36

1 Students must take the core courses within their first 15 credits.

2 Students who elect to complete a thesis may apply 6 credits of 798 and 799 to fulfill this requirement.

Dual Degree Options

Foreign Languages, MA and Global Affairs, MA Dual Degree

Students interested in pursuing a dual master's program linking foreign languages or global affairs with another discipline should discuss their interest with the graduate program directors of both programs and review the university policies regarding Individualized Dual Master's Degree Programs.

Students approved to pursue a dual master's program linking the foreign languages MA with a concentration in French, Spanish, or Spanish bilingual/multicultural education with the global affairs MA can share 12 credits between the two programs. Application to the second master's program should be pursued with consultation of the directors of both programs. Admission to the second master's program will require that the student has met the minimum prerequisites for admissions to the second program.

Accelerated Master's

Foreign Languages, BA (Spanish Concentration)/Foreign Languages, Accelerated MA (Spanish Concentration)

Overview

Highly-qualified Mason undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BA in Foreign Languages with a concentration in Spanish and an MA in Foreign Languages with a concentration in Spanish in an accelerated time-frame after satisfactory completion of a minimum of 138 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degrees for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/).

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's Accelerated Master's Degree policies. For information specific to this accelerated master's program, see Application Requirements and Deadlines (http://mcl.gmu.edu/programs/la-ma-acel-frln-span/) on the departmental website.

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits.

Students who are accepted in the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits.

Accelerated Master's Admissions Requirements

Students already admitted in the BAM Pathway will be admitted to the MA program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- Minimum overall GPA of 3.00
- Minimum grade of B in each advanced standing course
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing courses (up to 12 credits with a minimum grade of B in each)

500-level SPAN courses (https://catalog.gmu.edu/courses/span/)
500-level FRLN courses (https://catalog.gmu.edu/courses/frln/)

Advanced standing courses may substitute for some or all (up to 12 credits) of the 400-level requirements in the BA in Foreign Languages with a concentration in Spanish.

Reserve Graduate Credit courses (up to 6 credits) taken while an undergraduate and will only count for the graduate degree program

500-level SPAN courses (https://catalog.gmu.edu/courses/span/)
500-level FRLN courses (https://catalog.gmu.edu/courses/frln/)

For more detailed information on coursework and timeline requirements see AP.6.7 Bachelor's Accelerated Master's Degree policies.

Foreign Languages, BA (Spanish Concentration)/Foreign Languages, Accelerated MA (Spanish/Bilingual-Multicultural Education Concentration)

Overview

Highly-qualified Mason undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BA in Foreign Languages with a concentration in Spanish and an MA in Foreign Languages with a concentration in Spanish/Bilingual Multicultural Education in an accelerated time-frame after satisfactory completion of a minimum of 144 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degrees for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/).

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's Accelerated Master's Degree policies. For information specific to this accelerated master's program, see Application Requirements and Deadlines (http://mcl.gmu.edu/programs/la-ma-acel-frln-sbm/) on the departmental website.

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits.

Students who are accepted in the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits.

Accelerated Master's Admissions Requirements

Students already admitted in the BAM Pathway will be admitted to the MA program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- Minimum overall GPA of 3.00
- Minimum grade of B in each advanced standing course
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing courses (up to 12 credits with a minimum grade of B in each)

500-level SPAN courses (https://catalog.gmu.edu/courses/span/)
500-level FRLN courses (https://catalog.gmu.edu/courses/frln/)

Advanced standing courses may substitute for some or all (up to 12 credits) of the 400-level requirements in the BA in Foreign Languages with a concentration in Spanish.

Reserve Graduate Credit courses (up to 6 credits) taken while an undergraduate and will only count for the graduate degree program

500-level SPAN courses (https://catalog.gmu.edu/courses/span/)
500-level FRLN courses (https://catalog.gmu.edu/courses/frln/)

For more detailed information on coursework and timeline requirements see AP.6.7 Bachelor's Accelerated Master's Degree policies.

French Minor

Banner Code: FRN

Academic Advising

5100 Horizon Hall
Fairfax Campus

Website: mcl.gmu.edu/programs/LA-MINOR-MCL-FRN/

The minor in French provides students with the components of a well-rounded education in French: knowledge of the language (through conversation, composition, and grammar) combined with the study of literature and civilization.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must complete 18 credits at the 300-level or above with a minimum grade of 2.00 in each course. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 18

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Core Courses

Advanced Language Course

Code	Title	Credits
FREN 309	Reading and Writing Skills Development	3
Total Credits		3

Literature and Civilization

Code	Title	Credits
FREN 380	The Making of Modern France	3
FREN 340	Francophone Identities	3
or FREN 385	Introduction to French Linguistics	
Total Credits		6

Electives

Code	Title	Credits
Select three electives in FREN at the 300 level or above [1]		9
Total Credits		9

[1] One elective course in English may be applied to the minor. This may be chosen from FREN 325 Major French Writers (Topic Varies) (Mason Core) or FREN 329 Problems of Western Civilization in French Literature (Mason Core), or from a FRLN or non-MCL course with approval. Students choose electives in consultation with an advisor.

German Studies Minor

Banner Code: GRMS

Academic Advising

5100 Horizon Hall
Fairfax Campus

Website: mcl.gmu.edu/programs/la-minor-mcl-grm/

The emphasis of the minor is on developing strong language skills: oral communication and the reading of texts. Students are introduced

to important works of German literature and to the culture of German-speaking countries.

A German Studies minor can easily and effectively be combined with majors in other disciplines. It is especially valuable in combination with business, computer science, international studies, history, music, philosophy, or another language.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor. Students pursuing this minor must complete 18 credits at the 300-level or above with a minimum grade of 2.00 in each course. For policies governing all minors, see AP.5.3.4 Minors.

A maximum of two courses (6 credits) conducted in English can be applied to the minor.

Requirements

Minor Requirements

Total credits: 18

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Core Courses

Language Courses

Code	Title	Credits
Select three courses from the following:		9
GERM 310	Conversation and Composition	
GERM 316	German for the Business World	
GERM 312	Great Cities in Germany, Austria and Switzerland	
GERM 315	German for the Global World	
GERM 318	Translation of Texts	
GERM 370	German Through the Arts	
GERM 415	Advanced Grammar and Style	
GERM 418	Advanced Composition	
Total Credits		9

Literature and Culture Courses

Code	Title	Credits
Select two courses from the following:		6
GERM 301	Culture and Civilization	
GERM 325	Major Writers (Mason Core)	
GERM 340	Topics in German Literature and Film	
GERM 355	Readings in Poetry (Topic Varies)	
GERM 365	Topics in German History and Culture	
GERM 375	Readings in Drama	
GERM 442	The Age of Goethe	
GERM 444	The Literature of Romanticism	
GERM 480	Special Topics	
Total Credits		6

Elective

Code	Title	Credits
Select one course from the following: [1]		3
GERM 300- or 400-Level Course		
HIST 306	The Reformation	
HIST 308	Nineteenth-Century Europe	
HIST 309	Europe in Crisis: 1914-1948	
HIST 314	History of Germany	
PHIL 325	Karl Marx's Social and Political Thought	
PHIL 335	Nineteenth-Century Philosophy	
PHIL 340	Hermeneutic Philosophy	
MUSI 332	Music History in Society II	
MUSI 338	Music History in Society A	
Total Credits		3

[1] The courses listed may apply to the minor with prior written approval of the advisor.

Italian Studies Minor

Banner Code: ITLN

Academic Advising

5100 Horizon Hall
Fairfax Campus

Website: mcl.gmu.edu/programs/la-minor-mcl-itln

This minor enables students to advance their Italian language skills and to study Italian culture, history, and literature from an interdisciplinary perspective.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must earn a minimum grade of 2.00 in all courses applied to the minor. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 18

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Students complete coursework with a language emphasis or a history and culture emphasis. Special topics courses, such as HIST 388 Topics in European History, GOVT 520 Political Theory, and RELI 235 Religion and Literature (Mason Core), when relevant, may be applied to the minor with prior written approval of the coordinator.

Language Emphasis

Code	Title	Credits
Select five language courses from the following courses, most of which are repeatable:		15
ITAL 330	Advanced Italian: Language and Culture I	
ITAL 331	Advanced Italian Language and Culture II	
ITAL 340	Italian through Arts	
ITAL 360	Southern Italy	
ITAL 420	Global and Local Italy	
Select one course in Italian literature and film in translation from the following:		3
ITAL 320	Topics in Italian Film and Literature (Mason Core)	
ITAL 325	Major Italian Writers (Mason Core)	
Total Credits		18

History and Culture Emphasis

Code	Title	Credits
Select three language courses from the following:		9
ITAL 330	Advanced Italian: Language and Culture I	
ITAL 331	Advanced Italian Language and Culture II	
ITAL 340	Italian through Arts	
ITAL 360	Southern Italy	
ITAL 420	Global and Local Italy	
Select one course in Italian literature and film in translation from the following:		3
ITAL 320	Topics in Italian Film and Literature (Mason Core)	
ITAL 325	Major Italian Writers (Mason Core)	
Select two electives from the following:		6
ARTH 340	Early Renaissance Art in Italy, 1300-1500 (Mason Core)	
ARTH 342	High Renaissance Art in Italy, 1480-1570 (Mason Core)	
HIST 304	Western Europe in the Middle Ages	
HIST 305	The Renaissance	
HIST 308	Nineteenth-Century Europe	
GOVT 324	Modern Western Political Theory	
RELI 363	Catholicism	
Total Credits		18

Japanese Studies Minor

Banner Code: JPNS

Academic Advising

5100 Horizon Hall
Fairfax Campus

Website: mcl.gmu.edu/programs/la-minor-mcl-jpns/requirements

This minor enables students to advance their Japanese language skills and develop a sound understanding of Japanese culture and history from a global perspective.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must earn a minimum grade of 2.00 in all courses applied to the minor. Special topics courses, when relevant, may be applied to the minor with prior written approval of the director. Students who wish to declare this minor need to obtain the signature of the director.

For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 18

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Students must select an emphasis in either the study of Japanese language or the history and culture of Japan.

Language Emphasis

Code	Title	Credits
Japanese Language		
Select four courses from the following:		12
JAPA 330	Advanced Reading and Speaking I	
JAPA 331	Advanced Reading and Speaking II	
JAPA 350	Readings in Japanese Culture	
JAPA 440	Integrated Study of Japanese Language and Society I	
JAPA 441	Integrated Study of Japanese Language and Society II	
Japanese and Japan-Related History		
Select one course from the following:		3
HIST 251	Survey of East Asian History (Mason Core)	
HIST 252	Survey of East Asian History (Mason Core)	
HIST 356	Modern Japan (Mason Core)	
HIST 357	Postwar Japan (Mason Core)	
ARTH 385	Arts of Japan (Mason Core)	
Elective		
Select one course from the following:		3
JAPA 240	Introduction to Japanese Culture	
JAPA 310	Japanese Culture in a Global World (Mason Core)	
JAPA 320	Japanese Cinema	
JAPA 340	Topics in Japanese Literature (Mason Core)	
JAPA 350	Readings in Japanese Culture (if not used to fulfill the Japanese language requirement)	
JAPA 360	Topics in Japanese Popular Culture	
JAPA 370	Video Games and Japan	

JAPA 420	Animals and Nature in Japan
ARTH 482	RS: Advanced Studies in Asian Art
CHIN 328	Asian American Women Writers (Mason Core)
GOVT 333	Government and Politics of Asia
GOVT 433	Political Economy of East Asia
RELI 212	Religions of Asia (Mason Core)
RELI 315	Buddhism (Mason Core)
Total Credits	18

History and Culture Emphasis

Code	Title	Credits
Japanese Language		
Select two courses from the following:		6
JAPA 330	Advanced Reading and Speaking I	
JAPA 331	Advanced Reading and Speaking II	
JAPA 350	Readings in Japanese Culture	
JAPA 440	Integrated Study of Japanese Language and Society I	
JAPA 441	Integrated Study of Japanese Language and Society II	
Japanese and Japan-Related History		
Select two courses from the following:		6
HIST 251	Survey of East Asian History (Mason Core)	
HIST 252	Survey of East Asian History (Mason Core)	
HIST 356	Modern Japan (Mason Core)	
HIST 357	Postwar Japan (Mason Core)	
ARTH 385	Arts of Japan (Mason Core)	
Electives		
Select two courses from the following:		6
JAPA 240	Introduction to Japanese Culture	
JAPA 310	Japanese Culture in a Global World (Mason Core)	
JAPA 320	Japanese Cinema	
JAPA 340	Topics in Japanese Literature (Mason Core)	
JAPA 350	Readings in Japanese Culture (if not used to fulfill the Japanese language requirement)	
JAPA 360	Topics in Japanese Popular Culture	
JAPA 370	Video Games and Japan	
JAPA 420	Animals and Nature in Japan	
ARTH 482	RS: Advanced Studies in Asian Art	
CHIN 328	Asian American Women Writers (Mason Core)	
GOVT 333	Government and Politics of Asia	
GOVT 433	Political Economy of East Asia	
RELI 212	Religions of Asia (Mason Core)	
RELI 315	Buddhism (Mason Core)	
Total Credits		18

Korean Studies Minor

Banner Code: KRNS

Academic Advising

5100 Horizon Hall
Fairfax Campus

Website: mcl.gmu.edu

The minor in Korean studies focuses on the acquisition of Korean linguistic and cultural knowledge from various languages and interdisciplinary courses.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must earn a minimum grade of 2.00 in all courses applied to the minor. For policies governing all minors, see AP.5.3.4 Minors. A maximum of 6 credits of KORE courses, conducted in English, can be applied to the minor.

Requirements

Minor Requirements

Total credits: 18

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Core Courses

Code	Title	Credits
Select four courses in Korean from the following:		12
KORE 301	Advanced Korean Language and Culture	
KORE 305	Business Korean	
KORE 321	Korean Proficiency through Visual Culture	
KORE 331	Special Topics in Advanced Korean Reading	
KORE 332	Special Topics in Advanced Korean Speaking	
KORE 340	Transformation of Language and Culture in North and South Korea	
KORE 370	Advanced Korean Writing	
KORE 410	Special Topics in Korean Linguistics	
KORE 440	Special Topics in Translation of Korean	
KORE 450	Korean Cultural Studies	
KORE 490	Internship in Korean Studies	
Total Credits		12

Electives

Code	Title	Credits
Select two courses from the following:		6
KORE 300	Korean Culture and Society	

KORE 310	Traditional Korean Literature in Translation
KORE 311	Modern Korean Literature in Translation (Mason Core)
KORE 320	Korean Popular Culture in a Global World
KORE 325	Major North and South Korean Writers
KORE 385	Introduction to Korean Linguistics
ARTH 203	Survey of Asian Art (Mason Core)
GOVT 333	Government and Politics of Asia
GOVT 433	Political Economy of East Asia
HIST 251	Survey of East Asian History (Mason Core)
HIST 252	Survey of East Asian History (Mason Core)
RELI 212	Religions of Asia (Mason Core)
RELI 315	Buddhism (Mason Core)
RELI 317	Daoism
RELI 318	Korean Philosophy and Religions

Latin Minor

Banner Code: LATN

Academic Advising

5100 Horizon Hall
Fairfax Campus

Website: mcl.gmu.edu/programs/la-minor-mcl-latn/requirements

This minor offers students the opportunity to develop and refine their knowledge of the Latin language by reading classical Latin literature. Students gain an understanding and appreciation of the literature, culture, and intellectual achievements of Roman antiquity that have contributed to the development of Western civilization.

A Latin minor complements majors in literature, language, history, philosophy, and the arts, all of which find their roots in classical antiquity. Majors in the natural and the social sciences are also strengthened by the historical perspective and the advanced training in language and terminology afforded by the minor in Latin.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor. Students must complete 18 credits in Latin at the 300-level or above with a minimum grade of 2.00 in each course. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 18

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Coursework

Code	Title	Credits
Students complete 18 credits of the following courses which vary in content and may be repeated for credit when content is different.		18
LATN 351	Roman Prose Literature	
LATN 352	Roman Poetry	
LATN 451	Studies in Roman Literature	
LATN 452	Studies in Roman Literature	
Total Credits		18

Russian Minor

Banner Code: RUS

Academic Advising

5100 Horizon Hall
Fairfax Campus

Website: mcl.gmu.edu/programs/la-minor-mcl-rus/requirements

The minor in Russian provides students with the opportunity to acquire advanced-level skills in the Russian language and to apply these skills to the study of Russian literature and culture. The minor enhances any major, especially those in history, government and international politics, geography, literature, theater, communication, and economics.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor. Students must complete 18 credits at the 300-level or above with a minimum grade of 2.00 in each course. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 18

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Core Courses

Language

Code	Title	Credits
RUSS 302	Russian Conversation and Composition	3
or RUSS 303	Russian Advanced Conversation	
RUSS 380	Advanced Russian I	3
RUSS 381	Advanced Russian II	3
Total Credits		9

Literature

Code	Title	Credits
RUSS 310	Readings in Russian Literature	3
or RUSS 311	Contemporary Russian Short Fiction	
Total Credits		3

Additional Course

Code	Title	Credits
RUSS 353	Russian Civilization (Mason Core)	3
or RUSS 354	Contemporary Post-Soviet Life (Mason Core)	
Total Credits		3

Elective

Code	Title	Credits
Select one elective at the 3xx level or above [1]		3
Total Credits		3

[1] This course must be conducted in Russian.

Spanish Minor

Banner Code: SPN

Academic Advising

5100 Horizon Hall
Fairfax Campus

Website: mcl.gmu.edu/programs/la-minor-mcl-spn

The minor in Spanish focuses on developing skill in understanding, speaking, reading, and writing Spanish at an advanced level.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor. Students must complete 18 credits at the 300-level or above with a minimum grade of 2.00 in each course. One course taught in English may be applied toward the minor. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 18

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Core Courses

Language

Code	Title	Credits
Select one of the following options:		**6**
Option 1		
SPAN 305	Spanish in Context I	
SPAN 306	Spanish in Context II	
Option 2		
SPAN 309	Intensive Spanish in Context	
Option 3		
SPAN 315	Spanish in Context for Heritage Speakers	
One additional 300- or 400-level SPAN course		
Total Credits		6

Two Additional Courses

Code	Title	Credits
SPAN 370	Spanish Writing and Stylistics	3
Select one from the following:		3
SPAN 385	Introduction to Spanish Linguistics	
SPAN 388	Introduction to Latina/o Studies (Mason Core)	
SPAN 390	Introduction to Hispanic Literary Analysis	
Total Credits		6

Electives

Code	Title	Credits
Select two courses from the following:		6
SPAN 322	Introduction to Latin American Culture (Mason Core)	
SPAN 325	Major Hispanic Writers (Mason Core)	
SPAN 329	Special Topics in Spanish and Latin American Literature	
Other SPAN courses at the 300- or 400- level.		
FRLN 385	Multilingualism, Identity, and Power (Mason Core)	
FRLN topics courses with pre-approval of Spanish Program Coordinator		
Other elective courses taught in English with pre-approval of Spanish Program Coordinator [1]		
Total Credits		6

[1] Prefixes for elective courses (with pre-approval) include ANTH, ARTH, ENGH, GGS, GOVT, HIST, RELI, and SOCI.

Department of Philosophy

6300 Horizon Hall
Fairfax Campus

Phone: 703-993-1290
Website: philosophy.gmu.edu

Undergraduate Programs

The department offers a bachelor of arts degree in philosophy, which covers the major issues and areas in philosophy. It is intended to serve the needs of students who wish to pursue graduate studies in philosophy or emphasize philosophy while acquiring a broad liberal arts education. Majors in philosophy take courses in a variety of philosophical traditions and study logic, ethics, and social and political philosophy. With the skills of critical thinking, clear writing, and analytical reasoning that are the hallmark of philosophy majors, students are well-prepared for a wide range of careers including law, government service, or graduate study.

The philosophy program can complement other interests of students when they complete a second major in another field. Students who plan to pursue more than one undergraduate major should work out a program of study in consultation with advisors from both majors and be familiar with the relevant policies for completing more than one major. See Undergraduate Policies.

In addition to the general degree in philosophy, students can choose one of two concentrations. The concentration in philosophy and law offers philosophy majors the opportunity to focus their study of philosophy in a way that prepares them for the study of the law. The concentration in Philosophy, Politics and Economics (PPE) is a high credit concentration for students interested in a program that explores the interdisciplinary connections between philosophy, political science, and economics.

Minors

The department offers a minor in philosophy and a minor in philosophy and law. These minors are available to students in any major. The department, in cooperation with the Schar School of Policy and Government, coordinates the interdisciplinary minor in political philosophy.

Bachelor's/Accelerated Master's Program

The department offers highly qualified undergraduate majors in philosophy the opportunity to apply to an accelerated master's degree program in philosophy. If accepted, students will be able to earn both the undergraduate and graduate degrees after satisfactory completion of 145 credits, generally within five years.

Graduate Programs

The department offers a master of arts degree in traditional and contemporary philosophy as well as specialized concentrations in philosophy and cultural theory and ethics and public affairs. The degree is designed for students who want to further their professional goals or foster their intellectual development. It provides a solid preparation for advanced work in philosophy or other fields such as women and gender studies, cultural studies, or law. The degree provides grounding in the history of philosophy, ethics, metaphysics, epistemology, contemporary continental thought, contemporary analytic philosophy, and philosophy of science.

The focus on traditional and contemporary philosophy of the master's degree program provides students with a historical and pluralistic approach to philosophical questions. The concentration in ethics and public affairs gives students the opportunity to explore the ethical and philosophical issues that arise in such fields of study and work as business, health care, scientific research, biomedical technology, and public policy. The concentration in philosophy and cultural theory provides students with a distinctive and important theoretical foundation for doctoral work in cultural studies.

Students are encouraged to pursue opportunities beyond the classroom such as study abroad, professional internships, and research with faculty members.

Faculty

Department Faculty

Professors

Eckenwiler, Light

Professors Emeriti

Bergoffen, De Nys, Fletcher, Holman, McDermott, Paden, Skousgaard

Associate Professors

Cherubin, Froman, Jones, Kinnaman

Assistant Professors

Buckwalter, Brandhorst, Fyfe, Kirkpatrick, Nicholson, Peterson

Term Professors

Boyd, Kuykendall

Adjunct Professors

Evans, Faruggia, Kirilov, Olsen, Sojka, Venner, Will

Programs

- Philosophy Minor
- Philosophy and Law Minor
- Philosophy, BA
- Philosophy, MA
- Political Philosophy Minor

Philosophy and Law Minor

Banner Code: PHLW

Academic Advising

6300 Horizon Hall
Fairfax Campus

Website: philosophy.gmu.edu/programs/la-minor-phil-phlw

This minor offers students a course of study that emphasizes the philosophical analysis of legal issues. It acquaints students with the rich tradition of philosophical argument dealing with the justification of law, its relation to moral theory, the justifications for punishment, and the concepts of justice, rights, liberty, and legal responsibility. In addition, an education in philosophy stresses intellectual skills that are important in the study of law.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 18

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Core Courses

Code	Title	Credits
PHIL 173	Logic and Critical Thinking	3
PHIL 311	Philosophy of Law	3
Select one course from the following:		3
PHIL 301	History of Western Philosophy: Ancient	
PHIL 303	History of Western Philosophy: Modern	
Total Credits		9

Electives

Code	Title	Credits
Select two courses from the following: [1]		6
PHIL 323	Classical Western Political Theory	
or GOVT 323	Classical Western Political Theory	
PHIL 324	Modern Western Political Theory	
or GOVT 324	Modern Western Political Theory	
PHIL 325	Karl Marx's Social and Political Thought	
PHIL 327	Contemporary Western Political Theory	
or GOVT 327	Contemporary Western Political Theory	
PHIL 329	Philosophy after Auschwitz	
PHIL 353	Theories of Justice	
GOVT 428	Advanced Democratic Theory	
Select one course from the following:		3
PHIL 343	Topics in Environmental Philosophy (Mason Core)	
PHIL 344	Ethical Issues in Global Health	
PHIL 355	Theories of Ethics	
GOVT 448	Ethics and International Politics	
Total Credits		9

[1] One elective course may be chosen from other coursework in philosophy with prior written approval of the undergraduate director.

Philosophy Minor

Banner Code: PHIL

Academic Advising

6300 Horizon Hall
Fairfax Campus

Website: philosophy.gmu.edu/programs/la-minor-phil-phil

The Philosophy Minor allows students majoring in other disciplines to expand their analytical and critical thinking skills while engaging with pressing ethical, social, and political issues. Students will gain a grounding in the history of philosophy and with the help of an advisor, will select a range of electives that complement their major, future career plans and/or personal interests. Courses available span ancient, modern and contemporary philosophy, and focus on questions of knowledge, reality and existence; ethics, including bioethics, environmental ethics and existentialist ethics; social and political philosophy; and philosophy of art, literature and science, among other areas.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must earn a minimum grade of 2.00 in all courses applied to the minor. No course may be used to fulfill more than one requirement.

For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 18

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Core Course in history of philosophy

Code	Title	Credits
Select one course in the history of philosophy from the following:		3
PHIL 301	History of Western Philosophy: Ancient	
PHIL 303	History of Western Philosophy: Modern	
Total Credits		3

Electives

Code	Title	Credits
Select five electives in philosophy. At least 9 of the elective credits must be at the 300 level or above.		15
Total Credits		15

Philosophy, BA

Banner Code: LA-BA-PHIL

6300 Horizon Hall
Fairfax Campus

Website: philosophy.gmu.edu/programs/la-ba-phil

The Bachelor of Arts in Philosophy examines how philosophers have answered some of the most enduring questions about human existence, while exploring how those answers continue to inform our thinking in the present. Students gain a deeper understanding of philosophy's relevance to key contemporary issues—such as global warming, social justice and the defense of human rights, or the relationship between science and religion. Students can use this major as preparation for professions such as law or government service, as a pathway to graduate work, or to complement other interests by taking a double major in philosophy and a related field of study.

Admissions & Policies

Policies

Students pursuing this degree must complete at least 33 credits within the major, earning a minimum grade of 2.00 in each course. At least 21

credits must be at the 300 level or above, including at least 3 credits in PHIL 421 Seminar (Mason Core)/PHIL 422 Honors Seminar (Mason Core). If a course counts for the requirement in analytic or continental philosophy, and also for the ethics and political philosophy requirement, then both requirements are fulfilled with that course.

For policies governing all undergraduate degrees, see AP.5 Undergraduate Policies.

Requirements

Degree Requirements

Total credits: minimum 120

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Core Courses without Concentration

Code	Title	Credits
Logic		
PHIL 173	Logic and Critical Thinking	3
or PHIL 376	Symbolic Logic	
History of Philosophy		
PHIL 301	History of Western Philosophy: Ancient	3
PHIL 303	History of Western Philosophy: Modern	3
Analytic Tradition		
Select one course from the following: [1]		3
PHIL 332	Issues in Analytic Philosophy	
PHIL 333	American Philosophy: Pragmatism	
PHIL 338	Philosophy, Race, and Gender [2]	
PHIL 355	Theories of Ethics	
PHIL 356	Philosophy of Art [2]	
PHIL 357	Philosophy of the Social Sciences [2]	
PHIL 358	Ethics and Economics	
PHIL 371	Philosophy of Natural Sciences	
PHIL 373	Theory of Knowledge	
PHIL 374	Philosophy of Mind	
PHIL 411	Theories of Decision	
Continental Tradition		
Select one course from the following: [1]		3
PHIL 325	Karl Marx's Social and Political Thought	
PHIL 335	Nineteenth-Century Philosophy	
PHIL 336	Twentieth-Century Continental Thought: Existentialism	
PHIL 337	Twentieth-Century Continental Thought: Phenomenology	
PHIL 338	Philosophy, Race, and Gender [2]	
PHIL 339	Recent Continental Philosophy	
PHIL 340	Hermeneutic Philosophy	
PHIL 356	Philosophy of Art	
PHIL 357	Philosophy of the Social Sciences [2]	
Ethics and Social and Political Philosophy		
Select one course from the following: [1]		3
PHIL 305	Business Ethics	
PHIL 309	Bioethics (Mason Core)	
PHIL 311	Philosophy of Law	
PHIL 323	Classical Western Political Theory	
PHIL 324	Modern Western Political Theory	
PHIL 325	Karl Marx's Social and Political Thought	
PHIL 327	Contemporary Western Political Theory	
PHIL 329	Philosophy after Auschwitz	
PHIL 338	Philosophy, Race, and Gender	
PHIL 343	Topics in Environmental Philosophy (Mason Core)	
PHIL 344	Ethical Issues in Global Health	
PHIL 355	Theories of Ethics	
PHIL 358	Ethics and Economics	
PHIL 411	Theories of Decision	
PHIL 429	Advanced Topics in Social and Political Philosophy	
Total Credits		18

1 When the subject matter is appropriate and with the prior written approval of the undergraduate director, PHIL 391 Special Topics in Philosophy, PHIL 421 Seminar (Mason Core), PHIL 422 Honors Seminar (Mason Core), or PHIL 425 Independent Study may be used to fulfill this requirement.

2 Only with departmental approval.

Electives without Concentration

Code	Title	Credits
Select five or six electives from any philosophy courses including those listed above that are not used to meet another requirement. [1]		15-18
Total Credits		15-18

1 If both the analytic or continental philosophy and the ethics and political philosophy requirements are met with the same course, the student will complete six elective courses.

Optional Concentrations

Students interested in a degree in philosophy with a concentration will complete the coursework for one of the concentrations below.

Available Concentrations

- Concentration in Philosophy and Law (PHLW)
- Concentration in Philosophy, Politics, and Economics (PPE)

Concentration in Philosophy and Law (PHLW)

The concentration in philosophy and law offers philosophy majors the opportunity to focus their study of philosophy in a way that prepares them for the study of the law.

In addition to the specific courses listed below, other relevant courses may be applied to the requirements for this concentration with prior written approval of the undergraduate director.

Code	Title	Credits
Logic		
PHIL 173	Logic and Critical Thinking	3
or PHIL 376	Symbolic Logic	
History of Philosophy		

PHIL 301	History of Western Philosophy: Ancient	3
PHIL 303	History of Western Philosophy: Modern	3
Analytic Tradition		
Select one course from the following: [1]		3
PHIL 332	Issues in Analytic Philosophy	
PHIL 333	American Philosophy: Pragmatism	
PHIL 338	Philosophy, Race, and Gender [2]	
PHIL 355	Theories of Ethics	
PHIL 356	Philosophy of Art [2]	
PHIL 357	Philosophy of the Social Sciences [2]	
PHIL 358	Ethics and Economics	
PHIL 371	Philosophy of Natural Sciences	
PHIL 373	Theory of Knowledge	
PHIL 374	Philosophy of Mind	
PHIL 411	Theories of Decision	
Continental Tradition		
Select one course from the following: [1]		3
PHIL 325	Karl Marx's Social and Political Thought	
PHIL 335	Nineteenth-Century Philosophy	
PHIL 336	Twentieth-Century Continental Thought: Existentialism	
PHIL 337	Twentieth-Century Continental Thought: Phenomenology	
PHIL 338	Philosophy, Race, and Gender [2]	
PHIL 339	Recent Continental Philosophy	
PHIL 340	Hermeneutic Philosophy	
PHIL 356	Philosophy of Art	
PHIL 357	Philosophy of the Social Sciences [2]	
Philosophy and Law		
PHIL 311	Philosophy of Law	3
Select two courses from the following:		6
PHIL 323	Classical Western Political Theory	
PHIL 324	Modern Western Political Theory	
PHIL 327	Contemporary Western Political Theory	
PHIL 429	Advanced Topics in Social and Political Philosophy	
GOVT 428	Advanced Democratic Theory	
GOVT 448	Ethics and International Politics	
Electives in Philosophy		
Select three electives from any philosophy courses including those listed above that are not used to meet another requirement.		9
Total Credits		33

1 When the subject matter is appropriate and with the prior written approval of the undergraduate director, PHIL 391 Special Topics in Philosophy, PHIL 421 Seminar (Mason Core), PHIL 422 Honors Seminar (Mason Core), or PHIL 425 Independent Study may be used to fulfill this requirement.

2 Only with departmental approval.

Concentration in Philosophy, Politics, and Economics (PPE)

This is a high credit concentration for students interested in a program that explores the interdisciplinary connections between philosophy, political science, and economics.

Students pursuing this concentration, similar to all students pursuing a BA in philosophy, must complete at least 33 credits in philosophy earning a minimum grade of 2.00 in each course. No course may be used to fulfill more than one requirement. In addition to the specific courses listed below, other relevant courses may be applied to the requirements for this concentration with prior written approval of the undergraduate director.

Code	Title	Credits
Logic		
PHIL 173	Logic and Critical Thinking	3
or PHIL 376	Symbolic Logic	
History of Philosophy		
PHIL 301	History of Western Philosophy: Ancient	3
PHIL 303	History of Western Philosophy: Modern	3
Analytic Tradition		
Select one course from the following: [1]		3
PHIL 332	Issues in Analytic Philosophy	
PHIL 333	American Philosophy: Pragmatism	
PHIL 338	Philosophy, Race, and Gender [2]	
PHIL 355	Theories of Ethics	
PHIL 356	Philosophy of Art [2]	
PHIL 357	Philosophy of the Social Sciences [2]	
PHIL 358	Ethics and Economics	
PHIL 371	Philosophy of Natural Sciences	
PHIL 373	Theory of Knowledge	
PHIL 374	Philosophy of Mind	
PHIL 411	Theories of Decision	
Continental Tradition		
Select one course from the following: [1]		3
PHIL 325	Karl Marx's Social and Political Thought	
PHIL 335	Nineteenth-Century Philosophy	
PHIL 336	Twentieth-Century Continental Thought: Existentialism	
PHIL 337	Twentieth-Century Continental Thought: Phenomenology	
PHIL 338	Philosophy, Race, and Gender [2]	
PHIL 339	Recent Continental Philosophy	
PHIL 340	Hermeneutic Philosophy	
PHIL 356	Philosophy of Art	
PHIL 357	Philosophy of the Social Sciences [2]	
Required Courses for Concentration		
GOVT 103	Introduction to American Government (Mason Core)	3
ECON 103	Contemporary Microeconomic Principles (Mason Core)	3
ECON 104	Contemporary Macroeconomic Principles (Mason Core)	3
ECON 306	Intermediate Microeconomics	3
GOVT/PHIL 324	Modern Western Political Theory	3
GOVT/PHIL 327	Contemporary Western Political Theory	3

GOVT 422	Constitutional Interpretation	3
PHIL 357	Philosophy of the Social Sciences	3
or PHIL 371	Philosophy of Natural Sciences	
PHIL 358	Ethics and Economics	3
or PHIL 311	Philosophy of Law	
PHIL 429	Advanced Topics in Social and Political Philosophy	3
Select one course from the following:		3
ECON 412	Game Theory and Economics of Institutions	
ECON 403	Austrian Economics	
ECON 410	Public Choice	
ECON 415	Law and Economics	
GOVT 467	Current Issues in Economic Policy	3
PHIL 460	Senior Seminar in Philosophy, Politics, and Economics	3
Total Credits		54

1 When the subject matter is appropriate and with the prior written approval of the undergraduate director, PHIL 391 Special Topics in Philosophy, PHIL 421 Seminar (Mason Core), PHIL 422 Honors Seminar (Mason Core), or PHIL 425 Independent Study may be used to fulfill this requirement.

2 Only with departmental approval.

Writing-Intensive Requirement

The university requires all students to complete at least one course designated "writing intensive" in their majors at the 300 level or above. All senior seminars (PHIL 421 Seminar (Mason Core), PHIL 422 Honors Seminar (Mason Core)) in philosophy are writing intensive. Philosophy majors should consult the undergraduate director for other courses that can be taken to fulfill this requirement.

Upper Level Requirement

Students seeking a bachelor's degree must apply at least 45 credits of upper-level courses (numbered 300 or above) toward graduation requirements.

Additional Electives

Any remaining credits may be completed with elective courses to bring the degree total to 120.

College Level Requirements for the BA Degree

In addition to the Mason Core program, students pursuing a BA degree must complete the coursework below. Except where expressly prohibited, a course used to fulfill a college level requirement may also be used simultaneously to satisfy other requirements (Mason Core requirements or requirements for the major).

Philosophy or Religious Studies

Code	Title	Credits
Select 3 credits from the following:		3
PHIL [1]		
RELI		

1 Note that the following courses may not be used to fulfill this requirement:

- PHIL 323 Classical Western Political Theory
- PHIL 324 Modern Western Political Theory
- PHIL 327 Contemporary Western Political Theory
- PHIL 393 Humanities College to Career
- PHIL 460 Senior Seminar in Philosophy, Politics, and Economics

Additionally, PHIL 253 Philosophy and Literature (Mason Core), RELI 235 Religion and Literature (Mason Core), and RELI 333 Spiritual Autobiography (Mason Core) cannot be used to fulfill both the philosophy/religious studies requirement and the Mason Core literature requirement.

Social and Behavioral Sciences

Code	Title	Credits
Select 3 credits of social and behavioral sciences from the following (additional to the Mason Core social and behavioral sciences requirement) [1]		3
ANTH		
CRIM		
ECON		
GOVT		
HIST [2]		
LING		
PSYC		
SOCI		
Or choose from the following GGS courses:		
GGS 101	Major World Regions (Mason Core)	
GGS 103	Human Geography (Mason Core)	
GGS 110	Introduction to Geoinformation Technologies	
GGS 301	Political Geography (Mason Core)	
GGS 303	Geography of Resource Conservation (Mason Core)	
GGS 304	Population Geography (Mason Core)	
GGS 305	Economic Geography	
GGS 306	Urban Geography	
GGS 315	Geography of the United States	
GGS 316	Geography of Latin America	
GGS 320	Geography of Europe	
GGS 325	Geography of North Africa and the Middle East	
GGS 330	Geography of the Soviet Succession States	
GGS 357	Urban Planning	
GGS 380	Geography of Virginia	

1 The two courses used to fulfill the combined college and Mason Core requirements must be from different disciplines in the social and behavioral sciences.

2 HIST 100 History of Western Civilization (Mason Core) and HIST 125 Introduction to World History (Mason Core) may not be used to fulfill this requirement.

Foreign Language

Code	Title	Credits
Intermediate-level proficiency in one foreign language, fulfilled by: [1]		
Completing 3 credits in a foreign language numbered 202 (or higher level courses taught in the language)		
Or achieving a satisfactory score on an approved proficiency test		
Or completing the following ASL three course sequence:		
EDSE 115	American Sign Language (ASL) I	
EDSE 116	American Sign Language (ASL) II	
EDSE 219	American Sign Language (ASL) III	

[1] Students who are already proficient in a second language may be eligible for a waiver of this requirement. Additional information on waivers can be found at the Office of Undergraduate Academic Affairs (http://chssundergrad.gmu.edu/).

Non-Western Culture

Select 3 credits of an approved course in the study of a non-Western culture (additional to the Mason Core requirement in global understanding)

Code	Title	Credits
Select 3 credits (additional to Mason Core Global Understanding requirement) [1]		
ANTH 114	Introduction to Cultural Anthropology (Mason Core)	3
ANTH 300	Civilizations	3
ANTH 302	Peoples and Cultures of Latin America (Mason Core)	3
ANTH 307	Ancient Mesoamerica (Mason Core)	3
ANTH 308	Peoples and Cultures of the Middle East (Mason Core)	3
ANTH 309	Peoples and Cultures of India (Mason Core)	3
ANTH 313	Myth, Magic, and Mind (Mason Core)	3
ANTH 314	Zombies	3
ANTH 330	Peoples and Cultures of Selected Regions: Non-Western	3
ANTH 332	Cross-Cultural Perspectives on Globalization (Mason Core)	3
ANTH 381	Medical Anthropology	3
ANTH 396	Issues in Anthropology: Social Sciences (Mason Core)	3
ARAB 360	Topics in Arabic Cultural Production	3
ARAB 420	Survey of Arabic Literature	3
ARAB 440	Topics in Arabic Religious Thought and Texts (Mason Core)	3
ARTH 203	Survey of Asian Art (Mason Core)	3
ARTH 204	Survey of Latin American Art (Mason Core)	3
ARTH 206	Survey of African Art (Mason Core)	3
ARTH 318	Art and Archaeology of Ancient Egypt	3
ARTH 319	Art and Archaeology of the Ancient Near East (Mason Core)	3
ARTH 320	Art of the Islamic World (Mason Core)	3
ARTH 382	Arts of India (Mason Core)	3
ARTH 383	Arts of Southeast Asia (Mason Core)	3
ARTH 384	Arts of China (Mason Core)	3
ARTH 385	Arts of Japan (Mason Core)	3
ARTH 386	The Silk Road (Mason Core)	3
ARTH 482	RS: Advanced Studies in Asian Art	3
CHIN 318	Introduction to Classical Chinese (Mason Core)	3
CHIN 320	Contemporary Chinese Film	3
CHIN 325	Major Chinese Writers (Mason Core)	3
CHIN 470	Special Topics in Chinese Studies	3
DANC 118	World Dance (Mason Core)	3
ECON 361	Economic Development of Latin America (Mason Core)	3
ECON 362	African Economic Development (Mason Core)	3
FREN 451	Topics in Sub-Saharan Francophone Literature and Culture	3
FREN 454	Topics in Caribbean Francophone Literature and Culture	3
GGS 101	Major World Regions (Mason Core)	3
GGS 316	Geography of Latin America	3
GGS 317	Geography of China (Mason Core)	3
GGS 325	Geography of North Africa and the Middle East	3
GGS 330	Geography of the Soviet Succession States	3
GGS 399	Select Topics in GGS	3
GOVT 328	Global Political Theory	3
GOVT 332	Government and Politics of the Middle East and North Africa	3
GOVT 333	Government and Politics of Asia	3
GOVT 338	Government and Politics of Russia	3
GOVT 340	Central Asian Politics	3
GOVT 341	Chinese Foreign Policy	3
GOVT 345	Islam and Politics	3
GOVT 433	Political Economy of East Asia	3
HIST 251	Survey of East Asian History (Mason Core)	3
HIST 252	Survey of East Asian History (Mason Core)	3
HIST 261	Survey of African History (Mason Core)	3
HIST 262	Survey of African History (Mason Core)	3
HIST 271	Survey of Latin American History (Mason Core)	3
HIST 272	Survey of Latin American History (Mason Core)	3
HIST 281	Survey of Middle Eastern Civilization (Mason Core)	3
HIST 282	Survey of Middle Eastern Civilization (Mason Core)	3
HIST 326	Stalinism	3
HIST 327	The Soviet Union and Russia Since World War II	3

HIST 328	Rise of Russia (Mason Core)	3
HIST 329	Modern Russia and the Soviet Union (Mason Core)	3
HIST 353	History of Traditional China	3
HIST 354	Modern China (Mason Core)	3
HIST 356	Modern Japan (Mason Core)	3
HIST 357	Postwar Japan (Mason Core)	3
HIST 358	Post-1949 China (Mason Core)	3
HIST 360	History of South Africa (Mason Core)	3
HIST 364	Revolution and Radical Politics in Latin America (Mason Core)	3
HIST 365	Conquest and Colonization in Latin America (Mason Core)	3
HIST 366	Comparative Slavery	3
HIST 367	History, Fiction, and Film in Latin America	3
HIST 387	Topics in Global History (Mason Core)	3-6
HIST 426	The Russian Revolution	3
HIST 460	Modern Iran (Mason Core)	3
HIST 461	Arab-Israeli Conflict	3
HIST 462	Women in Islamic Society (Mason Core)	3
HIST 465	The Middle East in the 20th Century	3
JAPA 310	Japanese Culture in a Global World (Mason Core)	3
JAPA 340	Topics in Japanese Literature (Mason Core)	3
KORE 320	Korean Popular Culture in a Global World	3
MUSI 103	Musics of the World (Mason Core)	3
RELI 211	Religions of the West (Mason Core)	3
RELI 212	Religions of Asia (Mason Core)	3
RELI 240	Death and the Afterlife in World Religions	3
RELI 272	Islam	3
RELI 313	Hinduism (Mason Core)	3
RELI 314	Chinese Philosophies and Religious Traditions	3
RELI 315	Buddhism (Mason Core)	3
RELI 317	Daoism	3
RELI 337	Mysticism: East and West	3
RELI 365	Muhammad: Life and Legacy	3
RELI 374	Islamic Thought (Mason Core)	3
RELI 375	Qur'an and Hadith	3
RELI 379	Islamic Law, Society, and Ethics	3
RELI 387	Islam, Democracy, and Human Rights	3
RELI 490	Comparative Study of Religions (Mason Core)	3
RUSS 353	Russian Civilization (Mason Core)	3
RUSS 354	Contemporary Post-Soviet Life (Mason Core)	3

[1] A course used to fulfill the Mason Core global understanding requirement may not be simultaneously used to satisfy this college-level requirement. A course used to fulfill this requirement may be used simultaneously to fulfill any other requirements (Mason Core requirements, college-level requirements, or requirements for the major). Additional information on waivers can be found at the Office of Undergraduate Academic Affairs (http://chssundergrad.gmu.edu/).

Mason Core

Some Mason Core requirements may already be fulfilled by the major requirements listed above. Students are strongly encouraged to consult their advisors to ensure they fulfill all remaining Mason Core requirements.

Code	Title	Credits
Foundation Requirements		
Written Communication (ENGH 101)		3
Oral Communication		3
Quantitative Reasoning		3
Information Technology and Computing		3
Exploration Requirements		
Arts		3
Global Understanding		3
Literature		3
Natural Science		7
Social and Behavioral Sciences		3
Western Civilization/World History		3
Integration Requirements		
Written Communications (ENGH 302)		3
Writing-Intensive [1]		3
Synthesis/Capstone [2]		3
Total Credits		40

[1] Most programs include the writing-intensive course designated for the major as part of the major requirements; this course is therefore not counted towards the total required for Mason Core.

[2] Minimum 3 credits required.

4-Year Plan

Bachelor of Arts in Philosophy Sample Plan of Study

A sample four year graduation plan and degree planning worksheet can be found at https://academicaffairs.chss.gmu.edu/undergraduate-students/advising/advising-sheets (https://academicaffairs.chss.gmu.edu/undergraduate-students/advising/advising-sheets/). The plan is a recommended sequencing of courses based on prerequisites and scheduling. This may not fit every student's needs and is a guideline, not a requirement. Students should confirm major requirements with their academic advisor each semester and with their PatriotWeb Degree Evaluation to ensure they enroll in the proper courses and are on track to graduate.

Honors

Honors in the Major

Highly-qualified students may apply to the honors program in the major. Students can apply in their second semester as a junior, before they have completed 90 credits and should have a minimum GPA of 3.50 in the major. Eligible students should submit a transcript, one letter of recommendation from a member of the philosophy faculty, and one writing sample, a paper from one of the student's courses in philosophy.

Students pursuing honors in the major complete 6 credits of honors coursework chosen from PHIL 422 Honors Seminar (Mason Core) or PHIL 425 Independent Study. To graduate with honors in philosophy, students must complete these courses with a minimum GPA of 3.50.

Accelerated Master's

The accelerated master's program listed below specifies the BA in philosophy as a feeder degree for its program. Many other accelerated master's programs are also available for any bachelor's degree at Mason. See the full list of degrees (http://catalog.gmu.edu/programs/#filter=filter_24) with accelerated programs at George Mason.

Philosophy, BA/Philosophy, Accelerated MA

Overview

Highly-qualified Mason undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BA in Philosophy and an MA in Philosophy in an accelerated time-frame after satisfactory completion of a minimum of 139 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degrees for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/).

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's Accelerated Master's Degree policies. For information specific to this accelerated master's program, see Application Requirements and Deadlines (https://philosophy.gmu.edu/programs/la-ma-acel-phil/) on the departmental website.

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits and after completing the following:

- 9 upper level credits in philosophy.
- At least two of the following with a grade of B or higher in each: PHIL 301 History of Western Philosophy: Ancient, PHIL 303 History of Western Philosophy: Modern, or PHIL 173 Logic and Critical Thinking

Students who are accepted in the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits.

Accelerated Master's Admissions Requirements

Students already admitted in the BAM Pathway will be admitted to the MA program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- Minimum overall GPA of 3.25
- Minimum grade of 3.00 in each advanced standing course
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing courses (up to 12 credits with a minimum grade of B in each)

600-level PHIL courses (https://catalog.gmu.edu/courses/phil/), with the exception of PHIL 600 Proseminar in Philosophy and PHIL 693 Directed Readings in Philosophy, with the advice and approval of the department.

Advanced standing courses may fulfill the requirement in the BA in Philosophy for Analytic Tradition, Continental Tradition, or Ethics and Social and Political Philosophy, if content is appropriate and with permission of the department.

Reserve Graduate Credit courses (up to 6 credits) taken while an undergraduate and will only count for the graduate degree program

600-level PHIL courses (https://catalog.gmu.edu/courses/phil/), with the exception of PHIL 600 Proseminar in Philosophy and PHIL 693 Directed Readings in Philosophy, with the advice and approval of the department

For more detailed information on coursework and timeline requirements see AP.6.7 Bachelor's Accelerated Master's Degree policies.

Philosophy, MA

Banner Code: LA-MA-PHIL

Academic Advising

6300 Horizon Hall
Fairfax Campus

Email: philgrad@gmu.edu
Website: philosophy.gmu.edu/programs/la-ma-phil

Students in the Master of Arts in Philosophy program can choose a master's degree with a focus on traditional and contemporary philosophy, or choose one of two concentrations: ethics and public affairs, or philosophy and cultural theory. Course offerings provide grounding in the history of philosophy, ethics, metaphysics, epistemology, contemporary continental thought, contemporary analytic philosophy, and philosophy of science. Students pursue the degree to satisfy intellectual interest and to further professional expertise. Graduates of the program move on to

careers in law, technology, health care, education, and public service, or use the program to prepare for doctoral studies in philosophy.

Admissions & Policies

Admissions

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions. For information specific to the MA in philosophy, see Application Requirements and Deadlines (http://philosophy.gmu.edu/programs/LA-MA-PHIL/application/).

Policies

For policies governing all graduate degrees, see AP.6 Graduate Policies.

Requirements

Degree Requirements

Total credits: 31

Students pursuing this degree must successfully complete 31 credits, which may include a thesis. They may choose a course of study that focuses on traditional and contemporary philosophy or choose to complete one of three concentrations. Students need to identify an advisor on entering the program and meet regularly with that advisor during their course of study.

For policies governing all graduate degrees, see AP.6 Graduate Policies.

MA with a Focus on Traditional and Contemporary Philosophy

The focus in traditional and contemporary philosophy is for students who want to deepen their understanding of philosophical issues and for students who are preparing to pursue doctoral studies in philosophy or related fields, e.g. political theory, gender studies.

Students may apply up to 9 credits from other departments toward the degree with focus on traditional and contemporary philosophy with prior written approval of their advisor.

Code	Title	Credits
Proseminar		
PHIL 600	Proseminar in Philosophy [1]	1
Ancient or Medieval Philosophy		
Select one course from the following:		3
PHIL 603	Aristotle: Selected Works	
PHIL 681	Figures and Topics in Ancient Philosophy	
PHIL 721	Advanced Seminar in Philosophy [2]	
Modern Philosophy		
Select one course from the following:		3
PHIL 608	Hegel's Phenomenology of the Spirit	
PHIL 682	Figures and Topics in Early Modern Philosophy	
PHIL 721	Advanced Seminar in Philosophy [2]	
Contemporary Philosophy		
Select one course from the following:		3
PHIL 615	Postmodernist Thought	
PHIL 616	Phenomenology	
PHIL 683	Contemporary Philosophical Figures	
PHIL 694	Special Topics in Contemporary Philosophy	
PHIL 721	Advanced Seminar in Philosophy [2]	
Advanced Seminar		
Select one from the following:		3
PHIL 720	Nietzsche and his Readers	
PHIL 721	Advanced Seminar in Philosophy	
Electives in Philosophy		
Select four to six electives in philosophy [3]		12-18
Optional Thesis		
Three or six credits of		
PHIL 799	Thesis [4]	
Total Credits		31

1. This course should be completed in the first fall semester in which the student is enrolled in the MA program.
2. May be taken when the topic is relevant and with approval of advisor.
3. Students who choose to write a thesis (3 or 6 credits) will take correspondingly fewer electives.
4. Students must follow the thesis enrollment policy of the university and once enrolled in PHIL 799 Thesis, maintain continuous enrollment as specified in Academic Policies.

Concentration in Ethics and Public Affairs (ETPA)

The concentration in ethics and public affairs is designed for professionals who want to combine the study of ethics and the analysis of social and public policies in a variety of settings, including business, health care, biomedical technology, law, or government.

Code	Title	Credits
Proseminar		
PHIL 600	Proseminar in Philosophy [1]	1
History of Philosophy [2]		
PHIL 640	History of Ethical Theory	3
PHIL 603	Aristotle: Selected Works	3
or PHIL 608	Hegel's Phenomenology of the Spirit	
Public Administration		
PUAD 540	Public Policy Process	3
Ethics		
Select three courses from the following: [3]		9
PHIL 642	Biomedical Ethics	
PHIL 643	Environmental Ethics	
PHIL 644	Business and Organizational Ethics	
PHIL 645	Research Ethics	
Electives		
Select two to four electives from the following or from other relevant courses: [4]		6-12
PUAD 700	Ethics and Public Administration	
EVPP 635	Environment and Society	
Optional Thesis		
Three or six credits of		

PHIL 799	Thesis [5]	
Total Credits		31

1. This course should be completed in the first fall semester in which the student is enrolled in the MA program.
2. Depending on the topic, PHIL 681 Figures and Topics in Ancient Philosophy, PHIL 682 Figures and Topics in Early Modern Philosophy, or PHIL 721 Advanced Seminar in Philosophy may be applied to this concentration with prior written permission of the graduate director.
3. Other courses may be used to fulfill this requirement where appropriate and with prior written approval of the student's academic advisor.
4. Students who choose to write a thesis (3 or 6 credits) will take correspondingly fewer electives. Students are encouraged to use courses from around the university in disciplines relevant to their areas of interest, subject to the prior written approval of their academic advisor.
5. Students must follow the thesis enrollment policy of the university and once enrolled in PHIL 799 Thesis, maintain continuous enrollment as specified in Academic Policies.

Concentration in Philosophy and Cultural Theory (PHCT)

The concentration in philosophy and cultural theory is especially for students interested in pursuing a doctorate in cultural studies. Students may apply up to 9 credits from other departments toward this concentration with prior written approval of their advisor.

Code	Title	Credits
Proseminar		
PHIL 600	Proseminar in Philosophy [1]	1
Ancient or Medieval Philosophy		
Select one course from the following:		3
PHIL 603	Aristotle: Selected Works	
PHIL 681	Figures and Topics in Ancient Philosophy	
PHIL 721	Advanced Seminar in Philosophy [2]	
Modern Philosophy		
Select one course from the following:		3
PHIL 608	Hegel's Phenomenology of the Spirit	
PHIL 682	Figures and Topics in Early Modern Philosophy	
PHIL 721	Advanced Seminar in Philosophy [2]	
Contemporary Philosophy		
Select one course from the following:		3
PHIL 615	Postmodernist Thought	
PHIL 616	Phenomenology	
PHIL 683	Contemporary Philosophical Figures	
PHIL 694	Special Topics in Contemporary Philosophy	
PHIL 721	Advanced Seminar in Philosophy [2]	
Advanced Seminar		
Select one from the following:		3
PHIL 720	Nietzsche and his Readers	
PHIL 721	Advanced Seminar in Philosophy	
Cultural Studies		**6**
CULT 802	Histories of Cultural Studies	
Select one elective in consultation with an advisor.		
Electives in Philosophy		**6-12**
Select two to four electives in philosophy [3]		
Optional Thesis		
Three or six credits of		
PHIL 799	Thesis [4]	
Total Credits		31

1. This course should be completed in the first fall semester in which the student is enrolled in the MA program.
2. May be taken when the topic is relevant and with approval of advisor.
3. Students who choose to write a thesis (3 or 6 credits) will take correspondingly fewer electives.
4. Students must follow the thesis enrollment policy of the university and once enrolled in PHIL 799 Thesis, maintain continuous enrollment as specified in Academic Policies.

Dual Degree Options

Philosophy, MA and Interdisciplinary Studies, MAIS Dual Degree

Students interested in pursuing a dual master's program linking philosophy and another discipline should discuss their interest with the graduate program directors of both programs and review the university policies regarding Individualized Dual Master's Degree Programs. Students approved to pursue dual master's study linking the MA philosophy degree and the Interdisciplinary Studies, MAIS with a concentration in women and gender studies will complete WMST 630 Feminist Theories across the Disciplines/PHIL 658 Feminist Theory and 3 additional credits of WMST courses approved by the Department of Philosophy to apply to the philosophy degree as elective credit. Six credits of approved PHIL credits will apply to the MAIS degree as elective credit. Application to the second master's program should be pursued with consultation of the directors of both programs. Admission to the second master's program will require that the student has met the minimum prerequisites for admission to the second program. If a student lacks the minimum prerequisites and seeks to be admitted to a second master's program, the director of the second program may identify ways in which the prerequisite can be completed prior to admission.

Accelerated Master's

Philosophy, BA/Philosophy, Accelerated MA

Overview

Highly-qualified Mason undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BA in Philosophy and an MA in Philosophy in an accelerated time-frame after satisfactory completion of a minimum of 139 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degrees for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate

degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/).

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's Accelerated Master's Degree policies. For information specific to this accelerated master's program, see Application Requirements and Deadlines (https://philosophy.gmu.edu/programs/la-ma-acel-phil/) on the departmental website.

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits and after completing the following:

- 9 upper level credits in philosophy.
- At least two of the following with a grade of B or higher in each: PHIL 301 History of Western Philosophy: Ancient, PHIL 303 History of Western Philosophy: Modern, or PHIL 173 Logic and Critical Thinking

Students who are accepted in the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits.

Accelerated Master's Admissions Requirements

Students already admitted in the BAM Pathway will be admitted to the MA program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- Minimum overall GPA of 3.25
- Minimum grade of 3.00 in each advanced standing course
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing courses (up to 12 credits with a minimum grade of B in each)

600-level PHIL courses (https://catalog.gmu.edu/courses/phil/), with the exception of PHIL 600 Proseminar in Philosophy and PHIL 693 Directed Readings in Philosophy, with the advice and approval of the department.

Advanced standing courses may fulfill the requirement in the BA in Philosophy for Analytic Tradition, Continental Tradition, or Ethics and Social and Political Philosophy, if content is appropriate and with permission of the department.

Reserve Graduate Credit courses (up to 6 credits) taken while an undergraduate and will only count for the graduate degree program

600-level PHIL courses (https://catalog.gmu.edu/courses/phil/), with the exception of PHIL 600 Proseminar in Philosophy and PHIL 693 Directed Readings in Philosophy, with the advice and approval of the department

For more detailed information on coursework and timeline requirements see AP.6.7 Bachelor's Accelerated Master's Degree policies.

Political Philosophy Minor

Banner Code: PPHL

Academic Advising

6300 Horizon Hall
Fairfax Campus

Website: philosophy.gmu.edu/programs/la-minor-la-pphl

This minor provides students with an intensive study of political philosophy and political theory. Students take courses in the history of political philosophy; the moral evaluation of political institutions; the ethical, social, and political issues raised by globalization; and the conceptual foundations of democracy and human rights. Through this coursework, students are able to study this field from a variety of interdisciplinary perspectives. They develop a deeper philosophical perspective on political institutions and have a solid foundation for further graduate study in philosophy, government, or policy studies.

Faculty

Brandhorst, Cherubin, Fyfe, Mandaville, Miller (Director), Scherer

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 18

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Core Courses

Code	Title	Credits
Select two courses from the following:		6
PHIL 323	Classical Western Political Theory	
or GOVT 323	Classical Western Political Theory	
PHIL 324	Modern Western Political Theory	
or GOVT 324	Modern Western Political Theory	
PHIL 327	Contemporary Western Political Theory	
or GOVT 327	Contemporary Western Political Theory	
Total Credits		6

Electives

Code	Title	Credits
Select two elective courses from the courses below or above (if not used to meet the core requirement): [1]		6
PHIL 325	Karl Marx's Social and Political Thought	
PHIL 329	Philosophy after Auschwitz	

PHIL 343	Topics in Environmental Philosophy (Mason Core)	
PHIL 344	Ethical Issues in Global Health	
PHIL 353	Theories of Justice	
PHIL 429	Advanced Topics in Social and Political Philosophy	
Select two elective courses from the courses below or above (if not used to meet the core requirement): [1]		6
GOVT 328	Global Political Theory	
GOVT 329	Issues in Political Theories and Values	
GOVT 420	American Political Thought	
GOVT 427	Feminist Political Thought	
GOVT 428	Advanced Democratic Theory	
GOVT 448	Ethics and International Politics	
Total Credits		12

[1] Special topics courses and independent studies courses, when relevant, may also be used to fulfill elective credits with prior written approval of the director.

Department of Psychology

2086 David King Hall
Fairfax Campus

Phone: 703-993-1384
Website: psychology.gmu.edu

Undergraduate Programs

The department offers a bachelor of arts degree and a bachelor of science degree in psychology. All psychology majors complete a broad range of courses from social and abnormal psychology to cognitive and biopsychology. Students can also choose from special topics courses such as forensic psychology and romantic relationships.

In addition to the general degree in psychology, students can choose a concentration in clinical psychology, cognitive and behavioral neuroscience, developmental psychology, educational psychology, forensic psychology, health psychology, human factors and applied cognition, or work and organizational psychology. These concentrations may be of interest to students who are planning to attend graduate school.

Students in psychology may have the opportunity to do research with a faculty member or do a service learning course, which allows them to put into practice what they've learned in the classroom.

Students interested in graduate study should be aware that undergraduate research experience and letters of recommendation are major factors for admission to graduate study. Such students should distribute courses across a number of areas in psychology and work closely with one or more professors on individual projects during their junior and senior years.

Minors

The department offers minors in psychology, brain, body, and behavior, clinical psychology, developmental psychology, forensic psychology, health psychology, and industrial/organizational psychology. These minors are available to students in any major in the university.

Bachelor's/Accelerated Master's Program

The department offers highly-qualified undergraduate majors the opportunity to apply to an accelerated master's degree program in psychology with a concentration in cognitive and behavioral neuroscience. If accepted, students will be able to earn both an undergraduate degree and the master's degree with a concentration in cognitive and behavioral neuroscience after satisfactory completion of 138 credits, generally within five years.

Graduate Programs

The graduate programs in psychology are distinguished by an emphasis on basic research and the application of research to solving practical problems in families, schools, industry, government, and health care settings.

The department offers master's and doctoral degrees with concentrations in applied developmental psychology, cognitive and behavioral neuroscience, human factors/applied cognition, and industrial/organizational psychology. It also offers a doctoral degree with a concentration in clinical psychology.

Funding

The department offers teaching and research assistantships, which are awarded on a competitive basis. Other sources of funding such as grants, loans, and employment on campus are also available. Students awarded assistantships must register for a minimum of six credits a semester and show satisfactory progress toward their degree.

Certificates

The department offers graduate certificates in applied psychology, with concentrations in transportation human factors and usability, and cognitive neuroscience. These have been designed to meet the needs of students who desire to upgrade their skills and earn a certificate as evidence of their skill attainment. Students may take these as stand-alone certificates or pursue them concurrently with a graduate degree program. Part of the certificate course work may be able to be applied to the degree. Students must apply and be accepted to a graduate certificate program.

The certificate programs are open to all students who hold a bachelor's degree from an accredited university and meet the admissions requirements for the master's degree in psychology with a concentration in human factors and applied cognition.

Non-Degree Status

Applicants who have not been admitted to a graduate degree program or a certificate program may apply for non-degree status. Non-degree students must meet the same admission requirements as degree-seeking students. Non-degree status is not intended as a way to qualify for admission as a degree-seeking student.

While it may be possible to transfer the credits earned in non-degree status to a degree program, such transfers are not automatic. They require the approval of the graduate director and the dean. If approved, a maximum of 12 credits earned in non-degree status may be applied to a degree program. Non-degree students who intend to transfer their credits to a degree program should discuss this with the appropriate program director.

Faculty

Department Faculty

Professors

Cortina, Dalal, Denham, Esposito-Smythers, Helton, Kashdan, Klimoski, Mandes, Mehlenbeck (director, Center for Psychological Services), Pasnak, Renshaw (Chair), Riskind, Rupp, Tangney, Winsler (associate chair for graduate studies), Zaccaro

Research Professors

Olds

Associate Professors

Baldwin (director, Human Factors Program), Bitler, Buffardi, Cattaneo (director, Clinical Program), Chaplin, Curby (director, Applied Developmental Program), Fisher, Flinn (director, Cognitive and Behavioral Neuroscience Program), Goldstein, Kaplan, King, Kuykendall, McDonald, McKnight, Peterson, Rowe, Shaw, Short, J. Thompson

Research Associate Professors

Stuewig

Assistant Professors

Adams, Doebel, Jack, Kornienko, Le, P. Lee, Y. Lee, Phillips, Wiener,

Term Associate Professors

Brielmaier Sontag, Dumas, Hurley, Murdoch (associate chair for undergraduate studies), Ramsdell

Term Assistant Professors

Ahmad, Melley, Smith-Gray, Sontag

Affiliates

Eby, Hunt, Bachus

Programs

- Applied Industrial and Organizational Psychology, MPS
- Applied Psychology Graduate Certificate
- Brain, Body and Behavior Minor
- Clinical Psychology Minor
- Cognitive Neuroscience Graduate Certificate
- Developmental Psychology Minor
- Forensic Psychology Minor
- Health Psychology Minor
- Industrial / Organizational Psychology Minor
- Psychology Minor
- Psychology, BA
- Psychology, BS
- Psychology, MA (CHSS)
- Psychology, PhD

Applied Industrial and Organizational Psychology, MPS

Banner Code: LA-MPS-AIOP

Academic Advising

Dr. Stephen Zaccaro

Phone: 703 993-1355
Email: szaccaro@gmu.edu
Website: https://masononline.gmu.edu/programs/master-of-professional-studies-in-applied-industrial-organizational-psychology/

George Mason University's online Master of Professional Studies in Applied Industrial and Organizational Psychology provides instruction in research-backed methods and understanding of data and analytics. It is intended to give HR professionals and business professionals the skills they need to foster a culture where each employee feels empowered and motivated to contribute new ideas, effect change, and do their best work every day. Students learn how to assess and evaluate candidates to determine their fit for the company and specific positions, identify employees' individual motivations, establish meaningful evaluations and reward systems, and improve training and performance programs. Main areas of study focus on understanding and applying concepts in: research and data analytic methods, evidence-based practices, and client communication skills.

Admissions & Policies

Admissions

The online master's in organizational psychology program accepts applications on a rolling basis and is currently accepting applications. You can apply here (https://apply-now.force.com/?acctid=0013200001GuY7C).

Policies

For policies governing all graduate degrees, see AP.6 Graduate Policies.

Requirements

Degree Requirements

Total credits: 30

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Fundamentals of Industrial/Organizational Psychology

Code	Title	Credits
PSYC 598	Introduction to the Science and Practice of Industrial and Organizational Psychology	3
PSYC 641	Foundations of Organizational Psychology	3
PSYC 637	Foundations of Industrial Psychology	3

PSYC 616	Employee Selection	3
Total Credits		12

Principles of Research and Data Analysis in Psychology

Code	Title	Credits
PSYC 603	Psychological Research Methods	3
PSYC 601	Applied Data Analysis in Psychology I	3
PSYC 602	Applied Data Analysis in Psychology II	3
Total Credits		9

Application of Evidenced-Based Principles in Psychology

Code	Title	Credits
Complete one semester (3 credits) of the following:		
PSYC 730	Practicum in Applied Psychology	3
Total Credits		3

Electives

Code	Title	Credits
Select two courses from the following:		6
PSYC 618	Applied Leadership in the Workplace	
PSYC 620	Motivation and Well-Being	
PSYC 622	Applied Teamwork in the Workplace	
PSYC 626	Organizational Change and Development	
PSYC 627	Performance Management	
PSYC 628	Benefits and Compensation	
PSYC 629	Workplace Training	
Total Credits		6

Applied Psychology Graduate Certificate

Banner Code: LA-CERG-APSY

Academic Advising

2086 David King Hall
Fairfax Campus

Email: psycgrad@gmu.edu
Website: psychology.gmu.edu/programs/la-cerg-apsy

Admissions & Policies

Admissions

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions.

Policies

For policies governing all graduate certificates, see AP.6.8 Requirements for Graduate Certificates.

Requirements

Certificate Requirements

Total credits: 15

This certificate may be pursued on a full-or part-time basis.

Students pursuing this graduate certificate must choose either a concentration in transportation human factors or a concentration in usability.

Concentration in Transportation Human Factors (TRHF)

Core Courses

Code	Title	Credits
PSYC 530	Cognitive Engineering: Cognitive Science Applied to Human Factors	3
PSYC 645	Research Methods in Human Factors and Applied Cognition	3
PSYC 734	Seminar in Human Factors and Applied Cognition [1]	3
Total Credits		9

[1] Only when aviation-related topic is approved for this concentration by the program director.

Electives

Code	Title	Credits
Select two electives from the following:		6
PSYC 597	Directed Reading and Research [1]	
PSYC 768	Advanced Topics in Cognitive Science	
SYST 560	Introduction to Air Traffic Control	
SYST 671	Judgment and Choice Processing and Decision Making	
Total Credits		6

[1] Only when topic is approved for this concentration.

Concentration in Usability (UBTY)

Core Courses

Code	Title	Credits
PSYC 530	Cognitive Engineering: Cognitive Science Applied to Human Factors	3
PSYC 645	Research Methods in Human Factors and Applied Cognition	3
Total Credits		6

Electives

Code	Title	Credits
Select three electives from the following:		9
PSYC 597	Directed Reading and Research [1]	
PSYC 654	Naturalistic Methods in Psychology	
PSYC 734	Seminar in Human Factors and Applied Cognition [1]	
PSYC 768	Advanced Topics in Cognitive Science	
EDIT 526	Web Accessibility and Design	
EDIT 571	Visual Design and Applications	

EDIT 705	Instructional Design	
EDIT 773	Human Computer Interface Design for Teaching and Learning	
Total Credits		9

[1] Only when topic is approved for this concentration.

Brain, Body and Behavior Minor

Banner Code: BBB

Academic Advising

2086 David King Hall
Fairfax Campus

Email: upsyc@gmu.edu
Website: psychology.gmu.edu/programs/la-minor-psyc-bbb/overview

The courses included in this minor emphasize the behavioral consequences of both normal and abnormal neuronal and physiological processes. These in-depth courses will broaden the students' knowledge in understanding brain and behavior, specifically, but not exclusively, the cognitive aspects.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.80. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 21

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Required Courses

Code	Title	Credits
PSYC 304	Principles of Learning	4
PSYC 373	Biopsychology Laboratory	2
PSYC 375	Brain and Sensory Processes	3
PSYC 376	Brain and Behavior	3
Total Credits		12

Electives

Code	Title	Credits
Select a minimum of 9 credits from the following: [1]		9
NEUR 327	Cellular, Neurophysiological, and Pharmacological Neuroscience	
NEUR 335	Molecular, Developmental, and Systems Neuroscience	
PSYC 309	Sensation, Perception, and Information Processing	
PSYC 460	Independent Study in Psychology [2]	
PSYC 461	Special Topics [3]	
PSYC 480	Biological Bases of Alzheimer's Disease	
PSYC 472	Current Topics in Brain and Behavior [4]	
Other course as approved by the undergraduate associate chair		
Total Credits		9

[1] Students who are accepted into and successfully complete the Psychology Department Honors Program (PSYC 490 Psychology Honors I, PSYC 491 Psychology Honors II, and PSYC 492 RS: Psychology Honors III) with an honors thesis/project focused on cognitive and behavioral neuroscience may apply this coursework to the minor.

[2] With permission of CBN faculty member.

[3] When approved by the undergraduate associate chair and topic is *Music and the Brain*, *Neuronal Aspects of Cognitive Development*, *Animal Cognition*, or *Psychology of Stress and Health.*

[4] When approved by the undergraduate associate chair and topic is *Neuronal Bases of Learning and Memory*, *Drugs and the Brain*, or *Brain in Books and Film*.

Clinical Psychology Minor

Banner Code: CLPY

Academic Advising

2086 David King Hall
Fairfax Campus

Email: ugpsyc@gmu.edu
Website: psychology.gmu.edu/programs/la-minor-psyc-clpy

The required courses of the minor provide a foundation in psychology and focus on assessment and treatment of distress and dysfunction. The electives provide in-depth knowledge of normal development, psychological theories, psychological disorders, and treatment techniques.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must complete 19 credits of psychology with a minimum GPA of 2.00. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 19

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Core Courses

Code	Title	Credits
PSYC 100	Basic Concepts in Psychology (Mason Core)	3
PSYC 301	Research Methods in Psychology	4
PSYC 321	Clinical Psychology	3
PSYC 325	Abnormal Psychology	3
Total Credits		13

Electives

Code	Title	Credits
Select at least two courses from the following:		6
PSYC 211	Developmental Psychology (Mason Core) (or PSYC 313 or PSYC 314)	
PSYC 231	Social Psychology (Mason Core)	
PSYC 322	Behavior Modification	
PSYC 324	Personality Theory	
PSYC 326	Therapeutic Communication Skills	
PSYC 414	Behavior Disorders of Childhood	
PSYC 423	Group Psychotherapy Techniques	
PSYC 430	Clinical Practicum in Psychology	
PSYC 460	Independent Study in Psychology	
PSYC 461	Special Topics [1]	
Total Credits		6

[1] When topic is related to clinical psychology approved by the psychology department.

Cognitive Neuroscience Graduate Certificate

Banner Code: LA-CERG-CNEU

Academic Advising

2086 David King Hall
Fairfax Campus

Email: psycgrad@gmu.edu
Website: psychology.gmu.edu/programs/la-cerg-cneu

The Department of Psychology offers a graduate certificate in cognitive neuroscience under the auspices of the program in Human Factors/ Applied Cognition.

Admissions & Policies

Admissions

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions. For information specific to the graduate certificate in cognitive neuroscience, see Application Requirements and Deadlines (http://psychology.gmu.edu/programs/LA-CERG-CNEU/application/).

Policies

For policies governing all graduate certificates, see AP.6 Graduate Policies.

Requirements

Certificate Requirements

Total credits: 18

This certificate may be pursued on a full-or part-time basis.

For policies governing all graduate certificates, see AP.6.8 Requirements for Graduate Certificates.

Core Courses

Code	Title	Credits
PSYC 530	Cognitive Engineering: Cognitive Science Applied to Human Factors	3
Six credits of		6
PSYC 768	Advanced Topics in Cognitive Science [1]	
Total Credits		9

[1] Topic must be relevant to cognitive neuroscience. This course is repeatable when the specific topic is different.

Additional Course

Code	Title	Credits
Select one course from the following:		3
PSYC 531	Mammalian Neurobiology	
PSYC 558	Neuronal Bases of Learning and Memory	
PSYC 559	Behavioral Chemistry	
Total Credits		3

Electives

Code	Title	Credits
Select two electives from the following:		6
PSYC 702	Biological Bases of Human Behavior	
PSYC 597	Directed Reading and Research [1]	
PSYC 768	Advanced Topics in Cognitive Science [1]	
Total Credits		6

[1] May be used to fulfill this requirement when the topic is relevant to the certificate with prior written approval of the program director.

Developmental Psychology Minor

Banner Code: DVLP

Academic Advising

2086 David King Hall
Fairfax Campus

Email: ugpsyc@gmu.edu
Website: psychology.gmu.edu/programs/la-minor-psyc-dvlp

This minor is designed to provide students with an understanding of the ways in which humans change over time. Coursework provides for a broad foundation in psychology across the lifespan while also allowing for students to focus on a developmental period (e.g. childhood).

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 18

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Required Courses

Code	Title	Credits
PSYC 100	Basic Concepts in Psychology (Mason Core)	3
PSYC 211	Developmental Psychology (Mason Core)	3
Total Credits		6

Electives

Code	Title	Credits
Select a minimum of 12 credits from the following:		12
PSYC 313	Child Development	
PSYC 314	Adolescent Development	
PSYC 379	Applied Cross-Cultural Psychology (Mason Core)	
PSYC 414	Behavior Disorders of Childhood	
PSYC 415	Psychological Factors in Aging	
PSYC 460	Independent Study in Psychology [1]	
PSYC 461	Special Topics [2]	
HDFS 200	Individual and Family Development (Mason Core)	
Total Credits		12

1 When content is developmental, with approval.

2 When topic is developmental, when approved by Psychology Associate Chair of Undergraduate Studies.

Forensic Psychology Minor

Banner Code: FPSY

Academic Advising

2086 David King Hall
Fairfax Campus

Email: ugpsyc@gmu.edu
Website: psychology.gmu.edu/programs/la-minor-psyc-fpsy

This minor is designed to supplement the study of psychology, criminology, or other justice-related areas with an overview of the intersection of psychology and the criminal justice system. The minor focuses specifically on mental illness in the criminal justice system, the psychological experiences of victims, psychological science in the courtroom, and psychological factors related to criminal behavior.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 15

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Core Courses

Code	Title	Credits
PSYC 100	Basic Concepts in Psychology (Mason Core)	3
PSYC 380	Introduction to Forensic Psychology	3
PSYC 381	Mental Illness and Criminal Justice	3
Total Credits		9

Electives

Code	Title	Credits
Select two courses from the following:		6
PSYC 382	Psychology of Crime Victims	
PSYC 440	Forensic Psychology: Science and Pseudoscience	
PSYC 441	Criminal Behavior: Psychological and Neurological Aspects	
CRIM 100	Introduction to Criminal Justice (Mason Core)	
PSYC 461	Special Topics [1]	
PSYC 462	Selected Topics in Forensic Psychology [1]	
Total Credits		6

1 with Undergraduate Associate Chair approval

Health Psychology Minor

Banner Code: HPSY

Academic Advising

2086 David King Hall
Fairfax Campus

Email: ugpsyc@gmu.edu

Website: psychology.gmu.edu/programs/la-minor-psyc-hpsy

This minor is designed to help students better understand psychological factors that influence overall health. The courses provide instruction on factors that have the potential to impact both physical and psychological health. These include the roles of cognitive processes, health beliefs and behaviors, emotions, psychosocial circumstances and personality traits, all factors that may influence overall health and well-being.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 18

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Core Courses

Code	Title	Credits
PSYC 100	Basic Concepts in Psychology (Mason Core)	3
PSYC 408	Psychological Fitness	3
PSYC 417	Science of Well Being	3
Total Credits		9

Electives

Code	Title	Credits
Select a minimum of 9 credits from the following:		9
PSYC 211	Developmental Psychology (Mason Core)	
PSYC 301	Research Methods in Psychology	
PSYC 321	Clinical Psychology	
PSYC 325	Abnormal Psychology	
PSYC 372	Biopsychology	
PSYC 461	Special Topics [1]	
COMM 304	Foundations of Health Communication	
HEAL 230	Introduction to Health Behavior (Mason Core)	
PHIL 309	Bioethics (Mason Core)	
GCH 325	Stress and Well-Being (Mason Core)	
Total Credits		9

[1] When topic is related to health and well-being and approved by Psychology Associate Chair of Undergraduate Studies.

Industrial/Organizational Psychology Minor

Banner Code: IO

Academic Advising

2086 David King Hall
Fairfax Campus

Email: ugpsyc@gmu.edu
Website: psychology.gmu.edu/programs/la-minor-psyc-io

Develop further knowledge on topics such as leadership, occupational health, motivation, personality, research methods and more. Students will learn the foundations of work/organizational psychology including important theoretical aspects of the field.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 15

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Core Courses

Required Applied Psychology Course

Code	Title	Credits
PSYC 333	Industrial and Organizational Psychology	3
Total Credits		3

Research Methods Course

Code	Title	Credits
Choose one of the following:		4
PSYC 300	Statistics in Psychology	
PSYC 301	Research Methods in Psychology	
Total Credits		4

Electives

Code	Title	Credits
Select at least 8 credits from the following:		8
PSYC 320	Psychological Tests and Measurements	
PSYC 335	Psychology of Creativity and Innovation	
PSYC 435	Personnel Training and Development: A Psychological Perspective	
PSYC 461	Special Topics (when topic is Occupational Health Psychology or Work and Family with prior written approval)	

PSYC 467	The Psychology of Working in Groups and Teams	
MBUS 301	Managing People and Organizations in a Global Economy [1]	
MGMT 303	Principles of Management [1]	
Total Credits		8

[1] Students may take MGMT 303 or MBUS 301 for credit, but not both.

Psychology Minor

Banner Code: PSYC

Academic Advising

2086 David King Hall
Fairfax Campus

Email: ugpsyc@gmu.edu
Website: http://psychology.gmu.edu/programs/la-minor-psyc-psyc

Coursework in psychology can enhance many different majors, and the minor in psychology is available to students in any major at Mason. For a list of suggested courses for students who are majoring in specific disciplines that interact especially well with psychology, contact the Undergraduate Psychology Office (http://psychology.gmu.edu/contact/).

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 18

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Core Courses

Code	Title	Credits
PSYC 100	Basic Concepts in Psychology (Mason Core)	3
Total Credits		3

Areas of Psychology

Code	Title	Credits
Select three courses in three of the following areas of Psychology: [1]		9-12
Abnormal:		
PSYC 325	Abnormal Psychology	
Cognition:		
PSYC 317	Cognitive Psychology	
Developmental:		
PSYC 211	Developmental Psychology (Mason Core)	
PSYC 313	Child Development	
Physiological:		
PSYC 372	Biopsychology	
or PSYC 375 & PSYC 376	Brain and Sensory Processes and Brain and Behavior	
Social/Personality:		
PSYC 231	Social Psychology (Mason Core)	
PSYC 324	Personality Theory	
Total Credits		9-12

[1] Students must choose cognition or physiological as one of the three areas, though they may choose both.

Electives

Code	Title	Credits
Select one or two PSYC courses [1]		3-6
Total Credits		3-6

[1] No more than three credits of PSYC 260, PSYC 350, and PSYC 460 (in total) may be used as elective credit toward the minor. Students who take PSYC 375 and PSYC 376 in the physiological area above will only take 3 elective credits.

Psychology, BA

Banner Code: LA-BA-PSYC

2086 David King Hall
Fairfax Campus

Email: ugpsyc@gmu.edu
Website: psychology.gmu.edu/programs/la-ba-psyc

Students study behavior as it relates to health and well-being, child and adolescent development, education, social situations, the workplace, and the use of technology. Due to Mason's proximity to Washington, D.C. the department is especially active in research that informs public policy and national defense. Students who graduate from this program go on to work in a wide range of fields and positions, including human resources, data analysis, user interface design, and social media and marketing.

The Bachelor of Arts in Psychology focuses on liberal arts and general education courses, including a foreign language requirement, within the psychology field.

Admissions & Policies

Policies

Students pursuing this degree must complete 37 credits within the major, with 24 credits at the 300 and 400 level.

For policies governing all undergraduate degrees, see AP.5 Undergraduate Policies.

Requirements

Degree Requirements

Total credits: minimum 120

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Students may choose to complete a concentration in forensic psychology, human factors and applied cognition, work and organizational psychology, clinical psychology, developmental psychology, educational psychology, or health psychology. Courses required for a concentration may simultaneously satisfy other degree requirements. The concentrations in forensic psychology, human factors and applied cognition, and work and organizational psychology meet the applied psychology requirement.

Students who have limited technology skills are encouraged to take IT 104 Introduction to Computing.

Core Courses in the Major

Basic Courses in Psychology

Students must have a minimum GPA of 2.00 in these courses with a minimum grade of 1.67 (C-) in each one. Courses taken to fulfill these requirements may simultaneously satisfy a concentration.

Code	Title	Credits
Introductory Course		
PSYC 100	Basic Concepts in Psychology (Mason Core)	3
Foundational Courses		
PSYC 231	Social Psychology (Mason Core)	3
PSYC 317	Cognitive Psychology	3
Select one option from the following:		3-6
Option 1:		
PSYC 211	Developmental Psychology (Mason Core)	
Option 2:		
Select two from the following:		
PSYC 313	Child Development	
PSYC 314	Adolescent Development	
PSYC 415	Psychological Factors in Aging	
Research Methods Courses [1]		
PSYC 300	Statistics in Psychology	4
PSYC 301	Research Methods in Psychology	4
Biopsychology [2]		
Select one from the following: [3]		3-6
PSYC 372	Biopsychology	
PSYC 375 & PSYC 376	Brain and Sensory Processes and Brain and Behavior	
Professional Development		
Select one from the following:		3
PSYC 399	Psychology: College to Career	
PSYC 327	Psychology in the Community	
PSYC 427	Community Engagement for Social Change (Mason Core) [4]	
PSYC 430	Clinical Practicum in Psychology [4]	
PSYC 491	Psychology Honors II	
PSYC 492	RS: Psychology Honors III	
PSYC 461	Special Topics (with Undergraduate Associate Chair Approval)	
Total Credits		26-32

1. Students are strongly encouraged to complete PSYC 300 Statistics in Psychology and PSYC 301 Research Methods in Psychology by their junior year. PSYC 300 Statistics in Psychology is a prerequisite to several courses, and a background in research methods facilitates understanding empirical research discussed in all psychology courses.
2. It is strongly recommended that students fulfill the Mason Core natural science requirement by completing BIOL 103 Introductory Biology II-Survey of Cell and Molecular Biology (Mason Core) and BIOL 107 Intro Biology II Lecture (Mason Core)/BIOL 106 Introductory Biology II Laboratory (Mason Core) because these courses are prerequisites to the requirement of PSYC 372 Biopsychology or PSYC 375 Brain and Sensory Processes and PSYC 376 Brain and Behavior.
3. Only students who receive transfer credit for PSYC 372 Biopsychology may use it in place of PSYC 375 Brain and Sensory Processes as the prerequisite for PSYC 376 Brain and Behavior. Students taking PSYC 372 Biopsychology at Mason may not use it in place of PSYC 375 Brain and Sensory Processes.
4. PSYC 427 Community Engagement for Social Change (Mason Core) and PSYC 430 Clinical Practicum in Psychology may count for both the Professional Development and the Applied Psychology requirements.

Applied Psychology Courses or Optional Concentration

Alternatively, students may earn a concentration in forensic psychology, human factors and applied cognition, or work and organizational psychology to satisfy this requirement.

Applied Psychology

Code	Title	Credits
Students pursuing the BA without concentration complete two courses from the following with a minimum grade of C- in each:		6-7
PSYC 320	Psychological Tests and Measurements	
PSYC 325	Abnormal Psychology	
PSYC 333	Industrial and Organizational Psychology	
PSYC 340	Human Factors Psychology	
PSYC 379	Applied Cross-Cultural Psychology (Mason Core)	
PSYC 381	Mental Illness and Criminal Justice	
PSYC 427	Community Engagement for Social Change (Mason Core) [1]	
PSYC 430	Clinical Practicum in Psychology [1]	
Total Credits		6-7

1. PSYC 427 may count for both the Applied Psychology and the Professional Development requirements.

Concentrations Meeting Applied Psychology Requirement
Concentration in Forensic Psychology (FPSY)
Students pursuing the BA with concentration in forensic psychology take 15 credits. Students must earn a minimum GPA of 2.00 in all coursework applied to the concentration.

Students who successfully complete the Psychology Department Honors Program (PSYC 490 Psychology Honors I, PSYC 491 Psychology Honors II, and PSYC 492 RS: Psychology Honors III) with an honors thesis/project focused on forensic psychology may, with approval of their thesis committees and the associate chair for undergraduate studies, substitute their honors work for one course in the concentration.

Code	Title	Credits
PSYC 100	Basic Concepts in Psychology (Mason Core)	3
PSYC 380	Introduction to Forensic Psychology	3
PSYC 381	Mental Illness and Criminal Justice	3
Select two courses from the following:		6
PSYC 382	Psychology of Crime Victims	
PSYC 440	Forensic Psychology: Science and Pseudoscience	
PSYC 441	Criminal Behavior: Psychological and Neurological Aspects	
CRIM 100	Introduction to Criminal Justice (Mason Core)	
PSYC 461	Special Topics [1]	
PSYC 462	Selected Topics in Forensic Psychology [1]	
Total Credits		15

1 Only with Undergraduate Associate Chair approval.

Concentration in Human Factors and Applied Cognition (HF)
Students pursuing the BA with concentration in human factors and applied cognition take 12-13 credits. Students must earn a minimum GPA of 2.00 in all coursework applied to the concentration.

Students who successfully complete the Psychology Department Honors Program (PSYC 490 Psychology Honors I, PSYC 491 Psychology Honors II, and PSYC 492 RS: Psychology Honors III) with an honors thesis/project focused on human factors or applied cognition may, with approval of their thesis committees and the associate chair for undergraduate studies, substitute their honors work for one course in the concentration.

Code	Title	Credits
PSYC 317	Cognitive Psychology	3
PSYC 340	Human Factors Psychology	3
Select two courses from the following:		6-7
PSYC 309	Sensation, Perception, and Information Processing	
PSYC 333	Industrial and Organizational Psychology	
PSYC 372	Biopsychology	
PSYC 460	Independent Study in Psychology [1]	
PSYC 461	Special Topics [3]	
PSYC 530	Cognitive Engineering: Cognitive Science Applied to Human Factors [2]	
Total Credits		12-13

1 Must be taken with human factors and applied cognition faculty member.
2 Note course prerequisite of PSYC 317 Cognitive Psychology.
3 Only with Undergraduate Associate Chair approval.

Concentration in Work and Organizational Psychology (WKOP)
Students pursuing the BS with concentration take 12-13 credits. Students must earn a minimum GPA of 2.00 in all coursework applied to the concentration.

Students who successfully complete the Psychology Department Honors Program (PSYC 490 Psychology Honors I, PSYC 491 Psychology Honors II, and PSYC 492 RS: Psychology Honors III) with an honors thesis/project focused on I/O psychology may, with approval of their thesis committees and the associate chair for undergraduate studies, substitute the honors work for one course in the concentration.

Code	Title	Credits
PSYC 333	Industrial and Organizational Psychology	3
Select three courses from the following:		9-10
PSYC 320	Psychological Tests and Measurements	
PSYC 335	Psychology of Creativity and Innovation	
PSYC 435	Personnel Training and Development: A Psychological Perspective	
PSYC 467	The Psychology of Working in Groups and Teams	
PSYC 461	Special Topics [1]	
MBUS 301	Managing People and Organizations in a Global Economy [2]	
or MGMT 303	Principles of Management	
Total Credits		12-13

1 Only when topic is Occupational Health Psychology or Work and Family with prior written approval.
2 Students may take MBUS 301 or MGMT 303 for credit, but not both.

Other Concentrations Available to Majors

Students may choose to complete a concentration in clinical psychology, developmental psychology, educational psychology, or health psychology.

Available Concentrations

- Concentration in Clinical Psychology (CLPY)
- Concentration in Cognitive and Behavioral Neuroscience (CBNR)
- Concentration in Developmental Psychology (DVLP)
- Concentration in Educational Psychology (EPSY)
- Concentration in Health Psychology (HPSY)

Concentration in Clinical Psychology (CLPY)

Students pursuing the BA with this concentration take 12 credits. Students must earn a minimum GPA of 2.00 in all coursework applied to the concentration.

Students who successfully complete the Psychology Department Honors Program Psychology Honors I, PSYC 491 Psychology Honors II, and PSYC 492 RS: Psychology Honors III) with an honors thesis/project focused on clinical psychology may, with approval of their thesis committees and the associate chair for undergraduate studies, substitute their honors work for one course in the concentration.

Code	Title	Credits
PSYC 321	Clinical Psychology	3
PSYC 325	Abnormal Psychology	3
Select at least two psychology electives from the following		6
PSYC 211	Developmental Psychology (Mason Core)	
or PSYC 313	Child Development	
or PSYC 314	Adolescent Development	
PSYC 231	Social Psychology (Mason Core)	
PSYC 322	Behavior Modification	
PSYC 324	Personality Theory	
PSYC 326	Therapeutic Communication Skills	
PSYC 414	Behavior Disorders of Childhood	
PSYC 423	Group Psychotherapy Techniques	
PSYC 430	Clinical Practicum in Psychology	
PSYC 460	Independent Study in Psychology	
PSYC 461	Special Topics [1]	
PSYC 465	Pioneering Ideas in Psychology	

[1] Only when topic is related to clinical psychology approved by the psychology department.

Concentration in Cognitive and Behavioral Neuroscience (CBNR)

This concentration focuses on laboratory experience in cognitive and behavioral neuroscience and more in-depth courses of interest that will broaden the students' knowledge in understanding brain and behavior.

Students pursuing the BA with this concentration take 15 credits. Students must earn a minimum GPA of 3.00 in all coursework applied to the concentration.

Students who successfully complete the Psychology Department Honors Program (PSYC 490 Psychology Honors I, PSYC 491 Psychology Honors II, and PSYC 492 RS: Psychology Honors III) with an honors thesis/project focused on cognitive and behavioral neuroscience may, with approval of their thesis committees and the associate chair for undergraduate studies, substitute their honors work for one course in the concentration.

Code	Title	Credits
PSYC 373	Biopsychology Laboratory	2
PSYC 304	Principles of Learning	4
Select a minimum of 9 credits from the following:		9
PSYC 309	Sensation, Perception, and Information Processing	
PSYC 460	Independent Study in Psychology [1]	
PSYC 480	Biological Bases of Alzheimer's Disease	
PSYC 472	Current Topics in Brain and Behavior [2]	
PSYC 461	Special Topics [3]	
Total Credits		15

[1] With permission of a CBN faculty member.

[2] When approved by the undergraduate associate chair and topic is Neuronal Bases of Learning and Memory, Drugs and the Brain, or Brain in Books and Film.

[3] When approved by undergraduate associate chair and topic is Music and the Brain, Neuronal Aspects of Cognitive Development, Animal Cognition, or Psychology of Stress and Health.

Concentration in Developmental Psychology (DVLP)

The concentration in developmental psychology may be of interest to students who are planning to attend graduate school in developmental psychology or a related field, such as human development and family studies, school psychology, or clinical child psychology. Students who are considering a career in school psychology or education may also find this concentration advantageous.

Students pursuing the BA with this concentration take 12 credits. Students must earn a minimum GPA of 2.00 in all coursework applied to the concentration.

Students who successfully complete the Psychology Department Honors Program (PSYC 490 Psychology Honors I, PSYC 491 Psychology Honors II, and PSYC 492 RS: Psychology Honors III) with an honors thesis/project focused on developmental psychology may, with approval of their thesis committees and the associate chair for undergraduate studies, substitute their honors work for one course in the concentration.

Code	Title	Credits
PSYC 211	Developmental Psychology (Mason Core)	3
PSYC 313	Child Development	3
Select two courses from the following:		6
PSYC 314	Adolescent Development	
PSYC 379	Applied Cross-Cultural Psychology (Mason Core)	
PSYC 414	Behavior Disorders of Childhood	
PSYC 415	Psychological Factors in Aging	
PSYC 460	Independent Study in Psychology [1]	
PSYC 461	Special Topics [1]	
Total Credits		12

[1] Only when content is developmental, with prior written approval.

Concentration in Educational Psychology (EPSY)

Students pursuing the BA with concentration in educational psychology take 12 credits. Students must earn a minimum GPA of 2.00 in all coursework applied to the concentration.

Students who successfully complete the Psychology Department Honors Program (PSYC 490 Psychology Honors I, PSYC 491 Psychology Honors II, and PSYC 492 RS: Psychology Honors III) with an honors thesis/project focused on educational psychology may, with approval of their thesis committees and the associate chair for undergraduate studies, substitute their honors work for one course in the concentration.

Code	Title	Credits
PSYC 312	Educational Psychology	3
PSYC 320	Psychological Tests and Measurements	4
Select two courses from the following:		6
PSYC 304	Principles of Learning	
PSYC 313	Child Development	
PSYC 314	Adolescent Development	
PSYC 322	Behavior Modification	
PSYC 460	Independent Study in Psychology [1]	
PSYC 461	Special Topics [1]	
PSYC 558	Neuronal Bases of Learning and Memory	
Total Credits		13

[1] Educational content only, with department approval.

Concentration in Health Psychology (HPSY)

Students pursuing the BA with concentration in health psychology take 12 credits. Students must earn a minimum GPA of 2.00 in all course workapplied to the concentration.

Students who successfully complete the Psychology Department Honors Program (PSYC 490 Psychology Honors I PSYC 491 Psychology Honors II, and PSYC 492 RS: Psychology Honors III) with an honors thesis/project focused on health or well-being may, with approval of their thesis committees and the associate chair for undergraduate studies, substitute their honors work for one course in the concentration.

Code	Title	Credits
PSYC 417	Science of Well Being	3
Select three courses from the following:		9
PSYC 211	Developmental Psychology (Mason Core)	
PSYC 321	Clinical Psychology	
PSYC 325	Abnormal Psychology	
PSYC 408	Psychological Fitness	
PSYC 461	Special Topics [1]	
Total Credits		12

[1] Only when topic is related to health and well-being and approved by the psychology department.

Electives in the Major

Students complete the 37 required credits with electives in psychology (PSYC) with the following restrictions.

- A maximum of 6 credits of PSYC 327 Psychology in the Community and PSYC 328 Psychology in the Community Laboratory may be applied to required psychology credits.
- A maximum of 6 credits of PSYC 260 Basic Research Methods in Psychology, PSYC 350 Directed Reading and Research in Psychology, and PSYC 460 Independent Study in Psychology may be applied to required psychology credits.
- No more than 9 credits of PSYC 327 Psychology in the Community, PSYC 328 Psychology in the Community Laboratory, PSYC 260 Basic Research Methods in Psychology, PSYC 350 Directed Reading and Research in Psychology, and PSYC 460 Independent Study in Psychology can be taken without written permission of the department chair.
- No more than 6 credits of D may be applied toward this requirement.

PSYC 465 Pioneering Ideas in Psychology is strongly recommended for all students who plan to attend graduate school in psychology.

Writing-Intensive Requirement

The university requires all students to complete at least one course designated "writing intensive" in their majors at the 300 level or above. Students majoring in psychology may fulfill this requirement by successfully completing PSYC 301 Research Methods in Psychology, PSYC 304 Principles of Learning, or PSYC 309 Sensation, Perception, and Information Processing. Students who receive transfer credit for a research methods course must take PSYC 304 Principles of Learning or PSYC 309 Sensation, Perception, and Information Processing unless the transfer course has been approved as writing intensive.

Additional Electives

Any remaining credits may be completed with elective courses to bring the degree total to 120.

Upper Level Requirement

Students seeking a bachelor's degree must apply at least 45 credits of upper-level courses (numbered 300 or above) toward graduation requirements.

College Level Requirements for the BA Degree

In addition to the Mason Core program, students pursuing a BA degree must complete the coursework below. Except where expressly prohibited, a course used to fulfill a college level requirement may also be used simultaneously to satisfy other requirements (Mason Core requirements or requirements for the major).

Philosophy or Religious Studies

Code	Title	Credits
Select 3 credits from the following:		3
PHIL [1]		
RELI		

[1] Note that the following courses may not be used to fulfill this requirement:

- PHIL 323 Classical Western Political Theory
- PHIL 324 Modern Western Political Theory
- PHIL 327 Contemporary Western Political Theory
- PHIL 393 Humanities College to Career
- PHIL 460 Senior Seminar in Philosophy, Politics, and Economics

Additionally, PHIL 253 Philosophy and Literature (Mason Core), RELI 235 Religion and Literature (Mason Core), and RELI 333 Spiritual Autobiography (Mason Core) cannot be used to fulfill both the philosophy/religious studies requirement and the Mason Core literature requirement.

Social and Behavioral Sciences

Code	Title	Credits
Select 3 credits of social and behavioral sciences from the following (additional to the Mason Core social and behavioral sciences requirement) [1]		3
ANTH		
CRIM		
ECON		
GOVT		
HIST [2]		
LING		
PSYC		
SOCI		
Or choose from the following GGS courses:		
GGS 101	Major World Regions (Mason Core)	
GGS 103	Human Geography (Mason Core)	
GGS 110	Introduction to Geoinformation Technologies	
GGS 301	Political Geography (Mason Core)	
GGS 303	Geography of Resource Conservation (Mason Core)	
GGS 304	Population Geography (Mason Core)	

GGS 305	Economic Geography
GGS 306	Urban Geography
GGS 315	Geography of the United States
GGS 316	Geography of Latin America
GGS 320	Geography of Europe
GGS 325	Geography of North Africa and the Middle East
GGS 330	Geography of the Soviet Succession States
GGS 357	Urban Planning
GGS 380	Geography of Virginia

[1] The two courses used to fulfill the combined college and Mason Core requirements must be from different disciplines in the social and behavioral sciences.

[2] HIST 100 History of Western Civilization (Mason Core) and HIST 125 Introduction to World History (Mason Core) may not be used to fulfill this requirement.

Foreign Language

Code	Title	Credits
Intermediate-level proficiency in one foreign language, fulfilled by: [1]		
Completing 3 credits in a foreign language numbered 202 (or higher level courses taught in the language)		
Or achieving a satisfactory score on an approved proficiency test		
Or completing the following ASL three course sequence:		
EDSE 115	American Sign Language (ASL) I	
EDSE 116	American Sign Language (ASL) II	
EDSE 219	American Sign Language (ASL) III	

[1] Students who are already proficient in a second language may be eligible for a waiver of this requirement. Additional information on waivers can be found at the Office of Undergraduate Academic Affairs (http://chssundergrad.gmu.edu/).

Non-Western Culture

Select 3 credits of an approved course in the study of a non-Western culture (additional to the Mason Core requirement in global understanding)

Code	Title	Credits
Select 3 credits (additional to Mason Core Global Understanding requirement) [1]		
ANTH 114	Introduction to Cultural Anthropology (Mason Core)	3
ANTH 300	Civilizations	3
ANTH 302	Peoples and Cultures of Latin America (Mason Core)	3
ANTH 307	Ancient Mesoamerica (Mason Core)	3
ANTH 308	Peoples and Cultures of the Middle East (Mason Core)	3
ANTH 309	Peoples and Cultures of India (Mason Core)	3
ANTH 313	Myth, Magic, and Mind (Mason Core)	3
ANTH 314	Zombies	3
ANTH 330	Peoples and Cultures of Selected Regions: Non-Western	3
ANTH 332	Cross-Cultural Perspectives on Globalization (Mason Core)	3
ANTH 381	Medical Anthropology	3
ANTH 396	Issues in Anthropology: Social Sciences (Mason Core)	3
ARAB 360	Topics in Arabic Cultural Production	3
ARAB 420	Survey of Arabic Literature	3
ARAB 440	Topics in Arabic Religious Thought and Texts (Mason Core)	3
ARTH 203	Survey of Asian Art (Mason Core)	3
ARTH 204	Survey of Latin American Art (Mason Core)	3
ARTH 206	Survey of African Art (Mason Core)	3
ARTH 318	Art and Archaeology of Ancient Egypt	3
ARTH 319	Art and Archaeology of the Ancient Near East (Mason Core)	3
ARTH 320	Art of the Islamic World (Mason Core)	3
ARTH 382	Arts of India (Mason Core)	3
ARTH 383	Arts of Southeast Asia (Mason Core)	3
ARTH 384	Arts of China (Mason Core)	3
ARTH 385	Arts of Japan (Mason Core)	3
ARTH 386	The Silk Road (Mason Core)	3
ARTH 482	RS: Advanced Studies in Asian Art	3
CHIN 318	Introduction to Classical Chinese (Mason Core)	3
CHIN 320	Contemporary Chinese Film	3
CHIN 325	Major Chinese Writers (Mason Core)	3
CHIN 470	Special Topics in Chinese Studies	3
DANC 118	World Dance (Mason Core)	3
ECON 361	Economic Development of Latin America (Mason Core)	3
ECON 362	African Economic Development (Mason Core)	3
FREN 451	Topics in Sub-Saharan Francophone Literature and Culture	3
FREN 454	Topics in Caribbean Francophone Literature and Culture	3
GGS 101	Major World Regions (Mason Core)	3
GGS 316	Geography of Latin America	3
GGS 317	Geography of China (Mason Core)	3
GGS 325	Geography of North Africa and the Middle East	3
GGS 330	Geography of the Soviet Succession States	3
GGS 399	Select Topics in GGS	3
GOVT 328	Global Political Theory	3
GOVT 332	Government and Politics of the Middle East and North Africa	3
GOVT 333	Government and Politics of Asia	3
GOVT 338	Government and Politics of Russia	3
GOVT 340	Central Asian Politics	3
GOVT 341	Chinese Foreign Policy	3

GOVT 345	Islam and Politics	3
GOVT 433	Political Economy of East Asia	3
HIST 251	Survey of East Asian History (Mason Core)	3
HIST 252	Survey of East Asian History (Mason Core)	3
HIST 261	Survey of African History (Mason Core)	3
HIST 262	Survey of African History (Mason Core)	3
HIST 271	Survey of Latin American History (Mason Core)	3
HIST 272	Survey of Latin American History (Mason Core)	3
HIST 281	Survey of Middle Eastern Civilization (Mason Core)	3
HIST 282	Survey of Middle Eastern Civilization (Mason Core)	3
HIST 326	Stalinism	3
HIST 327	The Soviet Union and Russia Since World War II	3
HIST 328	Rise of Russia (Mason Core)	3
HIST 329	Modern Russia and the Soviet Union (Mason Core)	3
HIST 353	History of Traditional China	3
HIST 354	Modern China (Mason Core)	3
HIST 356	Modern Japan (Mason Core)	3
HIST 357	Postwar Japan (Mason Core)	3
HIST 358	Post-1949 China (Mason Core)	3
HIST 360	History of South Africa (Mason Core)	3
HIST 364	Revolution and Radical Politics in Latin America (Mason Core)	3
HIST 365	Conquest and Colonization in Latin America (Mason Core)	3
HIST 366	Comparative Slavery	3
HIST 367	History, Fiction, and Film in Latin America	3
HIST 387	Topics in Global History (Mason Core)	3-6
HIST 426	The Russian Revolution	3
HIST 460	Modern Iran (Mason Core)	3
HIST 461	Arab-Israeli Conflict	3
HIST 462	Women in Islamic Society (Mason Core)	3
HIST 465	The Middle East in the 20th Century	3
JAPA 310	Japanese Culture in a Global World (Mason Core)	3
JAPA 340	Topics in Japanese Literature (Mason Core)	3
KORE 320	Korean Popular Culture in a Global World	3
MUSI 103	Musics of the World (Mason Core)	3
RELI 211	Religions of the West (Mason Core)	3
RELI 212	Religions of Asia (Mason Core)	3
RELI 240	Death and the Afterlife in World Religions	3
RELI 272	Islam	3
RELI 313	Hinduism (Mason Core)	3
RELI 314	Chinese Philosophies and Religious Traditions	3
RELI 315	Buddhism (Mason Core)	3
RELI 317	Daoism	3
RELI 337	Mysticism: East and West	3
RELI 365	Muhammad: Life and Legacy	3
RELI 374	Islamic Thought (Mason Core)	3
RELI 375	Qur'an and Hadith	3
RELI 379	Islamic Law, Society, and Ethics	3
RELI 387	Islam, Democracy, and Human Rights	3
RELI 490	Comparative Study of Religions (Mason Core)	3
RUSS 353	Russian Civilization (Mason Core)	3
RUSS 354	Contemporary Post-Soviet Life (Mason Core)	3

[1] A course used to fulfill the Mason Core global understanding requirement may not be simultaneously used to satisfy this college-level requirement. A course used to fulfill this requirement may be used simultaneously to fulfill any other requirements (Mason Core requirements, college-level requirements, or requirements for the major). Additional information on waivers can be found at the Office of Undergraduate Academic Affairs (http://chssundergrad.gmu.edu/).

Mason Core

Some Mason Core requirements may already be fulfilled by the major requirements listed above. Students are strongly encouraged to consult their advisors to ensure they fulfill all remaining Mason Core requirements.

Code	Title	Credits
Foundation Requirements		
Written Communication (ENGH 101)		3
Oral Communication		3
Quantitative Reasoning		3
Information Technology and Computing		3
Exploration Requirements		
Arts		3
Global Understanding		3
Literature		3
Natural Science		7
Social and Behavioral Sciences		3
Western Civilization/World History		3
Integration Requirements		
Written Communications (ENGH 302)		3
Writing-Intensive [1]		3
Synthesis/Capstone [2]		3
Total Credits		40

[1] Most programs include the writing-intensive course designated for the major as part of the major requirements; this course is therefore not counted towards the total required for Mason Core.

[2] Minimum 3 credits required.

4-Year Plan

Bachelor of Arts in Psychology Sample Plan of Study

A sample four year graduation plan and degree planning worksheet can be found at https://academicaffairs.chss.gmu.edu/undergraduate-students/advising/advising-sheets (https://academicaffairs.chss.gmu.edu/undergraduate-students/advising/advising-sheets/). The plan is a recommended sequencing of courses based on prerequisites and scheduling. This may not fit every student's needs and is a guideline, not a requirement. Students should confirm major requirements with their academic advisor each semester and with their PatriotWeb Degree Evaluation to ensure they enroll in the proper courses and are on track to graduate.

Honors

Honors in the Major

Highly-qualified students may apply to graduate with honors in the major. To be eligible for admission, psychology majors must have completed at least 50 credits and have a minimum cumulative GPA of 3.25 and a minimum GPA of 3.40 in psychology courses.

If accepted, students must take a sequence of three courses, which culminates in the successful completion and presentation of an independent honors thesis.

To graduate with honors, students must earn a minimum GPA of 3.50 in their honors courses and maintain a minimum cumulative GPA of 3.25 and a minimum GPA of 3.40 in psychology courses.

Accelerated Master's

The accelerated master's program in the list below specifies the BA in psychology as a feeder degree for its program. Many other accelerated master's programs are also available for any bachelor's degree at Mason. See the full list of degrees (http://catalog.gmu.edu/programs/#filter=filter_24) with accelerated programs at George Mason.

Psychology, BA or BS/Psychology, Accelerated MA (Cognitive and Behavioral Neuroscience Concentration)

Overview

Highly qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BA/BS in Psychology and an MA in Psychology, with a concentration in cognitive and behavioral neuroscience, in an accelerated time-frame after satisfactory completion of a minimum of 138 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degrees for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6. Graduate Policies.

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies. For information specific to this accelerated master's program, see Application Requirements and Deadlines (https://psychology.gmu.edu/programs/la-ma-acel-psyc/overview/).

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits, and completion of 12 hours of psychology coursework including one of the following combinations of courses:

PSYC 300 Statistics in Psychology
PSYC 372 Biopsychology

OR

PSYC 300 Statistics in Psychology
PSYC 375 Brain and Sensory Processes and PSYC 376 Brain and Behavior

Students are strongly encouraged to have obtained previous research lab experience and to have one reference letter from the faculty member who will serve as their advisor.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MA program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- Minimum overall GPA of 3.25
- Minimum grade of B in each advanced standing course
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing courses (up to 12 credits) with a minimum grade of B in each

PSYC 531 Mammalian Neurobiology (3 credits)
PSYC 558 Neuronal Bases of Learning and Memory (3 credits)
PSYC 555 Neuroimaging (3 credits)
PSYC 559 Behavioral Chemistry (3 credits)
PSYC 592 Special Topics (3 credits) when the topic is Animal Behavior, Biological Bases of Alzheimer's Disease, Human Brain Stimulation, Cognitive Electrophysiology or Comparative Cognition. Can be repeated if the topic differs.

Reserve Graduate Credit courses (up to 6 credits) taken while an undergraduate and will only count for the graduate degree program

PSYC 531 Mammalian Neurobiology (3 credits)
PSYC 558 Neuronal Bases of Learning and Memory (3 credits)

PSYC 555 Neuroimaging (3 credits)
PSYC 559 Behavioral Chemistry (3 credits)
PSYC 592 Special Topics (3 credits) when the topic is Animal Behavior, Biological Bases of Alzheimer's Disease, Human Brain Stimulation, Cognitive Electrophysiology or Comparative Cognition. Can be repeated if the topic differs.
PSYC 611 Advanced Statistics (4 credits)

For more detailed information on coursework and timeline requirements, see AP.6.7.Bachelor's/Accelerated Master's Degree policies.

Psychology, BS

Banner Code: LA-BS-PSYC

2086 David King Hall
Fairfax Campus

Email: ugpsyc@gmu.edu
Website: psychology.gmu.edu/programs/la-bs-psyc

Students study behavior as it relates to health and well-being, child and adolescent development, education, social situations, the workplace, and the use of technology. Due to Mason's close proximity to Washington, D.C. the department is especially active in research that informs public policy and national defense. Students who graduate from this program go on to work in a wide range of fields and positions, including human resources, data analysis, user interface design, and social media and marketing.

The BS in Psychology focuses on math and science within the psychology field.

Admissions & Policies

Policies

Students pursuing this degree must complete at least 39 credits in psychology and 35 credits in supporting courses. Of the 39 credits earned through basic psychology courses, applied psychology courses and electives, 24 credits must be at the 300 and 400 level.

For policies governing all undergraduate degrees, see AP.5 Undergraduate Policies.

Requirements

Degree Requirements

Total credits: minimum 120

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Students may choose to complete a concentration in clinical psychology, cognitive and behavioral neuroscience, developmental psychology, educational psychology, forensic psychology, health psychology, human factors and applied cognition, or work and organizational psychology. Courses required for a concentration may simultaneously satisfy other degree requirements. The concentrations in forensic psychology, human factors and applied cognition, and work and organizational psychology meet the applied psychology requirement.

Students who have limited technology skills are encouraged to take IT 104 Introduction to Computing (Mason Core).

Core Courses in the Major

Basic Courses in Psychology

Students must have a minimum GPA of 2.00 in these courses with a minimum grade of 1.67 (C-) in each one. Courses taken to fulfill these requirements may simultaneously satisfy a concentration.

Code	Title	Credits
Introductory Course		
PSYC 100	Basic Concepts in Psychology (Mason Core)	3
Foundational Courses		
PSYC 231	Social Psychology (Mason Core)	3
PSYC 317	Cognitive Psychology	3
Select one option from the following:		3-6
Option 1:		
PSYC 211	Developmental Psychology (Mason Core)	
Option 2:		
Select two from the following:		
PSYC 313	Child Development	
PSYC 314	Adolescent Development	
PSYC 415	Psychological Factors in Aging	
Research Methods Courses [1]		
PSYC 300	Statistics in Psychology	4
PSYC 301	Research Methods in Psychology	4
Psychology Lab Course		
Select one course from the following: [2]		1-4
PSYC 304	Principles of Learning	
PSYC 309	Sensation, Perception, and Information Processing	
PSYC 320	Psychological Tests and Measurements	
PSYC 373	Biopsychology Laboratory	
Biopsychology		
Select one from the following: [3]		3-6
PSYC 372	Biopsychology	
PSYC 375 & PSYC 376	Brain and Sensory Processes and Brain and Behavior	
Professional Development		
Select one course from the following:		3
PSYC 399	Psychology: College to Career	
PSYC 327	Psychology in the Community	
PSYC 427	Community Engagement for Social Change (Mason Core) [4]	
PSYC 430	Clinical Practicum in Psychology [4]	
PSYC 491	Psychology Honors II	
PSYC 492	RS: Psychology Honors III	
PSYC 461	Special Topics (with Undergraduate Associate Chair approval)	
Total Credits		27-36

1 Students are strongly encouraged to complete PSYC 300 Statistics in Psychology and PSYC 301 Research Methods in Psychology by their junior year. PSYC 300 Statistics in Psychology is a prerequisite to several courses, and a background in research methods facilitates understanding empirical research discussed in all psychology courses.

2 The course chosen to fulfill this requirement cannot be the same course used to fulfill the technical writing requirement below. PSYC 320 may count for both the Psychology Lab and the Applied Psychology requirements.

3 Students who have a strong interest in biopsychology or cognitive neuroscience are encouraged to take PSYC 375 Brain and Sensory Processes/PSYC 376 Brain and Behavior rather than PSYC 372 Biopsychology. Only students who receive transfer credit for PSYC 372 Biopsychology may use it in place of PSYC 375 Brain and Sensory Processes as the prerequisite for PSYC 376 Brain and Behavior. Students taking PSYC 372 Biopsychology at Mason may not use it in place of PSYC 375 Brain and Sensory Processes.

4 PSYC 427 Community Engagement for Social Change (Mason Core) and PSYC 430 Clinical Practicum in Psychology may count for both the Professional Development and the Applied Psychology requirements.

Applied Psychology Courses or Optional Concentration

Alternatively, students may earn a concentration in forensic psychology, human factors and applied cognition, or work and organizational psychology to satisfy this requirement.

Applied Psychology

Code	Title	Credits
Students pursuing the BA without concentration complete two courses from the following with a minimum grade of C- in each:		6-7
PSYC 320	Psychological Tests and Measurements [1]	
PSYC 325	Abnormal Psychology	
PSYC 333	Industrial and Organizational Psychology	
PSYC 340	Human Factors Psychology	
PSYC 379	Applied Cross-Cultural Psychology (Mason Core)	
PSYC 381	Mental Illness and Criminal Justice	
PSYC 427	Community Engagement for Social Change (Mason Core) [2]	
PSYC 430	Clinical Practicum in Psychology [2]	
Total Credits		6-7

1 PSYC 320 Psychological Tests and Measurements may count for both the Applied Psychology and the Psychology Lab requirements or for both the Applied Psychology and the Technical Writing requirements.

2 PSYC 427 Community Engagement for Social Change (Mason Core) and PSYC 430 Clinical Practicum in Psychology may count for both the Applied Psychology and the Professional Development requirements.

Concentrations Meeting Applied Psychology Requirement

Concentration in Forensic Psychology (FPSY)

Students pursuing the BS with concentration in forensic psychology take 15 credits. Students must earn a minimum GPA of 2.00 in all coursework applied to the concentration.

Students who successfully complete the Psychology Department Honors Program (PSYC 490 Psychology Honors I, PSYC 491 Psychology Honors II, and PSYC 492 RS: Psychology Honors III) with an honors thesis/project focused on forensic psychology may, with approval of their thesis committees and the associate chair for undergraduate studies, substitute their honors work for one course in the concentration.

Code	Title	Credits
PSYC 100	Basic Concepts in Psychology (Mason Core)	3
PSYC 380	Introduction to Forensic Psychology	3
PSYC 381	Mental Illness and Criminal Justice	3
Select two courses from the following:		6
PSYC 382	Psychology of Crime Victims	
PSYC 440	Forensic Psychology: Science and Pseudoscience	
PSYC 441	Criminal Behavior: Psychological and Neurological Aspects	
CRIM 100	Introduction to Criminal Justice (Mason Core)	
PSYC 461	Special Topics [1]	
PSYC 462	Selected Topics in Forensic Psychology [1]	
Total Credits		15

1 Requires Undergraduate Associate Chair approval.

Concentration in Human Factors and Applied Cognition (HF)

Students pursuing the BS with concentration in human factors and applied cognition take 12-13 credits. Students must earn a minimum GPA of 2.00 in all coursework applied to the concentration.

Students who successfully complete the Psychology Department Honors Program (PSYC 490 Psychology Honors I, PSYC 491 Psychology Honors II, and PSYC 492 RS: Psychology Honors III) with an honors thesis/project focused on human factors or applied cognition may, with approval of their thesis committees and the associate chair for undergraduate studies, substitute their honors work for one course in the concentration.

Code	Title	Credits
PSYC 317	Cognitive Psychology	3
PSYC 340	Human Factors Psychology	3
Select two courses from the following:		6-7
PSYC 309	Sensation, Perception, and Information Processing	
PSYC 333	Industrial and Organizational Psychology	
PSYC 372	Biopsychology	
PSYC 460	Independent Study in Psychology [1]	
PSYC 461	Special Topics [3]	
PSYC 530	Cognitive Engineering: Cognitive Science Applied to Human Factors [2]	
Total Credits		12-13

1 Must be taken with a human factors and applied cognition faculty member.

2 Note course prerequisite of PSYC 317 Cognitive Psychology.

3 Only with Undergraduate Associate Chair approval.

Concentration in Work and Organizational Psychology (WKOP)

Students pursuing the BS with concentration take 12-13 credits. Students must earn a minimum GPA of 2.00 in all coursework applied to the concentration.

Students who successfully complete the Psychology Department Honors Program (PSYC 490 Psychology Honors I, PSYC 491 Psychology Honors II, and PSYC 492 RS: Psychology Honors III) with an honors thesis/project focused on I/O psychology may, with approval of their thesis committees and the associate chair for undergraduate studies, substitute the honors work for one course in the concentration.

Code	Title	Credits
Applied Psychology Course		
PSYC 333	Industrial and Organizational Psychology	3
Select three courses from the following:		9-10
PSYC 320	Psychological Tests and Measurements	
PSYC 335	Psychology of Creativity and Innovation	
PSYC 435	Personnel Training and Development: A Psychological Perspective	
PSYC 467	The Psychology of Working in Groups and Teams	
PSYC 461	Special Topics [1]	
MBUS 301	Managing People and Organizations in a Global Economy [2]	
or MGMT 303	Principles of Management	
Total Credits		12-13

1. Only when topic is Occupational Health Psychology or Work and Family with prior written approval.
2. Students may take MBUS 301 or MGMT 303 for credit, but not both.

Other Concentrations Available to Majors

Available Concentrations Available to Majors

- Concentration in Clinical Psychology (CLPY)
- Cognitive and Behavioral Neuroscience (CBNR)
- Concentration in Developmental Psychology (DVLP)
- Concentration in Educational Psychology (EPSY)
- Concentration in Health Psychology (HPSY)

Students may choose to complete a concentration in clinical psychology, cognitive and behavioral neuroscience, developmental psychology, educational psychology, or health psychology.

Concentration in Clinical Psychology (CLPY)

Students pursuing the BS with this concentration take 12 credits. Students must earn a minimum GPA of 2.00 in all coursework applied to the concentration.

Students who successfully complete the Psychology Department Honors Program (PSYC 490 Psychology Honors I, PSYC 491 Psychology Honors II, and PSYC 492 RS: Psychology Honors III) with an honors thesis/project focused on clinical psychology may, with approval of their thesis committees and the associate chair for undergraduate studies, substitute their honors work for one course in the concentration.

Code	Title	Credits
PSYC 321	Clinical Psychology	3
PSYC 325	Abnormal Psychology	3
Select at least two psychology electives from the following		6
PSYC 211	Developmental Psychology (Mason Core)	
or PSYC 313	Child Development	
or PSYC 314	Adolescent Development	
PSYC 231	Social Psychology (Mason Core)	
PSYC 322	Behavior Modification	
PSYC 324	Personality Theory	
PSYC 326	Therapeutic Communication Skills	
PSYC 414	Behavior Disorders of Childhood	
PSYC 423	Group Psychotherapy Techniques	
PSYC 430	Clinical Practicum in Psychology	
PSYC 460	Independent Study in Psychology	
PSYC 461	Special Topics [1]	
PSYC 465	Pioneering Ideas in Psychology	

1. Only when topic is related to clinical psychology approved by the psychology department.

Concentration in Cognitive and Behavioral Neuroscience (CBNR)

This concentration focuses on laboratory experience in cognitive and behavioral neuroscience and more in-depth courses of interest that will broaden the students' knowledge in understanding brain and behavior.

Students pursuing the BS with this concentration take 15 credits. Students must earn a minimum GPA of 3.00 in all coursework applied to the concentration.

Students who successfully complete the Psychology Department Honors Program (PSYC 490 Psychology Honors I, PSYC 491 Psychology Honors II, and PSYC 492 RS: Psychology Honors III) with an honors thesis/project focused on cognitive and behavioral neuroscience may, with approval of their thesis committees and the associate chair for undergraduate studies, substitute their honors work for one course in the concentration.

Code	Title	Credits
Required courses		
PSYC 373	Biopsychology Laboratory	2
PSYC 304	Principles of Learning	4
Select a minimum of 9 credits from the following:		9
PSYC 309	Sensation, Perception, and Information Processing	
PSYC 460	Independent Study in Psychology [1]	
PSYC 480	Biological Bases of Alzheimer's Disease	
PSYC 472	Current Topics in Brain and Behavior [2]	
PSYC 461	Special Topics [3]	
Total Credits		15

1. With permission of a CBN faculty member.
2. With approval of the undergraduate associate chair when the topic is Neuronal Bases of Learning and Memory, Drugs and the Brain, or Brain in Books and Film.
3. With approval of the undergraduate associate chair when the topic is Music and the Brain, Neuronal Aspects of Cognitive Development, Animal Cognition, or Psychology of Stress and Health.

Concentration in Developmental Psychology (DVLP)

The concentration in developmental psychology may be of interest to students who are planning to attend graduate school in developmental

psychology or a related field, such as human development and family studies, school psychology, or clinical child psychology. Students who are considering a career in school psychology or education may also find this concentration advantageous.

Students pursuing the BS with this concentration take 12 credits. Students must earn a minimum GPA of 2.00 in all coursework applied to the concentration.

Students who successfully complete the Psychology Department Honors Program (PSYC 490 Psychology Honors I, PSYC 491 Psychology Honors II, and PSYC 492 RS: Psychology Honors III) with an honors thesis/project focused on developmental psychology may, with approval of their thesis committees and the associate chair for undergraduate studies, substitute their honors work for one course in the concentration.

Code	Title	Credits
PSYC 211	Developmental Psychology (Mason Core)	3
PSYC 313	Child Development	3
Select two courses from the following:		6
PSYC 314	Adolescent Development	
PSYC 379	Applied Cross-Cultural Psychology (Mason Core)	
PSYC 414	Behavior Disorders of Childhood	
PSYC 415	Psychological Factors in Aging	
PSYC 460	Independent Study in Psychology [1]	
PSYC 461	Special Topics [1]	
Total Credits		12

[1] Only when content is developmental, with prior written approval.

Concentration in Educational Psychology (EPSY)

Students pursuing the BS with concentration in educational psychology take 13 credits. Students must earn a minimum GPA of 2.00 in all coursework applied to the concentration.

Students who successfully complete the Psychology Department Honors Program (PSYC 490 Psychology Honors I, PSYC 491 Psychology Honors II, and PSYC 492 RS: Psychology Honors III) with an honors thesis/project focused on educational psychology may, with approval of their thesis committees and the associate chair for undergraduate studies, substitute their honors work for one course in the concentration.

Code	Title	Credits
PSYC 312	Educational Psychology	3
PSYC 320	Psychological Tests and Measurements	4
Select two from the following:		6
PSYC 304	Principles of Learning	
PSYC 313	Child Development	
PSYC 314	Adolescent Development	
PSYC 322	Behavior Modification	
PSYC 460	Independent Study in Psychology [1]	
PSYC 461	Special Topics [1]	
PSYC 558	Neuronal Bases of Learning and Memory	
Total Credits		13

[1] Educational content only, with department approval.

Concentration in Health Psychology (HPSY)

Students pursuing the BS with concentration in health psychology take 12 credits. Students must earn a minimum GPA of 2.00 in all coursework applied to the concentration.

Students who successfully complete the Psychology Department Honors Program (PSYC 490 Psychology Honors I, PSYC 491 Psychology Honors II, and PSYC 492 RS: Psychology Honors III) with an honors thesis/project focused on health or well-being may, with approval of their thesis committees and the associate chair for undergraduate studies, substitute their honors work for one course in the concentration.

Code	Title	Credits
PSYC 417	Science of Well Being	3
Select three from the following:		9
PSYC 211	Developmental Psychology (Mason Core)	
PSYC 321	Clinical Psychology	
PSYC 325	Abnormal Psychology	
PSYC 408	Psychological Fitness	
PSYC 461	Special Topics [1]	
Total Credits		12

[1] Only when topic is related to health and well-being and approved by the psychology department.

Electives in the Major

Students complete the 39 required credits with electives in psychology (PSYC) with the following restrictions.

- A maximum of 6 credits of PSYC 327 Psychology in the Community and PSYC 328 Psychology in the Community Laboratory may be applied to required psychology credits.
- A maximum of 6 credits of PSYC 260 Basic Research Methods in Psychology, PSYC 350 Directed Reading and Research in Psychology, and PSYC 460 Independent Study in Psychology may be applied to required psychology credits.
- No more than 9 credits of PSYC 327 Psychology in the Community, PSYC 328 Psychology in the Community Laboratory, PSYC 260 Basic Research Methods in Psychology, PSYC 350 Directed Reading and Research in Psychology, and PSYC 460 Independent Study in Psychology can be taken without written permission of the department chair.
- No more than 6 credits of D may be applied toward this requirement.

PSYC 465 Pioneering Ideas in Psychology is strongly recommended for all students who plan to attend graduate school in psychology.

If an approved psychology course is used to meet the technical writing requirement, it may also be applied as a psychology elective.

Supporting Courses

These courses broaden the requirements to include humanities and strengthen the science, quantitative and writing components of the degree. Students who successfully complete the Honors College curriculum are required to complete only the quantitative reasoning and natural science support requirements described below. All other supporting requirements are considered met by successful completion of the Honors College curriculum.

Code	Title	Credits
Technical Writing		
Select one of the following: [1]		3-4
ENGH 388	Professional and Technical Writing	
PSYC 304	Principles of Learning	
PSYC 309	Sensation, Perception, and Information Processing	
PSYC 320	Psychological Tests and Measurements	
Successful completion of the psychology honors program: [2]		
Natural Science		
Choose one of the following sequences:		8
BIOL 103 & BIOL 213	Introductory Biology II-Survey of Cell and Molecular Biology (Mason Core) and Cell Structure and Function (Mason Core)	
BIOL 103 & BIOL 107 & BIOL 106	Introductory Biology II-Survey of Cell and Molecular Biology (Mason Core) and Intro Biology II Lecture (Mason Core) and Introductory Biology II Laboratory (Mason Core)	
Two elective courses in the natural sciences. [3]		6-8
Quantitative Reasoning		
Select two courses from the following:		6-8
CDS 292	Introduction to Social Network Analysis (Mason Core)	
MATH 106	Quantitative Reasoning (Mason Core)	
MATH 108	Introductory Calculus with Business Applications (Mason Core)	
MATH 110	Introductory Probability (Mason Core)	
MATH 111	Linear Mathematical Modeling (Mason Core)	
MATH 113	Analytic Geometry and Calculus I (Mason Core)	
MATH 114	Analytic Geometry and Calculus II	
MATH 115	Analytic Geometry and Calculus I (Honors) (Mason Core)	
MATH 123	Calculus with Algebra/Trigonometry, Part A	
MATH 124	Calculus with Algebra/Trigonometry, Part B (Mason Core)	
STAT 250	Introductory Statistics I (Mason Core)	
STAT 350	Introductory Statistics II	
Humanities		
Select one course from the following:		3
PHIL		
RELI		
ARTH		
AVT		
MUSI		
DANC		
THR		
Social and Behavioral Science		
Select two courses from the following: [4]		6
ANTH		
CRIM		
ECON		
GOVT		
HIST		
SOCI		
Any non-psychology course that has been approved to meet the Mason Core requirement in social and behavioral science		
One Additional Course in Humanities or Social and Behavioral Science [5]		**3**

1. The psychology classes in this list may also be applied as a psychology elective. PSYC 320 may count for both the Technical Writing and the Applied Psychology requirements.
2. PSYC 490 Psychology Honors I, PSYC 491 Psychology Honors II, and PSYC 492 RS: Psychology Honors III
3. Students fill the additional science requirement with any two courses in the natural sciences including any EVPP, NEUR, ASTR, BIOL, CHEM, GEOL, and PHYS courses, and any course from the list of approved Mason Core science courses.
4. Courses in psychology may not be used to fulfill this requirement.
5. Select an additional course from the lists under the requirements in humanities and social sciences above (and with the same restrictions).

Writing-Intensive Requirement

The university requires all students to complete at least one course designated "writing intensive" in their majors at the 300 level or above. Students majoring in psychology may fulfill this requirement by successfully completing PSYC 301 Research Methods in Psychology, PSYC 304 Principles of Learning, or PSYC 309 Sensation, Perception, and Information Processing. Students who receive transfer credit for a research methods course must take PSYC 304 Principles of Learning, or PSYC 309 Sensation, Perception, and Information Processing unless the transfer course has been approved as writing intensive.

Upper Level Requirement

Students seeking a bachelor's degree must apply at least 45 credits of upper-level courses (numbered 300 or above) toward graduation requirements.

Additional Electives

Any remaining credits may be completed with elective courses to bring the degree total to 120.

College Level Requirements for the BA Degree

In addition to the Mason Core program, students pursuing a BA degree must complete the coursework below. Except where expressly prohibited, a course used to fulfill a college level requirement may also be used simultaneously to satisfy other requirements (Mason Core requirements or requirements for the major).

Philosophy or Religious Studies

Code	Title	Credits
Select 3 credits from the following:		3
PHIL [1]		
RELI		

[1] Note that the following courses may not be used to fulfill this requirement:

- PHIL 323 Classical Western Political Theory
- PHIL 324 Modern Western Political Theory
- PHIL 327 Contemporary Western Political Theory
- PHIL 393 Humanities College to Career
- PHIL 460 Senior Seminar in Philosophy, Politics, and Economics

Additionally, PHIL 253 Philosophy and Literature (Mason Core), RELI 235 Religion and Literature (Mason Core), and RELI 333 Spiritual Autobiography (Mason Core) cannot be used to fulfill both the philosophy/religious studies requirement and the Mason Core literature requirement.

Social and Behavioral Sciences

Code	Title	Credits
Select 3 credits of social and behavioral sciences from the following (additional to the Mason Core social and behavioral sciences requirement) [1]		3
ANTH		
CRIM		
ECON		
GOVT		
HIST [2]		
LING		
PSYC		
SOCI		
Or choose from the following GGS courses:		
GGS 101	Major World Regions (Mason Core)	
GGS 103	Human Geography (Mason Core)	
GGS 110	Introduction to Geoinformation Technologies	
GGS 301	Political Geography (Mason Core)	
GGS 303	Geography of Resource Conservation (Mason Core)	
GGS 304	Population Geography (Mason Core)	
GGS 305	Economic Geography	
GGS 306	Urban Geography	
GGS 315	Geography of the United States	
GGS 316	Geography of Latin America	
GGS 320	Geography of Europe	
GGS 325	Geography of North Africa and the Middle East	
GGS 330	Geography of the Soviet Succession States	
GGS 357	Urban Planning	
GGS 380	Geography of Virginia	

[1] The two courses used to fulfill the combined college and Mason Core requirements must be from different disciplines in the social and behavioral sciences.

[2] HIST 100 History of Western Civilization (Mason Core) and HIST 125 Introduction to World History (Mason Core) may not be used to fulfill this requirement.

Foreign Language

Code	Title	Credits
Intermediate-level proficiency in one foreign language, fulfilled by: [1]		
Completing 3 credits in a foreign language numbered 202 (or higher level courses taught in the language)		
Or achieving a satisfactory score on an approved proficiency test		
Or completing the following ASL three course sequence:		
EDSE 115	American Sign Language (ASL) I	
EDSE 116	American Sign Language (ASL) II	
EDSE 219	American Sign Language (ASL) III	

[1] Students who are already proficient in a second language may be eligible for a waiver of this requirement. Additional information on waivers can be found at the Office of Undergraduate Academic Affairs (http://chssundergrad.gmu.edu/).

Non-Western Culture

Select 3 credits of an approved course in the study of a non-Western culture (additional to the Mason Core requirement in global understanding)

Code	Title	Credits
Select 3 credits (additional to Mason Core Global Understanding requirement) [1]		
ANTH 114	Introduction to Cultural Anthropology (Mason Core)	3
ANTH 300	Civilizations	3
ANTH 302	Peoples and Cultures of Latin America (Mason Core)	3
ANTH 307	Ancient Mesoamerica (Mason Core)	3
ANTH 308	Peoples and Cultures of the Middle East (Mason Core)	3
ANTH 309	Peoples and Cultures of India (Mason Core)	3
ANTH 313	Myth, Magic, and Mind (Mason Core)	3
ANTH 314	Zombies	3
ANTH 330	Peoples and Cultures of Selected Regions: Non-Western	3
ANTH 332	Cross-Cultural Perspectives on Globalization (Mason Core)	3
ANTH 381	Medical Anthropology	3
ANTH 396	Issues in Anthropology: Social Sciences (Mason Core)	3
ARAB 360	Topics in Arabic Cultural Production	3
ARAB 420	Survey of Arabic Literature	3
ARAB 440	Topics in Arabic Religious Thought and Texts (Mason Core)	3
ARTH 203	Survey of Asian Art (Mason Core)	3
ARTH 204	Survey of Latin American Art (Mason Core)	3
ARTH 206	Survey of African Art (Mason Core)	3
ARTH 318	Art and Archaeology of Ancient Egypt	3
ARTH 319	Art and Archaeology of the Ancient Near East (Mason Core)	3
ARTH 320	Art of the Islamic World (Mason Core)	3

ARTH 382	Arts of India (Mason Core)	3
ARTH 383	Arts of Southeast Asia (Mason Core)	3
ARTH 384	Arts of China (Mason Core)	3
ARTH 385	Arts of Japan (Mason Core)	3
ARTH 386	The Silk Road (Mason Core)	3
ARTH 482	RS: Advanced Studies in Asian Art	3
CHIN 318	Introduction to Classical Chinese (Mason Core)	3
CHIN 320	Contemporary Chinese Film	3
CHIN 325	Major Chinese Writers (Mason Core)	3
CHIN 470	Special Topics in Chinese Studies	3
DANC 118	World Dance (Mason Core)	3
ECON 361	Economic Development of Latin America (Mason Core)	3
ECON 362	African Economic Development (Mason Core)	3
FREN 451	Topics in Sub-Saharan Francophone Literature and Culture	3
FREN 454	Topics in Caribbean Francophone Literature and Culture	3
GGS 101	Major World Regions (Mason Core)	3
GGS 316	Geography of Latin America	3
GGS 317	Geography of China (Mason Core)	3
GGS 325	Geography of North Africa and the Middle East	3
GGS 330	Geography of the Soviet Succession States	3
GGS 399	Select Topics in GGS	3
GOVT 328	Global Political Theory	3
GOVT 332	Government and Politics of the Middle East and North Africa	3
GOVT 333	Government and Politics of Asia	3
GOVT 338	Government and Politics of Russia	3
GOVT 340	Central Asian Politics	3
GOVT 341	Chinese Foreign Policy	3
GOVT 345	Islam and Politics	3
GOVT 433	Political Economy of East Asia	3
HIST 251	Survey of East Asian History (Mason Core)	3
HIST 252	Survey of East Asian History (Mason Core)	3
HIST 261	Survey of African History (Mason Core)	3
HIST 262	Survey of African History (Mason Core)	3
HIST 271	Survey of Latin American History (Mason Core)	3
HIST 272	Survey of Latin American History (Mason Core)	3
HIST 281	Survey of Middle Eastern Civilization (Mason Core)	3
HIST 282	Survey of Middle Eastern Civilization (Mason Core)	3
HIST 326	Stalinism	3
HIST 327	The Soviet Union and Russia Since World War II	3
HIST 328	Rise of Russia (Mason Core)	3
HIST 329	Modern Russia and the Soviet Union (Mason Core)	3
HIST 353	History of Traditional China	3
HIST 354	Modern China (Mason Core)	3
HIST 356	Modern Japan (Mason Core)	3
HIST 357	Postwar Japan (Mason Core)	3
HIST 358	Post-1949 China (Mason Core)	3
HIST 360	History of South Africa (Mason Core)	3
HIST 364	Revolution and Radical Politics in Latin America (Mason Core)	3
HIST 365	Conquest and Colonization in Latin America (Mason Core)	3
HIST 366	Comparative Slavery	3
HIST 367	History, Fiction, and Film in Latin America	3
HIST 387	Topics in Global History (Mason Core)	3-6
HIST 426	The Russian Revolution	3
HIST 460	Modern Iran (Mason Core)	3
HIST 461	Arab-Israeli Conflict	3
HIST 462	Women in Islamic Society (Mason Core)	3
HIST 465	The Middle East in the 20th Century	3
JAPA 310	Japanese Culture in a Global World (Mason Core)	3
JAPA 340	Topics in Japanese Literature (Mason Core)	3
KORE 320	Korean Popular Culture in a Global World	3
MUSI 103	Musics of the World (Mason Core)	3
RELI 211	Religions of the West (Mason Core)	3
RELI 212	Religions of Asia (Mason Core)	3
RELI 240	Death and the Afterlife in World Religions	3
RELI 272	Islam	3
RELI 313	Hinduism (Mason Core)	3
RELI 314	Chinese Philosophies and Religious Traditions	3
RELI 315	Buddhism (Mason Core)	3
RELI 317	Daoism	3
RELI 337	Mysticism: East and West	3
RELI 365	Muhammad: Life and Legacy	3
RELI 374	Islamic Thought (Mason Core)	3
RELI 375	Qur'an and Hadith	3
RELI 379	Islamic Law, Society, and Ethics	3
RELI 387	Islam, Democracy, and Human Rights	3
RELI 490	Comparative Study of Religions (Mason Core)	3
RUSS 353	Russian Civilization (Mason Core)	3
RUSS 354	Contemporary Post-Soviet Life (Mason Core)	3

[1] A course used to fulfill the Mason Core global understanding requirement may not be simultaneously used to satisfy this college-level requirement. A course used to fulfill this requirement may be used simultaneously to fulfill any other requirements (Mason Core requirements, college-level requirements, or requirements for the major). Additional information on waivers can be found at the Office of Undergraduate Academic Affairs (http://chssundergrad.gmu.edu/).

Mason Core

Some Mason Core requirements may already be fulfilled by the major requirements listed above. Students are strongly encouraged to consult their advisors to ensure they fulfill all remaining Mason Core requirements.

Code	Title	Credits
Foundation Requirements		
Written Communication (ENGH 101)		3
Oral Communication		3
Quantitative Reasoning		3
Information Technology and Computing		3
Exploration Requirements		
Arts		3
Global Understanding		3
Literature		3
Natural Science		7
Social and Behavioral Sciences		3
Western Civilization/World History		3
Integration Requirements		
Written Communications (ENGH 302)		3
Writing-Intensive [1]		3
Synthesis/Capstone [2]		3
Total Credits		40

[1] Most programs include the writing-intensive course designated for the major as part of the major requirements; this course is therefore not counted towards the total required for Mason Core.

[2] Minimum 3 credits required.

4-Year Plan

Bachelor of Science in Psychology Sample Plan of Study

A sample four year graduation plan and degree planning worksheet can be found at https://academicaffairs.chss.gmu.edu/undergraduate-students/advising/advising-sheets (https://academicaffairs.chss.gmu.edu/undergraduate-students/advising/advising-sheets/). The plan is a recommended sequencing of courses based on prerequisites and scheduling. This may not fit every student's needs and is a guideline, not a requirement. Students should confirm major requirements with their academic advisor each semester and with their PatriotWeb Degree Evaluation to ensure they enroll in the proper courses and are on track to graduate.

Honors

Honors in the Major

Highly-qualified students may apply to graduate with honors in the major. To be eligible for admission, psychology majors must have completed at least 50 credits and have a minimum cumulative GPA of 3.25 and a minimum GPA of 3.40 in psychology courses.

If accepted, students must take a sequence of three courses, which culminates in the successful completion and presentation of an independent honors thesis.

Code	Title	Credits
PSYC 490	Psychology Honors I	3
PSYC 491	Psychology Honors II	3
PSYC 492	RS: Psychology Honors III	3
Total Credits		9

To graduate with honors, students must earn a minimum GPA of 3.50 in their honors courses and maintain a minimum cumulative GPA of 3.25 and a minimum GPA of 3.40 in psychology courses.

Accelerated Master's

The accelerated master's program listed below specifies the BS in psychology as a feeder degree for its program. Many other accelerated master's programs are available for any bachelor's degree at Mason. See the full list of degrees (http://catalog.gmu.edu/programs/#filter=filter_24) with accelerated programs at George Mason.

Psychology, BA or BS/Psychology, Accelerated MA (Cognitive and Behavioral Neuroscience Concentration)

Overview

Highly qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BA/BS in Psychology and an MA in Psychology, with a concentration in cognitive and behavioral neuroscience, in an accelerated time-frame after satisfactory completion of a minimum of 138 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degrees for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6. Graduate Policies.

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies. For information specific to this accelerated master's program, see Application Requirements and Deadlines (https://psychology.gmu.edu/programs/la-ma-acel-psyc/overview/).

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits, and completion of 12 hours of

psychology coursework including one of the following combinations of courses:

PSYC 300 Statistics in Psychology
PSYC 372 Biopsychology

OR

PSYC 300 Statistics in Psychology
PSYC 375 Brain and Sensory Processes and PSYC 376 Brain and Behavior

Students are strongly encouraged to have obtained previous research lab experience and to have one reference letter from the faculty member who will serve as their advisor.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MA program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- Minimum overall GPA of 3.25
- Minimum grade of B in each advanced standing course
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing courses (up to 12 credits) with a minimum grade of B in each

PSYC 531 Mammalian Neurobiology (3 credits)
PSYC 558 Neuronal Bases of Learning and Memory (3 credits)
PSYC 555 Neuroimaging (3 credits)
PSYC 559 Behavioral Chemistry (3 credits)
PSYC 592 Special Topics (3 credits) when the topic is Animal Behavior, Biological Bases of Alzheimer's Disease, Human Brain Stimulation, Cognitive Electrophysiology or Comparative Cognition. Can be repeated if the topic differs.

Reserve Graduate Credit courses (up to 6 credits) taken while an undergraduate and will only count for the graduate degree program

PSYC 531 Mammalian Neurobiology (3 credits)
PSYC 558 Neuronal Bases of Learning and Memory (3 credits)
PSYC 555 Neuroimaging (3 credits)
PSYC 559 Behavioral Chemistry (3 credits)
PSYC 592 Special Topics (3 credits) when the topic is Animal Behavior, Biological Bases of Alzheimer's Disease, Human Brain Stimulation, Cognitive Electrophysiology or Comparative Cognition. Can be repeated if the topic differs.
PSYC 611 Advanced Statistics (4 credits)

For more detailed information on coursework and timeline requirements, see AP.6.7.Bachelor's/Accelerated Master's Degree policies.

Psychology, MA (CHSS)

Banner Code: LA-MA-PSYC

Academic Advising

2086 David King Hall
Fairfax Campus

Email: psycgrad@gmu.edu
Website: psychology.gmu.edu/programs/la-ma-psyc

The MA in psychology is distinguished by its emphasis on basic research and the application of research to solve practical problems in families, industry, government, and health care settings. Because of the program's proximity to Washington D.C., students have access to many employment and continuing education opportunities in research, academia, and consulting within government, public, and private settings.

The psychology MA offers the following concentrations:

- applied developmental psychology
- clinical psychology
- cognitive and behavioral neuroscience
- human factors/applied cognition
- industrial/organizational psychology

While the department does not offer a master's degree in clinical or counseling psychology, a master's degree in psychology with a concentration in clinical psychology is available for students who have been admitted to the doctoral program concentration in clinical psychology.

Admissions & Policies

Admissions

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions. For information specific to the MA in psychology, see Application Requirements and Deadlines (http://psychology.gmu.edu/programs/LA-MA-PSYC/application/).

Provisional Admission

Students who are admitted provisionally are required to take 12 credits in psychology and earn a minimum GPA of 3.25 in those courses to qualify for removal of the provisional qualifier. Programs may add other conditions to provisional admission. Individualized study courses cannot be used toward the 12 credits.

Policies

For policies governing all graduate degrees, see Graduate Policies.

In addition to satisfying the requirements for all master's degrees, students pursuing a master's degree in psychology must successfully complete 30-32 credits of required coursework. They complete this coursework in one of five concentrations.

A maximum of 6 credits of thesis proposal and thesis research (PSYC 798 Thesis Proposal, PSYC 799 Master's Thesis) may be applied to the master's degree. A maximum of 9 credits of thesis courses (PSYC 798 Thesis Proposal, PSYC 799 Master's Thesis), Directed Reading and

Research (PSYC 597 Directed Reading and Research), and Practicum (PSYC 792 Psychology Practicum) may be applied to the degree.

Requirements

Degree Requirements

Total credits: 30-32

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Choose one concentration and complete the requirements therein.

For policies governing all graduate degrees, see AP.6 Graduate Policies.

Concentration in Applied Developmental Psychology (APD)

The concentration in applied developmental psychology focuses on child development. It provides basic knowledge about normal development, skills for assessing developmental level, and techniques for planning and evaluating programs that foster optimal development. Graduates are prepared for employment at agencies concerned with educational and health programs for children, enrichment programs for infants and preschoolers, and education programs for parents.

Core Courses

Code	Title	Credits
PSYC 704	Life-Span Development	3
Select one course from any of the following areas:		3
Social Psychology:		
PSYC 668	Personality: Theoretical and Empirical Approaches	
PSYC 703	Social Bases of Behavior	
PSYC 707	Emotional Bases of Behavior	
Biological Psychology:		
PSYC 702	Biological Bases of Human Behavior	
Cognitive Psychology:		
PSYC 701	Cognitive Bases of Behavior	
PSYC 592	Special Topics (with approval)	
PSYC 892	Special Topics in Psychology (with approval)	
Total Credits		6

Quantitative Methods

Code	Title	Credits
PSYC 611	Advanced Statistics	4
PSYC 754	Multiple Regression	3
Total Credits		7

Specialized Content

Code	Title	Credits
One to two courses selected from the following:		3-6
PSYC 566	Cognitive and Perceptual Development	
PSYC 615	Language Development	
PSYC 648	Developmental Psychopathology	
PSYC 669	Social and Emotional Development	
PSYC 780	Applied Developmental Psychology	
PSYC 592	Special Topics [1]	
Other developmental courses chosen with advisor approval		
Select a maximum of one course from:		0-3
PSYC 614	The Psychology of Aging	
PSYC 619	Applied Behavior Analysis: Principles, Procedures, and Philosophy	
Total Credits		6

[1] When content is developmental, with approval of advisor.

Thesis Research or Practicum Experience

Thesis

The thesis includes a combination of PSYC 798 Thesis Proposal/PSYC 799 Master's Thesis. Per the University Catalog, at least 3 hours must be PSYC 799 Master's Thesis; these 3 hours must be taken the first semester in which PSYC 799 Master's Thesis is registered. Thus, this is generally a combination of 1 credit of PSYC 798 Thesis Proposal and 3 of PSYC 799 Master's Thesis.

Students should be aware of the policies governing theses. They must follow the thesis enrollment policy of the university and once enrolled in PSYC 799 Master's Thesis, maintain continuous enrollment. See Academic Policies.

Code	Title	Credits
Select 4 credits from the following:		4
PSYC 798	Thesis Proposal	
PSYC 799	Master's Thesis (minimum of 3 credits)	
Total Credits		4

Practicum

Code	Title	Credits
Select 4 credits from the following:		4
PSYC 792	Psychology Practicum (take 3 credits)	
PSYC 597	Directed Reading and Research (take 1 credit)	
Total Credits		4

Professional Seminar

Code	Title	Credits
Two credits of [1]		2
PSYC 890	Seminar in Professional Psychology	
Total Credits		2

[1] Students should take 1 credit in fall and 1 credit in spring of their first year.

Electives

Code	Title	Credits
Select 5 credits in consultation with your advisor		5
Total Credits		5

Students complete the 30 credits required for this degree through additional coursework, including courses not listed above, within or outside the department, with prior approval of the graduate advisor.

Concentration in Clinical Psychology (CLN)

The clinical psychology concentration trains students to have flexibility to fill the evolving functions of clinical psychologists, including research, direct provision of clinical services, supervision, program development and evaluation, and consultation.

The clinical psychology MA concentration is not a terminal degree. Students who have been admitted to the doctoral program with a concentration in clinical psychology may apply to receive the MA in psychology on completion of 30 credits of coursework. Students must also be in good standing in the program, as determined by the director of clinical training.

Foundation Courses

Code	Title	Credits
PSYC 810	Psychological Assessment I	4
PSYC 811	Psychological Assessment II	4
PSYC 822	Scientific Foundations of Clinical Psychology I	3
PSYC 860	Introductory Helping Skills and Motivational Interviewing	3
Total Credits		14

Practicum Courses

Code	Title	Credits
PSYC 861	Cognitive Behavioral Therapy for Youth	3
PSYC 862	Cognitive Behavioral Therapy for Adults	3
Total Credits		6

Advanced Statistics and Research Methods

Note: For doctoral quantitative emphases B and C, both PSYC 754 Multiple Regression and PSYC 756 Quantitative Methods IV: Multivariate Techniques in Psychology must be taken, but only one of these courses is required for the MA.

Code	Title	Credits
Select three or more courses from the following:		10-11
PSYC 644	Methods for Social Research	
PSYC 611	Advanced Statistics	
PSYC 612	Advanced Statistics	
or PSYC 754	Multiple Regression	
or PSYC 756	Quantitative Methods IV: Multivariate Techniques in Psychology	
Total Credits		10-11

Concentration in Cognitive and Behavioral Neuroscience (CBNR)

The concentration in cognitive and behavioral neuroscience focuses on studying biological substrates of behavior. Core and affiliated faculty study areas as diverse as neural control of behavioral development; animal models of learning and memory and their disorders (such as Alzheimer's); human brain systems involved in cognition, perception, human error, decision making, and movement; the relation of neural activity to human performance; and cognitive aging. A focus of the program is on translational neuroscience-complementary study of neural systems in humans and animals, including application of animal research to human behavior.

Specialized Content

Code	Title	Credits
PSYC 531	Mammalian Neurobiology	3
PSYC 558	Neuronal Bases of Learning and Memory	3
Total Credits		6

Additional Course

Code	Title	Credits
Select one course from the following:		3
PSYC 555	Neuroimaging	
PSYC 559	Behavioral Chemistry	
Total Credits		3

Quantitative Methods

Code	Title	Credits
PSYC 611	Advanced Statistics	4
Select one course from the following:		3-4
PSYC 652	Quantitative Methods II: Analysis of Variance	
PSYC 754	Multiple Regression	
PSYC 756	Quantitative Methods IV: Multivariate Techniques in Psychology	
PSYC 592	Special Topics [1]	
PSYC 892	Special Topics in Psychology [2]	
Total Credits		7-8

1 When topic is Bayesian Statistics or Research Methods.

2 When topic is Quantitative or Research Methods.

Professional Seminar

Code	Title	Credits
One credit of		1
PSYC 890	Seminar in Professional Psychology	
Total Credits		1

Electives

Students complete the 30 credits required for the degree through additional credits of coursework, including courses not listed above within or outside the department, with prior approval of the graduate advisor.

PSYC 592 Special Topics
PSYC 892 Special Topics in Psychology
NEUR 602 Cellular Neuroscience
NEUR 689 Topics in Neuroscience
BIOL 585 Eukaryotic Cell Biology Laboratory

Practicum or Thesis

Students may choose to do either a 6 credit Psychology Practicum or a Thesis. Both options require at least 6 credits total. Students should be aware of the policies governing theses. They must follow the thesis enrollment policy of the university and once enrolled in PSYC 799 Master's Thesis, maintain continuous enrollment. See Academic Policies.

Code	Title	Credits
Psychology Practicum		
PSYC 792	Psychology Practicum	6
Thesis		

Select 6 credits from the following:	
PSYC 798	Thesis Proposal
PSYC 799	Master's Thesis (minimum of 3 credits)

Concentration in Human Factors/Applied Cognition (HF)

The human factors/applied cognition concentration trains students in the application of cognitive science to real-world problems. Students gain expertise in such areas as human/computer interaction, cognitive system engineering, cognitive ergonomics, and transportation. Faculty members help place students who do not have real-world experience in a part- or full-time practicum before completing the degree.

Core Course

Code	Title	Credits
PSYC 701	Cognitive Bases of Behavior	3
or PSYC 768	Advanced Topics in Cognitive Science	
Total Credits		3

Quantitative Methods

Code	Title	Credits
PSYC 611	Advanced Statistics	4
Select one from the following:		3-4
PSYC 652	Quantitative Methods II: Analysis of Variance	
PSYC 754	Multiple Regression	
PSYC 756	Quantitative Methods IV: Multivariate Techniques in Psychology	
Total Credits		7-8

Specialized Content

Code	Title	Credits
PSYC 530	Cognitive Engineering: Cognitive Science Applied to Human Factors	3
PSYC 645	Research Methods in Human Factors and Applied Cognition	3
Total Credits		6

Additional Courses

Code	Title	Credits
Select two courses from the following: [1]		6
PSYC 734	Seminar in Human Factors and Applied Cognition	
PSYC 768	Advanced Topics in Cognitive Science	
Total Credits		6

[1] These courses may be repeated.

Electives

Code	Title	Credits
Students complete the 30 credits required for this degree through additional coursework, including courses not listed above, within or outside the department, with prior approval of the graduate advisor.		0-8
Total Credits		0-8

Optional Practicum

Students need an advisor's approval to register for practicum.

Code	Title	Credits
Six credits of		6
PSYC 730	Practicum in Applied Psychology	
Total Credits		6

Optional Thesis

Students need the chair's approval to register for thesis. Students should be aware of the policies governing theses. They must follow the thesis enrollment policy of the university and once enrolled in PSYC 799 Master's Thesis, maintain continuous enrollment. See Academic Policies.

Code	Title	Credits
Select 6 credits from the following:		6
PSYC 798	Thesis Proposal	
PSYC 799	Master's Thesis	
Total Credits		6

Concentration in Industrial/Organizational Psychology (IO)

The industrial/organizational psychology concentration trains students in the conduct and application of psychological research in work settings. Expertise can be developed in a variety of areas, including personnel selection, training, leadership, motivation, and human performance assessment.

Statistics

Code	Title	Credits
Select at least 10 credits of the following:		10
PSYC 611	Advanced Statistics	
PSYC 754	Multiple Regression	
PSYC 557	Psychometric Methods	
or PSYC 633	Evaluative Research in Psychology	
Total Credits		10

Survey of Content

Code	Title	Credits
PSYC 636	Survey of Industrial-Organizational Psychology	3
Total Credits		3

Specialized Content

Code	Title	Credits
Select at least four courses from the following:		12
PSYC 626	Organizational Change and Development	
PSYC 631	Industrial and Personnel Testing and Evaluation	
PSYC 638	Training: Psychological Contributions to Theory, Design, and Evaluation	
PSYC 640	Techniques in Industrial/Organizational Psychology	
PSYC 667	Behavior in Small Groups and Teams	
PSYC 668	Personality: Theoretical and Empirical Approaches	
PSYC 703	Social Bases of Behavior	
PSYC 733	Issues in Personnel Psychology	
PSYC 741	Psychology of Work Motivation	
PSYC 742	Careers	

PSYC 743	Behavior and Performance at Work	
Other PSYC graduate courses with permission of I/O faculty		
Total Credits		12

Professional Development

Code	Title	Credits
Select at least 1 credit from the following:		1
PSYC 730	Practicum in Applied Psychology	
PSYC 892	Special Topics in Psychology [1]	
Total Credits		1

[1] When topic is IO Learning Series.

Electives

Code	Title	Credits
Students complete the 32 credits required for this degree through additional coursework, including courses not listed above, within or outside the department, with prior approval of the graduate advisor. These courses are typically within statistics or specialized content.		

Accelerated Master's

Psychology, BA or BS/Psychology, Accelerated MA (Cognitive and Behavioral Neuroscience Concentration)

Overview

Highly qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BA/BS in Psychology and an MA in Psychology, with a concentration in cognitive and behavioral neuroscience, in an accelerated time-frame after satisfactory completion of a minimum of 138 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degrees for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6. Graduate Policies.

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies. For information specific to this accelerated master's program, see Application Requirements and Deadlines (https://psychology.gmu.edu/programs/la-ma-acel-psyc/overview/).

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits, and completion of 12 hours of psychology coursework including one of the following combinations of courses:

PSYC 300 Statistics in Psychology
PSYC 372 Biopsychology

OR

PSYC 300 Statistics in Psychology
PSYC 375 Brain and Sensory Processes and PSYC 376 Brain and Behavior

Students are strongly encouraged to have obtained previous research lab experience and to have one reference letter from the faculty member who will serve as their advisor.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MA program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- Minimum overall GPA of 3.25
- Minimum grade of B in each advanced standing course
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing courses (up to 12 credits) with a minimum grade of B in each

PSYC 531 Mammalian Neurobiology (3 credits)
PSYC 558 Neuronal Bases of Learning and Memory (3 credits)
PSYC 555 Neuroimaging (3 credits)
PSYC 559 Behavioral Chemistry (3 credits)
PSYC 592 Special Topics (3 credits) when the topic is Animal Behavior, Biological Bases of Alzheimer's Disease, Human Brain Stimulation, Cognitive Electrophysiology or Comparative Cognition. Can be repeated if the topic differs.

Reserve Graduate Credit courses (up to 6 credits) taken while an undergraduate and will only count for the graduate degree program

PSYC 531 Mammalian Neurobiology (3 credits)
PSYC 558 Neuronal Bases of Learning and Memory (3 credits)
PSYC 555 Neuroimaging (3 credits)
PSYC 559 Behavioral Chemistry (3 credits)
PSYC 592 Special Topics (3 credits) when the topic is Animal Behavior, Biological Bases of Alzheimer's Disease, Human Brain Stimulation, Cognitive Electrophysiology or Comparative Cognition. Can be repeated if the topic differs.
PSYC 611 Advanced Statistics (4 credits)

For more detailed information on coursework and timeline requirements, see AP.6.7.Bachelor's/Accelerated Master's Degree policies.

Psychology, PhD

Banner Code: LA-PHD-PSYC

Academic Advising

2086 David King Hall
Fairfax Campus

Email: psycgrad@gmu.edu
Website: psychology.gmu.edu/programs/la-phd-psyc

The PhD in Psychology provides knowledge of the basic content areas in psychology and practical experience in applying this knowledge to solve human problems in relationships, work, and education. Core course requirements cover subject matter identified by the profession as essential to doctoral training. This includes biological, social, cognitive, and individual bases of behavior, as well as the history of psychology. The program offers the following concentrations: applied developmental psychology, clinical psychology, cognitive and behavioral neuroscience, human factors/applied cognition, and industrial/organizational psychology.

Admissions & Policies

Admissions

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions.

For specific information, see Application Requirements and Deadlines (http://psychology.gmu.edu/programs/application/LA-PHD-PSYC/).

Policies

For policies governing all graduate programs, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/).

Reduction of Credit

For students entering the doctoral program with a master's degree, the number of credits required may be reduced by a maximum of 30 credits subject to the approval of the program faculty and the dean. Requests for reduction of credit are reviewed by a committee only after acceptance to the PhD program.

Grading

Students in the doctoral program are evaluated on the basis of grades, comprehensive exams, research, and communication skills. In doctoral courses, a range of A to B- are the only acceptable grades. Students in the doctoral program must successfully complete comprehensive exams.

Requirements

Degree Requirements

Total credits: 72-79

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

In addition to satisfying the requirements for all doctoral degrees, students must successfully complete 72–76 credits of required coursework chosen in one of five concentrations. Each concentration consists of four educational components: core courses, upper-level specialty courses, supervised practica, and dissertation.

Psychology Concentrations

- Concentration in Applied Developmental Psychology (APD)
- Concentration in Clinical Psychology (CLN)
- Concentration in Cognitive and Behavioral Neuroscience (CBNR)
- Concentration in Human Factors/Applied Cognition (HF)
- Concentration in Industrial/Organizational Psychology (IO)

Concentration in Applied Developmental Psychology (APD)

Overview

The applied developmental psychology concentration is concerned with enhancing developmental processes and preventing developmental disorders in individuals and families across the life span. It uses the knowledge base and methodologies of developmental science to assist the development of individuals who vary in cultural and ethnic backgrounds; economic and social opportunities; physical, social, emotional, and cognitive abilities; and conditions of living (e.g., families, neighborhoods, communities, and physical settings). The program's emphasis is on child development (infancy, early childhood, middle childhood, and adolescence), and students may focus their studies on the cognitive, social, emotional, language, personality, or physiological aspects of development.

The applied developmental concentration has two goals: to train students to teach and do research on basic and applied issues in child development for employment in such settings as universities, research institutes, and organizations, and to train students to do applied work in developmental psychology (consultation, program evaluation, assessment and evaluation, developmental interventions, and parent training) in such settings as schools, hospitals, courts, child care facilities, and other organizations.

Students pursuing this concentration must complete 72 credits comprised of doctoral coursework and at least 12 credits of dissertation research. The number of credits required may be reduced for a prior master's degree as described above.

Doctoral Coursework

Developmental Core

Code	Title	Credits
PSYC 704	Life-Span Development	3
Total Credits		3

Psychology Core

Code	Title	Credits
Select two courses from the following:		6
PSYC 701	Cognitive Bases of Behavior	
PSYC 702	Biological Bases of Human Behavior	
PSYC 703	Social Bases of Behavior	
PSYC 707	Emotional Bases of Behavior	
PSYC 892	Special Topics in Psychology	
Total Credits		6

Quantitative Methods

Code	Title	Credits
PSYC 611	Advanced Statistics	4
PSYC 754	Multiple Regression	3

Select two from the following:		6
PSYC 557	Psychometric Methods	
PSYC 646	Longitudinal Data Analysis	
PSYC 652	Quantitative Methods II: Analysis of Variance	
PSYC 756	Quantitative Methods IV: Multivariate Techniques in Psychology	
PSYC 757	Advanced Topics in Statistical Analysis (with approval)	
PSYC 889	Structural Equation Modeling and Meta-Analysis	
PSYC 892	Special Topics in Psychology (with approval)	
EDRS 812	Qualitative Methods in Educational Research	
Total Credits		13

Advanced Specialized Methods

Code	Title	Credits
Students who take 6 credits of Advanced Specialized Methods must take 15 credits of Developmental Content.		6-9
PSYC 654	Naturalistic Methods in Psychology	
PSYC 619	Applied Behavior Analysis: Principles, Procedures, and Philosophy	
PSYC 651	Doing Social Network Research in Psychological Science	
PSYC 794	Developmental Assessment	
EDRS 631	Program Evaluation	
PSYC 592	Special Topics (with approval)	
PSYC 892	Special Topics in Psychology (with approval)	
Total Credits		6-9

Developmental Content

Code	Title	Credits
Students who take 6 credits of Advanced Specialized Methods must take 15 credits of Developmental Content.		12-15
Select at least two courses from the following:		
PSYC 669	Social and Emotional Development	
PSYC 566	Cognitive and Perceptual Development	
PSYC 615	Language Development	
PSYC 592	Special Topics (when topic is Peer Relationships and Development)	
PSYC 892	Special Topics in Psychology (when topic is Peer Relationships and Development)	
Select remaining credits from the following:		
PSYC 592	Special Topics (when topic is developmental in content)	
PSYC 614	The Psychology of Aging	
PSYC 648	Developmental Psychopathology	
PSYC 780	Applied Developmental Psychology	
Total Credits		12-15

Professional Seminar/Professional Ethics

Students take 1 credit in fall and 1 credit in spring of their first year and 1 additional credit at any other time (preferably in their second year).

Code	Title	Credits
PSYC 890	Seminar in Professional Psychology (3 credits)	1-3
Total Credits		3

Directed Reading and Research or Practicum

Students may fulfill this requirement with 8 credits of PSYC 897 Directed Reading and Research or a combination of PSYC 897 Directed Reading and Research and PSYC 792 Psychology Practicum.

Code	Title	Credits
Select 8 credits from the following:		8
PSYC 897	Directed Reading and Research (can be repeated for credit)	
PSYC 792	Psychology Practicum (A maximum of 6 credits may be applied to this requirement.)	
PSYC 850	Teaching Practicum in Psychology	
Total Credits		8

Elective Courses

Students complete the 72 credits required for the degree with additional coursework from within or outside the department, excluding PSYC 798 Thesis Proposal and PSYC 799 Master's Thesis, with prior approval of the advisor.

Advancement to Candidacy

To advance to candidacy, students must complete all courses required by the program. Students must also successfully complete and pass written and oral comprehensive exams.

Dissertation Research

The dissertation requirement is designed to demonstrate the student's ability to apply psychological principles to research problems. Once enrolled in PSYC 999 Doctoral Dissertation, students must follow the university's continuous registration policy as specified in AP.6.10.6 Dissertation Research. Students who defend in the summer must be registered for at least 1 credit of PSYC 999 Doctoral Dissertation.

Students complete a minimum of 3 credits of PSYC 998 Doctoral Dissertation Proposal and 3 credits of PSYC 999 Doctoral Dissertation. They must apply a minimum of 12 dissertation credits (PSYC 998 Doctoral Dissertation Proposal and PSYC 999 Doctoral Dissertation combined) to the degree. Because of the continuous registration policy, students may be required to register for additional credits of these courses.

Code	Title	Credits
Select 12 credits from the following:		12
PSYC 998	Doctoral Dissertation Proposal	
PSYC 999	Doctoral Dissertation	
Total Credits		12

Concentration in Clinical Psychology (CLN)

Overview

The clinical psychology concentration is committed to the clinical science model. Our goal is to train clinical psychologists who are capable of integrating research and applied clinical activities. The program is unique in approaching clinical psychology from social psychological and contextual perspectives. A social psychological approach uses theory and research from social psychology to understand emotional, cognitive, behavioral, and interpersonal functioning. A contextual perspective stresses the impact of social and cultural factors on the individual and vice versa. Most of the faculty members employ cognitive-behavioral and interpersonal approaches to research and clinical practice, but students also receive exposure to humanistic, existential, and psychodynamic perspectives.

Students pursuing this concentration must complete 79 graduate credits comprised of doctoral coursework and at least 12 credits of dissertation research. The number of credits required may be reduced for a prior master's degree as described above.

Doctoral Coursework

Biological Bases of Behavior

Code	Title	Credits
Select one course from the following:		3
PSYC 531	Mammalian Neurobiology	
PSYC 702	Biological Bases of Human Behavior	
Total Credits		3

Developmental Bases of Behavior

Code	Title	Credits
PSYC 704	Life-Span Development	3
Total Credits		3

Design and Data Analysis Emphasis

Select one Emphasis from the Following.

Basic Emphasis A

Code	Title	Credits
PSYC 611	Advanced Statistics	4
PSYC 644	Methods for Social Research	3
PSYC 754	Multiple Regression	3
Total Credits		10

Enhanced Quantitative Emphasis B

Code	Title	Credits
PSYC 611	Advanced Statistics	4
PSYC 644	Methods for Social Research	3
PSYC 754	Multiple Regression	3
Select one additional approved quantitative course, such as those in the list shown under Quantitative Emphasis C		3
Total Credits		13

Quantitative Emphasis C

Code	Title	Credits
PSYC 611	Advanced Statistics	4
PSYC 644	Methods for Social Research	3
PSYC 754	Multiple Regression	3
Select two additional approved quantitative courses, such as:		6
PSYC 557	Psychometric Methods	
PSYC 646	Longitudinal Data Analysis	
PSYC 652	Quantitative Methods II: Analysis of Variance	
PSYC 756	Quantitative Methods IV: Multivariate Techniques in Psychology	
PSYC 757	Advanced Topics in Statistical Analysis (varies by semester but includes Bayesian methods)	
PSYC 892	Special Topics in Psychology (Credits: 3 that include Meta-analysis/SEM)	
PSYC 889	Structural Equation Modeling and Meta-Analysis	
EDRS 812	Qualitative Methods in Educational Research	
Total Credits		16

Required Courses

Code	Title	Credits
PSYC 810	Psychological Assessment I	4
PSYC 811	Psychological Assessment II	4
PSYC 813	Supervision, Consultation, and Interprofessional Skills	3
PSYC 822	Scientific Foundations of Clinical Psychology I	3
PSYC 850	Teaching Practicum in Psychology (take 1 credit)	1
PSYC 860	Introductory Helping Skills and Motivational Interviewing	3
PSYC 861	Cognitive Behavioral Therapy for Youth [1]	6
PSYC 862	Cognitive Behavioral Therapy for Adults [1]	6
PSYC 881	Practicum in Clinical Psychology [2]	6
PSYC 883	Ethical and Professional Issues in Clinical Practice	3
PSYC 855	Social, Cognitive, and Affective Foundations of Behavior	3
PSYC 856	Diversity, History and Clinical Psychology	3
PSYC 890	Seminar in Professional Psychology	1
PSYC 792	Psychology Practicum	2
Total Credits		48

[1] Students take 3 credits in fall and 3 credits in spring of the second year.

[2] Students take 3 credits in fall and 3 credits in spring of the third year.

Electives

The choice of quantitative emphasis affects the number of credits available for electives. Those who choose Emphasis A take 3 credit hours of electives; students choosing Emphasis B or Emphasis C take 0 hours of electives.

Code	Title	Credits
Select 0-3 electives with the approval of the advisor.		0-3
Total Credits		0-3

Advancement to Candidacy

To advance to candidacy, students must complete all core courses required by the program. Students must also successfully complete and pass written and oral comprehensive exams.

Dissertation Research

The dissertation requirement is designed to demonstrate the student's ability to apply psychological principles to research problems. Once enrolled in PSYC 999 Doctoral Dissertation, students must follow the university's continuous registration policy as specified in AP.6.10.6 Dissertation Research. Students who defend in the summer must be registered for at least 1 credit of PSYC 999 Doctoral Dissertation.

Students complete a minimum of 3 credits of PSYC 998 Doctoral Dissertation Proposal and 3 credits of PSYC 999 Doctoral Dissertation. They must apply a minimum of 12 dissertation credits (PSYC 998 Doctoral Dissertation Proposal and PSYC 999 Doctoral Dissertation combined) to the degree. Because of the continuous registration policy, students may be required to register for additional credits of these courses.

Code	Title	Credits
Select 12 credits from the following:		12
PSYC 998	Doctoral Dissertation Proposal	
PSYC 999	Doctoral Dissertation	
Total Credits		12

Internship

Students complete a full-time, 12-month clinical psychology internship at a site accredited by the American Psychological Association.

Externship (optional, but recommended)

Students complete a part-time clinical psychology externship in the fourth and/or fifth year of the program.

Concentration in Cognitive and Behavioral Neuroscience (CBNR)

Overview

This cognitive and behavioral neuroscience concentration focuses on studying biological substrates of behavior. Core and affiliated faculty study areas as diverse as neural control of behavioral development; animal models of learning and memory and their disorders (such as Alzheimer's); human brain systems involved in cognition, perception, human error, decision making, and movement; the relation of neural activity to human performance; and cognitive aging. A focus of the program is on translational neuroscience-complementary study of neural systems in humans and animals, including application of animal research to human behavior.

The program's core facilities have well-equipped behavioral testing and histological/histochemical facilities. The program's strong links to the Krasnow Institute for Advanced Study and the Center for Biomedical Genomics and Informatics allows opportunities for collaborative work as diverse as tissue slice preparations and molecular genetics. The doctoral program prepares students for research-based careers in academics, government, or industry.

Students pursuing this concentration must complete 72 graduate credits comprised of coursework and at least 12 credits of dissertation research. The number of credits required may be reduced for a prior master's degree as described above.

Doctoral Coursework

Cognitive and Behavioral Neuroscience Core

Code	Title	Credits
PSYC 531	Mammalian Neurobiology	3
PSYC 555	Neuroimaging	3
PSYC 559	Behavioral Chemistry	3
PSYC 558	Neuronal Bases of Learning and Memory	3
or PSYC 685	Cognitive Neuroscience	
Total Credits		12

Quantitative and Research Methods

Code	Title	Credits
Two required Courses		
PSYC 611	Advanced Statistics	4
Select one course from the following:		3
PSYC 652	Quantitative Methods II: Analysis of Variance	
or PSYC 754	Multiple Regression	
Elective Statistics and Methods		**6**
Students will choose from research methods and statistics courses in consultation with their advisor. May include but not limited to PSYC 563.		
PSYC 563	Laboratory Methods in Cognitive and Behavioral Neuroscience	
Total Credits		13

Teaching Practicum

Code	Title	Credits
Take two credits in teaching practicum, one each semester		2
PSYC 850	Teaching Practicum in Psychology	
Total Credits		2

Research Credits

The research credit requirement can be met through completion of a master's thesis (recommended) or other research course as approved by the program.

Code	Title	Credits
Select 6 credits in either a master's thesis or other research course [1]		6
Total Credits		6

Elective Credits

Students can complete the 72 credit requirement through credits of additional coursework, within or outside the department, with prior approval of the advisor.

Some options for fulfilling this requirement:

NEUR 602 Cellular Neuroscience
NEUR 689 Topics in Neuroscience
BIOL 585 Eukaryotic Cell Biology Laboratory

Advancement to Candidacy

To advance to candidacy, students must complete all core courses required by the program. Students must also successfully complete and pass written and oral comprehensive exams.

Dissertation Research

The dissertation requirement is designed to demonstrate the student's ability to apply psychological principles to research problems. Once enrolled in PSYC 999 Doctoral Dissertation, students must follow the university's continuous registration policy as specified in AP.6.10.6 Dissertation Research. Students who defend in the summer must be registered for at least 1 credit of PSYC 999 Doctoral Dissertation.

Students apply to this degree a minimum of 3 credits of PSYC 998 Doctoral Dissertation Proposal and 3 credits of PSYC 999 Doctoral Dissertation; they may apply a minimum 12 and a maximum of 24 dissertation credits (PSYC 998 Doctoral Dissertation Proposal and PSYC 999 Doctoral Dissertation combined) to the degree. Because of the continuous registration policy, students may be required to register for additional credits of these courses.

Code	Title	Credits
Select 12-24 credits from the following:		12-24
PSYC 998	Doctoral Dissertation Proposal	
PSYC 999	Doctoral Dissertation	
Total Credits		12-24

Concentration in Human Factors/Applied Cognition (HF)

Overview

The human factors and applied cognition concentration covers basic theoretical and empirical issues and emphasizes research that applies cognitive science to real-world problems. The program builds bridges between human factors engineering and cognitive psychology. Many applications of cognitive science are in the domain of human factors, and many doctoral students who complete our program go on to be human factors professionals.

Students pursuing this concentration must complete 72 graduate credits comprised of coursework and at least 12 credits of dissertation research. The number of credits required may be reduced for a prior master's degree (up to 30 credits).

Doctoral Coursework

Cognitive Core

Code	Title	Credits
PSYC 701	Cognitive Bases of Behavior	3
or PSYC 768	Advanced Topics in Cognitive Science	
Total Credits		3

Biological, Social, or Developmental Core

Code	Title	Credits
Select two from the following:		6
Biological:		
PSYC 558	Neuronal Bases of Learning and Memory	
PSYC 559	Behavioral Chemistry	
PSYC 685	Cognitive Neuroscience	
PSYC 702	Biological Bases of Human Behavior	
Social:		
PSYC 667	Behavior in Small Groups and Teams	
PSYC 668	Personality: Theoretical and Empirical Approaches	
PSYC 703	Social Bases of Behavior	
Developmental:		
PSYC 566	Cognitive and Perceptual Development	
PSYC 669	Social and Emotional Development	
PSYC 704	Life-Span Development	
Total Credits		6

Quantitative and Research Methods

Code	Title	Credits
PSYC 611	Advanced Statistics	4
Total Credits		4

Advanced Statistics or Qualitative Methods

Code	Title	Credits
Select four courses from the following:		12
STAT 525	Nonparametric Statistics and Categorical Data Analysis	
PSYC 557	Psychometric Methods	
PSYC 646	Longitudinal Data Analysis	
PSYC 652	Quantitative Methods II: Analysis of Variance	
PSYC 754	Multiple Regression	
PSYC 756	Quantitative Methods IV: Multivariate Techniques in Psychology	
PSYC 757	Advanced Topics in Statistical Analysis	
PSYC 889	Structural Equation Modeling and Meta-Analysis	
SOCI 634	Qualitative Research Methods	
Total Credits		12

Specialized Content

Code	Title	Credits
PSYC 530	Cognitive Engineering: Cognitive Science Applied to Human Factors	3
PSYC 645	Research Methods in Human Factors and Applied Cognition	3
Select three courses from the following: [1]		9
PSYC 734	Seminar in Human Factors and Applied Cognition	
PSYC 768	Advanced Topics in Cognitive Science	
Total Credits		15

[1] These are seminars with variable topics that may be repeated for credit when the topic is different.

Special Topics in Professional Issues

Code	Title	Credits
PSYC 890	Seminar in Professional Psychology	1-3
Total Credits		3

Directed Reading and Research

Students are encouraged to take a minimum of 1 credit of this course each semester until they advance to candidacy.

Code	Title	Credits
PSYC 897	Directed Reading and Research	1-3
Total Credits		1-3

Elective Courses

Students have several options for completing the remaining 72 credits required for the degree. They may take additional content courses with permission of their advisor. Students who do not have work experience in applied cognition or human factors are encouraged to take up to 6 credits of practicum.

Students are strongly encouraged to develop competence in programming and computer science through coursework or independent study. Students are also encouraged to identify and take relevant courses within or outside the department with permission of their advisor.

Some options for fulfilling this requirement:

Code	Title	Credits
PSYC 734	Seminar in Human Factors and Applied Cognition	3
PSYC 768	Advanced Topics in Cognitive Science	3
PSYC 730	Practicum in Applied Psychology	1-6
or PSYC 592	Special Topics	

Advancement to Candidacy

To advance to candidacy, students must complete all core courses required by the program. Students must also successfully complete and pass written comprehensive exams.

Dissertation Research

The dissertation requirement is designed to demonstrate the student's ability to apply psychological principles to research problems. Once enrolled in PSYC 999 Doctoral Dissertation, students must follow the university's continuous registration policy as specified in AP.6.10.6 Dissertation Research. Students who defend in the summer must be registered for at least 1 credit of PSYC 999 Doctoral Dissertation.

Students complete a minimum of 3 credits of PSYC 998 Doctoral Dissertation Proposal and 3 credits of PSYC 999 Doctoral Dissertation. They must apply a minimum of 12 dissertation credits (PSYC 998 Doctoral Dissertation Proposal and PSYC 999 Doctoral Dissertation combined) to the degree. Because of the continuous registration policy, students may be required to register for additional credits of these courses.

Code	Title	Credits
Select 12 credits from the following:		12
PSYC 998	Doctoral Dissertation Proposal	
PSYC 999	Doctoral Dissertation	
Total Credits		12

Concentration in Industrial/Organizational Psychology (IO)

Overview

The industrial/organizational psychology concentration focuses on multiple aspects of behavior in organizational settings, including personnel selection, quantitative analysis, teams, leadership, work and family issues, and organizational health issues. Mason's graduate work in this area emphasizes research as the key to knowledge in both academic and applied settings. The program fosters a peer-oriented environment whereby students collaborate on numerous projects in addition to working with faculty members, in many different areas of industrial/organizational psychology.

Students pursuing this concentration must complete 72 graduate credits comprised of coursework and at least 12 credits of dissertation research. The number of credits required may be reduced for a prior master's degree as described above.

Doctoral Coursework

Core Course

Code	Title	Credits
PSYC 703	Social Bases of Behavior	3
PSYC 668	Personality: Theoretical and Empirical Approaches	3
Total Credits		6

Required Courses in Statistics

Code	Title	Credits
PSYC 557	Psychometric Methods	3
PSYC 611	Advanced Statistics	4
PSYC 633	Evaluative Research in Psychology	3
PSYC 754	Multiple Regression	3
Select two additional specialized statistics courses from the following:		6
PSYC 646	Longitudinal Data Analysis	
PSYC 756	Quantitative Methods IV: Multivariate Techniques in Psychology	
PSYC 889	Structural Equation Modeling and Meta-Analysis	
PSYC 892	Special Topics in Psychology (when topic is Specialized Statics)	
Total Credits		19

Survey of Content

Code	Title	Credits
PSYC 636	Survey of Industrial-Organizational Psychology	3
Total Credits		3

Specialized Content

Students taking 18 credits of specialized content may take an additional 3 credits of PSYC 897 Directed Reading and Research.

Code	Title	Credits
Select six to seven courses of specialized content from the following:		18-21
PSYC 626	Organizational Change and Development	

PSYC 638	Training: Psychological Contributions to Theory, Design, and Evaluation	
PSYC 667	Behavior in Small Groups and Teams	
PSYC 733	Issues in Personnel Psychology	
PSYC 741	Psychology of Work Motivation	
PSYC 742	Careers	
PSYC 743	Behavior and Performance at Work	
PSYC 892	Special Topics in Psychology	
Total Credits		18-21

Professional Development

Code	Title	Credits
Required:		
PSYC 890	Seminar in Professional Psychology	3
PSYC 892	Special Topics in Psychology [1]	6
PSYC 850	Teaching Practicum in Psychology (take at least 1 credit)	1
Total Credits		10

[1] When topic is IO Learning Series.

Electives

Students complete the remaining credits required for this degree through additional coursework, within or outside the department in a content area, professional development, or dissertation, with prior approval of the advisor.

Advancement to Candidacy

To advance to candidacy, students must complete all core courses required by the program. Students must also successfully complete and pass written and oral comprehensive exams.

Dissertation Research

The dissertation requirement is designed to demonstrate the student's ability to apply psychological principles to research problems. Once enrolled in PSYC 999 Doctoral Dissertation, students must follow the university's continuous registration policy as specified in AP.6.10.6 Dissertation Research. Students who defend in the summer must be registered for at least 1 credit of PSYC 999 Doctoral Dissertation.

Students complete a minimum of 3 credits of PSYC 998 Doctoral Dissertation Proposal and 3 credits of PSYC 999 Doctoral Dissertation. They must apply a minimum of 12 dissertation credits (PSYC 998 Doctoral Dissertation Proposal and PSYC 999 Doctoral Dissertation combined) to the degree. Because of the continuous registration policy, students may be required to register for additional credits of these courses.

Code	Title	Credits
Select 12 credits from th efollowing:		12
PSYC 998	Doctoral Dissertation Proposal	
PSYC 999	Doctoral Dissertation	
Total Credits		12

Department of Religious Studies

3200 Horizon Hall
Fairfax Campus
Phone: 703-993-1290
Website: religious.gmu.edu

Undergraduate Program

The department offers a bachelor of arts degree in religious studies for students who are interested in learning more about the world's religious traditions. Majors explore the many dimensions of religion and study religion's spiritual, historical, cultural, and social aspects.

Areas of Study

Areas of study offered by the department include Asian religious traditions, Near (Middle) East religious traditions (Judaism, Islam, and Christianity), and comparative aspects of religion. Though the required coursework, majors in religious studies develop skills in reading and interpreting sacred texts. They explore the cultural and social dimensions of religion along with a consideration of religious values and ethics, from comparative and cross-cultural perspectives with relation to global issues.

Courses

The courses in the undergraduate program are writing intensive. They enable students to study and analyze religious ideas and symbols and give them the skills they need to present well-argued papers.

Minors

Students majoring in religious studies are encouraged to do one of the many minors offered by the college. See Minors and Interdisciplinary Minors on the College of Humanities and Social Sciences page.

The department also offers minors in religious studies and Judaic studies, both of which are available to students in all majors in the university.

Graduate Program

The department sponsors the concentration in religious studies in the interdisciplinary studies, MAIS. This concentration is designed for students who are interested in exploring the world's major religions at the graduate level. Students study the development and interaction of the global religious traditions that influence human identity, behavior, culture, and values. They investigate the effects that historical crises and the forces of change have on religion, placing contemporary religious pluralism and inter-religious dialog in a global context.

Faculty

Department Faculty

Professor

Ro, Sachedina (chair), Turner

Professors Emeriti

Burns

Associate Professors

M. Dakake, Farina, Nguyen, Rashkover, Sparks

Assistant Professor

Garrettson

Postdoctoral R & T Fellow

Gunderson

Adjuncts

Bond, D. Dakake, Hostetter, Padgett, Rine, S. Sparks

Programs

- Judaic Studies Minor
- Religious Studies Minor
- Religious Studies, BA

Judaic Studies Minor

Banner Code: JS

Academic Advising

3200 Horizon Hall
Fairfax Campus

Website: https://religious.gmu.edu/programs/la-minor-reli-js

This minor is designed for students interested in the culture, history, and politics of Jewish communities across the world.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 15

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Core Course

Code	Title	Credits
RELI 370	Judaism (Mason Core)	3
Total Credits		3

Electives

Code	Title	Credits
Students choose 12 credits from the following. No more than 6 credits of foreign language or 9 credits of Experiential Learning can be applied to the minor. [1]		12
General Electives		
HIST 465	The Middle East in the 20th Century	
RELI 211	Religions of the West (Mason Core)	
RELI 350	Religion and History of Ancient Israel	
RELI 352	Judaism from Exile to Talmud	
RELI 372	American Judaism	
Foreign Language (up to 6 credits)		
HEBR 101	Elementary Hebrew I	
HEBR 102	Elementary Hebrew II	
HEBR 150	Introduction to Biblical Hebrew	
HEBR 160	Readings in Biblical Hebrew	
HEBR 201	Intermediate Hebrew I	
HEBR 202	Intermediate Hebrew II	
Experiential Learning (up to 9 credits)		
Any study abroad program approved by minor director		
An internship experience approved by the minor director		
Total Credits		12

[1] Special topics courses and independent studies courses, when relevant, may be used to fulfill this requirement with prior written approval of the undergraduate director.

Religious Studies Minor

Banner Code: RELI

Academic Advising

3200 Horizon Hall
Fairfax Campus

Website: religious.gmu.edu/programs/la-minor-reli-reli

The religious studies minor introduces students to the world's religious traditions. Within the minor, students may focus on the religious traditions of Asia, those of the Near (Middle) East, or comparative aspects of religion.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must earn a minimum grade of 2.00 in each course applied to the minor. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 18

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Core Course

Code	Title	Credits
Select one course from the following:		3
RELI 100	The Human Religious Experience (Mason Core)	
RELI 211	Religions of the West (Mason Core)	

RELI 212	Religions of Asia (Mason Core)	
Total Credits		3

Electives

Code	Title	Credits
Select five elective courses in religious studies [1]		15
Total Credits		15

[1] At least three courses must be at the 300 level or above.

Religious Studies, BA

Banner Code: LA-BA-RELI

3200 Horizon Hall
Fairfax Campus

Website: religious.gmu.edu/programs/la-ba-reli

Religious studies provides students an understanding of the traditions of religions across the globe. Areas of study offered by the department include Asian religious traditions, Near (Middle) East religious traditions (Judaism, Islam, and Christianity), and comparative aspects of religion. Students develop skills in reading and interpreting sacred texts. They explore the cultural and social dimensions of religion along with a consideration of religious values and ethics from comparative and cross-cultural perspectives, and with relation to global issues. Students go on to work in the government, service, or nonprofit sectors, as well as pursue graduate work in the humanities.

Admissions & Policies

Policies

Students in this major complete at least 33 credits within the major, earning a minimum grade of 2.00 in each course. No course applied to the major in religious studies may be used to fulfill more than one requirement.

For policies governing all undergraduate degrees, see AP.5 Undergraduate Policies.

Requirements

Degree Requirements

Total credits: minimum 120

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Core Courses in the Major

Introductory Courses in the Main World Religions

Code	Title	Credits
RELI 211	Religions of the West (Mason Core)	3
RELI 212	Religions of Asia (Mason Core)	3
RELI 300	Theories and Methods in Religious Studies	3
Total Credits		9

Comparative or Methodological Aspects of the Study of Religion

Code	Title	Credits
Select one course from the following:		3
ANTH 313	Myth, Magic, and Mind (Mason Core)	
RELI 337	Mysticism: East and West	
RELI 341	Global Perspectives on Spirituality and Healing (Mason Core)	
RELI 490	Comparative Study of Religions (Mason Core)	
SOCI 385	Religion and Society	
RELI 376	Special Topics in Religious Thought [1]	
Total Credits		3

[1] Only when topic is relevant and with the prior written approval of the undergraduate director.

Religious Studies

Code	Title	Credits
Select four courses (12 credits) from any religious studies courses (RELI) at the 300 and 400 level other than those used to fulfill the requirements above. [1]		12
Total Credits		12

[1] Choose courses in a scriptural language (such as Arabic, Biblical Hebrew, Chinese, Classical Greek, Latin, or Sanskrit). Up to 6 credits of a scriptural language may be used to fulfill this requirement and the 6 credits of electives.

One Seminar

Students should take this course during their senior year.

Code	Title	Credits
RELI 420	Seminar	3
Total Credits		3

Electives in the Major

Code	Title	Credits
Select two electives in consultation with an advisor. [1]		6
Total Credits		6

[1] Choose from courses in religious studies, related disciplines (including anthropology, art history, and history), or a scriptural language (such as Arabic, Biblical Hebrew, Chinese, Classical Greek, Latin, or Sanskrit). Up to 6 credits of a scriptural language may be used to fulfill this requirement and the requirement of 12 credits in religious studies at 300 and 400 level.

Writing-Intensive Requirement

The university requires all students to complete at least one course designated "writing intensive" in their majors. Students majoring in religious studies fulfill this requirement by successfully completing RELI 420 Seminar.

Upper Level Requirement

Students seeking a bachelor's degree must apply at least 45 credits of upper-level courses (numbered 300 or above) toward graduation requirements.

Additional Electives

Any remaining credits may be completed with elective courses to bring the degree total to 120.

College Level Requirements for the BA Degree

In addition to the Mason Core program, students pursuing a BA degree must complete the coursework below. Except where expressly prohibited, a course used to fulfill a college level requirement may also be used simultaneously to satisfy other requirements (Mason Core requirements or requirements for the major).

Philosophy or Religious Studies

Code	Title	Credits
Select 3 credits from the following:		3
PHIL [1]		
RELI		

[1] Note that the following courses may not be used to fulfill this requirement:

- PHIL 323 Classical Western Political Theory
- PHIL 324 Modern Western Political Theory
- PHIL 327 Contemporary Western Political Theory
- PHIL 393 Humanities College to Career
- PHIL 460 Senior Seminar in Philosophy, Politics, and Economics

Additionally, PHIL 253 Philosophy and Literature (Mason Core), RELI 235 Religion and Literature (Mason Core), and RELI 333 Spiritual Autobiography (Mason Core) cannot be used to fulfill both the philosophy/religious studies requirement and the Mason Core literature requirement.

Social and Behavioral Sciences

Code	Title	Credits
Select 3 credits of social and behavioral sciences from the following (additional to the Mason Core social and behavioral sciences requirement) [1]		3
ANTH		
CRIM		
ECON		
GOVT		
HIST [2]		
LING		
PSYC		
SOCI		
Or choose from the following GGS courses:		
GGS 101	Major World Regions (Mason Core)	
GGS 103	Human Geography (Mason Core)	
GGS 110	Introduction to Geoinformation Technologies	
GGS 301	Political Geography (Mason Core)	
GGS 303	Geography of Resource Conservation (Mason Core)	
GGS 304	Population Geography (Mason Core)	
GGS 305	Economic Geography	
GGS 306	Urban Geography	
GGS 315	Geography of the United States	
GGS 316	Geography of Latin America	
GGS 320	Geography of Europe	
GGS 325	Geography of North Africa and the Middle East	
GGS 330	Geography of the Soviet Succession States	
GGS 357	Urban Planning	
GGS 380	Geography of Virginia	

[1] The two courses used to fulfill the combined college and Mason Core requirements must be from different disciplines in the social and behavioral sciences.

[2] HIST 100 History of Western Civilization (Mason Core) and HIST 125 Introduction to World History (Mason Core) may not be used to fulfill this requirement.

Foreign Language

Code	Title	Credits
Intermediate-level proficiency in one foreign language, fulfilled by: [1]		
Completing 3 credits in a foreign language numbered 202 (or higher level courses taught in the language)		
Or achieving a satisfactory score on an approved proficiency test		
Or completing the following ASL three course sequence:		
EDSE 115	American Sign Language (ASL) I	
EDSE 116	American Sign Language (ASL) II	
EDSE 219	American Sign Language (ASL) III	

[1] Students who are already proficient in a second language may be eligible for a waiver of this requirement. Additional information on waivers can be found at the Office of Undergraduate Academic Affairs (http://chssundergrad.gmu.edu/).

Non-Western Culture

Select 3 credits of an approved course in the study of a non-Western culture (additional to the Mason Core requirement in global understanding)

Code	Title	Credits
Select 3 credits (additional to Mason Core Global Understanding requirement) [1]		
ANTH 114	Introduction to Cultural Anthropology (Mason Core)	3
ANTH 300	Civilizations	3
ANTH 302	Peoples and Cultures of Latin America (Mason Core)	3
ANTH 307	Ancient Mesoamerica (Mason Core)	3
ANTH 308	Peoples and Cultures of the Middle East (Mason Core)	3
ANTH 309	Peoples and Cultures of India (Mason Core)	3
ANTH 313	Myth, Magic, and Mind (Mason Core)	3
ANTH 314	Zombies	3
ANTH 330	Peoples and Cultures of Selected Regions: Non-Western	3
ANTH 332	Cross-Cultural Perspectives on Globalization (Mason Core)	3
ANTH 381	Medical Anthropology	3

ANTH 396	Issues in Anthropology: Social Sciences (Mason Core)	3
ARAB 360	Topics in Arabic Cultural Production	3
ARAB 420	Survey of Arabic Literature	3
ARAB 440	Topics in Arabic Religious Thought and Texts (Mason Core)	3
ARTH 203	Survey of Asian Art (Mason Core)	3
ARTH 204	Survey of Latin American Art (Mason Core)	3
ARTH 206	Survey of African Art (Mason Core)	3
ARTH 318	Art and Archaeology of Ancient Egypt	3
ARTH 319	Art and Archaeology of the Ancient Near East (Mason Core)	3
ARTH 320	Art of the Islamic World (Mason Core)	3
ARTH 382	Arts of India (Mason Core)	3
ARTH 383	Arts of Southeast Asia (Mason Core)	3
ARTH 384	Arts of China (Mason Core)	3
ARTH 385	Arts of Japan (Mason Core)	3
ARTH 386	The Silk Road (Mason Core)	3
ARTH 482	RS: Advanced Studies in Asian Art	3
CHIN 318	Introduction to Classical Chinese (Mason Core)	3
CHIN 320	Contemporary Chinese Film	3
CHIN 325	Major Chinese Writers (Mason Core)	3
CHIN 470	Special Topics in Chinese Studies	3
DANC 118	World Dance (Mason Core)	3
ECON 361	Economic Development of Latin America (Mason Core)	3
ECON 362	African Economic Development (Mason Core)	3
FREN 451	Topics in Sub-Saharan Francophone Literature and Culture	3
FREN 454	Topics in Caribbean Francophone Literature and Culture	3
GGS 101	Major World Regions (Mason Core)	3
GGS 316	Geography of Latin America	3
GGS 317	Geography of China (Mason Core)	3
GGS 325	Geography of North Africa and the Middle East	3
GGS 330	Geography of the Soviet Succession States	3
GGS 399	Select Topics in GGS	3
GOVT 328	Global Political Theory	3
GOVT 332	Government and Politics of the Middle East and North Africa	3
GOVT 333	Government and Politics of Asia	3
GOVT 338	Government and Politics of Russia	3
GOVT 340	Central Asian Politics	3
GOVT 341	Chinese Foreign Policy	3
GOVT 345	Islam and Politics	3
GOVT 433	Political Economy of East Asia	3
HIST 251	Survey of East Asian History (Mason Core)	3
HIST 252	Survey of East Asian History (Mason Core)	3
HIST 261	Survey of African History (Mason Core)	3
HIST 262	Survey of African History (Mason Core)	3
HIST 271	Survey of Latin American History (Mason Core)	3
HIST 272	Survey of Latin American History (Mason Core)	3
HIST 281	Survey of Middle Eastern Civilization (Mason Core)	3
HIST 282	Survey of Middle Eastern Civilization (Mason Core)	3
HIST 326	Stalinism	3
HIST 327	The Soviet Union and Russia Since World War II	3
HIST 328	Rise of Russia (Mason Core)	3
HIST 329	Modern Russia and the Soviet Union (Mason Core)	3
HIST 353	History of Traditional China	3
HIST 354	Modern China (Mason Core)	3
HIST 356	Modern Japan (Mason Core)	3
HIST 357	Postwar Japan (Mason Core)	3
HIST 358	Post-1949 China (Mason Core)	3
HIST 360	History of South Africa (Mason Core)	3
HIST 364	Revolution and Radical Politics in Latin America (Mason Core)	3
HIST 365	Conquest and Colonization in Latin America (Mason Core)	3
HIST 366	Comparative Slavery	3
HIST 367	History, Fiction, and Film in Latin America	3
HIST 387	Topics in Global History (Mason Core)	3-6
HIST 426	The Russian Revolution	3
HIST 460	Modern Iran (Mason Core)	3
HIST 461	Arab-Israeli Conflict	3
HIST 462	Women in Islamic Society (Mason Core)	3
HIST 465	The Middle East in the 20th Century	3
JAPA 310	Japanese Culture in a Global World (Mason Core)	3
JAPA 340	Topics in Japanese Literature (Mason Core)	3
KORE 320	Korean Popular Culture in a Global World	3
MUSI 103	Musics of the World (Mason Core)	3
RELI 211	Religions of the West (Mason Core)	3
RELI 212	Religions of Asia (Mason Core)	3
RELI 240	Death and the Afterlife in World Religions	3
RELI 272	Islam	3
RELI 313	Hinduism (Mason Core)	3
RELI 314	Chinese Philosophies and Religious Traditions	3
RELI 315	Buddhism (Mason Core)	3
RELI 317	Daoism	3
RELI 337	Mysticism: East and West	3
RELI 365	Muhammad: Life and Legacy	3
RELI 374	Islamic Thought (Mason Core)	3

RELI 375	Qur'an and Hadith	3
RELI 379	Islamic Law, Society, and Ethics	3
RELI 387	Islam, Democracy, and Human Rights	3
RELI 490	Comparative Study of Religions (Mason Core)	3
RUSS 353	Russian Civilization (Mason Core)	3
RUSS 354	Contemporary Post-Soviet Life (Mason Core)	3

[1] A course used to fulfill the Mason Core global understanding requirement may not be simultaneously used to satisfy this college-level requirement. A course used to fulfill this requirement may be used simultaneously to fulfill any other requirements (Mason Core requirements, college-level requirements, or requirements for the major). Additional information on waivers can be found at the Office of Undergraduate Academic Affairs (http://chssundergrad.gmu.edu/).

Mason Core

Some Mason Core requirements may already be fulfilled by the major requirements listed above. Students are strongly encouraged to consult their advisors to ensure they fulfill all remaining Mason Core requirements.

Code	Title	Credits
Foundation Requirements		
Written Communication (ENGH 101)		3
Oral Communication		3
Quantitative Reasoning		3
Information Technology and Computing		3
Exploration Requirements		
Arts		3
Global Understanding		3
Literature		3
Natural Science		7
Social and Behavioral Sciences		3
Western Civilization/World History		3
Integration Requirements		
Written Communications (ENGH 302)		3
Writing-Intensive [1]		3
Synthesis/Capstone [2]		3
Total Credits		40

[1] Most programs include the writing-intensive course designated for the major as part of the major requirements; this course is therefore not counted towards the total required for Mason Core.

[2] Minimum 3 credits required.

4-Year Plan

Bachelor of Arts in Religious Studies Sample Plan of Study

A sample four year graduation plan and degree planning worksheet can be found at https://academicaffairs.chss.gmu.edu/undergraduate-students/advising/advising-sheets (https://academicaffairs.chss.gmu.edu/undergraduate-students/advising/advising-sheets/). The plan is a recommended sequencing of courses based on prerequisites and scheduling. This may not fit every student's needs and is a guideline, not a requirement. Students should confirm major requirements with their academic advisor each semester and with their PatriotWeb Degree Evaluation to ensure they enroll in the proper courses and are on track to graduate.

Accelerated Master's

Many accelerated master's programs are available for any bachelor's degree at Mason. See the full list of degrees (http://catalog.gmu.edu/programs/#filter=filter_24) with accelerated programs at George Mason.

Department of Sociology and Anthropology

6300 Horizon Hall
Fairfax Campus

Phone: 703-993-1440
Website: soan.gmu.edu

Undergraduate Programs

Anthropology

The department offers a Bachelor of Arts degree in Anthropology. The program draws broadly from the social sciences, humanities, and natural sciences, making it a strong undergraduate major that provides a sound interdisciplinary preparation for a variety of careers.

Bachelor's/Accelerated Master's Program

The department offers highly-qualified majors in anthropology the opportunity to apply to an accelerated master's degree program in anthropology. If accepted, students will be able to earn both the undergraduate and graduate degrees after satisfactory completion of 138 credits, generally within five years.

Sociology

The department offers a Bachelor of Arts degree in Sociology. Sociology majors study how social movements emerge from the collective efforts of individuals and the role that social forces play in defining racial identities and gender roles. They take courses in the theories that explain social phenomena and develop strong research skills, learning how to conduct surveys, interviews, systematic observation as well as how to evaluate sources.

With the strong research skills, critical thinking, and effective writing that are the hallmark of sociology graduates, they are prepared for a variety of career paths from teaching, human service, and human resource occupations to work in the criminal justice system, marketing, and social research. The sociology major is also excellent preparation for students considering law school or graduate training in the social and behavioral sciences.

Bachelor's/Accelerated Master's Program

The department offers highly-qualified majors in sociology the opportunity to apply to an accelerated master's degree program in sociology. If accepted, students will be able to earn both the

undergraduate and graduate degrees after satisfactory completion of 141 credits, generally within five years.

Minors

The department offers minors in anthropology and sociology available to students in any major. The department coordinates the interdisciplinary minor in immigration studies and the faculty participate in many other minors in the college.

Graduate Programs

Anthropology

The department offers a Master of Arts degree in Anthropology. Students can choose one of three emphases: advanced training in sociocultural anthropology; culture, health and bioethics; or transnational and global issues. They can chose from many courses that are richly interdisciplinary covering such diverse topics as nationalism and transnationalism; bioethics; social movements, ethnicity and identity; conflict and violence; migration, displacement, and refugees; regional ethnography; and political economy and globalization. Departmental specializations include the following regions: Africa, Asia, Central and South America, Europe, the Middle East, and the United States. Coursework progresses from core courses to more advanced courses and culminates in a thesis.

Sociology

The department offers master's and doctoral degrees in sociology. Students pursuing a master's degree in sociology take required courses in theory and methods and a host of electives.

The doctoral degree in sociology provides rigorous training in public and applied social research, including skills in research design, data analysis, and substantive areas that are pertinent to various sectors in the Washington, D.C., area. Graduates have the theoretical, analytical, and professional skills that prepare them for academic positions in teaching or research. They are also well-qualified for nonacademic positions in the many settings that rely on the expertise of sociologists including human service agencies, marketing research firms, educational systems, nonprofit foundations, and law enforcement agencies.

Funding

The department has a limited number of teaching assistantships which are awarded on a competitive basis. Other sources of funding such as grants, loans, and employment on campus are also available. Students awarded assistantships must register for a minimum of six credits a semester and show satisfactory progress toward their degree.

Faculty

Department Faculty

Emeritus Faculty

Anthropology: Black, Dumont, Golomb, Haines, Seligmann, Williams
Sociology: Borkman, Guagnano, Rosenblum

Professors

Anthropology: Schiller
Sociology: Best, Davis, Dennis, Jacobs, Kurtz, Scimecca, Witte

Associate Professors

Anthropology: Bickford, Trencher
Sociology: Bockman, Dale, Hanrahan, Kim

Assistant Professors

Anthropology: Hughes Rinker, Klaus, Mantz, Sadana, Takahashi, Temple

Term Associate Professor

Masters

Term Assistant Professor

Sociology: Storelli

Adjuncts

Anthropology: Gerber, Hodges, Lowry
Sociology: Mitcho, Nambiar, Pearlman, Smith

Affiliate Faculty

Anthropology: Avruch, Blum, Usher
Sociology: Goldstone, Johnson, Nambiar, Sandole-Staroste, Smith, Spalter-Roth

Requirements & Policies

Policies

Non-Degree Status

Applicants who do not wish to pursue a degree may apply for non-degree status. Non-degree students must meet the same admission requirements as degree-seeking students (minimum undergraduate GPA of 3.00, among other criteria). Non-degree students may later apply for admission to a degree program. Up to nine credits earned in non-degree status may transferred to the master's degrees in anthropology or sociology, subject to the approval of the program director and dean.

Programs

- Anthropology Minor
- Anthropology, BA
- Anthropology, MA
- Immigration Studies Minor
- Sociology Minor
- Sociology, BA
- Sociology, MA
- Sociology, PhD

Anthropology Minor

Banner Code: ANTH

Academic Advising

6300 Horizon Hall
Fairfax Campus

Website: soan.gmu.edu/programs/la-minor-soan-anth

A minor in anthropology enriches many majors with its holistic and cross-cultural perspective. It is a good fit for students majoring in biology, communication, English, history, psychology, sociology, and others. This

minor will be useful for anyone contemplating an international career or a future profession involving culturally-diverse populations.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 18

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Core Courses

Code	Title	Credits
ANTH 114	Introduction to Cultural Anthropology (Mason Core)	3
ANTH 120	Unearthing the Past: Prehistory, Culture and Evolution (Mason Core)	3
or ANTH 135	Introduction to Biological Anthropology (Mason Core)	
Total Credits		6

Regional Ethnography Course

Code	Title	Credits
Select one course from the following:		3
ANTH 302	Peoples and Cultures of Latin America (Mason Core)	
ANTH 307	Ancient Mesoamerica (Mason Core)	
ANTH 308	Peoples and Cultures of the Middle East (Mason Core)	
ANTH 309	Peoples and Cultures of India (Mason Core)	
ANTH 330	Peoples and Cultures of Selected Regions: Non-Western	
Total Credits		3

Electives

Code	Title	Credits
Select three elective courses in anthropology at the 300- or 400- level		9
Total Credits		9

Anthropology, BA

Banner Code: LA-BA-ANTH

6300 Horizon Hall
Fairfax Campus

Website: soan.gmu.edu/programs/la-ba-anth

Anthropology is the study of human beings and their cultures. Majors develop an eye for detail and careful observation, critical thinking, sensitivity to the unfamiliar, skills in research and writing, and an ability to describe and understand culture. The programs in archaeology and biological anthropology give hands-on research experience with faculty through fieldwork in bioarchaeology, archaeology, and museum-based data collection. The programs in cultural anthropology connect anthropological research to current social challenges such as health and disease, urbanization, and geopolitics. It is a strong undergraduate major that provides sound interdisciplinary preparation for a variety of careers.

Admissions & Policies

Policies

Students pursuing this degree must complete 36 credits within the major, with a minimum GPA of 2.00.

For policies governing all undergraduate degrees, see AP.5 Undergraduate Policies.

Requirements

Degree Requirements

Total credits: minimum 120

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Students are advised to consult with an advisor to learn how they can fulfill Mason Core requirements in global understanding, information technology, and synthesis, as well as the college-level requirement in non-Western culture.

Core Courses in the Major

Code	Title	Credits
Introductory Courses		
ANTH 114	Introduction to Cultural Anthropology (Mason Core)	3
ANTH 120	Unearthing the Past: Prehistory, Culture and Evolution (Mason Core)	3
ANTH 135	Introduction to Biological Anthropology (Mason Core)	3
Total Credits		9

Code	Title	Credits
Cultural Anthropology		
Select one course from the following:		3
ANTH 302	Peoples and Cultures of Latin America (Mason Core)	
ANTH 308	Peoples and Cultures of the Middle East (Mason Core)	
ANTH 309	Peoples and Cultures of India (Mason Core)	
ANTH 312	Political Anthropology (Mason Core)	
ANTH 313	Myth, Magic, and Mind (Mason Core)	
ANTH 314	Zombies	

ANTH 320	Global Africa
ANTH 330	Peoples and Cultures of Selected Regions: Non-Western
ANTH 331	Refugees (Mason Core)
ANTH 332	Cross-Cultural Perspectives on Globalization (Mason Core)
ANTH 340	Comparative Perspectives on Immigration
ANTH 345	Ritual and Power in Social Life
ANTH 370	Environment and Culture
ANTH 375	Culture, Power, History
ANTH 376	Food and Culture
ANTH 381	Medical Anthropology
ANTH 382	Urban Anthropology (Mason Core)
ANTH 396	Issues in Anthropology: Social Sciences (Mason Core) (with program approval)
ANTH 399	Issues in Anthropology (with program approval)
ANTH 400	Engaging the World: Anthropological Perspectives (Mason Core)
ANTH 488	Gender, Sexuality, and Culture
Total Credits	3

Code	Title	Credits
Biological Anthropology		
Select 3-5 credits from the following:		3-5
ANTH 350	Human Growth and Development	
ANTH 355	Human Origins	
ANTH 357	Bioarchaeology	
ANTH 363	Humans, Disease, and Death (Mason Core)	
ANTH 365	Scientific Racism and Human Variation	
ANTH 366	Food and Human Evolution	
ANTH 388 & ANTH 389	Human Osteology and Human Osteology Lab [1]	
ANTH 393	Paleopathology	
ANTH 396	Issues in Anthropology: Social Sciences (Mason Core) (with program approval)	
ANTH 399	Issues in Anthropology (with program approval)	
ANTH 496	Evolutionary Theory	
Total Credits		3-5

[1] Students taking ANTH 388 Human Osteology/ANTH 389 Human Osteology Lab will have 5 credits for this requirement.

Code	Title	Credits
Archaeology		
Select one course from the following:		3
ANTH 300	Civilizations	
ANTH 307	Ancient Mesoamerica (Mason Core)	
ANTH 324	Warfare, Violence, and Sacrifice in Antiquity	
ANTH 325	Field Techniques in Archaeology	
ANTH 345	Ritual and Power in Social Life	
ANTH 357	Bioarchaeology	
ANTH 373	Archaeological Science	
ANTH 374	Archaeology of Hunter-Gatherers	
ANTH 377	Mortuary Archaeology	
ANTH 378	Humans and Animals	
ANTH 379	Andean Archaeology	
ANTH 387	Zooarchaeology	
ANTH 394	Archaeology of Climate Change	
ANTH 396	Issues in Anthropology: Social Sciences (Mason Core) (with program approval)	
ANTH 399	Issues in Anthropology (with program approval)	
Total Credits		3

Code	Title	Credits
Theory Course		
ANTH 390	History of Anthropological Thought	3
Total Credits		3

Code	Title	Credits
Methods Course		
ANTH 386	Quantitative Methods in Anthropology	3
or ANTH 450	Qualitative Methods: Nonstatistical Approaches in Culture and Social Research	
Total Credits		3

Electives in the Major

Code	Title	Credits
Select 12 credits from the following:		12
ANTH courses 300-499		
Total Credits		12

Writing-Intensive Requirement

The university requires all students to complete at least one course designated "writing intensive" in their majors at the 300 level or above. Students majoring in anthropology may fulfill this requirement by successfully completing ANTH 490 Theories, Methods, and Issues II.

Additional Electives

Any remaining credits may be completed with electives to bring the degree total to 120.

Upper Level Requirement

Students seeking a bachelor's degree must apply at least 45 credits of upper-level courses (numbered 300 or above) toward graduation requirements.

College Level Requirements for the BA Degree

In addition to the Mason Core program, students pursuing a BA degree must complete the coursework below. Except where expressly prohibited, a course used to fulfill a college level requirement may also be used simultaneously to satisfy other requirements (Mason Core requirements or requirements for the major).

Philosophy or Religious Studies

Code	Title	Credits
Select 3 credits from the following:		3
PHIL [1]		
RELI		

[1] Note that the following courses may not be used to fulfill this requirement:
- PHIL 323 Classical Western Political Theory
- PHIL 324 Modern Western Political Theory
- PHIL 327 Contemporary Western Political Theory
- PHIL 393 Humanities College to Career
- PHIL 460 Senior Seminar in Philosophy, Politics, and Economics

Additionally, PHIL 253 Philosophy and Literature (Mason Core), RELI 235 Religion and Literature (Mason Core), and RELI 333 Spiritual Autobiography (Mason Core) cannot be used to fulfill both the philosophy/religious studies requirement and the Mason Core literature requirement.

Social and Behavioral Sciences

Code	Title	Credits
Select 3 credits of social and behavioral sciences from the following (additional to the Mason Core social and behavioral sciences requirement) [1]		3
ANTH		
CRIM		
ECON		
GOVT		
HIST [2]		
LING		
PSYC		
SOCI		
Or choose from the following GGS courses:		
GGS 101	Major World Regions (Mason Core)	
GGS 103	Human Geography (Mason Core)	
GGS 110	Introduction to Geoinformation Technologies	
GGS 301	Political Geography (Mason Core)	
GGS 303	Geography of Resource Conservation (Mason Core)	
GGS 304	Population Geography (Mason Core)	
GGS 305	Economic Geography	
GGS 306	Urban Geography	
GGS 315	Geography of the United States	
GGS 316	Geography of Latin America	
GGS 320	Geography of Europe	
GGS 325	Geography of North Africa and the Middle East	
GGS 330	Geography of the Soviet Succession States	
GGS 357	Urban Planning	
GGS 380	Geography of Virginia	

[1] The two courses used to fulfill the combined college and Mason Core requirements must be from different disciplines in the social and behavioral sciences.

[2] HIST 100 History of Western Civilization (Mason Core) and HIST 125 Introduction to World History (Mason Core) may not be used to fulfill this requirement.

Foreign Language

Code	Title	Credits
Intermediate-level proficiency in one foreign language, fulfilled by: [1]		
Completing 3 credits in a foreign language numbered 202 (or higher level courses taught in the language)		
Or achieving a satisfactory score on an approved proficiency test		
Or completing the following ASL three course sequence:		
EDSE 115	American Sign Language (ASL) I	
EDSE 116	American Sign Language (ASL) II	
EDSE 219	American Sign Language (ASL) III	

[1] Students who are already proficient in a second language may be eligible for a waiver of this requirement. Additional information on waivers can be found at the Office of Undergraduate Academic Affairs (http://chssundergrad.gmu.edu/).

Non-Western Culture

Select 3 credits of an approved course in the study of a non-Western culture (additional to the Mason Core requirement in global understanding)

Code	Title	Credits
Select 3 credits (additional to Mason Core Global Understanding requirement) [1]		
ANTH 114	Introduction to Cultural Anthropology (Mason Core)	3
ANTH 300	Civilizations	3
ANTH 302	Peoples and Cultures of Latin America (Mason Core)	3
ANTH 307	Ancient Mesoamerica (Mason Core)	3
ANTH 308	Peoples and Cultures of the Middle East (Mason Core)	3
ANTH 309	Peoples and Cultures of India (Mason Core)	3
ANTH 313	Myth, Magic, and Mind (Mason Core)	3
ANTH 314	Zombies	3
ANTH 330	Peoples and Cultures of Selected Regions: Non-Western	3
ANTH 332	Cross-Cultural Perspectives on Globalization (Mason Core)	3
ANTH 381	Medical Anthropology	3
ANTH 396	Issues in Anthropology: Social Sciences (Mason Core)	3
ARAB 360	Topics in Arabic Cultural Production	3
ARAB 420	Survey of Arabic Literature	3
ARAB 440	Topics in Arabic Religious Thought and Texts (Mason Core)	3
ARTH 203	Survey of Asian Art (Mason Core)	3
ARTH 204	Survey of Latin American Art (Mason Core)	3
ARTH 206	Survey of African Art (Mason Core)	3

ARTH 318	Art and Archaeology of Ancient Egypt	3
ARTH 319	Art and Archaeology of the Ancient Near East (Mason Core)	3
ARTH 320	Art of the Islamic World (Mason Core)	3
ARTH 382	Arts of India (Mason Core)	3
ARTH 383	Arts of Southeast Asia (Mason Core)	3
ARTH 384	Arts of China (Mason Core)	3
ARTH 385	Arts of Japan (Mason Core)	3
ARTH 386	The Silk Road (Mason Core)	3
ARTH 482	RS: Advanced Studies in Asian Art	3
CHIN 318	Introduction to Classical Chinese (Mason Core)	3
CHIN 320	Contemporary Chinese Film	3
CHIN 325	Major Chinese Writers (Mason Core)	3
CHIN 470	Special Topics in Chinese Studies	3
DANC 118	World Dance (Mason Core)	3
ECON 361	Economic Development of Latin America (Mason Core)	3
ECON 362	African Economic Development (Mason Core)	3
FREN 451	Topics in Sub-Saharan Francophone Literature and Culture	3
FREN 454	Topics in Caribbean Francophone Literature and Culture	3
GGS 101	Major World Regions (Mason Core)	3
GGS 316	Geography of Latin America	3
GGS 317	Geography of China (Mason Core)	3
GGS 325	Geography of North Africa and the Middle East	3
GGS 330	Geography of the Soviet Succession States	3
GGS 399	Select Topics in GGS	3
GOVT 328	Global Political Theory	3
GOVT 332	Government and Politics of the Middle East and North Africa	3
GOVT 333	Government and Politics of Asia	3
GOVT 338	Government and Politics of Russia	3
GOVT 340	Central Asian Politics	3
GOVT 341	Chinese Foreign Policy	3
GOVT 345	Islam and Politics	3
GOVT 433	Political Economy of East Asia	3
HIST 251	Survey of East Asian History (Mason Core)	3
HIST 252	Survey of East Asian History (Mason Core)	3
HIST 261	Survey of African History (Mason Core)	3
HIST 262	Survey of African History (Mason Core)	3
HIST 271	Survey of Latin American History (Mason Core)	3
HIST 272	Survey of Latin American History (Mason Core)	3
HIST 281	Survey of Middle Eastern Civilization (Mason Core)	3
HIST 282	Survey of Middle Eastern Civilization (Mason Core)	3
HIST 326	Stalinism	3
HIST 327	The Soviet Union and Russia Since World War II	3
HIST 328	Rise of Russia (Mason Core)	3
HIST 329	Modern Russia and the Soviet Union (Mason Core)	3
HIST 353	History of Traditional China	3
HIST 354	Modern China (Mason Core)	3
HIST 356	Modern Japan (Mason Core)	3
HIST 357	Postwar Japan (Mason Core)	3
HIST 358	Post-1949 China (Mason Core)	3
HIST 360	History of South Africa (Mason Core)	3
HIST 364	Revolution and Radical Politics in Latin America (Mason Core)	3
HIST 365	Conquest and Colonization in Latin America (Mason Core)	3
HIST 366	Comparative Slavery	3
HIST 367	History, Fiction, and Film in Latin America	3
HIST 387	Topics in Global History (Mason Core)	3-6
HIST 426	The Russian Revolution	3
HIST 460	Modern Iran (Mason Core)	3
HIST 461	Arab-Israeli Conflict	3
HIST 462	Women in Islamic Society (Mason Core)	3
HIST 465	The Middle East in the 20th Century	3
JAPA 310	Japanese Culture in a Global World (Mason Core)	3
JAPA 340	Topics in Japanese Literature (Mason Core)	3
KORE 320	Korean Popular Culture in a Global World	3
MUSI 103	Musics of the World (Mason Core)	3
RELI 211	Religions of the West (Mason Core)	3
RELI 212	Religions of Asia (Mason Core)	3
RELI 240	Death and the Afterlife in World Religions	3
RELI 272	Islam	3
RELI 313	Hinduism (Mason Core)	3
RELI 314	Chinese Philosophies and Religious Traditions	3
RELI 315	Buddhism (Mason Core)	3
RELI 317	Daoism	3
RELI 337	Mysticism: East and West	3
RELI 365	Muhammad: Life and Legacy	3
RELI 374	Islamic Thought (Mason Core)	3
RELI 375	Qur'an and Hadith	3
RELI 379	Islamic Law, Society, and Ethics	3
RELI 387	Islam, Democracy, and Human Rights	3
RELI 490	Comparative Study of Religions (Mason Core)	3
RUSS 353	Russian Civilization (Mason Core)	3
RUSS 354	Contemporary Post-Soviet Life (Mason Core)	3

[1] A course used to fulfill the Mason Core global understanding requirement may not be simultaneously used to satisfy this college-level requirement. A course used to fulfill this requirement may be used simultaneously to fulfill any other requirements (Mason Core requirements, college-level requirements, or requirements for the major). Additional information on waivers can be found at the Office of Undergraduate Academic Affairs (http://chssundergrad.gmu.edu/).

Mason Core

Some Mason Core requirements may already be fulfilled by the major requirements listed above. Students are strongly encouraged to consult their advisors to ensure they fulfill all remaining Mason Core requirements.

Code	Title	Credits
Foundation Requirements		
Written Communication (ENGH 101)		3
Oral Communication		3
Quantitative Reasoning		3
Information Technology and Computing		3
Exploration Requirements		
Arts		3
Global Understanding		3
Literature		3
Natural Science		7
Social and Behavioral Sciences		3
Western Civilization/World History		3
Integration Requirements		
Written Communications (ENGH 302)		3
Writing-Intensive [1]		3
Synthesis/Capstone [2]		3
Total Credits		40

[1] Most programs include the writing-intensive course designated for the major as part of the major requirements; this course is therefore not counted towards the total required for Mason Core.

[2] Minimum 3 credits required.

4-Year Plan

Bachelor of Arts in Anthropology Sample Plan of Study

A sample four year graduation plan and degree planning worksheet can be found at https://academicaffairs.chss.gmu.edu/undergraduate-students/advising/advising-sheets (https://academicaffairs.chss.gmu.edu/undergraduate-students/advising/advising-sheets/). The plan is a recommended sequencing of courses based on prerequisites and scheduling. This may not fit every student's needs and is a guideline, not a requirement. Students should confirm major requirements with their academic advisor each semester and with their PatriotWeb Degree Evaluation to ensure they enroll in the proper courses and are on track to graduate.

Honors

Honors in the Major

Highly-qualified students majoring in anthropology may apply to graduate with honors in the major.

Eligibility

To be eligible, students must have completed at least 60 credits, taken ENGH 302 Advanced Composition (Mason Core) for the social sciences, completed 15 credits of anthropology (including ANTH 114 Introduction to Cultural Anthropology (Mason Core)), and have a minimum cumulative GPA of 3.30 and a minimum grade of B+ in anthropology courses.

Requirements

If accepted, students complete two honors courses. The first course is an honors section of one of these courses: ANTH 496 Evolutionary Theory, ANTH 450 Qualitative Methods: Nonstatistical Approaches in Culture and Social Research, ANTH 495 Internship or another course chosen in consultation with the honors director. The second course is ANTH 499 Independent Research, in which students complete an honors paper written under the guidance of an anthropology faculty member. All candidates for honors in the major participate in an honors colloquium. To graduate with honors in the major, students must complete the honors coursework with a minimum GPA of 3.50.

Accelerated Master's

The accelerated master's program below specifies the BA in Anthropology as a feeder degree for its program. Many other accelerated master's programs are also available for any bachelor's degree at Mason. See the full list of degrees (http://catalog.gmu.edu/programs/#filter=filter_24) with accelerated programs at Mason.

Anthropology, BA/Anthropology, Accelerated MA

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BA in Anthropology and a MA in Anthropology in an accelerated time-frame after satisfactory completion of a minimum of 138 credits. Students with both a BA and MA have a competitive advantage when applying to PhD programs in anthropology.

See AP.6.7 Bachelor's/Accelerated Master's Degrees for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies. For information specific to the accelerated MA in Anthropology, see Application Requirements and Deadlines (http://soan.gmu.edu/programs/LA-MA-ANTH/application/).

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits and additional unit-specific criteria.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits.

Accelerated Master's Admission Requirements

Students already admitted in the BAM pathway will be admitted to the MA Anthropology, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- Minimum overall GPA of 3.25
- Completion of ANTH 390 History of Anthropological Thought
- Minimum grade of B in each advanced standing course
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing courses (up to 12 credits with a minimum grade of B in each)

ANTH 535 Anthropology and the Human Condition: Seminar I (3 credits)
ANTH 536 Anthropology and the Human Condition: Seminar II (3 credits)
ANTH 545 Ritual and Power in Social Life (3 credits)
ANTH 555 Policy and Culture (3 credits)
ANTH 556 Human Growth and Development (3 credits)
ANTH 557 Human Origins (3 credits)
ANTH 570 Andean Archaeology (3 credits)
ANTH 576 American Cultures (3 credits)
ANTH 577 Mortuary Archaeology (3 credits)
ANTH 578 Humans and Animals (3 credits)
ANTH 580 Environmental Anthropology (3 credits)
ANTH 582 Human Osteology (3 credits)
ANTH 583 Human Osteology Lab (2 credits)
ANTH 584 Paleopathology (3 credits)
ANTH 585 Bioarchaeology (3 credits)
ANTH 586 Quantitative Methods in Anthropology (3 credits)
ANTH 590 Forensic Anthropology (3 credits)
ANTH 591 Forensic Anthropology Lab (2 credits)
ANTH 587 Zooarchaeology
ANTH 616 Anthropology of the City (3 credits)
ANTH 631 Refugees in the Contemporary World (3 credits)
ANTH 635 Regional Ethnography (3 credits)
ANTH 640 Applied Anthropology (3 credits)
ANTH 650 Methods in Anthropology (3 credits)
ANTH 670 Regional Studies in Archaeology (3 credits)
ANTH 677 Anthropology and History (3 credits)
ANTH 684 Independent Study in Sociocultural Anthropology (1-6 credits)
ANTH 687 Medical Anthropology (3 credits)
ANTH 699 Contemporary Issues in Sociocultural Anthropology (3 credits)

Reserve Graduate Credit courses (up to 6 credits) taken while an undergraduate and will only count for the graduate degree program

All courses listed as advanced standing credit can be used for reserve graduate credit.

For more detailed information on coursework and timeline requirements see AP.6.7 Bachelor's Accelerated Master's Degree policies.

Anthropology, MA

Banner Code: LA-MA-ANTH

Academic Advising

6300 Horizon Hall
Fairfax Campus

Website: soan.gmu.edu/programs/la-ma-anth

Master of Arts in Anthropology students learn the history of critical inquiry in the discipline of anthropology and how to approach and develop a topic of research. Students are trained in fieldwork and ethnographic methods appropriate for their goals and are guided through the research and writing methods central to completion of a thesis or project. In the process, students learn about the ethics of conducting research. Students may focus on cultural anthropology or bioarchaeology. The program prepares students for careers in government, the private sector, non-governmental organizations, museums, and numerous other fields, or to pursue a doctorate in the field.

Admissions & Policies

Admissions

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Admissions. For specific information, see Application Requirements and Deadlines (http://soan.gmu.edu/programs/application/LA-MA-ANTH/).

Policies

For policies governing all graduate degrees, see Graduate Policies.

Reduction of Credit

Students with previously conferred graduate degrees may request a reduction of credit. Reductions of credit may not exceed six elective credits and no reductions will be given for required core courses. Evaluation of a previously conferred graduate degree for reduction of credit is not automatic and students must request this review in their first semester of matriculation in the master's program.

Satisfactory Progress

According to university policy, students may be terminated if they fail to achieve satisfactory progress toward their degree. Students in the program are judged as having failed to achieve satisfactory progress toward their degree for the following reasons:

- two consecutive semesters in which academic warnings appear on their transcript
- failure to successfully complete ANTH 535 Anthropology and the Human Condition: Seminar I, ANTH 536 Anthropology and the Human

Condition: Seminar II, and ANTH 650 Methods in Anthropology within 4 semesters of first enrolling as degree-seeking students in the MA in Anthropology program

- failure to enroll in graduate coursework in anthropology for 2 consecutive semesters, unless there are compelling reasons for not having done so

Like all academic policies, these provisions take effect with the publication of this catalog and apply to all graduate students in the MA in Anthropology program regardless of their catalog year.

Requirements

Degree Requirements

Total credits: 30

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Core Courses

Code	Title	Credits
ANTH 535	Anthropology and the Human Condition: Seminar I	3
ANTH 536	Anthropology and the Human Condition: Seminar II	3
ANTH 650	Methods in Anthropology	3
ANTH 798	Thesis or Project Proposal	3
Total Credits		12

Electives

Code	Title	Credits
Select 15 credits from advanced courses in anthropology chosen in consultation with an advisor		15
Total Credits		15

Students can choose to focus their electives around an emphasis in these four areas: advanced training in sociocultural anthropology; culture, health and bioethics; museums and anthropology; or transnational and global issues. Up to six credits may be from other disciplines with the prior written approval of the graduate director.

Students may take ANTH 690 Internship as elective credit. An internship can serve as a primary field research site for the thesis.

Thesis or Research Project

Students should be aware of the policies governing theses. They must follow the thesis enrollment policy of the university and, once enrolled in ANTH 799, maintain continuous enrollment.

Code	Title	Credits
Three credits from one of the following:		3
ANTH 796	Master's Research Project	
ANTH 799	Master's Thesis	
Total Credits		3

Accelerated Master's

Anthropology, BA/Anthropology, Accelerated MA

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BA in Anthropology and a MA in Anthropology in an accelerated time-frame after satisfactory completion of a minimum of 138 credits. Students with both a BA and MA have a competitive advantage when applying to PhD programs in anthropology.

See AP.6.7 Bachelor's/Accelerated Master's Degrees for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies. For information specific to the accelerated MA in Anthropology, see Application Requirements and Deadlines (http://soan.gmu.edu/programs/LA-MA-ANTH/application/).

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits and additional unit-specific criteria.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits.

Accelerated Master's Admission Requirements

Students already admitted in the BAM pathway will be admitted to the MA Anthropology, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- Minimum overall GPA of 3.25
- Completion of ANTH 390 History of Anthropological Thought
- Minimum grade of B in each advanced standing course
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing courses (up to 12 credits with a minimum grade of B in each)

ANTH 535 Anthropology and the Human Condition: Seminar I (3 credits)
ANTH 536 Anthropology and the Human Condition: Seminar II (3 credits)
ANTH 545 Ritual and Power in Social Life (3 credits)

ANTH 555 Policy and Culture (3 credits)
ANTH 556 Human Growth and Development (3 credits)
ANTH 557 Human Origins (3 credits)
ANTH 570 Andean Archaeology (3 credits)
ANTH 576 American Cultures (3 credits)
ANTH 577 Mortuary Archaeology (3 credits)
ANTH 578 Humans and Animals (3 credits)
ANTH 580 Environmental Anthropology (3 credits)
ANTH 582 Human Osteology (3 credits)
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ANTH 584 Paleopathology (3 credits)
ANTH 585 Bioarchaeology (3 credits)
ANTH 586 Quantitative Methods in Anthropology (3 credits)
ANTH 590 Forensic Anthropology (3 credits)
ANTH 591 Forensic Anthropology Lab (2 credits)
ANTH 587 Zooarchaeology
ANTH 616 Anthropology of the City (3 credits)
ANTH 631 Refugees in the Contemporary World (3 credits)
ANTH 635 Regional Ethnography (3 credits)
ANTH 640 Applied Anthropology (3 credits)
ANTH 650 Methods in Anthropology (3 credits)
ANTH 670 Regional Studies in Archaeology (3 credits)
ANTH 677 Anthropology and History (3 credits)
ANTH 684 Independent Study in Sociocultural Anthropology (1-6 credits)
ANTH 687 Medical Anthropology (3 credits)
ANTH 699 Contemporary Issues in Sociocultural Anthropology (3 credits)

Reserve Graduate Credit courses (up to 6 credits) taken while an undergraduate and will only count for the graduate degree program

All courses listed as advanced standing credit can be used for reserve graduate credit.

For more detailed information on coursework and timeline requirements see AP.6.7 Bachelor's Accelerated Master's Degree policies.

Immigration Studies Minor

Banner Code: IMMS

Academic Advising

6300 Horizon Hall
Fairfax Campus

Phone: 703-993-1441
Website: soan.gmu.edu/programs/la-minor-la-imms

The minor combines perspectives from the humanities and social sciences to provide an interdisciplinary and comparative understanding of the immigrant experience, ethnic identity, assimilation, ethnic exclusion and conflict, and refugee situations.

Faculty

Cleaveland, Haines, Ihara, Kim (director), Leeman, Rabin, Ritchie, Shutika, Trencher

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 15

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Core Courses

Code	Title	Credits
ANTH 340	Comparative Perspectives on Immigration	3
or SOCI 330	US Immigrants and Immigration (Mason Core)	
Total Credits		3

Comparative Migration, Ethnicity and Race

Code	Title	Credits
Select two courses from the following:		6
ANTH 331	Refugees (Mason Core)	
CHIN 328	Asian American Women Writers (Mason Core)	
ENGH 416	Ethnicity and Migration in Folklore	
ENGH 352	Topics in Ethnic American Literature	
GOVT 337	Ethnic Politics in Western Europe and North America	
INTS 416	Refugee and Internal Displacement (Mason Core)	
INTS 417	Human Trafficking and Smuggling	
INTS 437	Critical Race Studies (Mason Core)	
INTS 438	Representations of Race (Mason Core)	
SOCI 308	Race and Ethnicity in a Changing World (Mason Core)	
SPAN 388	Introduction to Latina/o Studies (Mason Core)	
Total Credits		6

Electives

Code	Title	Credits
Select two electives from the following:		6
CONF 302	Culture, Identity, and Conflict	
GOVT 445	Human Rights	
FRLN 385	Multilingualism, Identity, and Power (Mason Core)	
INTS 361	Neighborhood, Community, and Identity (Mason Core)	
SOCI 332	The Urban World (Mason Core)	
SOCI 394	Sociology of Human Rights	

SPAN 430	Spanish in the United States	
Total Credits		6

Sociology Minor

Banner Code: SOCI

Academic Advising

6300 Horizon Hall
Fairfax Campus

Website: soan.gmu.edu/programs/la-minor-soan-soci

A minor in sociology is an excellent complement for students intending careers in health-related fields, the non-profit sector, government, higher education, human resource management, city and regional planning, or public policy.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 18

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Core Courses

Code	Title	Credits
SOCI 101	Introductory Sociology (Mason Core)	3
SOCI 311	Sociological Theory	3
Total Credits		6

Electives

Code	Title	Credits
Select four electives [1]		12
Total Credits		12

[1] Students may focus the coursework for their minor by choosing electives from one of the four concentrations offered as part of the BA in sociology.

Sociology, BA

Banner Code: LA-BA-SOCI

6300 Horizon Hall
Fairfax Campus

Website: soan.gmu.edu/programs/la-ba-soci

Sociology involves the systematic study of social structures, cultural patterns, and human relationships. It combines rigorous methods with theory and observation, yielding insights that challenge commonly held assumptions about the social world. Sociology also informs the practice of social and public service, aiding efforts to address important social problems. Sociology majors pursue a varied set of career paths, ranging from teaching, human service and human resource occupations, to positions in the criminal justice system, marketing, and social research. The major is excellent preparation for students considering law school or graduate training in the social and behavioral sciences.

Admissions & Policies

Policies

Students pursuing this degree must complete 34 credits of sociology courses with a minimum GPA of 2.00. No more than 6 credits of courses with unsatisfactory grades (C- or D) may be applied toward the degree.

For policies governing all undergraduate degrees, see AP.5 Undergraduate Policies.

Requirements

Degree Requirements

Total credits: minimum 120

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Core Courses in the Major

The introductory course must be completed with a minimum grade of 2.00.

Code	Title	Credits
SOCI 101	Introductory Sociology (Mason Core)	3
Total Credits		3

Additional Core Courses

Each of these courses must be completed with a minimum grade of 2.00.

Code	Title	Credits
SOCI 303	Methods and Logic of Inquiry	3
SOCI 311	Sociological Theory	3
SOCI 313	Statistics for the Behavioral Sciences (Mason Core)	4
SOCI 412	Contemporary Sociological Theory	3
Total Credits		13

Capstone Experience Course

Code	Title	Credits
Select one from the following:		3
SOCI 485	RS: Sociological Analysis and Practice (Mason Core)	
SOCI 416	Internship in Sociology I (Mason Core)	
SOCI 481	RS: Honors Seminar in Sociology II	
Total Credits		3

Electives in the Major

Code	Title	Credits
Select 15 credits in SOCI at the 100 to 400 level [1]		15
SOCI 120	Globalization and Society (Mason Core)	
SOCI 208	Introduction to Race and Ethnicity	
SOCI 215	Gender and Society	
Any sociology (SOCI) course at the 300 - 400 level.		
Total Credits		15

[1] SOCI 101 Introductory Sociology (Mason Core) does not count toward this requirement. A maximum of 6 credits of SOCI 120 Globalization and Society (Mason Core), SOCI 208 Introduction to Race and Ethnicity, and SOCI 215 Gender and Society can be counted toward the major.

Students are strongly encouraged to focus four of their elective courses (12 credits) in one of the concentrations which follow, chosen to suit their interests and career objectives. Students who choose a concentration will complete one remaining elective.

Optional Concentrations in the Major

Students can focus 12 of their 15 elective credits to complete one of the following 12-credit concentrations.

Concentration in Childhood and Youth (CYC)
Concentration in Deviance, Crime, and Social Control (DCSC)
Concentration in Global Sociology (GSOC)
Concentration in Inequality and Social Change (INSC)

Students who graduate with honors in sociology may apply 3 credits of honors coursework to their selected concentration where appropriate and with prior written approval of the undergraduate director.

Concentration in Childhood and Youth (CYC)

This concentration focuses on the changing social realities, experiences, and identities of children and youth as they are formed in different social and historical contexts. It emphasizes children in peer groups, youth subcultural activities, youth and children and the media, schools, families, social movements, social policy, and the welfare state. This concentration is appropriate for students interested in working directly with children and youth or in organizations serving them in a broad range of fields, such as educational counseling, teaching, policy, advocacy or clinical work, family and community services, social work, early child development, and juvenile justice.

Code	Title	Credits
SOCI 360	Youth Culture and Society (Mason Core)	3
Select three from the following:		9
SOCI 302	Sociology of Delinquency	
SOCI 307	Social Movements and Political Protest	
SOCI 309	Marriage, Families, and Intimate Life	
SOCI 314	Sociology of Culture	
SOCI 315	Contemporary Gender Relations (Mason Core)	
SOCI 352	Social Problems and Solutions (Mason Core)	
SOCI 382	Education in Contemporary Society	
SOCI 395	Special Topics in Sociology	
SOCI 483	The Sociology of Higher Education (Mason Core)	
Total Credits		12

Concentration in Deviance, Crime, and Social Control (DCSC)

This concentration focuses on the social, legal, and political systems that underpin social control in Western societies and beyond. The emphasis is on how norms, values, and common sense regulate human action and the social forces that produce deviant behavior and societal responses to it. This concentration is appropriate for students interested in the criminal justice system and the law.

Code	Title	Credits
Select four from the following:		12
SOCI 301	Criminology	
SOCI 302	Sociology of Delinquency	
SOCI 307	Social Movements and Political Protest	
SOCI 308	Race and Ethnicity in a Changing World (Mason Core)	
SOCI 310	Sociology of Deviance	
SOCI 326	Conflict, Violence, and Peace	
SOCI 332	The Urban World (Mason Core)	
SOCI 340	Power, Politics, and Society	
SOCI 352	Social Problems and Solutions (Mason Core)	
SOCI 355	Social Inequality (Mason Core)	
SOCI 388	Violence and Religion	
SOCI 395	Special Topics in Sociology [1]	
Total Credits		12

[1] Depending on topic.

Concentration in Global Sociology (GSOC)

This concentration focuses on global interconnectedness and its effect on the nature of societies around the world. It emphasizes new technologies and social processes, migration, transnational communities, global cities, and social movements working across state borders. This concentration is appropriate for students interested in pursuing internationally oriented careers in social change, political reform, and international development.

Code	Title	Credits
SOCI 320	Globalization and Social Change (Mason Core)	3
Select three from the following:		9
SOCI 304	The Future of Work	
SOCI 307	Social Movements and Political Protest	
SOCI 308	Race and Ethnicity in a Changing World (Mason Core)	
SOCI 326	Conflict, Violence, and Peace	
SOCI 330	US Immigrants and Immigration (Mason Core)	
SOCI 332	The Urban World (Mason Core)	
SOCI 340	Power, Politics, and Society	
SOCI 352	Social Problems and Solutions (Mason Core)	
SOCI 388	Violence and Religion	

SOCI 395	Special Topics in Sociology [1]	
ANTH 332	Cross-Cultural Perspectives on Globalization (Mason Core)	
Total Credits		12

[1] Depending on topic.

Concentration in Inequality and Social Change (INSC)

The focus is on inequalities, such as those of race, class, and sex, and on the manner in which such inequalities become structurally rooted in a society. The emphasis is on understanding the rise of the struggle for human rights, democracy, and various social movements that have sought to reverse these inequalities through protests, demonstrations, counterorganizations, and the ballot. This concentration is appropriate for students who seek careers in social justice organizations, social services, or teaching, and those who wish to participate in social and political movements.

Code	Title	Credits
SOCI 355	Social Inequality (Mason Core)	3
Select three from the following:		9
SOCI 304	The Future of Work	
SOCI 307	Social Movements and Political Protest	
SOCI 308	Race and Ethnicity in a Changing World (Mason Core)	
SOCI 310	Sociology of Deviance	
SOCI 315	Contemporary Gender Relations (Mason Core)	
SOCI 320	Globalization and Social Change (Mason Core)	
SOCI 330	US Immigrants and Immigration (Mason Core)	
SOCI 332	The Urban World (Mason Core)	
SOCI 340	Power, Politics, and Society	
SOCI 352	Social Problems and Solutions (Mason Core)	
SOCI 360	Youth Culture and Society (Mason Core)	
SOCI 382	Education in Contemporary Society	
SOCI 390	Sociology of Health, Illness, and Disability	
SOCI 395	Special Topics in Sociology [1]	
Total Credits		12

[1] Depending on topic.

Writing-Intensive Requirement

The university requires all students to complete at least one course designated "writing intensive" in their majors at the 300 level or above. Students majoring in sociology may fulfill this requirement by successfully completing SOCI 412 Contemporary Sociological Theory.

Upper Level Requirement

Students seeking a bachelor's degree must apply at least 45 credits of upper-level courses (numbered 300 or above) toward graduation requirements.

Additional Electives

Any remaining credits may be completed with elective courses to bring the degree total to 120.

College Level Requirements for the BA Degree

In addition to the Mason Core program, students pursuing a BA degree must complete the coursework below. Except where expressly prohibited, a course used to fulfill a college level requirement may also be used simultaneously to satisfy other requirements (Mason Core requirements or requirements for the major).

Philosophy or Religious Studies

Code	Title	Credits
Select 3 credits from the following:		3
PHIL [1]		
RELI		

[1] Note that the following courses may not be used to fulfill this requirement:

- PHIL 323 Classical Western Political Theory
- PHIL 324 Modern Western Political Theory
- PHIL 327 Contemporary Western Political Theory
- PHIL 393 Humanities College to Career
- PHIL 460 Senior Seminar in Philosophy, Politics, and Economics

Additionally, PHIL 253 Philosophy and Literature (Mason Core), RELI 235 Religion and Literature (Mason Core), and RELI 333 Spiritual Autobiography (Mason Core) cannot be used to fulfill both the philosophy/religious studies requirement and the Mason Core literature requirement.

Social and Behavioral Sciences

Code	Title	Credits
Select 3 credits of social and behavioral sciences from the following (additional to the Mason Core social and behavioral sciences requirement) [1]		3
ANTH		
CRIM		
ECON		
GOVT		
HIST [2]		
LING		
PSYC		
SOCI		
Or choose from the following GGS courses:		
GGS 101	Major World Regions (Mason Core)	
GGS 103	Human Geography (Mason Core)	
GGS 110	Introduction to Geoinformation Technologies	
GGS 301	Political Geography (Mason Core)	
GGS 303	Geography of Resource Conservation (Mason Core)	
GGS 304	Population Geography (Mason Core)	
GGS 305	Economic Geography	
GGS 306	Urban Geography	
GGS 315	Geography of the United States	
GGS 316	Geography of Latin America	
GGS 320	Geography of Europe	

GGS 325	Geography of North Africa and the Middle East	
GGS 330	Geography of the Soviet Succession States	
GGS 357	Urban Planning	
GGS 380	Geography of Virginia	

1 The two courses used to fulfill the combined college and Mason Core requirements must be from different disciplines in the social and behavioral sciences.

2 HIST 100 History of Western Civilization (Mason Core) and HIST 125 Introduction to World History (Mason Core) may not be used to fulfill this requirement.

Foreign Language

Code	Title	Credits
Intermediate-level proficiency in one foreign language, fulfilled by: [1]		
Completing 3 credits in a foreign language numbered 202 (or higher level courses taught in the language)		
Or achieving a satisfactory score on an approved proficiency test		
Or completing the following ASL three course sequence:		
EDSE 115	American Sign Language (ASL) I	
EDSE 116	American Sign Language (ASL) II	
EDSE 219	American Sign Language (ASL) III	

1 Students who are already proficient in a second language may be eligible for a waiver of this requirement. Additional information on waivers can be found at the Office of Undergraduate Academic Affairs (http://chssundergrad.gmu.edu/).

Non-Western Culture

Select 3 credits of an approved course in the study of a non-Western culture (additional to the Mason Core requirement in global understanding)

Code	Title	Credits
Select 3 credits (additional to Mason Core Global Understanding requirement) [1]		
ANTH 114	Introduction to Cultural Anthropology (Mason Core)	3
ANTH 300	Civilizations	3
ANTH 302	Peoples and Cultures of Latin America (Mason Core)	3
ANTH 307	Ancient Mesoamerica (Mason Core)	3
ANTH 308	Peoples and Cultures of the Middle East (Mason Core)	3
ANTH 309	Peoples and Cultures of India (Mason Core)	3
ANTH 313	Myth, Magic, and Mind (Mason Core)	3
ANTH 314	Zombies	3
ANTH 330	Peoples and Cultures of Selected Regions: Non-Western	3
ANTH 332	Cross-Cultural Perspectives on Globalization (Mason Core)	3
ANTH 381	Medical Anthropology	3
ANTH 396	Issues in Anthropology: Social Sciences (Mason Core)	3
ARAB 360	Topics in Arabic Cultural Production	3
ARAB 420	Survey of Arabic Literature	3
ARAB 440	Topics in Arabic Religious Thought and Texts (Mason Core)	3
ARTH 203	Survey of Asian Art (Mason Core)	3
ARTH 204	Survey of Latin American Art (Mason Core)	3
ARTH 206	Survey of African Art (Mason Core)	3
ARTH 318	Art and Archaeology of Ancient Egypt	3
ARTH 319	Art and Archaeology of the Ancient Near East (Mason Core)	3
ARTH 320	Art of the Islamic World (Mason Core)	3
ARTH 382	Arts of India (Mason Core)	3
ARTH 383	Arts of Southeast Asia (Mason Core)	3
ARTH 384	Arts of China (Mason Core)	3
ARTH 385	Arts of Japan (Mason Core)	3
ARTH 386	The Silk Road (Mason Core)	3
ARTH 482	RS: Advanced Studies in Asian Art	3
CHIN 318	Introduction to Classical Chinese (Mason Core)	3
CHIN 320	Contemporary Chinese Film	3
CHIN 325	Major Chinese Writers (Mason Core)	3
CHIN 470	Special Topics in Chinese Studies	3
DANC 118	World Dance (Mason Core)	3
ECON 361	Economic Development of Latin America (Mason Core)	3
ECON 362	African Economic Development (Mason Core)	3
FREN 451	Topics in Sub-Saharan Francophone Literature and Culture	3
FREN 454	Topics in Caribbean Francophone Literature and Culture	3
GGS 101	Major World Regions (Mason Core)	3
GGS 316	Geography of Latin America	3
GGS 317	Geography of China (Mason Core)	3
GGS 325	Geography of North Africa and the Middle East	3
GGS 330	Geography of the Soviet Succession States	3
GGS 399	Select Topics in GGS	3
GOVT 328	Global Political Theory	3
GOVT 332	Government and Politics of the Middle East and North Africa	3
GOVT 333	Government and Politics of Asia	3
GOVT 338	Government and Politics of Russia	3
GOVT 340	Central Asian Politics	3
GOVT 341	Chinese Foreign Policy	3
GOVT 345	Islam and Politics	3
GOVT 433	Political Economy of East Asia	3
HIST 251	Survey of East Asian History (Mason Core)	3

HIST 252	Survey of East Asian History (Mason Core)	3
HIST 261	Survey of African History (Mason Core)	3
HIST 262	Survey of African History (Mason Core)	3
HIST 271	Survey of Latin American History (Mason Core)	3
HIST 272	Survey of Latin American History (Mason Core)	3
HIST 281	Survey of Middle Eastern Civilization (Mason Core)	3
HIST 282	Survey of Middle Eastern Civilization (Mason Core)	3
HIST 326	Stalinism	3
HIST 327	The Soviet Union and Russia Since World War II	3
HIST 328	Rise of Russia (Mason Core)	3
HIST 329	Modern Russia and the Soviet Union (Mason Core)	3
HIST 353	History of Traditional China	3
HIST 354	Modern China (Mason Core)	3
HIST 356	Modern Japan (Mason Core)	3
HIST 357	Postwar Japan (Mason Core)	3
HIST 358	Post-1949 China (Mason Core)	3
HIST 360	History of South Africa (Mason Core)	3
HIST 364	Revolution and Radical Politics in Latin America (Mason Core)	3
HIST 365	Conquest and Colonization in Latin America (Mason Core)	3
HIST 366	Comparative Slavery	3
HIST 367	History, Fiction, and Film in Latin America	3
HIST 387	Topics in Global History (Mason Core)	3-6
HIST 426	The Russian Revolution	3
HIST 460	Modern Iran (Mason Core)	3
HIST 461	Arab-Israeli Conflict	3
HIST 462	Women in Islamic Society (Mason Core)	3
HIST 465	The Middle East in the 20th Century	3
JAPA 310	Japanese Culture in a Global World (Mason Core)	3
JAPA 340	Topics in Japanese Literature (Mason Core)	3
KORE 320	Korean Popular Culture in a Global World	3
MUSI 103	Musics of the World (Mason Core)	3
RELI 211	Religions of the West (Mason Core)	3
RELI 212	Religions of Asia (Mason Core)	3
RELI 240	Death and the Afterlife in World Religions	3
RELI 272	Islam	3
RELI 313	Hinduism (Mason Core)	3
RELI 314	Chinese Philosophies and Religious Traditions	3
RELI 315	Buddhism (Mason Core)	3
RELI 317	Daoism	3
RELI 337	Mysticism: East and West	3
RELI 365	Muhammad: Life and Legacy	3
RELI 374	Islamic Thought (Mason Core)	3
RELI 375	Qur'an and Hadith	3
RELI 379	Islamic Law, Society, and Ethics	3
RELI 387	Islam, Democracy, and Human Rights	3
RELI 490	Comparative Study of Religions (Mason Core)	3
RUSS 353	Russian Civilization (Mason Core)	3
RUSS 354	Contemporary Post-Soviet Life (Mason Core)	3

[1] A course used to fulfill the Mason Core global understanding requirement may not be simultaneously used to satisfy this college-level requirement. A course used to fulfill this requirement may be used simultaneously to fulfill any other requirements (Mason Core requirements, college-level requirements, or requirements for the major). Additional information on waivers can be found at the Office of Undergraduate Academic Affairs (http://chssundergrad.gmu.edu/).

Mason Core

Some Mason Core requirements may already be fulfilled by the major requirements listed above. Students are strongly encouraged to consult their advisors to ensure they fulfill all remaining Mason Core requirements.

Code	Title	Credits
Foundation Requirements		
Written Communication (ENGH 101)		3
Oral Communication		3
Quantitative Reasoning		3
Information Technology and Computing		3
Exploration Requirements		
Arts		3
Global Understanding		3
Literature		3
Natural Science		7
Social and Behavioral Sciences		3
Western Civilization/World History		3
Integration Requirements		
Written Communications (ENGH 302)		3
Writing-Intensive [1]		3
Synthesis/Capstone [2]		3
Total Credits		40

[1] Most programs include the writing-intensive course designated for the major as part of the major requirements; this course is therefore not counted towards the total required for Mason Core.

[2] Minimum 3 credits required.

4-Year Plan

Bachelor of Arts in Sociology Sample Plan of Study

A sample four year graduation plan and degree planning worksheet can be found at https://academicaffairs.chss.gmu.edu/undergraduate-students/advising/advising-sheets (https://

academicaffairs.chss.gmu.edu/undergraduate-students/advising/advising-sheets/). The plan is a recommended sequencing of courses based on prerequisites and scheduling. This may not fit every student's needs and is a guideline, not a requirement. Students should confirm major requirements with their academic advisor each semester and with their PatriotWeb Degree Evaluation to ensure they enroll in the proper courses and are on track to graduate.

Honors

Honors in the Major

Highly qualified students majoring in sociology may apply to graduate with honors in the major. To be eligible, students must have completed at least 75 credits, taken ENGH 302 Advanced Composition (Mason Core) for the social sciences, completed 21 credits of sociology, and have a minimum cumulative GPA of 3.30 and a minimum grade of B+ in sociology courses. Applicants must have completed SOCI 303 Methods and Logic of Inquiry and SOCI 311 Sociological Theory with a minimum grade of B in each.

If accepted, to graduate with honors in sociology, students must complete SOCI 480 Honors Seminar in Sociology I and SOCI 481 RS: Honors Seminar in Sociology II with a minimum grade of B+ in each of these courses and have an overall GPA of 3.50 in sociology courses presented for graduation. SOCI 481 RS: Honors Seminar in Sociology II includes completion of an honors thesis, which will be presented at a sociology colloquium.

Accelerated Master's

Many accelerated master's programs are available for any bachelor's degree at Mason, including this one. See the full list of degrees (http://catalog.gmu.edu/programs/#filter=filter_24) with accelerated programs at George Mason.

Bachelor's Degree (any)/Sociology, Accelerated MA

Overview

Highly qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BA/BS in a chosen major and an MA in Sociology in an accelerated time-frame after satisfactory completion of a minimum of 141 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degree for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Polices and Bachelor's/Accelerated Master's Degree policies. For information specific to this accelerated program, see Application Requirements and Deadlines (https://soan.gmu.edu/programs/LA-MA-ACEL-soci/) on the departmental website.

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits with a minimum overall GPA of 3.25, and a minimum overall GPA of 3.50 in sociology courses.

Students who are accepted in the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MA program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- Minimum overall GPA of 3.25
- Minimum grade of B in each advanced standing course
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing courses (up to 12 credits with a minimum grade of B in each)

500- or 600-level SOCI courses (https://catalog.gmu.edu/courses/soci/) (up to 12 credits)
SOCI 620 Methods and Logic of Social Inquiry (will count for SOCI 303 Methods and Logic of Inquiry) and SOCI 636 Statistical Reasoning (will count for SOCI 313 Statistics for the Behavioral Sciences (Mason Core)

Reserve Graduate Credit courses (up to 6 credits) taken while an undergraduate and will only count for the graduate degree program

500- or 600-level SOCI courses (up to 6 credits) (https://catalog.gmu.edu/courses/soci/)

For more detailed information on coursework and timeline requirements see AP.6.7 Bachelor's Accelerated Master's Degree policies.

Sociology, MA

Banner Code: LA-MA-SOCI

Academic Advising

6300 Horizon Hall
Fairfax Campus

Website: soan.gmu.edu/programs/la-ma-soci

Students pursuing a Master of Arts in Sociology may pursue studies in a wide range of areas of sociological inquiry. Faculty in the program specialize in culture (including music, art, new media, and consumption); family, youth and aging; gender; globalization; immigration and migration; political economy, development and economic sociology; political sociology and social movements; race/ethnicity; religion; sociological theory; and urban sociology. The program is strongly connected to nonprofit and community groups, providing ample opportunity for research, internships, and employment.

Admissions & Policies

Application Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions. For information specific to the MA in sociology, see Application Requirements and Deadlines (http://soan.gmu.edu/programs/LA-MA-SOCI/application/) on the departmental website.

Policies

For policies governing all graduate degrees, see AP.6 Graduate Policies.

Reduction of Credit

Students who enter the program with a previously conferred graduate degree may be allowed a reduction of up to 6 elective credits, subject to the approval of the graduate director and dean.

Satisfactory Progress

According to university policy, students may be terminated if they fail to achieve satisfactory progress toward their degree. In addition to the graduate policies on academic termination (see AP.6.6.2), students in the program are judged as having failed to achieve satisfactory progress if they have a plagiarism finding by the Office of Academic Integrity.

Requirements

Degree Requirements

Total credits: 33

For policies governing all graduate degrees, see AP.6 Graduate Policies. Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Foundation Courses

Code	Title	Credits
Public Sociology		
SOCI 601	Proseminar in Public and Applied Sociology	3
Social Theory		
SOCI 711	Classical Sociological Theory	3
SOCI 712	Contemporary Sociological Theory	3
Required Methodology and Analysis Course		
SOCI 620	Methods and Logic of Social Inquiry	3
Elective Methodology and Analysis Courses		**6**
Select two from the following:		
SOCI 631	Survey Research	
SOCI 632	Evaluation Research for Social Programs	
SOCI 633	Special Topics in Sociology	
SOCI 634	Qualitative Research Methods	
SOCI 636	Statistical Reasoning	
SOCI 638	Feminist Theory	
SOCI 655	Ethnography	
SOCI 660	Historical and Comparative Sociology	
SOCI 730	Analytic Techniques of Social Research	
ANTH 650	Methods in Anthropology	
WMST 610	Feminist Approaches to Social Research	
WMST 611	Feminist Research Practice	
Total Credits		18

Elective Courses

Code	Title	Credits
Select three to four electives from advanced courses (500-800 level) in sociology. [1]		9-12

[1] Students may take SOCI 616 Practicum in Sociology as 1-6 elective credits. With prior written approval of the MA advisor, up to two courses from outside the sociology program that are not currently listed as approved courses (inclusive of consortium courses) may count toward elective courses.

Thesis or MA Capstone Paper

Thesis

A master's thesis demonstrates the student's capacity to carry out independent research. The thesis consists of a substantial sociological research or theoretical project that will contribute to the advancement of knowledge in sociology.

Students must follow the thesis enrollment policy of the university and once enrolled in SOCI 799 Thesis, maintain continuous enrollment as specified in AP.6.9.3 Master's Thesis.

Code	Title	Credits
SOCI 799	Thesis	3-6
Total Credits		3-6

Master's Capstone Paper

As an alternative to the thesis, students can elect to complete an independent, 25-page research paper. Unlike the thesis, the master's capstone paper must be completed in one semester under the guidance of a faculty member who has been admitted to the graduate faculty.

Code	Title	Credits
SOCI 797	Master's Capstone Paper	3
Total Credits		3

Accelerated Master's

Bachelor's Degree (any)/Sociology, Accelerated MA

Overview

Highly qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BA/BS in a chosen major and an MA in Sociology in an accelerated time-frame after satisfactory completion of a minimum of 141 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degree for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Polices and Bachelor's/Accelerated Master's Degree policies. For information specific to this accelerated program, see Application Requirements and Deadlines (https://soan.gmu.edu/programs/LA-MA-ACEL-soci/) on the departmental website.

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits with a minimum overall GPA of 3.25, and a minimum overall GPA of 3.50 in sociology courses.

Students who are accepted in the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MA program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- Minimum overall GPA of 3.25
- Minimum grade of B in each advanced standing course
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing courses (up to 12 credits with a minimum grade of B in each)

500- or 600-level SOCI courses (https://catalog.gmu.edu/courses/soci/) (up to 12 credits)
SOCI 620 Methods and Logic of Social Inquiry (will count for SOCI 303 Methods and Logic of Inquiry) and SOCI 636 Statistical Reasoning (will count for SOCI 313 Statistics for the Behavioral Sciences (Mason Core)

Reserve Graduate Credit courses (up to 6 credits) taken while an undergraduate and will only count for the graduate degree program

500- or 600-level SOCI courses (up to 6 credits) (https://catalog.gmu.edu/courses/soci/)

For more detailed information on coursework and timeline requirements see AP.6.7 Bachelor's Accelerated Master's Degree policies.

Sociology, PhD

Banner Code: LA-PHD-SOCI

Academic Advising

6300 Horizon Hall
Fairfax Campus

Website: soan.gmu.edu/programs/la-phd-soci

The sociology doctoral degree provides rigorous training in public and applied social research, including skills in research design, data analysis, and substantive areas that are pertinent to various sectors in the Washington, D.C. area. Graduates have the theoretical, analytical, and professional skills that prepare them for academic positions in teaching or research. They are also well-qualified for nonacademic positions in the many settings that rely on the expertise of sociologists including human service agencies, marketing research firms, educational systems, nonprofit foundations, and law enforcement agencies.

Admissions & Policies

Admissions

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions. For specific information, see Application Requirements and Deadlines (http://soan.gmu.edu/programs/application/LA-PHD-SOCI/) on the departmental web site.

Policies

For policies governing all graduate degrees, see AP.6 Graduate Policies.

Reduction of Credit

Students who enter the program with a previously conferred graduate degree may be allowed a reduction of credit up to 30 credits subject to the approval of the graduate director and the dean.

Satisfactory Progress

According to university policy, students may be terminated if they fail to achieve satisfactory progress toward their degree. In addition to the graduate policies on academic termination (see AP.6.6.2), students in the program are judged as having failed to achieve satisfactory progress if they have a plagiarism finding by the Office of Academic Integrity.

Requirements

Degree Requirements

Total credits: 72

For policies governing all graduate degrees, see AP.6 Graduate Policies. Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Following completion of all required coursework and passing a comprehensive exam, students are advanced to candidacy by the dean and complete a dissertation, an original and independent research project.

Foundation Courses

Code	Title	Credits
Public Sociology		
SOCI 601	Proseminar in Public and Applied Sociology	3
Social Theory		
SOCI 711	Classical Sociological Theory	3
SOCI 712	Contemporary Sociological Theory	3
Required Methodology and Analysis Courses		

SOCI 620	Methods and Logic of Social Inquiry	3
SOCI 636	Statistical Reasoning	3
Elective Methodology and Analysis Courses		
Select three courses from the following:		9
SOCI 631	Survey Research	
SOCI 632	Evaluation Research for Social Programs	
SOCI 633	Special Topics in Sociology (when topic is Critical Theory, Critical Ethnography, or another course with written approval of the graduate director.)	
SOCI 634	Qualitative Research Methods	
SOCI 638	Feminist Theory	
SOCI 655	Ethnography	
SOCI 660	Historical and Comparative Sociology	
or SOCI 860	Historical and Comparative Sociology	
SOCI 730	Analytic Techniques of Social Research	
ANTH 650	Methods in Anthropology	
WMST 610	Feminist Approaches to Social Research	
WMST 611	Feminist Research Practice	
Total Credits		24

Concentrations

Concentration in Institutions and Inequalities (INI)

Code	Title	Credits
Two Proseminars		
SOCI 803	Institutions and Inequalities	3
SOCI 804	Sociology of Globalization	3
Total Credits		6

Code	Title	Credits
Select three courses from the following:		9
SOCI 605	Gender and Social Structure	
SOCI 614	Sociology of Culture	
SOCI 623	Racial and Ethnic Relations: American and Selected Global Perspectives	
SOCI 624	International Migration in the Age of Globalization	
SOCI 635	Environment and Society	
SOCI 637	Political Sociology	
SOCI 638	Feminist Theory	
SOCI 639	Urban Inequality: From Watts to #Blacklivesmatter	
SOCI 641	Micro Sociology: Inequality and Everyday Life	
SOCI 670	Social Networks, New Media, and Inequality	
SOCI 840	Work Organizations and Social Inequality	
SOCI 845	Society and Education	
SOCI 853	Cities in a Global Society	
SOCI 857	Sociology of Human Rights	
SOCI 633	Special Topics in Sociology (with prior written approval of graduate director)	
SOCI 833	Special Topics in Sociology (with prior written approval of graduate director)	
Total Credits		9

Concentration in Sociology of Globalization (SGL)

Code	Title	Credits
Two Proseminars		
SOCI 803	Institutions and Inequalities	3
SOCI 804	Sociology of Globalization	3
Total Credits		6

Code	Title	Credits
Select three courses from the following:		9
SOCI 614	Sociology of Culture	
SOCI 623	Racial and Ethnic Relations: American and Selected Global Perspectives	
SOCI 624	International Migration in the Age of Globalization	
SOCI 635	Environment and Society	
SOCI 637	Political Sociology	
SOCI 670	Social Networks, New Media, and Inequality	
SOCI 850	Sociology of Development	
SOCI 851	Globalization and Social Movements	
SOCI 853	Cities in a Global Society	
SOCI 857	Sociology of Human Rights	
ANTH 631	Refugees in the Contemporary World	
SOCI 633	Special Topics in Sociology (with prior written approval of graduate director)	
SOCI 833	Special Topics in Sociology (with prior written approval of graduate director)	
Total Credits		9

Elective Courses

Code	Title	Credits
Select seven elective courses from advanced courses (500-800 level) in sociology. [1]		21
Total Credits		21

[1] With prior written approval of the graduate director, up to two courses from outside the sociology program that are not currently listed as approved courses (inclusive of consortium courses) may count toward degree requirements.

Advancement to Candidacy

To advance to candidacy, students must complete all coursework required on their approved program of study. Students must also successfully pass one written comprehensive examination. The comprehensive exam tests students' mastery of the foundations of sociological inquiry, linking research methods and sociological theory to public concerns, as well as material in the student's area of concentration. It is administered by a faculty committee appointed by the graduate program director. Additionally, students must defend their dissertation proposal. Evidence of completed requirements must be on file in the Dean's Office before a student can advance to candidacy.

Dissertation

Once enrolled in SOCI 999 Doctoral Dissertation, students must maintain continuous registration each semester (excluding summers) until the dissertation is submitted to and accepted by the University Libraries. Once enrolled in SOCI 999 Doctoral Dissertation, students must follow the university's continuous registration policy as specified in AP.6.10.6 Dissertation Research. Students who defend in the summer must be registered for at least 1 credit of SOCI 999 Doctoral Dissertation.

Students complete a minimum of 3 credits of SOCI 998 Doctoral Dissertation Proposal and 3 credits of SOCI 999 Doctoral Dissertation. They may apply a maximum of 12 dissertation credits (SOCI 998 Doctoral Dissertation Proposal and SOCI 999 Doctoral Dissertation combined) to the degree. Because of the continuous registration policy, students may be required to register for additional credits of SOCI 999 Doctoral Dissertation. Because students cannot register for credits of SOCI 999 Doctoral Dissertation until they have advanced to PhD candidacy, they may choose (but are not required) to register for additional credits of SOCI 998 Doctoral Dissertation Proposal.

Code	Title	Credits
Select 12 credits from the following:		12
SOCI 998	Doctoral Dissertation Proposal	
SOCI 999	Doctoral Dissertation	
Total Credits		12

Global Affairs Program

Cortney Hughes Rinker, Director

6300 Horizon Hall
Fairfax Campus

Phone: 703-993-9185
Website: globalaffairs.gmu.edu

Undergraduate Program

Global Affairs is an interdisciplinary major that introduces students to the processes of globalization that affect all societies. Students gain a sophisticated understanding of complex issues such as terrorism, refugee crises, global inequality, and health and environmental challenges. Core courses in the major provide a knowledge foundation of the political, economic, cultural, and environmental processes in our global and globalizing world. The choice of a thematic or regional concentration helps students tailor the degree to their particular interests and career goals. Students in this program are encouraged to participate in study abroad opportunities and internships. They can complement their major with a second major or a minor.

Global Affairs with a Second Major or Minor

Students can complement their major in global affairs with a second major. Students interested in this option are encouraged to discuss their plans with advisors in both majors. See the section AP.5.3.7 Credit for More than One Undergraduate Major in Undergraduate Policies.

Students majoring in global affairs are encouraged to complement their major with one of the many minors offered by the college.

Minor

The undergraduate program in global affairs offers a minor in global affairs, which is available to students in any major in the university except those majoring in global affairs.

Graduate Program

The master's degree in global affairs is an interdisciplinary program that offers students the opportunity to engage in advanced study of a broad range of international global issues.

Bachelor's/Accelerated Master's Program

Highly qualified undergraduates in any major are invited to apply to the accelerated master's degree program in global affairs. If accepted, students will be able to earn an undergraduate degree in their chosen major and a graduate degree in global affairs after satisfactory completion of 144 credits, generally within five years.

Faculty

Program Faculty

Ashley, Bockman, Boudreaux, Breglia, Burt, Copelman, Hughes Rinker (director), Hultin, Ipek, Kelly, Kim, Mandaville, McGlinchey, Mitcho (assistant director), Ngalabak, Platt, Smith, Son, West

Programs

- Asia-Pacific and Northeast Asian Studies Minor
- Global Affairs Minor
- Global Affairs, BA
- Global Affairs, MA

Asia-Pacific and Northeast Asian Studies Minor

Banner Code: APNS

6300 Horizon Hall
Fairfax Campus

Email: gloa@gmu.edu
Website: global.gmu.edu/programs/la-minor-la-apns

This interdisciplinary minor is for students whose interests focus on the humanities and social sciences and Asia's role in global systems and the cultural mosaic of human experience.

Asia is the birthplace of many great religious and cultural traditions. It is a region in rapid and profound transformation. With half of the world's population and half of its land mass, Asia is destined to play an increasingly important role in the global economy and world politics. This minor will give students a better understanding of an important region of the world, broaden their perspective, and provide an edge in seeking jobs in various government agencies, international organizations, private businesses, law firms, and non-profit organizations that deal with Asia. It prepares students for graduate studies in the humanities or social sciences. This minor complements many majors including history, anthropology, communication, economics, and government and politics.

Faculty

Chang, Cuong, DeCaroli, Hinton, H. Nguyen, Lin, Paden, Platt, Ro, Son (director), Wan, Zhang

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and nine of the 18 credits required must be at the 300 and 400 level. Three credits of Chinese, Korean, or Japanese at the intermediate level (200-level) or above may be applied to the minor. Students must complete all coursework with a minimum GPA of 2.00.

For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 18

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

It is recommended that students interested in this minor take language courses in Chinese, Korean, or Japanese.

Core Courses

Code	Title	Credits
Select two courses from the following:		6
One course (3 credits) in a language relevant to the area such as Chinese, Korean, or Japanese at the 200-level (or higher)		
ARTH 203	Survey of Asian Art (Mason Core)	
GOVT 333	Government and Politics of Asia	
HIST 251	Survey of East Asian History (Mason Core)	
HIST 252	Survey of East Asian History (Mason Core)	
RELI 212	Religions of Asia (Mason Core)	
Total Credits		6

Electives

Code	Title	Credits
Select four courses from the following: [1]		12
ARTH 384	Arts of China (Mason Core)	
ARTH 385	Arts of Japan (Mason Core)	
ARTH 386	The Silk Road (Mason Core)	
CHIN 310	Survey of Chinese Literature (Mason Core)	
CHIN 311	Modern Chinese Literature in Translation (Mason Core)	
CHIN 320	Contemporary Chinese Film	
CHIN 325	Major Chinese Writers (Mason Core)	
CHIN 470	Special Topics in Chinese Studies	
GOVT 341	Chinese Foreign Policy	
GOVT 433	Political Economy of East Asia	
HIST 353	History of Traditional China	
HIST 354	Modern China (Mason Core)	
HIST 356	Modern Japan (Mason Core)	
HIST 357	Postwar Japan (Mason Core)	
RELI 314	Chinese Philosophies and Religious Traditions	
RELI 315	Buddhism (Mason Core)	
RELI 317	Daoism	
RELI 337	Mysticism: East and West	
Total Credits		12

[1] Any course from the list of core course options not used to fulfill that requirement may be used as an elective course. Other electives are possible, including special topics courses when focused on this region (e.g. GOVT 490 Synthesis Seminar (Mason Core), HIST 387 Topics in Global History (Mason Core), HNRS 122 Reading the Arts (Topic Varies), and approved study abroad courses or internships, when relevant, with prior written approval of the director.

Global Affairs Minor

Banner Code: GLOA

Academic Advising

6300 Horizon Hall
Fairfax Campus

Email: gloa@gmu.edu
Website: globalaffairs.gmu.edu/programs/la-minor-la-gloa

This minor provides students with a global perspective that can enhance many different majors. The minor is not available to students majoring in global affairs or minoring in global systems.

This is a Green Leaf Program.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 15

This is a Green Leaf program.

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Coursework

Code	Title	Credits
GLOA 101	Introduction to Global Affairs (Mason Core)	3
or SOCI 120	Globalization and Society (Mason Core)	
CULT 320	Globalization and Culture	3
ECON 385	International Economic Policy	3
GOVT 322	International Relations Theory	3
CONF 340	Global Conflict Analysis and Resolution (Mason Core)	3
or EVPP 337	Environmental Policy Making in Developing Countries	
Total Credits		15

Global Affairs, BA

Banner Code: LA-BA-GLOA

6300 Horizon Hall
Fairfax Campus

Email: gloa@gmu.edu
Website: globalaffairs.gmu.edu/programs/la-ba-gloa

Global affairs is an interdisciplinary major that introduces students to the processes of globalization that affect all societies. Students gain a sophisticated understanding of complex issues such as terrorism, refugee crises, global inequality, and health and environmental challenges. Core courses in the major provide a knowledge foundation of the political, economic, cultural, and environmental processes in our global and globalizing world. The choice of a thematic or regional concentration helps students tailor the degree to their particular interests and career goals. Students in this program are encouraged to participate in study abroad opportunities and internships. They can complement their major with a second major or a minor.

This is a Green Leaf program.

Admissions & Policies

Policies

Students pursuing this degree must complete 36-39 credits within the major, with a minimum cumulative GPA of 2.00. Students completing the Smithsonian-Mason semester program will have a total of 40-43 credits. Students must have a minimum grade of C in each of the core courses, including the capstone course (GLOA 400), and a minimum grade of C- in each of the courses used to fulfill the concentration and the language requirement for Global Affairs majors. Students who major in Global Affairs may not also earn the minor in Global Systems.

Global Affairs majors fulfill the Mason Core Capstone requirement by successfully completing GLOA 400.

For policies governing all undergraduate degrees, see AP.5 Undergraduate Policies.

Requirements

Degree Requirements

Total credits: minimum 120

This is a Green Leaf program.

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Core Courses in the Major

Code	Title	Credits
GLOA 101	Introduction to Global Affairs (Mason Core)	3
or SOCI 120	Globalization and Society (Mason Core)	
CONF 340	Global Conflict Analysis and Resolution (Mason Core)	3
CULT 320	Globalization and Culture	3
ECON 385	International Economic Policy	3
EVPP 337	Environmental Policy Making in Developing Countries	3
GOVT 322	International Relations Theory [1]	3
Total Credits		18

[1] Note the prerequisite for this course: GOVT 132 Introduction to International Politics (Mason Core) or GOVT 133 Introduction to Comparative Politics (Mason Core)

Capstone Course

Code	Title	Credits
GLOA 400	Global Affairs Capstone (Mason Core)	3

Language Study Beyond Intermediate Proficiency

To fulfill this requirement, students can continue the study of one language beyond the intermediate proficiency level (required for all BA degrees in the college) or choose to study other languages. After a student has demonstrated intermediate proficiency in one language, the remainder of the requirement may be fulfilled by taking any courses taught in a foreign language, at any level.

Students are required to complete:
6 credits of foreign language coursework beyond the completion of 202, SPAN 212, SPAN 215, EDSE 219 or the receipt of proficiency waiver

Concentrations in the Major

Students select one concentration and complete the requirements therein. Courses applied to a global affairs concentration must come from at least two different departments. Concentration courses must be unique to the concentration: they cannot be simultaneously used to fulfill any Mason Core or college requirement for the bachelor's degree. They cannot be applied to any other major, minor, concentration, or certificate.

In addition to the courses listed with each concentration, other relevant courses, including special topics courses, study abroad, and internships (maximum 3 credits), may be applied to a concentration with prior written approval from the director.

Available Concentrations

- Concentration in the Environment (EVT)
- Concentration in Global Economy and Management (GEM)
- Concentration in Global Governance (GLGV)
- Concentration in Global Inequalities and Responses (GIR)
- Concentration in Human Security (HMSC)
- Concentration in International Development (IDEV)
- Concentration in Media, Communication, and Culture (MCC)
- Concentration in Africa (AFR)
- Concentration in Asia (ASA)
- Concentration in Europe (EU)
- Concentration in Latin America (LA)
- Concentration in Middle East and North Africa (MNA)
- Concentration in North America (NA)
- Concentration in Russia and Central Asia (RCA)
- Individualized Concentration (IND)

Concentration in the Environment (EVT)

Students may complete this concentration through 12 credits of regular coursework or through the Smithsonian-Mason Semester Program (15-16 credits).

Regular Coursework

Code	Title	Credits
Select 12 credits from the following:		12
ANTH 370	Environment and Culture	
BIOL 301	Biology and Society (Mason Core)	
ECON 335	Environmental Economics [1]	
ECON 435	Economics of Energy	
EVPP 108	Ecosphere - Introduction to Environmental Science I-Lecture (Mason Core)	
EVPP 336	Human Dimensions of the Environment	
EVPP 377	Applied Ecology	
EVPP 475	Global Biodiversity Governance	
GEOL 309	Oceanography	
GGS 302	Global Environmental Hazards	
GGS 303	Geography of Resource Conservation (Mason Core)	
GGS 307	Geographic Approaches for Sustainable Development	
GGS 311	Geographic Information Systems	
GOVT 361	Introduction to Environmental Policy	
or EVPP 361	Introduction to Environmental Policy	
GOVT 362	Intermediate Environmental Policy	
or EVPP 362	Intermediate Environmental Policy	
INTS 334	Environmental Justice (Mason Core)	
PHIL 243	Global Environmental Ethics (Mason Core)	
PHIL 343	Topics in Environmental Philosophy (Mason Core)	
TOUR 340	Sustainable Tourism	
Total Credits		12

[1] Note the prerequisites for this course: ECON 103 Contemporary Microeconomic Principles (Mason Core) and ECON 104 Contemporary Macroeconomic Principles (Mason Core)

Smithsonian-Mason Semester Program

Students complete 16 credits offered through the Mason Center for Conservation Studies in cooperation with the Smithsonian National Zoo Smithsonian Conservation Biology Institute. Students may choose to focus their study on "Conservation, Biodiversity and Society", "Wildlife Ecology and Conservation", or "Endangered Species Conservation". Students take the courses in the selected focus area together in one semester, living on site at the institute in Front Royal, VA. Students who apply this coursework to the concentration cannot also apply it to the minor in Conservation Studies.

Code	Title	Credits
Select one of the following focus areas:		16
Conservation, Biodiversity and Society option (16 credits):		
CONS 320	Conservation in Practice	
CONS 401	Conservation Theory	
CONS 402	Applied Conservation	
CONS 410	Human Dimensions in Conservation (Mason Core)	
CONS 490	RS: Integrated Conservation Strategies (Mason Core)	
Wildlife Ecology and Conservation option (16 credits):		
Offered only in Fall semesters, students complete four required courses:		
CONS 400	Conservation Seminar	
CONS 404	Biodiversity Monitoring	
CONS 405	Landscape and Macrosystems Ecology	
CONS 496	Research in Conservation (Mason Core)	
Endangered Species and Conservation option (16 credits)		
Offered only in Spring semesters, students complete four required courses:		
CONS 400	Conservation Seminar	
CONS 406	Small Population Management	
CONS 491	RS: Conservation Management Planning (Mason Core)	
CONS 496	Research in Conservation (Mason Core)	
Total Credits		16

Concentration in Global Economy and Management (GEM)

In this concentration, students explore marketing, managing, financing, and networking dimensions of the globalizing world economy. Students will take classes on economic policies of national governments and international organizations as well as operations of non-government market actors.

Code	Title	Credits
Select 12 credits from the following:		12
ECON 310	Money and Banking	
ECON 360	Economics of Developing Areas (Mason Core)	
ECON 361	Economic Development of Latin America (Mason Core)	
ECON 362	African Economic Development (Mason Core)	

ECON 380	Economies in Transition (Mason Core)
ECON 390	International Economics
FNAN 440	International Financial Management
GOVT 343	International Political Economy
GOVT 367	Money, Markets and Economic Policy (Mason Core)
MGMT 461	Cross Cultural and Global Management
MKTG 407	Global Marketing
MBUS 301	Managing People and Organizations in a Global Economy
MBUS 303	Marketing in a Global Economy
MBUS 305	Introduction to International Business (Mason Core)
MBUS 491	Special Topics: Business Minor
MIS 303	Introduction to Business Information Systems
BULE 303	Legal Environment of Business [1]
BULE 402	Commercial Law [1]
Or other course approved by the program director	
Total Credits	12

[1] BULE courses require the approval of the director.

Concentration in Global Governance (GLGV)

In this concentration students explore how national governments, international organizations, and non-governmental organizations interact to identify, understand, and address global issues. Coursework covers such topics as transnational challenges, theories of international relations, global institutions, international law and ethics, international security, and conflict. Students are expected to garner theoretical and practical understanding of the ways in which national and transnational actors approach global problems.

Code	Title	Credits
Select 12 credits from the following:		12
ANTH 312	Political Anthropology (Mason Core)	
COMM 305	Foundations of Intercultural Communication (Mason Core)	
CRIM 405	Law and Justice around the World (Mason Core)	
CRIM 475	Theory and Politics of Terrorism	
EVPP 475	Global Biodiversity Governance	
GGS 301	Political Geography (Mason Core)	
GOVT 342	Diplomacy	
GOVT 343	International Political Economy	
GOVT 344	American Foreign Policy	
GOVT 346	American Security Policy	
GOVT 347	International Security	
GOVT 412	Politics and the Mass Media	
GOVT 434	Democracy in Global Perspective	
GOVT 445	Human Rights	
GOVT 446	International Law and Organization	
GOVT 447	Revolution and International Politics	
GOVT 448	Ethics and International Politics	
INTS 305	Conflict Resolution and Transformation	
INTS 416	Refugee and Internal Displacement (Mason Core)	
INTS 422	An Experiential Approach to American Foreign Policy	
SOCI 340	Power, Politics, and Society	
Or other course approved by the program director		
Total Credits		12

Concentration in Global Inequalities and Responses (GIR)

This concentration addresses global social issues and the steps actors such as non-profits, social movements, and international organizations take to address these issues. Courses cover human rights, refugee crises, gender violence, racial discrimination, and economic inequality from both historical and contemporary perspectives and in different parts of the world. Students are expected to acquire the skills to analyze complex social problems and to be able to formulate effective strategies to address these.

Code	Title	Credits
Select 12 credits from the following:		12
ANTH 365	Scientific Racism and Human Variation	
ANTH 488	Gender, Sexuality, and Culture	
CONF 394	Human Rights and Inequality	
CRIM 405	Law and Justice around the World (Mason Core)	
GCH 332	Health and Disease	
GCH 450	Culture, Sexuality and the Global AIDS Epidemic	
GGS 304	Population Geography (Mason Core)	
GOVT 414	Politics of Race and Gender	
HIST 366	Comparative Slavery	
INTS 304	Social Movements and Community Activism (Mason Core)	
INTS 416	Refugee and Internal Displacement (Mason Core)	
SOCI 307	Social Movements and Political Protest	
SOCI 308	Race and Ethnicity in a Changing World (Mason Core)	
SOCI 315	Contemporary Gender Relations (Mason Core)	
SOCI 355	Social Inequality (Mason Core)	
WMST 100	Global Representations of Women (Mason Core)	
WMST 200	Introduction to Women and Gender Studies (Mason Core)	
Or other course approved by the program director		
Total Credits		12

Concentration in Human Security (HMSC)

This concentration is designed to conceptualize security beyond the boundaries of national security and to promote a more comprehensive understanding of "human security" in its multiple facets, including: food and health (famine and infectious disease), environmental security (natural disasters and climate change), and economic security (development). Coursework addresses these and other themes and draws on government, sociology, criminology, environmental science and policy,

and other fields. Students are expected to garner an understanding of the sources of insecurity in today's world.

Code	Title	Credits
Select 12 credits from the following:		12
ANTH 331	Refugees (Mason Core)	
ANTH 340	Comparative Perspectives on Immigration	
CONF 345	Social Dynamics of Terrorism, Security, and Justice	
CRIM 475	Theory and Politics of Terrorism	
ECON 360	Economics of Developing Areas (Mason Core)	
EVPP 436	The Human Dimensions of Global Climate Change	
GCH 332	Health and Disease	
GCH 405	Global Health Interventions: History and Systems	
GGS 311	Geographic Information Systems	
GOVT 346	American Security Policy	
GOVT 347	International Security	
GOVT 460	Surveillance and Privacy in Contemporary Society	
INTS 305	Conflict Resolution and Transformation	
INTS 314	Conflict, Trauma and Healing	
INTS 416	Refugee and Internal Displacement (Mason Core)	
SOCI 320	Globalization and Social Change (Mason Core)	
Or other course approved by the program director		
Total Credits		12

Concentration in International Development (IDEV)

In this concentration, students examine international development, its challenges, and how these are addressed by governments, international organizations, and non-governmental organizations. Coursework covers development economics, the politics of developing regions and transitional economies, the social consequences of global inequality, public health and health-related development issues, humanitarian relief, and more. Students are expected to gain the knowledge and skills to prepare them for work in the development sector or for further specialized studies in international development.

Code	Title	Credits
Select 12 credits from the following:		12
ANTH 331	Refugees (Mason Core)	
ECON 360	Economics of Developing Areas (Mason Core)	
ECON 361	Economic Development of Latin America (Mason Core)	
ECON 362	African Economic Development (Mason Core)	
EVPP 472	Tools and Techniques for International Development	
EVPP 475	Global Biodiversity Governance	
GCH 205	Global Health (Mason Core)	
GCH 405	Global Health Interventions: History and Systems	
GGS 303	Geography of Resource Conservation (Mason Core)	
GGS 307	Geographic Approaches for Sustainable Development	
GOVT 434	Democracy in Global Perspective	
GOVT 445	Human Rights	
GOVT 446	International Law and Organization	
HEAL 350	Interventions for Populations and Communities at Risk	
INTS 401	Conservation Biology (Mason Core)	
INTS 416	Refugee and Internal Displacement (Mason Core)	
PHIL 344	Ethical Issues in Global Health	
TOUR 340	Sustainable Tourism	
Or other course approved by the program director		
Total Credits		12

Concentration in Media, Communication, and Culture (MCC)

In this concentration, students examine historic trends and recent changes in media and communication technologies as well as their cultural contexts. Coursework includes critical analysis of media content, comparison of global media infrastructures and systems of political communication, discussion of the foundations of intercultural communication, and more. Students are expected to gain an understanding of the role of media and communication in shaping and responding to global issues of concern.

Code	Title	Credits
Select 12 credits from the following:		12
ANTH 332	Cross-Cultural Perspectives on Globalization (Mason Core)	
ANTH 380	Language and Culture	
ANTH 395	Work, Technology, and Society: An IT Perspective	
AVT 372	Hip Hop Culture	
COMM 202	Media and Society	
COMM 305	Foundations of Intercultural Communication (Mason Core)	
COMM 306	Issues in Intercultural Communication	
COMM 380	Media Criticism	
COMM 412	Politics and the Mass Media	
COMM 456	Comparative Mass Media (Mason Core)	
DANC 318	Global Perspectives: World Dance Forms (Mason Core)	
ENGH 315	Folklore and Folklife (Mason Core)	
ENGH 362	Global Voices (Mason Core)	
ENGH 366	The Idea of a World Literature (Mason Core)	
ENGH 367	World Literatures in English	
FRLN 330	Topics in World Literature (Mason Core)	
FRLN 331	Contexts for Global Cinema (Mason Core)	
IT 300	Modern Telecommunications	
INTS 348	Digital Futures	
PSYC 379	Applied Cross-Cultural Psychology (Mason Core)	
SOCI 314	Sociology of Culture	

THR 359	World Stages (Mason Core)	
or other course approved by the program director		
Total Credits		12

Concentration in Africa (AFR)

This concentration focuses on the societies of Africa, their history, culture, economics, and politics, including the pre-colonial, colonial, and post-colonial experiences. Course options include African diaspora experiences. Upon completion of this concentration, students will have an in-depth understanding of Africa as an international actor, African contributions (past and present) to global society, the political and economic challenges facing the continent today, and African solutions to problems such as civil wars and inequality.

Code	Title	Credits
Select 12 credits from the following:		12
ARTH 206	Survey of African Art (Mason Core)	
ECON 362	African Economic Development (Mason Core)	
FREN 451	Topics in Sub-Saharan Francophone Literature and Culture	
GGS 325	Geography of North Africa and the Middle East	
HIST 261	Survey of African History (Mason Core)	
HIST 262	Survey of African History (Mason Core)	
HIST 335	The African American Experience in the United States: African Background to 1885	
HIST 336	The African American Experience in the United States: Reconstruction to the Present	
HIST 360	History of South Africa (Mason Core)	
Or other course approved by the program director		
Total Credits		12

Concentration in Asia (ASA)

This concentration emphasizes Asia's increasingly significant role in contemporary global issues as well as its historical contexts. The courses in this concentration cover the economic, social, and political issues that confront the Asia-Pacific region (that is, East and Southeast Asian countries). Students interested in anthropology, history, art history, government, and religious studies should consider this concentration.

Code	Title	Credits
Select 12 credits from the following:		12
ANTH 309	Peoples and Cultures of India (Mason Core)	
ARTH 203	Survey of Asian Art (Mason Core)	
ARTH 382	Arts of India (Mason Core)	
ARTH 383	Arts of Southeast Asia (Mason Core)	
ARTH 384	Arts of China (Mason Core)	
ARTH 385	Arts of Japan (Mason Core)	
ARTH 386	The Silk Road (Mason Core)	
CHIN 310	Survey of Chinese Literature (Mason Core)	
CHIN 311	Modern Chinese Literature in Translation (Mason Core)	
CHIN 325	Major Chinese Writers (Mason Core)	
CHIN 328	Asian American Women Writers (Mason Core)	
CHIN 320	Contemporary Chinese Film	
CHIN 470	Special Topics in Chinese Studies	
GOVT 333	Government and Politics of Asia	
GOVT 338	Government and Politics of Russia	
GOVT 341	Chinese Foreign Policy	
GOVT 433	Political Economy of East Asia	
HIST 251	Survey of East Asian History (Mason Core)	
HIST 252	Survey of East Asian History (Mason Core)	
HIST 353	History of Traditional China	
HIST 354	Modern China (Mason Core)	
HIST 356	Modern Japan (Mason Core)	
HIST 357	Postwar Japan (Mason Core)	
HIST 358	Post-1949 China (Mason Core)	
JAPA 310	Japanese Culture in a Global World (Mason Core)	
JAPA 320	Japanese Cinema	
KORE 310	Traditional Korean Literature in Translation	
RELI 212	Religions of Asia (Mason Core)	
RELI 313	Hinduism (Mason Core)	
RELI 314	Chinese Philosophies and Religious Traditions	
RELI 315	Buddhism (Mason Core)	
RELI 317	Daoism	
RUSS 353	Russian Civilization (Mason Core)	
Or other course approved by the program director		
Total Credits		12

Concentration in Europe (EU)

This concentration is designed to equip students with a deep and broad understanding of politics, history, culture, religion, and the arts in Europe as well as Europe's lasting legacies across the globe. Coursework includes broad surveys on government, geography, literature, and economics as well as special topics courses on the Renaissance, World Wars I and II, and nationalism in Eastern Europe. Upon completion of this concentration, students will have the ability to think critically about how historical processes and current events in Europe not only impact Europeans, but also the global community at large.

Code	Title	Credits
Select 12 credits from the following:		12
ARTH 340	Early Renaissance Art in Italy, 1300-1500 (Mason Core)	
ARTH 360	Nineteenth-Century European Art (Mason Core)	
ARTH 362	Twentieth-Century European Art (Mason Core)	
ENGH 339	British and Irish Drama after 1900	
ENGH 361	Continental Fiction, 1880-1950	
FREN 325	Major French Writers (Topic Varies) (Mason Core)	

FREN 470	French and Francophone Cinema
GERM 325	Major Writers (Mason Core)
GERM 340	Topics in German Literature and Film
GGS 320	Geography of Europe
GOVT 334	Government and Politics of Europe
GOVT 337	Ethnic Politics in Western Europe and North America
GOVT 338	Government and Politics of Russia
HIST 304	Western Europe in the Middle Ages
HIST 305	The Renaissance
HIST 306	The Reformation
HIST 307	Old Regime and Revolutionary Europe
HIST 308	Nineteenth-Century Europe
HIST 309	Europe in Crisis: 1914-1948
HIST 312	Nationalism in Eastern Europe
HIST 314	History of Germany
HIST 322	Modern Britain
HIST 436	European Society and Culture: 19th and 20th Centuries
RUSS 353	Russian Civilization (Mason Core)
SPAN 321	Introduction to Spanish Culture
SPAN 325	Major Hispanic Writers (Mason Core)
SPAN 461	Spanish Civilization and Culture
SPAN 483	Medieval and Early Modern Literature of Spain
SPAN 484	Modern and Contemporary Literature of Spain
Or other course approved by the program director	
Total Credits	12

Concentration in Latin America (LA)

This concentration is designed to provide students with an overview of Latin America and its diaspora. Course options include broad surveys of Latin American history, art, literature, music, culture, and politics, as well as courses that provide in-depth exploration of topics such as colonialism, economic development, political movements, race and ethnicity, migration, and aesthetic trends. Upon completion of this concentration, students will have an in-depth understanding of Latin America as an international actor, Latin American contributions (past and present) to global society, and the political and economic challenges faced by the region.

Code	Title	Credits
Select 12 credits from the following:		12
ANTH 302	Peoples and Cultures of Latin America (Mason Core)	
ANTH 307	Ancient Mesoamerica (Mason Core)	
ARTH 204	Survey of Latin American Art (Mason Core)	
ARTH 376	Twentieth-Century Latin American Art (Mason Core)	
ECON 361	Economic Development of Latin America (Mason Core)	
GGS 316	Geography of Latin America	
GOVT 331	Government and Politics of Latin America	
HIST 271	Survey of Latin American History (Mason Core)	
HIST 272	Survey of Latin American History (Mason Core)	
HIST 364	Revolution and Radical Politics in Latin America (Mason Core)	
HIST 365	Conquest and Colonization in Latin America (Mason Core)	
HIST 367	History, Fiction, and Film in Latin America	
SPAN 322	Introduction to Latin American Culture (Mason Core)	
SPAN 325	Major Hispanic Writers (Mason Core)	
SPAN 388	Introduction to Latina/o Studies (Mason Core)	
SPAN 390	Introduction to Hispanic Literary Analysis	
SPAN 466	Latin American Civilization and Culture (Mason Core)	
SPAN 488	The Literature of Spanish America	
Or other course approved by the program director		
Total Credits		12

Concentration in Middle East and North Africa (MNA)

This concentration provides students with a contemporary and historical perspective on the politics, economics, and religious diversity of the Middle East and North Africa. Coursework includes broad surveys as well as courses on specific topics such as the Arab-Israeli conflict, francophone literature from North Africa, politics and Islam, and art and archeology of the ancient Near East. Upon completion of this concentration, students are expected to have an in-depth understanding of the current state of the Middle East and North Africa and how this state has developed historically.

Code	Title	Credits
Select 12 credits from the following:		12
ANTH 308	Peoples and Cultures of the Middle East (Mason Core)	
ARTH 319	Art and Archaeology of the Ancient Near East (Mason Core)	
ARTH 320	Art of the Islamic World (Mason Core)	
ARTH 386	The Silk Road (Mason Core)	
FREN 453	Topics in North African Francophone Literature and Culture	
GGS 325	Geography of North Africa and the Middle East	
GOVT 332	Government and Politics of the Middle East and North Africa	
GOVT 345	Islam and Politics	
HIST 281	Survey of Middle Eastern Civilization (Mason Core)	
HIST 282	Survey of Middle Eastern Civilization (Mason Core)	
HIST 460	Modern Iran (Mason Core)	
HIST 461	Arab-Israeli Conflict	
HIST 462	Women in Islamic Society (Mason Core)	
HIST 465	The Middle East in the 20th Century	
RELI 211	Religions of the West (Mason Core)	

RELI 272	Islam
RELI 352	Judaism from Exile to Talmud
RELI 355	Sufism
RELI 370	Judaism (Mason Core)
RELI 375	Qur'an and Hadith
RELI 387	Islam, Democracy, and Human Rights
Or other course approved by the program director	
Total Credits	12

Concentration in North America (NA)

In this concentration, students explore the multifaceted development of the United States and its relationship with its North American neighbors. Coursework includes historical examinations of pre-American culture, as well as in-depth surveys of political, economic, cultural, and artistic developments in United States. Upon completion of this concentration, students will have the ability to critically assess how the US has influenced and been influenced by European and non-European societies and traditions, knowledge of the development of American government and its consequences within and beyond North America, and an appreciation of the role of arts and literature in American culture.

Code	Title	Credits
Select 12 credits from the following:		12
ARTH 371	American Architecture and Material Culture (Mason Core)	
ARTH 372	Studies in 18th- and 19th-Century Art of the United States (Mason Core)	
ARTH 373	Studies in 20th-Century Art of the United States (Mason Core)	
ENGH 355	Recent American Fiction	
ENGH 356	Recent American Poetry	
GGS 315	Geography of the United States	
GOVT 301	Public Law and the Judicial Process	
GOVT 307	Legislative Behavior	
GOVT 308	The American Presidency	
GOVT 337	Ethnic Politics in Western Europe and North America	
GOVT 420	American Political Thought	
HIST 336	The African American Experience in the United States: Reconstruction to the Present	
HIST 350	U.S. Women's History	
HIST 351	History of the Old South	
HIST 352	The South since 1865	
HIST 370	War and American Society	
USST 401	Seminar: The Future of Metropolitan America	
Or other course approved by the program director		
Total Credits		12

Concentration in Russia and Central Asia (RCA)

This concentration provides students contemporary and historical perspectives on the political, economic, and cultural climates and trends in Russia and Central Asia. Upon completion of this concentration, students will not only have the skills to critically assess the impacts of Soviet-era legacies on newly independent political systems, economies in transition, and re-emerging cultural traditions, but also knowledge of pre-Soviet sociocultural and political environments in Russia and Central Asia.

Code	Title	Credits
Select 12 credits from the following:		12
ARTH 386	The Silk Road (Mason Core)	
ECON 380	Economies in Transition (Mason Core)	
GGS 330	Geography of the Soviet Succession States	
GOVT 338	Government and Politics of Russia	
GOVT 340	Central Asian Politics	
GOVT 447	Revolution and International Politics	
HIST 327	The Soviet Union and Russia Since World War II	
HIST 328	Rise of Russia (Mason Core)	
HIST 329	Modern Russia and the Soviet Union (Mason Core)	
HIST 426	The Russian Revolution	
RUSS 325	Major Russian Writers (Mason Core)	
RUSS 326	A Survey of Russian Literature (Mason Core)	
RUSS 327	A Survey of Russian Literature (Mason Core)	
RUSS 353	Russian Civilization (Mason Core)	
RUSS 354	Contemporary Post-Soviet Life (Mason Core)	
RUSS 407	Russian Drama and Theater	
RUSS 410	Russian Poetry	
RUSS 470	Topics in (Post) Soviet Film	
Or other course approved by the program director		
Total Credits		12

Individualized Concentration (IND)

Students who wish to design their own concentration must submit a one-page proposal and create a curriculum plan to be approved by the director.

Writing-Intensive Requirement

The university requires all students to complete at least one course designated "writing intensive" in their majors at the 300 level or above. Students majoring in global affairs may fulfill this requirement by successfully completing EVPP 337 Environmental Policy Making in Developing Countries.

Upper Level Requirement

Students seeking a bachelor's degree must apply at least 45 credits of upper-level courses (numbered 300 or above) toward graduation requirements.

Additional Electives

Any remaining credits may be completed with elective courses to bring the degree total to 120.

College Level Requirements in the BA Degree

In addition to the Mason Core program, students pursuing a BA degree must complete the coursework below. Except where expressly prohibited, a course used to fulfill a college level requirement may also be used

simultaneously to satisfy other requirements (Mason Core requirements or requirements for the major).

Philosophy or Religious Studies

Code	Title	Credits
Select 3 credits from the following:		3
PHIL [1]		
RELI		

[1] Note that the following courses may not be used to fulfill this requirement:
- PHIL 323 Classical Western Political Theory
- PHIL 324 Modern Western Political Theory
- PHIL 327 Contemporary Western Political Theory
- PHIL 393 Humanities College to Career
- PHIL 460 Senior Seminar in Philosophy, Politics, and Economics

Additionally, PHIL 253 Philosophy and Literature (Mason Core), RELI 235 Religion and Literature (Mason Core), and RELI 333 Spiritual Autobiography (Mason Core) cannot be used to fulfill both the philosophy/religious studies requirement and the Mason Core literature requirement.

Social and Behavioral Sciences

Code	Title	Credits
Select 3 credits of social and behavioral sciences from the following (additional to the Mason Core social and behavioral sciences requirement) [1]		3
ANTH		
CRIM		
ECON		
GOVT		
HIST [2]		
LING		
PSYC		
SOCI		
Or choose from the following GGS courses:		
GGS 101	Major World Regions (Mason Core)	
GGS 103	Human Geography (Mason Core)	
GGS 110	Introduction to Geoinformation Technologies	
GGS 301	Political Geography (Mason Core)	
GGS 303	Geography of Resource Conservation (Mason Core)	
GGS 304	Population Geography (Mason Core)	
GGS 305	Economic Geography	
GGS 306	Urban Geography	
GGS 315	Geography of the United States	
GGS 316	Geography of Latin America	
GGS 320	Geography of Europe	
GGS 325	Geography of North Africa and the Middle East	
GGS 330	Geography of the Soviet Succession States	
GGS 357	Urban Planning	
GGS 380	Geography of Virginia	

[1] The two courses used to fulfill the combined college and Mason Core requirements must be from different disciplines in the social and behavioral sciences.

[2] HIST 100 History of Western Civilization (Mason Core) and HIST 125 Introduction to World History (Mason Core) may not be used to fulfill this requirement.

Foreign Language

Code	Title	Credits
Intermediate-level proficiency in one foreign language, fulfilled by: [1]		
Completing 3 credits in a foreign language numbered 202 (or higher level courses taught in the language)		
Or achieving a satisfactory score on an approved proficiency test		
Or completing the following ASL three course sequence:		
EDSE 115	American Sign Language (ASL) I	
EDSE 116	American Sign Language (ASL) II	
EDSE 219	American Sign Language (ASL) III	

[1] Students who are already proficient in a second language may be eligible for a waiver of this requirement. Additional information on waivers can be found at the Office of Undergraduate Academic Affairs (http://chssundergrad.gmu.edu/).

Non-Western Culture

Select 3 credits of an approved course in the study of a non-Western culture (additional to the Mason Core requirement in global understanding)

Code	Title	Credits
Select 3 credits (additional to Mason Core Global Understanding requirement) [1]		
ANTH 114	Introduction to Cultural Anthropology (Mason Core)	3
ANTH 300	Civilizations	3
ANTH 302	Peoples and Cultures of Latin America (Mason Core)	3
ANTH 307	Ancient Mesoamerica (Mason Core)	3
ANTH 308	Peoples and Cultures of the Middle East (Mason Core)	3
ANTH 309	Peoples and Cultures of India (Mason Core)	3
ANTH 313	Myth, Magic, and Mind (Mason Core)	3
ANTH 314	Zombies	3
ANTH 330	Peoples and Cultures of Selected Regions: Non-Western	3
ANTH 332	Cross-Cultural Perspectives on Globalization (Mason Core)	3
ANTH 381	Medical Anthropology	3
ANTH 396	Issues in Anthropology: Social Sciences (Mason Core)	3
ARAB 360	Topics in Arabic Cultural Production	3
ARAB 420	Survey of Arabic Literature	3
ARAB 440	Topics in Arabic Religious Thought and Texts (Mason Core)	3
ARTH 203	Survey of Asian Art (Mason Core)	3

ARTH 204	Survey of Latin American Art (Mason Core)	3
ARTH 206	Survey of African Art (Mason Core)	3
ARTH 318	Art and Archaeology of Ancient Egypt	3
ARTH 319	Art and Archaeology of the Ancient Near East (Mason Core)	3
ARTH 320	Art of the Islamic World (Mason Core)	3
ARTH 382	Arts of India (Mason Core)	3
ARTH 383	Arts of Southeast Asia (Mason Core)	3
ARTH 384	Arts of China (Mason Core)	3
ARTH 385	Arts of Japan (Mason Core)	3
ARTH 386	The Silk Road (Mason Core)	3
ARTH 482	RS: Advanced Studies in Asian Art	3
CHIN 318	Introduction to Classical Chinese (Mason Core)	3
CHIN 320	Contemporary Chinese Film	3
CHIN 325	Major Chinese Writers (Mason Core)	3
CHIN 470	Special Topics in Chinese Studies	3
DANC 118	World Dance (Mason Core)	3
ECON 361	Economic Development of Latin America (Mason Core)	3
ECON 362	African Economic Development (Mason Core)	3
FREN 451	Topics in Sub-Saharan Francophone Literature and Culture	3
FREN 454	Topics in Caribbean Francophone Literature and Culture	3
GGS 101	Major World Regions (Mason Core)	3
GGS 316	Geography of Latin America	3
GGS 317	Geography of China (Mason Core)	3
GGS 325	Geography of North Africa and the Middle East	3
GGS 330	Geography of the Soviet Succession States	3
GGS 399	Select Topics in GGS	3
GOVT 328	Global Political Theory	3
GOVT 332	Government and Politics of the Middle East and North Africa	3
GOVT 333	Government and Politics of Asia	3
GOVT 338	Government and Politics of Russia	3
GOVT 340	Central Asian Politics	3
GOVT 341	Chinese Foreign Policy	3
GOVT 345	Islam and Politics	3
GOVT 433	Political Economy of East Asia	3
HIST 251	Survey of East Asian History (Mason Core)	3
HIST 252	Survey of East Asian History (Mason Core)	3
HIST 261	Survey of African History (Mason Core)	3
HIST 262	Survey of African History (Mason Core)	3
HIST 271	Survey of Latin American History (Mason Core)	3
HIST 272	Survey of Latin American History (Mason Core)	3
HIST 281	Survey of Middle Eastern Civilization (Mason Core)	3
HIST 282	Survey of Middle Eastern Civilization (Mason Core)	3
HIST 326	Stalinism	3
HIST 327	The Soviet Union and Russia Since World War II	3
HIST 328	Rise of Russia (Mason Core)	3
HIST 329	Modern Russia and the Soviet Union (Mason Core)	3
HIST 353	History of Traditional China	3
HIST 354	Modern China (Mason Core)	3
HIST 356	Modern Japan (Mason Core)	3
HIST 357	Postwar Japan (Mason Core)	3
HIST 358	Post-1949 China (Mason Core)	3
HIST 360	History of South Africa (Mason Core)	3
HIST 364	Revolution and Radical Politics in Latin America (Mason Core)	3
HIST 365	Conquest and Colonization in Latin America (Mason Core)	3
HIST 366	Comparative Slavery	3
HIST 367	History, Fiction, and Film in Latin America	3
HIST 387	Topics in Global History (Mason Core)	3-6
HIST 426	The Russian Revolution	3
HIST 460	Modern Iran (Mason Core)	3
HIST 461	Arab-Israeli Conflict	3
HIST 462	Women in Islamic Society (Mason Core)	3
HIST 465	The Middle East in the 20th Century	3
JAPA 310	Japanese Culture in a Global World (Mason Core)	3
JAPA 340	Topics in Japanese Literature (Mason Core)	3
KORE 320	Korean Popular Culture in a Global World	3
MUSI 103	Musics of the World (Mason Core)	3
RELI 211	Religions of the West (Mason Core)	3
RELI 212	Religions of Asia (Mason Core)	3
RELI 240	Death and the Afterlife in World Religions	3
RELI 272	Islam	3
RELI 313	Hinduism (Mason Core)	3
RELI 314	Chinese Philosophies and Religious Traditions	3
RELI 315	Buddhism (Mason Core)	3
RELI 317	Daoism	3
RELI 337	Mysticism: East and West	3
RELI 365	Muhammad: Life and Legacy	3
RELI 374	Islamic Thought (Mason Core)	3
RELI 375	Qur'an and Hadith	3
RELI 379	Islamic Law, Society, and Ethics	3
RELI 387	Islam, Democracy, and Human Rights	3
RELI 490	Comparative Study of Religions (Mason Core)	3
RUSS 353	Russian Civilization (Mason Core)	3

RUSS 354	Contemporary Post-Soviet Life (Mason Core)	3

1 A course used to fulfill the Mason Core global understanding requirement may not be simultaneously used to satisfy this college-level requirement. A course used to fulfill this requirement may be used simultaneously to fulfill any other requirements (Mason Core requirements, college-level requirements, or requirements for the major). Additional information on waivers can be found at the Office of Undergraduate Academic Affairs (http://chssundergrad.gmu.edu/).

Mason Core

Some Mason Core requirements may already be fulfilled by the major requirements listed above. Students are strongly encouraged to consult their advisors to ensure they fulfill all remaining Mason Core requirements.

Code	Title	Credits
Foundation Requirements		
Written Communication (ENGH 101)		3
Oral Communication		3
Quantitative Reasoning		3
Information Technology and Computing		3
Exploration Requirements		
Arts		3
Global Understanding		3
Literature		3
Natural Science		7
Social and Behavioral Sciences		3
Western Civilization/World History		3
Integration Requirements		
Written Communications (ENGH 302)		3
Writing-Intensive [1]		3
Synthesis/Capstone [2]		3
Total Credits		40

1 Most programs include the writing-intensive course designated for the major as part of the major requirements; this course is therefore not counted towards the total required for Mason Core.

2 Minimum 3 credits required.

4-Year Plan

Bachelor of Arts in Global Affairs Sample Plan of Study

A sample four year graduation plan and degree planning worksheet can be found at https://academicaffairs.chss.gmu.edu/undergraduate-students/advising/advising-sheets (https://academicaffairs.chss.gmu.edu/undergraduate-students/advising/advising-sheets/). The plan is a recommended sequencing of courses based on prerequisites and scheduling. This may not fit every student's needs and is a guideline, not a requirement. Students should confirm major requirements with their academic advisor each semester and with their PatriotWeb Degree Evaluation to ensure they enroll in the proper courses and are on track to graduate.

Honors

Honors in the Major

Highly qualified students may pursue advanced work leading to graduation with honors in the major. Global affairs majors who have completed 75 credits with an overall GPA of 3.50 and a GPA of 3.50 in courses for the major are eligible to apply to graduate with honors.

Students pursuing honors in the major must complete the two-course honors sequence, GLOA 491 Honors Seminar in Global Affairs and GLOA 492 Honors Research Project in Global Affairs, with a minimum GPA of 3.50 in the sequence. Not all applicants who meet the minimum requirements are guaranteed acceptance.

Accelerated Master's

The accelerated master's program listed below specifies the BA in global affairs as a feeder degree for its program. Many other accelerated master's programs are also available for any bachelor's degree at Mason. See the full list of degrees (https://catalog.gmu.edu/programs/#filter=filter_24) with accelerated programs at George Mason. In addition, as a student with a BA in global affairs you may be particularly interested in the accelerated (https://catalog.gmu.edu/colleges-schools/humanities-social-sciences/global-affairs/global-affairs-ma/#acceleratedmasterstext)MA in global affairs (https://catalog.gmu.edu/colleges-schools/humanities-social-sciences/global-affairs/global-affairs-ma/#acceleratedmasterstext).

Bachelor's Degree (any)/Global Affairs, Accelerated MA

Overview

Highly qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BA/BS in a chosen major and an MA in Global Affairs in an accelerated time-frame after satisfactory completion of a minimum of 138 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degree for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Polices and Bachelor's/Accelerated Master's Degree policies. For information specific to the accelerated MA in global affairs, see Application Requirements and Deadlines (https://globalaffairs.gmu.edu/programs/LA-MA-ACEL-gloa/) on the departmental website.

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits, and after meeting the following:

- Minimum overall GPA of 3.50
- Enrolled in or have completed a foreign language course 202 or higher with a minimum grade of C- prior to graduation with the BA (or other evidence of proficiency in foreign language).

Students who are accepted in the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MA program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- Minimum overall GPA of 3.50
- Minimum grade of B in each advanced standing course
- Successfully met Mason's requirements for undergraduate degree conferral (graduation) and completed the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing courses (up to 12 credits with a minimum grade of B in each)

Required course

GLOA 600 Global Competencies (3 credits)

Additional Optional Courses

GLOA 605 Interdisciplinary Research Methods (3 credits)
GLOA 615 Case Studies in Globalization (3 credits) (first 3 credits taken to fulfill GLOA 615 requirement and may be repeated one time for another 3 credits as a specialization course, with permission of program)
GLOA 599 Issues in Global Affairs (1-6 credits) as a specialization course

Other specialization course after GLOA 600 and 605 have been completed with the permission of the program.

Reserve Graduate Credit courses (up to 6 credits) taken while an undergraduate and will only count for the graduate degree program

GLOA 599 Issues in Global Affairs (1-6 credits) as a specialization course

GLOA 615 Case Studies in Globalization (3 credits) if not taken as advanced standing

500- or 600-level courses approved for student's specialization

For more detailed information on coursework and timeline requirements see AP.6.7 Bachelor's Accelerated Master's Degree policies.

Bachelor's Degree (selected)/ Environmental Science and Policy, Accelerated MS

Overview

This bachelor's/accelerated master's degree program allows academically strong undergraduates with a commitment to advance their education to obtain a Green Leaf-designated bachelor's degree and the Environmental Science and Policy, MS (https://catalog.gmu.edu/colleges-schools/science/environmental-policy/environmental-science-policy-ms/) degrees within an accelerated timeframe. Upon completion of this 141 credit accelerated program, students will be exceptionally well prepared for entry into their careers or into a doctoral program in the field or in a related discipline.

Students are eligible to apply for this accelerated program once they have earned at least 60 undergraduate credits and can enroll in up to 18 credits of graduate coursework after successfully completing 75 undergraduate credits. This flexibility makes it possible for students to complete a bachelor's and a master's in five years.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies. For more information on undergraduates enrolling in graduate courses, see AP.1.4.4 Graduate Course Enrollment by Undergraduates (https://catalog.gmu.edu/policies/academic/registration-attendance/#text).

Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in the Graduate Admission Policies section of this catalog.

Important application information and processes for this accelerated master's program can be found here (https://www2.gmu.edu/admissions-aid/how-apply/accelerated-masters/).

The GRE exam is not required for this accelerated master's program.

Students should submit three letters of recommendation (at least one from a former professor or someone with a PhD), a recent resume, a statement of interest/research goals and interests (including information on the candidate's proposed MS research), and a letter from their advisor (see Graduate Advisor section below) stating that the advisor agrees to take on the candidate as an MS student, how the candidate would be a good fit for them and why candidate's research topic would be suitable.

Students with an overall GPA of at least 3.20 who are pursuing any Green Leaf-designated major or minor may apply to this accelerated master's program after completing two semesters of chemistry (including CHEM 211 General Chemistry I (Mason Core) and CHEM 212 General Chemistry II (Mason Core) and three semesters of biology, including a course in ecology, or the equivalent, for example:

Code	Title	Credits
Select one of the following options:		13
Option 1:		
BIOL 213	Cell Structure and Function (Mason Core)	
BIOL 214	Biostatistics for Biology Majors	
BIOL 308	Foundations of Ecology and Evolution	
Option 2:		
EVPP 210	Environmental Biology: Molecules and Cells	
EVPP 301	Environmental Science: Biological Diversity and Ecosystems	
EVPP 302	Environmental Science: Biomes and Human Dimensions	
EVPP 305	Environmental Microbiology Essentials	

EVPP 306	Environmental Microbiology Essentials Laboratory
Option 3:	
CONS 401	Conservation Theory
CONS 402	Applied Conservation
6 credits of BIOL or CONS electives	

Graduate Advisor

By at least the beginning of their senior year, students should seek out a faculty member in the Department of Environmental Science and Policy who is willing to serve as their advisor. This advisor will aid the student in choosing the appropriate graduate courses to take and help to prepare the student for graduate studies. Admission into a research-oriented master's concentration is dependent upon securing the agreement of a faculty advisor. Faculty from a variety of departments and colleges at George Mason University (called "program faculty") can serve as master's advisors. Potential students are encouraged to speak with the graduate program coordinator in the department to obtain guidance on this issue.

Accelerated Option Requirements

After the completion of 75 undergraduate credits, students may complete 3 to 12 credits of graduate coursework that can apply to both the undergraduate and graduate degrees.

In addition to applying to graduate from the undergraduate program, students in the accelerated program must submit a bachelor's/accelerated master's transition form (available from the Office of the University Registrar (https://registrar.gmu.edu/forms/)) to the College of Science's Office of Academic and Student Affairs (https://cos.gmu.edu/about/contact-us/) by the last day to add classes of their final undergraduate semester. Students should enroll for courses in the master's program in the fall or spring semester immediately following conferral of the bachelor's degree, but should contact an advisor if they would like to defer up to one semester.

Students must maintain an overall GPA of 3.00 or higher in all graduate coursework and should consult with their faculty advisor to coordinate their academic goals.

Reserve Graduate Credits

Accelerated master's students may also take up to 6 graduate credits as reserve graduate credits. These credits do not apply to the undergraduate degree, but will reduce the master's degree by up to 6 credits. With 12 graduate credits counted toward the undergraduate degree plus the maximum 6 reserve graduate credits, the credits necessary for the graduate degree can be reduced by up to 18.

Graduate Course Suggestions

The following list of suggested courses is provided for general reference. To ensure an efficient route to graduation and post-graduation readiness, students are strongly encouraged to meet with an advisor before registering for graduate-level courses.

Code	Title	Credits
EVPP 518	Conservation Biology	3
EVPP 529	Environmental Science Communication	3
EVPP 621	Overview of Biodiversity Conservation	3
EVPP 635	Environment and Society	3

Global Affairs, MA

Banner Code: LA-MA-GLOA

Academic Advising

6300 Horizon Hall
Fairfax Campus

Email: globalma@gmu.edu
Website: globalaffairs.gmu.edu/programs/la-ma-gloa

The Global Affairs, MA is an interdisciplinary program offering students the opportunity to engage in advanced study of a broad range of global issues. Students complete a core curriculum that provides the knowledge and skills to think and act globally. Students also pursue specializations that include relevant courses from academic departments across the university. All students in the program take part in a residency abroad, typically two weeks in duration, and complete a capstone seminar. Graduates enter the workforce or move forward in their already-established international and domestic careers in the public sector, non-governmental organizations, and business.

This is a Green Leaf program.

Admissions & Policies

Admissions

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions. For specific information, see Application Requirements and Deadlines (http://globalaffairs.gmu.edu/programs/application/LA-MA-GLOA/) on the departmental website.

Policies

For policies governing all graduate degrees, see AP.6 Graduate Policies.

Students who wish to pursue study abroad in addition to the required core course GLOA 710 Seminar Abroad must receive prior approval and may not use more than 3 credits earned while abroad towards their specialization. Students must maintain a 3.00 cumulative grade point average with no more than two grades below B.

Requirements

Degree Requirements

Total credits: 30

This is a Green Leaf program.

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Core Courses

Code	Title	Credits
GLOA 600	Global Competencies	3
GLOA 605	Interdisciplinary Research Methods	3
GLOA 610	Economic Globalization and Development	3

GLOA 615	Case Studies in Globalization	3
GLOA 710	Seminar Abroad	3
Total Credits		15

Specialization

Students choose to specialize in one of eight fields by completing 12 credits in that field selected from the courses listed. The specialization is developed in consultation with an advisor. Students who wish to design their own specialization must submit a one-page proposal and receive written approval from the director. Specialization courses must come from at least two academic disciplines.

Global Conflict and Security

Code	Title	Credits
Select 12 credits from the following:		12
BIOD 610	Advanced Topics in Global Health Security (minimum of 3 credits)	
BIOD 621	Ethics and International Security	
BIOD 705	Intelligence: Theory and Practice	
BIOD 706	Nuclear, Biological, and Chemical Weapons Policy and Security	
BIOD 709	Nonproliferation and Arms Control	
BIOD 722	Examining Terrorist Groups	
BIOD 725	Terrorism and Weapons of Mass Destruction	
CONF 501	Introduction to Conflict Analysis and Resolution	
CONF 652	Conflict Analysis and Resolution for Prevention, Reconstruction, and Stabilization Contexts	
CONF 653	World Religions, Diplomacy, and Conflict Resolution	
CONF 658	Diversity and Difference in Conflict Analysis and Resolution	
CONF 659	Leadership in Conflict Analysis and Resolution	
CONF 720	Ethnic and Cultural Factors in Conflict Resolution	
CONF 736	Globalization and International Conflict	
GOVT 742	International Negotiation	
GOVT 745	International Security	
PUAD 634	Management of International Security	
PUBP 650	International Conflict and Crisis Response	
PUBP 651	Peace and Stabilization Operations	
or other course approved by the program director		
Total Credits		12

Global Culture and Society

Code	Title	Credits
Select 12 credits from the following:		12
ANTH 580	Environmental Anthropology	
ANTH 635	Regional Ethnography	
ANTH 721	Culture, Power, and Conflict	
CONF 707	Gender and Violence	
CONF 720	Ethnic and Cultural Factors in Conflict Resolution	
ENGH 665	Seminar in Global Culture	
GOVT 530	Comparative Politics	
GOVT 725	Democratic Theory	
GOVT 739	Issues in Comparative and International Politics	
HIST 510	Approaches to Modern World History	
HIST 535	Problems in Comparative World History	
HIST 615	Problems in American History	
MUSI 640	Topics in World Musics	
RELI 632	Interreligious Dialogue	
RELI 633	Issues in Religious Ethics	
SOAN 510	Culture and Globalization	
SOCI 623	Racial and Ethnic Relations: American and Selected Global Perspectives	
SPMT 551	Sport in the Global Marketplace	
WMST 640	Transnational Issues of Gender and Race	
or other course approved by the program director		
Total Credits		12

Global Economics and Development

This specialization is best suited for students with an academic background in economics or for students who have taken microeconomics, macroeconomics, and calculus with a minimum grade of 3.00 in all three.

Code	Title	Credits
Select 12 credits from the following:		12
CONF 732	Conflict in Development	
ECON 611	Microeconomic Theory	
ECON 612	Microeconomic Theory II	
ECON 615	Macroeconomic Theory	
ECON 676	Comparative Economic Systems	
EVPP 642	Environmental Policy	
GOVT 743	International Political Economy	
ITRN 500	Global Political Economy	
ITRN 503	Macroeconomic Policy in the Global Economy	
ITRN 602	Global Financial Crises and Institutions	
ITRN 603	Global Trade Relations	
ITRN 701	Special Topics in International Commerce and Policy	
ITRN 767	Political Economy and Integration in Latin America	
PUAD 504	Managing in the International Arena: Theory and Practice	
Total Credits		12

Global Education

Code	Title	Credits
Select 12 credits from the following:		12
EDUC 537	Introduction to Culturally Linguistically Diverse Learners	
EDUC 606	Education and Culture	
EDEP 550	Theories of Learning and Cognition	
EDEP 653	Culture and Intelligence	

ENGH 665	Seminar in Global Culture	
SOCI 845	Society and Education	
Or other course approved by the program director		
Total Credits		12

Global Governance and Public Management

Code	Title	Credits
Select 12 credits from the following:		12
BIOD 709	Nonproliferation and Arms Control	
GOVT 540	International Relations	
GOVT 631	Seminar in Comparative Politics and Institutions	
GOVT 741	Advanced Seminar in International Politics	
GOVT 742	International Negotiation	
ITRN 701	Special Topics in International Commerce and Policy	
ITRN 761	European Political and Economic Union	
PUAD 636	The NGO: Policy and Management	
PUAD 701	Cross-Cultural and Ethical Dimensions of International Management	
PUBP 502	Governance and Policy Processes	
PUBP 700	Theory and Practice in Public Policy	
PUBP 783	Global Governance	
Or other course approved by the program director		
Total Credits		12

Global Health

Code	Title	Credits
Select 12 credits from the following:		12
COMM 705	Intercultural Health and Risk Communication	
GCH 543	Global Health	
GCH 560	Environmental Health	
GCH 571	HIV/AIDS: Concepts, Principles, and Interventions	
GCH 611	Health Program Planning and Evaluation	
GCH 640	Global Infectious Diseases	
GCH 645	U.S. and Global Public Health Systems	
GGS 540	Health Geography	
GGS 581	World Food and Population	
HAP 609	Comparative International Health Systems	
NUTR 630	Global Nutrition	
PUBP 757	Public Policy in Global Health and Medical Practice	
PUBP 758	Global Threats and Medical Policies	
Or other course approved by the program director		
Total Credits		12

Global Media and Information Technology

Code	Title	Credits
Select 12 credits from the following:		12
COMM 630	Theories of Public Relations	
ITRN 604	New Technologies in the Global Economy	
ITRN 701	Special Topics in International Commerce and Policy	
PUBP 503	Culture, Organization, and Technology	
PUBP 726	Telecommunications Policy	
PUBP 736	International Migration and Public Policy	
Or other course approved by the program director		
Total Credits		12

Global Population and Geography

Code	Title	Credits
Select 12 credits from the following:		12
ANTH 580	Environmental Anthropology	
GGS 505	Transportation Geography	
GGS 533	Issues in Regional Geography	
GGS 540	Health Geography	
GGS 550	Geospatial Science Fundamentals	
GGS 581	World Food and Population	
GGS 590	Selected Topics in Geography	
GGS 631	Spatial Agent-Based Models of Human-Environment Interactions	
PUBP 754	Geographic Information Systems and Spatial Analysis for Public Policy	
SOCW 653	Immigration Policy	
Or other course approved by the program director		
Total Credits		12

Capstone Seminar

Code	Title	Credits
GLOA 720	Capstone Research Seminar	3
Total Credits		3

Dual Degree Options

Foreign Languages, MA and Global Affairs, MA Dual Degree

Students interested in pursuing a dual master's program linking foreign languages or global affairs with another discipline should discuss their interest with the graduate program directors of both programs and review the university policies regarding Individualized Dual Master's Degree Programs.

Students approved to pursue a dual master's program linking the foreign languages MA with a concentration in French, Spanish, or Spanish bilingual/multicultural education with the global affairs MA can share 12 credits between the two programs. Application to the second master's program should be pursued with consultation of the directors of both programs. Admission to the second master's program will require that the student has met the minimum prerequisites for admissions to the second program.

Accelerated Master's

Bachelor's Degree (any)/Global Affairs, Accelerated MA

Overview

Highly qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BA/BS in a chosen major and an MA in Global Affairs in an accelerated time-frame after satisfactory completion of a minimum of 138 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degree for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Polices and Bachelor's/Accelerated Master's Degree policies. For information specific to the accelerated MA in global affairs, see Application Requirements and Deadlines (https://globalaffairs.gmu.edu/programs/LA-MA-ACEL-gloa/) on the departmental website.

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits, and after meeting the following:

- Minimum overall GPA of 3.50
- Enrolled in or have completed a foreign language course 202 or higher with a minimum grade of C- prior to graduation with the BA (or other evidence of proficiency in foreign language).

Students who are accepted in the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MA program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- Minimum overall GPA of 3.50
- Minimum grade of B in each advanced standing course
- Successfully met Mason's requirements for undergraduate degree conferral (graduation) and completed the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing courses (up to 12 credits with a minimum grade of B in each)

Required course

GLOA 600 Global Competencies (3 credits)

Additional Optional Courses

GLOA 605 Interdisciplinary Research Methods (3 credits)
GLOA 615 Case Studies in Globalization (3 credits) (first 3 credits taken to fulfill GLOA 615 requirement and may be repeated one time for another 3 credits as a specialization course, with permission of program)
GLOA 599 Issues in Global Affairs (1-6 credits) as a specialization course

Other specialization course after GLOA 600 and 605 have been completed with the permission of the program.

Reserve Graduate Credit courses (up to 6 credits) taken while an undergraduate and will only count for the graduate degree program

GLOA 599 Issues in Global Affairs (1-6 credits) as a specialization course

GLOA 615 Case Studies in Globalization (3 credits) if not taken as advanced standing

500- or 600-level courses approved for student's specialization

For more detailed information on coursework and timeline requirements see AP.6.7 Bachelor's Accelerated Master's Degree policies.

Higher Education Program

316 Enterprise Hall
Fairfax Campus

Phone: 703-993-2310
Website: highered.gmu.edu

The Higher Education Program prepares students for positions of leadership in teaching, research, and administration at community colleges, four-year colleges, and universities around the globe. The interdisciplinary curriculum focuses on leadership, the scholarship of teaching and learning, administration, and assessment. The program also prepares students for positions in academic and student affairs as well as in associations, government agencies, and industries whose activities relate to or impact higher education.

MA in Higher Education and Student Development

The program prepares students for positions in higher education administration, student development, non-profit higher education associations, and government organizations. Today's higher education professionals are required to address both the needs of incoming traditionally aged students, as well as those of older students returning for a degree and special populations. The wide range of student backgrounds in the current complex context requires a holistic approach to college student development.

Doctor of Philosophy in Education with Specialization in Higher Education

The doctor of philosophy in education with a specialization in higher education is offered jointly by the Higher Education Program and the College of Education and Human Development. This doctoral program prepares students for faculty positions and positions of leadership in administration and student services through core required coursework in higher education and through a secondary concentration that can further disciplinary expertise.

See the Education, PhD for more information.

Certificates

The program offers graduate certificates in college teaching with a concentration in higher education pedagogy and in higher education administration. Students may take these as stand-alone certificates or pursue them concurrently with a graduate degree program. Part of the certificate course work may be applied to the degree subject to the approval of the director of the graduate degree program. Students must apply and be accepted to a graduate certificate program.

Faculty

Program Faculty

Core Faculty

Chen (director), Lenzy, Lester, Schrum

Affiliate Faculty

Anthony, Brown Leonard, Cicchetti, Farris, Foster, Holmes, Hughes, Jorgenson, Lortenson, Lucas, Okahana, Owen, Park, Scher, Stearns

Programs

- College Teaching Graduate Certificate (HE)
- Higher Education Administration Graduate Certificate
- Higher Education and Student Development, MA

College Teaching Graduate Certificate (HE)

Banner Code: LA-CERG-CTCH

Academic Advising

316 Enterprise Hall
Fairfax Campus

Email: hepadmin@gmu.edu
Website: highered.gmu.edu/programs/la-cerg-ctch-he

The certificate in College Teaching is designed for graduate students who are planning a career in undergraduate education. The program offers courses that enhance pedagogical skills and explore pedagogical assessment or scholarship with the use of technology in instruction.

This certificate program qualifies for Title IV Federal Financial Aid.

Admissions & Policies

Admissions

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions.

Policies

For policies governing all graduate certificates, see AP.6.8 Requirements for Graduate Certificates.

Concentration in English Pedagogy

This concentration in the graduate certificate in college teaching requires 18 credits. Students must achieve a minimum grade of 3.00 in each course.

Concentration in Higher Education Pedagogy

This concentration in the graduate certificate in college teaching requires 18 credits.

Requirements

Certificate Requirements

Total credits: 18

This certificate may be pursued on a full-or part-time basis.

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Students pursuing this graduate certificate must choose either a concentration in English pedagogy or a concentration in higher education pedagogy.

Concentration in English Pedagogy (EPGY)

Core Courses

Code	Title	Credits
ENGH 610	Proseminar in Teaching the Reading of Literature	3
ENGH 615	Proseminar in Composition Instruction	3
Pedagogy Courses		
Select two courses from the following:		6
ENGH 620	Topics in Pedagogy	
ENGH 695	Northern Virginia Writing Project Inservice Program [1]	
ENGH 697	Composition Theory	
ENGH 699	Visiting Writers [2]	
LING 521	Applied Linguistics: Teaching English to Speakers of Other Languages (TESOL)	
Total Credits		12

1 Offered only to full-time teachers through school district contracts.

2 Topic must be NVWP Summer Institute; open to full-time teachers on an invitation basis.

Electives

Code	Title	Credits
Select content-area coursework that supports their goals in developing pedagogical expertise. [1]		6
Total Credits		6

1 Electives should be selected in consultation with an advisor.

Concentration in Higher Education Pedagogy (HEDP)

Core Courses

Code	Title	Credits
Choose 9 credits from the following courses:		9
HE 602	College Teaching	
HE 605	Learning Assessment	

HE 703	Higher Education in the Digital Age	
HE 704	The Scholarship of Teaching and Learning	
HE 712	Assessment and Program Evaluation in Higher Education	
Practicum		
HE 685	Practicum	3
Total Credits		12

Electives

Code	Title	Credits
Choose 6 credits from the following courses:		6
HE 601	The Community College	
HE 606	Cultural Pluralism in Higher Education	
HE 610	Research Methods in Higher Education	
HE 641	Introduction to Helping Skills	
HE 645	The Contemporary College Student	
HE 646	Student Development Theory	
HE 706	Students in Postsecondary Education	
HE 721	History of Higher Education	
Other HE courses, when relevant, with approval of director or advisor		
Total Credits		6

Higher Education Administration Graduate Certificate

Banner Code: LA-CERG-HEDA

Academic Advising

316 Enterprise Hall
Fairfax Campus

Email: hepadmin@gmu.edu
Website: highered.gmu.edu/programs/la-cerg-heda

The certificate is designed for individuals who are planning or enhancing a career in a broad range of administrative positions in higher education institutions. The certificate will provide core knowledge for administrative processes in the context of higher education institutions.

This certificate program qualifies for Title IV Federal Financial Aid.

Admissions & Policies

Admissions

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions. For information specific to the graduate certificate in higher education administration, see Application Requirements and Deadlines (http://chss.gmu.edu/programs/LA-CERG-HEDA/application/).

Requirements

Certificate Requirements

Total credits: 18

This certificate may be pursued on a full-or part-time basis.

For policies governing all graduate certificates, see AP.6.8 Requirements for Graduate Certificates.

Core Courses

Code	Title	Credits
Choose 9 credits from the following:		9
HE 646	Student Development Theory	
HE 712	Assessment and Program Evaluation in Higher Education	
HE 721	History of Higher Education	
HE 722	Organization and Administration in Higher Education	
Total Credits		9

Electives

Code	Title	Credits
Choose 9 credits of electives from the following:		9
HE 601	The Community College	
HE 606	Cultural Pluralism in Higher Education	
HE 610	Research Methods in Higher Education	
HE 624	Finance and Fiscal Management in Higher Education	
HE 641	Introduction to Helping Skills	
HE 644	Organization and Administration of Student Affairs	
HE 645	The Contemporary College Student	
HE 685	Practicum	
Other HE courses, when relevant, with approval of director or advisor		
Total Credits		9

Higher Education and Student Development, MA

Banner Code: LA-MA-HESD

Academic Advising

316 Enterprise Hall
Fairfax Campus

Email: hepadmin@gmu.edu
Website: highered.gmu.edu/programs/la-ma-hesd

The program prepares students for positions in higher education administration, student development, non-profit higher education associations, and government organizations. Today's higher education professionals are required to address both the needs of incoming traditionally aged students, as well as those of older students returning

for a degree and special populations. The wide range of student backgrounds in the current complex context requires a holistic approach to college student development.

The Master of Arts degree in Higher Education and Student Development will prepare future higher education leaders who understand higher education in the digital age, student development, multicultural and diverse populations, program development, professionalism, and learning assessment. This multidisciplinary program offers both thesis and project capstone options and is full and part-time student friendly. Alumni hold positions in areas such as career development, academic advising, assessment, facilities management, admissions, and residence life.

Admissions & Policies

Admissions

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions. For specific information, see Application Requirements and Deadlines on the departmental website.

Policies

For policies governing all graduate degrees, see AP.6 Graduate Policies.

Transfer Credit

Courses applied to the degree are subject to the following restrictions: a maximum of 6 credits may be taken through the Consortium of Universities of the Washington Metropolitan Area; a maximum of 9 credits may be transfer credits; a maximum of 6 of the transfer credits may be from other accredited institutions.

Transfer credits include credits taken before first enrolling as an admitted degree-seeking student (at another institution, in another Mason graduate program, or in Mason non-degree status) or credits taken at another institution after admission to the degree program through study abroad or study elsewhere (which requires prior written approval of the director and the dean). Additional information may be found in AP.6.5.3 Transfer of Credit.

Requirements

Degree Requirements

Total credits: 36

The program offers two distinct tracks: (a) Student Affairs Administration and (b) Higher Education Leadership. The Students Affairs Administration track is built on the Council for the Advancement of Standards in Higher Education's (CAS) standards and guidelines for Master's Level Student Affairs Professional Preparation Programs. The Higher Education Leadership track takes an interdisciplinary approach to offer the flexibility for students to select courses that meet their professional needs.

Students Affairs Administration track

The Students Affairs Administration track is built on the Council for the Advancement of Standards in Higher Education's (CAS) standards and guidelines for Master's Level Student Affairs Professional Preparation Programs. Graduates will have the knowledge, prospectives, and skills to serve in a wide variety of capacities within higher education.

Required Courses

Code	Title	Credits
HE 606	Cultural Pluralism in Higher Education	3
HE 610	Research Methods in Higher Education	3
HE 624	Finance and Fiscal Management in Higher Education	3
HE 644	Organization and Administration of Student Affairs	3
HE 645	The Contemporary College Student	3
HE 646	Student Development Theory	3
HE 685	Practicum [1]	6
HE 703	Higher Education in the Digital Age	3
HE 721	History of Higher Education	3
Total Credits		30

[1] CAS standard requires students to complete two practicums that provide distinct experiences. Students who are working full-time in higher education may substitute the 2nd practicum with an elective course.

Capstone Requirement

Students may choose the capstone course option or thesis option as described below.

Code	Title	Credits
Capstone Course Option		
Students who select the capstone course option will complete one elective course (3 credits) approved by the advisor in addition to the HE 797 Higher Education Capstone. Electives can be taken outside of the Higher Education Program and should be selected in consultation with the advisor.		
One elective course		3
HE 797	Higher Education Capstone	3
Total Credits		6

Code	Title	Credits
Thesis Option		
A thesis is a rigorous scholarly inquiry that requires the collection of original data and is presented in a traditional, formal, written format. It is informed by experience gained from the research apprenticeship. The guideline and deadlines for thesis submission are set by the University and administered by the University Dissertation and Thesis Service. Students selecting the thesis option must complete an extra research course approved by the student's thesis advisor in addition to HE 799 Higher Education Thesis.		
One elective research course		3
HE 799	Higher Education Thesis (3 credits required) [1]	3
Total Credits		6

[1] Students are required to enroll in a minimum of 3 credit hours of HE 799. If the thesis is not completed within the timeframe of a 3-credit-hour course, the student must continue to register and enroll in HE 799 until the thesis is completed.

Higher Education Leadership track

The Higher Education Leadership track takes an interdisciplinary approach to offer the flexibility for students to select courses that meet their professional needs.

Required Courses

Code	Title	Credits
HE 606	Cultural Pluralism in Higher Education	3
HE 610	Research Methods in Higher Education	3
HE 624	Finance and Fiscal Management in Higher Education	3
HE 645	The Contemporary College Student	3
HE 685	Practicum	3
HE 703	Higher Education in the Digital Age	3
HE 721	History of Higher Education	3
Total Credits		21

Specialization Courses

Code	Title	Credits
Students should work with their advisor to select three courses (9 credit hours) either in the Higher Education Program or in another discipline that fits the students' career goals.		9

Capstone Requirement

Students may choose the capstone course option or these option as described below.

Code	Title	Credits
Capstone Course Option		
Students who select the capstone course option will complete one elective course (3 credits) approved by the advisor in addition to the HE 797 Higher Education Capstone. Electives can be taken outside of the Higher Education Program and should be selected in consultation with the advisor.		
One elective course		3
HE 797	Higher Education Capstone	3
Total Credits		6

Code	Title	Credits
Thesis Option		
A thesis is a rigorous scholarly inquiry that requires the collection of original data and is presented in a traditional, formal, written format. It is informed by experience gained from the research apprenticeship. The guideline and deadlines for thesis submission are set by the University and administered by the University Dissertation and Thesis Service. Students selecting the thesis option must complete an extra research course approved by the student's thesis advisor in addition to HE 799 Higher Education Thesis.		
One elective research course		3
HE 799	Higher Education Thesis	3
Total Credits		6

Interdisciplinary Studies Program

Ben Gatling, Interim Director

5200 Horizon Hall
Fairfax Campus

Phone: 703-993-8762
Website: mais.gmu.edu

The master of arts degree program in interdisciplinary studies (MAIS) is designed for students who seek a degree that integrates knowledge from several disciplines. It addresses a rapidly evolving demand for specialized and individualized graduate study. Students choose one of seven structured concentrations or devise an individualized program of study when traditional degree programs do not meet their evolving careers or life goals.

The degree requires coursework from a home department and selected courses from other disciplines. Students complete their degrees with a project or thesis.

Concentrations

Students pursuing a master's degree program in interdisciplinary studies can choose established concentrations in these areas:

- Computational Social Science
- Energy and Sustainability
- Religious Studies
- Social Entrepreneurship
- Social Justice and Human Rights
- War and the Military in Society
- Women and Gender Studies

For a variety of reasons, traditional graduate programs are not able to meet the specific educational goals of some students. They can choose an individualized concentration. With the help of a faculty advisor, they design an individualized program of study that includes courses from several academic disciplines.

Faculty

Concentration Heads

Berea, Breglia, Chen, Dakake, Frye, Hamner, Lewis

Programs

- Interdisciplinary Studies, MAIS

Interdisciplinary Studies, MAIS

Banner Code: LA-MAIS-ISIN

Academic Advising

5200 Horizon Hall
Fairfax Campus

Email: mais@gmu.edu
Website: mais.gmu.edu/programs/LA-MAIS-ISIN

The MA in interdisciplinary studies is for students who seek a master's degree that integrates knowledge from several disciplines. It addresses the rapidly evolving demand for unique graduate study by promoting advanced scholarship that transcends traditional disciplinary boundaries. Students can pursue one of the following structured interdisciplinary concentrations and also have the opportunity to design an individualized concentration to meet the special needs of their careers.

The MAIS in Interdisciplinary Studies with a concentration in Energy and Sustainability is a Green Leaf program.

Admissions & Policies

Admissions

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions. For information specific to the MA in Interdisciplinary Studies, see Application Requirements and Deadlines (http://mais.gmu.edu/programs/LA-MAIS-ISIN/application/).

Applicants must show a capacity for original thought in cross-disciplinary research. There may be additional skills required of students applying to specific concentrations. Students will be admitted to the Individualized Studies concentration only if the applicant identifies a Mason Faculty member appropriate for the intended course of study who is willing to serve as the student's advisor.

Policies

For policies governing all graduate degrees, see AP.6 Graduate Policies.

Credit Restrictions

Courses applied to the degree are subject to the following restrictions:

- a maximum of 6 credits may be earned through independent study or directed readings and research courses
- a maximum of 6 credits may be taken through the Consortium of Universities of the Washington Metropolitan Area
- a maximum of 15 credits may be transfer credits
- a maximum of 6 of the transfer credits may be from other accredited institutions

Transfer credits include credits taken before first enrolling as an admitted degree-seeking student (at another institution, in another Mason graduate program, or in Mason nondegree status) or credits taken at another institution after admission to the degree program through study abroad or study elsewhere (which requires prior written approval of the director and the dean). Additional information may be found in Academic Policies.

Requirements

Degree Requirements

Total credits: 36

This is a Green Leaf program.

The Green Leaf status for this program applies only to the concentration in Energy and Sustainability.

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Students pursuing this degree must successfully complete 36 credits of graduate coursework in one of the concentrations which follow. Students must submit a curriculum worksheet that has been approved by their concentration head and the director. All students complete their work in the program with a project or thesis.

Concentration in Computational Social Science (CSS)

Computational social science (CSS) is a relatively new interdisciplinary science in which social science questions are investigated with modern computational tools. Computational social scientists investigate complex social phenomena such as economic markets, traffic control, and political systems by simulating the interactions of the many actors in such systems on computers. They hope to gain insights which will lead to better management of the behavior of the larger social systems, i.e., prevention of market crashes, smoothed traffic flow, or maintenance of political stability. The intractability of many social problems calls for the new approaches provided by computational social science.

CSS is a highly interdisciplinary field that requires teams to plan and complete projects, be they undertaken by government, industry, or non-profit entities. Project managers of such teams, overseeing all elements of project design and execution, tend to hold PhDs. The MAIS concentration will train students to be members of these project teams, able to meaningfully contribute to background research and to project design, execution, and communication.

Prior background should include a bachelor's degree in one of the social sciences, in computer science, in engineering, or in a relevant discipline, as well as undergraduate courses in these and related areas. Bachelor's degrees in other areas are also eligible, but the student may be required to take additional courses in social science, mathematics, or computer science as prerequisites to admission.

Required Course of Proseminar

Code	Title	Credits
MAIS 696	MAIS ProSeminar	1
Total Credits		1

Core Courses

Code	Title	Credits
Required Courses [1]		
CSS 600	Introduction to Computational Social Science	3
CSS 605	Object-Oriented Modeling in Social Science	3
CSS 610	Agent-based Modeling and Simulation	3
Electives [2]		
Select three electives from the following:		9
CSS 620	Origins of Social Complexity	
CSS 625	Complexity Theory in the Social Sciences	
CSS 645	Spatial Agent-Based Models of Human-Environment Interactions	
CSS 692	Social Network Analysis	

CSS 739	Topics in Computational Social Science	
Total Credits		18

1 The required CSS courses provide an understanding of the conceptual, technical, and practical foundations of computational social science.

2 The electives provide an understanding of the technical foundations and current work in at least two subfields of computational social science.

Research Course

The research course provides students with exposure to the most current ongoing research in the field and allows them to further develop their computational research expertise.

Code	Title	Credits
Select one from the following:		3
CSS 796	Directed Reading and Research	
CSS 898	Research Colloquium in Computational Social Science	
CSS 899	Colloquium in Computational Social Science	
Total Credits		3

Electives

The electives allow students to acquire a substantive specialization as well as additional training in social and computational science. Because of the broad spectrum of social science phenomena, methodologies, and student backgrounds, there is a large pool of potential courses. Electives may include any Mason master's-level course in computational social science, social science, computer science, computational science and informatics, statistics, or other quantitative methods such as data visualization, information technology, and geographic information science. Electives should be selected in conjunction with and approval of the student's advisor and the Director of CSS Graduate Studies. If the student does not have prior coursework in multivariate statistical analysis, the electives should include at least one such course relevant for the student's chosen specialization.

Students who elect to complete a 4-credit thesis take 9 elective credits. Students who complete a 1-credit project take 12 elective credits.

Proposal

Code	Title	Credits
MAIS 797	Interdisciplinary Studies Proposal	1
Total Credits		1

Project or Thesis

Code	Title	Credits
Nine to twelve credits of electives		9-12
Select one from the following:		1-4
MAIS 798	Interdisciplinary Studies Project (take 1 credit)	
MAIS 799	Interdisciplinary Studies Thesis (take 4 credits)	
Total Credits		13

Concentration in Energy and Sustainability (EAS)

This concentration is designed for students interested in careers in energy and sustainability-related positions in the public, private, or non-profit sectors, including law, national and international policy, media, government, and business. As one of the University's Green Leaf academic programs, the concentration in energy and sustainability focuses on finding ways to meet present needs for energy and material goods without compromising the ability of future generations to meet their needs. A sustainability education lies at the intersection of environmental science, engineering, economics, business, public policy, social justice, and many other areas. Energy required to fuel all of these endeavors is a crucial component of sustainability.

Required Course of Interdisciplinary Studies Proseminar

Code	Title	Credits
MAIS 696	MAIS ProSeminar	1
Total Credits		1

Core Courses in Energy and Sustainability

Code	Title	Credits
Required Courses		
EVPP 533	Energy Policy	3
GGS 507	Geographic Approaches for Sustainable Development	3
Natural Science Course		
PHYS 581	Topics in Renewable Energy	3
or GEOL 521	Geology of Energy Resources	
Total Credits		9

Energy, Sustainability or Environmental Policy

Students choose from the following courses or other relevant courses chosen in consultation with an advisor.

Code	Title	Credits
Select two courses from the following:		6
BIOD 760	National Security Technology and Policy	
ECON 695	Special Topics in Economics [1]	
EVPP 505	Selected Topics in Environmental Science (take 3 credits) [2]	
EVPP 638	Corporate Environmental Management and Policy	
EVPP 642	Environmental Policy	
GGS 525	Economics of Human/Environment Interactions	
POGO 550	Topics in Policy and Government (when topic involves environmental or sustainability policy)	
PUBP 710	Topics in Public Policy [3]	
Total Credits		6

1 When the topic involves environmental or sustainability policy.

2 When the topic involves energy or sustainability policy.

3 When the topic involves environmental or sustainability issues.

Humanities or Social Science Approaches to Sustainability and Environmental Issues

Students choose from the following courses or other relevant courses chosen in consultation with an advisor.

Code	Title	Credits
Select two courses from the following:		6
COMM 660	Climate Change and Sustainability Communication Campaigns	
HIST 615	Problems in American History [1]	
ECON 695	Special Topics in Economics [2]	
INTS 540	Contemporary Issues in Social Justice Human Rights	
ITRN 760	International Environmental Politics	
PHIL 643	Environmental Ethics	
RELI 636	Religion and the Natural Environment	
Total Credits		6

1 When the topic involves environmental or sustainability issues.

2 When the topic involves environmental or sustainability policy.

Planning, Modeling, or Management

Students choose from the following courses or other relevant courses chosen in consultation with an advisor.

Code	Title	Credits
Select one from the following:		3-4
CEIE 601	Infrastructure Modeling	
EVPP 638	Corporate Environmental Management and Policy	
EVPP 650	Ecosystem Analysis and Modeling	
EVPP 693	Directed Studies in Environmental Science and Public Policy (take 3 credits)	
Total Credits		3-4

Natural Science

Students choose from the following courses or other relevant courses chosen in consultation with an advisor.

Code	Title	Credits
Select one from the following:		3
CLIM 690	Scientific Basis of Climate Change	
EVPP 607	Fundamentals of Ecology	
EVPP 677	Applied Ecology and Ecosystem Management	
Total Credits		3

Electives

Students who wish to take MAIS 798 Interdisciplinary Studies Project for their capstone research experience will take one course (3 credits) of electives from courses listed below or other relevant course chosen in consultation with an advisor. They may also fulfill this requirement with experiential learning. Students who wish to take MAIS 799 Interdisciplinary Studies Thesis will not take an elective course or pursue experiential learning credits.

Code	Title	Credits
Select 0-3 credits from the following:		0-3
BIOD 760	National Security Technology and Policy	
CEIE 601	Infrastructure Modeling	
CEIE 664	Transportation Engineering and the Environment	
CLIM 690	Scientific Basis of Climate Change	
COMM 660	Climate Change and Sustainability Communication Campaigns	
ECON 695	Special Topics in Economics [1]	
EVPP 505	Selected Topics in Environmental Science (take 3 credits) [1]	
EVPP 607	Fundamentals of Ecology	
EVPP 638	Corporate Environmental Management and Policy	
EVPP 642	Environmental Policy	
EVPP 650	Ecosystem Analysis and Modeling	
EVPP 677	Applied Ecology and Ecosystem Management	
EVPP 693	Directed Studies in Environmental Science and Public Policy (take 3 credits)	
GEOL 521	Geology of Energy Resources	
GGS 525	Economics of Human/Environment Interactions	
HIST 615	Problems in American History [2]	
INTS 540	Contemporary Issues in Social Justice Human Rights	
ITRN 760	International Environmental Politics	
MAIS 695	Experiential Learning	
PHIL 643	Environmental Ethics	
PHYS 581	Topics in Renewable Energy	
PUBP 710	Topics in Public Policy [2]	
PUBP 721	Transportation Economics	
RELI 636	Religion and the Natural Environment	
Total Credits		0-3

1 When the topic involves environmental or sustainability policy.

2 When the topic involves environmental or sustainability issues.

3 Students may fulfill their elective credits with experiential learning. Experiential learning opportunities can include internships, service-learning, consulting projects, and field studies or research (including overseas). Because the intention is to develop and apply newly acquired skills, students may not use work done previously or their current employment to fulfill this requirement. All experiential learning projects must be approved by the social entrepreneurship concentration head the semester before registering for the course.

Research Methods Course

Students choose one of the following courses or other relevant courses in consultation with an advisor.

Code	Title	Credits
Select one course from the following:		3
BINF 690	Numerical Methods for Bioinformatics	
EVPP 632	Qualitative Research Methods for Environmental Scientists	
EVPP 650	Ecosystem Analysis and Modeling	
EVPP 651	Multivariate Data Analysis for Ecology and Environmental Science	
GLOA 605	Interdisciplinary Research Methods	
OR 682	Computational Methods in Engineering and Statistics	

POGO 511	Introductory Data Analysis for Policy and Government	
PUBP 710	Topics in Public Policy [1]	
SOCI 620	Methods and Logic of Social Inquiry	
Total Credits		3

[1] When topic is Analytical Methods for Science, Technology and Innovation Policy.

Proposal

Code	Title	Credits
MAIS 797	Interdisciplinary Studies Proposal	1
Total Credits		1

Project or Thesis

Students who wish to do a project in lieu of a thesis will take 1 credit of MAIS 798 Interdisciplinary Studies Project and an additional 3 credit elective course from the courses listed under the electives requirement. Students who choose to write a thesis will take 4 credits of MAIS 799 Interdisciplinary Studies Thesis and no additional electives.

Code	Title	Credits
Zero to three credits of electives		0-3
Select one from the following:		1-4
MAIS 798	Interdisciplinary Studies Project (take 1 credit)	
MAIS 799	Interdisciplinary Studies Thesis (take 4 credits)	
Total Credits		4

Concentration in Religious Studies (RELI)

The concentration in religious studies is particularly relevant for students who are interested in careers in law, national and international government, print and media journalism, library sciences, archives and museums, public and social service, teaching, advanced graduate studies, and religious communities and institutions. The Washington, DC metropolitan area is rich in the presence of many major religious traditions and their places of worship.

The core courses introduce students to the study of religion as a unique and rigorous intellectual discipline. Students learn to evaluate a variety of perspectives on religion and gain a clear understanding of the dimension of the sacred in all aspects of human life including those commonly designated "secular". Students discover how religious perceptions of the sacred respond to an evolving world and relate to and influence cultures, institutions, and values.

Students also examine the effects of historical crises and the forces of change on religions including contemporary religious pluralism and inter-religious dialogue. Students gain a deeper knowledge of specific traditions and a more profound understanding of values and worldviews from the viewpoint of cultural diversity and religious pluralism.

Required Course of Proseminar

Code	Title	Credits
MAIS 696	MAIS ProSeminar	1
Total Credits		1

Core Courses

Code	Title	Credits
RELI 600	Interdisciplinary Pathways in the Study of Religion	3
RELI 630	Theories and Methods in the Study of Religion	3
Total Credits		6

Interdisciplinary Competencies in Religious Studies (9 credits)

Students take three courses from the list of competencies below to complement their interests and the skills they have already acquired through formal education and professional experience, or other courses that are chosen in consultation with an advisor.

Code	Title	Credits
Religion, Philosophy, and Ethics		
PHIL 603	Aristotle: Selected Works	
PHIL 608	Hegel's Phenomenology of the Spirit	
PHIL 640	History of Ethical Theory	
PHIL 658	Feminist Theory	
RELI 633	Issues in Religious Ethics	
RELI 636	Religion and the Natural Environment	
RELI 637	Religion and Secularity in State and Society	
RELI 640	Religion and Law	
RELI 646	Islam and Human Rights	
RELI 660	Islamic Biomedical Ethics (Religion in the Americas)	
Religion in the Americas		
HIST 661	Religion in North America to 1870	
HIST 662	U.S. Religion since 1870	
HIST 663	Topics in U.S. Religious History	
RELI 634	Topics in American Religion	
RELI 640	Religion and Law	
Religions in Conflicl, Conversation, and Transition		
ANTH 545	Ritual and Power in Social Life	
CONF 653	World Religions, Diplomacy, and Conflict Resolution	
CONF 722	Conflict and Religion	
RELI 632	Interreligious Dialogue	
RELI 637	Religion and Secularity in State and Society	
RELI 644	Islamic Texts and Contexts	
RELI 645	Muslim Comparative Theologies: Sunni-Shi`i Religious Thought	

Electives

Elective courses should complement the student's competencies, and/or reflect the topic of their project or thesis. Students take 15-18 credits of electives chosen from the courses listed below, or other appropriate courses chosen in consultation with the concentration head. Students who do a project for their capstone will take 18 credits of electives. Students who do a thesis for their capstone will take 15 credits of electives.

Code	Title	Credits
Select 5-6 courses from the following:		
ANTH 535	Anthropology and the Human Condition: Seminar I	
ANTH 536	Anthropology and the Human Condition: Seminar II	
ANTH 545	Ritual and Power in Social Life	
CONF 653	World Religions, Diplomacy, and Conflict Resolution	
CONF 722	Conflict and Religion	
HIST 642	Humanism and the Renaissance	
HIST 661	Religion in North America to 1870	
HIST 662	U.S. Religion since 1870	
HIST 663	Topics in U.S. Religious History	
PHIL 603	Aristotle: Selected Works	
PHIL 608	Hegel's Phenomenology of the Spirit	
PHIL 640	History of Ethical Theory	
PHIL 658	Feminist Theory	
RELI 632	Interreligious Dialogue	
RELI 633	Issues in Religious Ethics	
RELI 634	Topics in American Religion	
RELI 636	Religion and the Natural Environment	
RELI 637	Religion and Secularity in State and Society	
RELI 640	Religion and Law	
RELI 644	Islamic Texts and Contexts	
RELI 645	Muslim Comparative Theologies: Sunni-Shi`i Religious Thought	
RELI 646	Islam and Human Rights	
RELI 660	Islamic Biomedical Ethics	
SOCI 655	Ethnography	

Proposal

Code	Title	Credits
MAIS 797	Interdisciplinary Studies Proposal	1
Total Credits		1

Project or Thesis

Code	Title	Credits
Select one from the following:		1-4
MAIS 798	Interdisciplinary Studies Project (take 1 credit)	
MAIS 799	Interdisciplinary Studies Thesis (take 4 credits)	
Total Credits		1-4

Concentration in Social Entrepreneurship (SOCE)

The concentration in social entrepreneurship will equip students with the subject matter expertise, strategic knowledge, technical support, and social networks needed to create, operate, develop, and accelerate startups; bring ideas to scale; and improve an existing program's effectiveness. These future leaders will learn about sustainability, ethical leadership, strategic management, and working effectively within complex networks made up of divergent groups of stakeholders. All students will complete a capstone research project and an experiential learning requirement that deliver practical knowledge and real-world experience. This degree is suitable for students seeking careers in government, business, or the non-profit sector.

Required Course of Proseminar

Code	Title	Credits
MAIS 696	MAIS ProSeminar	1
Total Credits		1

Core Courses

Code	Title	Credits
Social Entrepreneurship and Leadership		
INTS 550	Social Innovation In Action	3
INTS 535	Leadership in a Changing Environment	3
Business		
Select one course from the following:		3
GBUS 540	Analysis of Financial Decisions	
GBUS 697	Special Topics in Graduate School of Business [1]	
MBA 711	Entrepreneurship	
Total Credits		9

[1] When topic is Introduction to Entrepreneurship.

Interdisciplinary Perspectives and Competencies in Social Entrepreneurship (9-12 credits)

Students take three or four courses from the list of competencies below to complement the skills they have already acquired through formal education and professional experience, or other courses to enhance their skills, including oral and written communication and research methods, that are chosen in consultation with an advisor. Students choosing the thesis option for their capstone take 9 credits including a research methods course. Students choosing the project option for their capstone take 12 credits total, with a research methods course being optional.

Environmental and Public Policy

Code	Title	Credits
EVPP 638	Corporate Environmental Management and Policy	
PUAD 540	Public Policy Process	
PUBP 761	Social Entrepreneurship and Public Policy	
PUBP 784	Entrepreneurship, Economics, and Public Policy	

Finance and Accounting

Code	Title	Credits
GBUS 540	Analysis of Financial Decisions	
PUAD 655	Nonprofit Fund Raising and Resource Development	
PUAD 664	Nonprofit Financial Management	

Business and Project Management

Code	Title	Credits
GBUS 697	Special Topics in Graduate School of Business [1]	
or MBA 711	Entrepreneurship	
MBA 712	Project Management	
MBA 714	Managing Growth of Small Businesses	
MBA 752	Turning Ideas into Successful Companies	

PUAD 505	Introduction to Management of Nonprofits	
PUAD 658	Social Entrepreneurship and Social Enterprise	
PUAD 659	Nonprofit Law, Governance, and Ethics	

[1] When topic is Introduction to Entrepreneurship.

Leadership and Well-Being

Code	Title	Credits
INTS 595	Experiential Learning [1]	
INTS 595	Experiential Learning [2]	

[1] When topic is Mindfulness and Leadership.

[2] When the topic is Leadership and Positive Organizations.

Research Methods

Code	Title	Credits
GLOA 605	Interdisciplinary Research Methods	
INTS 534	Research for Social Change	
Appropriate alternative chosen in consultation with the concentration head		

Subject Matter Expertise

Students must develop expertise in the social problem they seek to address through entrepreneurship. Possible areas of focus include global and/or local poverty, homelessness, human trafficking, conflict resolution, women's rights, racial inequality, educational and health-care access, climate change, environmental sustainability, and human rights, among other possible topics. The experiential learning requirement should be met through an opportunity that advances the student's understanding of their subject matter expertise.

Students take:

Code	Title	Credits
INTS 540	Contemporary Issues in Social Justice Human Rights [1]	3
6 credits of courses related to the student's chosen subject matter area of expertise, chosen in consultation with the concentration head.		6
Experiential learning		**3**
MAIS 695	Experiential Learning	
or other relevant experiential learning course chosen in consultation with the concentration head.		
Total Credits		12

[1] or other social justice and human rights course chosen in consultation with the concentration head.

[2] Students will seek out and/or create an opportunity for experiential learning that aligns with a social mission. Experiential learning opportunities can include internships, service-learning, consulting projects, and field studies or research (including overseas). Because the intention is to develop and apply newly acquired skills, students may not use work done previously or their current employment to fulfill this requirement. All experiential learning projects must be approved by the social entrepreneurship concentration head the semester before registering for the course.

Proposal

Code	Title	Credits
MAIS 797	Interdisciplinary Studies Proposal	1
Total Credits		1

Project or Thesis

Code	Title	Credits
Select one from the following:		4
MAIS 798	Interdisciplinary Studies Project (take 1 credit)	
MAIS 799	Interdisciplinary Studies Thesis (take 4 credits)	
Total Credits		4

Concentration in Social Justice and Human Rights (SJHR)

The social justice and human rights concentration is designed to cultivate a deep theoretical understanding of the social, political, cultural, historical, and economic implications of a wide array of social injustices and human rights issues. Students are engaged in the applied process of imagining and actualizing holistic and complex strategies for creating and sustaining a more equitable, just, and humane world.

Required Course of Proseminar

Code	Title	Credits
MAIS 696	MAIS ProSeminar	1
Total Credits		1

Core Courses

Code	Title	Credits
Foundational Course		
INTS 540	Contemporary Issues in Social Justice Human Rights	3
Social Justice and Human Rights Courses		
INTS 537	Critical Race Studies	3
Choose one of the following:		3
WMST 602	Queer Theory	
WMST 630	Feminist Theories	
Social Justice and Human Rights Issues and Movements		
Select one course from the following:		3
EDUC 892	Social Justice and Equity in International Education	
HE 705	Access and Social Justice	
INTS 538	Representations of Race	
SOCI 623	Racial and Ethnic Relations: American and Selected Global Perspectives	
WMST 504	Gender, Sexuality, and Disability	
WMST 508	Gender, Sexuality, and Human Rights	
other relevant course chosen in consultation with the concentration head		
Total Credits		12

Emphasis Courses

Code	Title	Credits
Select 6 credits of courses with an emphasis on a specific social justice or human rights issue or context or a specific region, chosen in consultation with the concentration head. The theme of the emphasis courses should be reflected in the student's experiential learning project. [1]		6
Total Credits		6

[1] Examples of issue emphases include racial justice, human trafficking, or children's rights. Context emphases examples include the education, corporate, or government sector. Regional emphases examples include the Middle East, Latin America, or Southeast Asia.

Experiential Learning

Students will seek out and/or create an opportunity for experiential learning that deepens their understanding of social justice and/or human rights. Experiential learning opportunities can include internships, service-learning, consulting projects, and field studies or research (including overseas). The experiential learning requirement should be met through an opportunity that advances the student's understanding of their chosen emphasis. Because the intention is to develop and apply newly acquired skills, students may not use work done previously or their current employment to fulfill this requirement. All experiential learning projects must be approved by the social justice and human rights concentration head in the semester before registering for the course. Students may register for an individualized section of MAIS 695 Experiential Learning or another graduate-level internship or practicum course to fulfill this requirement.

Code	Title	Credits
MAIS 695	Experiential Learning	3
Total Credits		3

Electives

Code	Title	Credits
Students complete 6 or 9 elective credits from the following or other relevant courses chosen in consultation with the concentration head. Students who do a project for the capstone will complete 9 credits. Students who do a thesis for their capstone will complete 6 credits.		6-9
ANTH 721	Culture, Power, and Conflict	
COMM 605	Intercultural Communication	
COMM 660	Climate Change and Sustainability Communication Campaigns	
COMM 690	Special Topics in Communication [1]	
CONF 658	Diversity and Difference in Conflict Analysis and Resolution	
CONF 682	Principles of Environmental Conflict Resolution	
CONF 702	Peace Studies	
CONF 707	Gender and Violence	
CONF 708	Identity and Conflict	
CONF 720	Ethnic and Cultural Factors in Conflict Resolution	
CONF 721	Conflict and Race	
CONF 723	Conflict and Gender	
CONF 728	Human Rights Theory and Practice in Comparative Perspective	
CONF 730	Structural Sources of Conflict	
EDUC 537	Introduction to Culturally Linguistically Diverse Learners	
EDUC 606	Education and Culture	
EDUC 797	Advanced Topics in Education [2]	
EDUC 874	The Achievement Gap	
EDUC 886	School Reform in the United States: Politics and Policies	
EDUC 887	Neighborhood, Community, Education Policy	
EDUC 892	Social Justice and Equity in International Education	
EDUC 894	Seminar in Multicultural Education	
ENGH 526	Special Topics in the History and Criticism of Children's Literature [3]	
EVPP 637	Human Dimensions of Climate Change	
HE 606	Cultural Pluralism in Higher Education	
HE 705	Access and Social Justice	
HE 792	Special Topics in Higher Education [4]	
HIST 615	Problems in American History [5]	
INTS 538	Representations of Race	
INTS 595	Experiential Learning [6]	
NUTR 594	Special Topics in Nutrition and Food Studies [7]	
PHIL 643	Environmental Ethics	
PUAD 642	Environmental Policy	
PUAD 649	Advocacy and Lobbying	
PUBP 762	Social Institutions and Public Policy	
PUBP 765	Human Smuggling and Trafficking	
RELI 646	Islam and Human Rights	
SOCI 623	Racial and Ethnic Relations: American and Selected Global Perspectives	
SOCI 624	International Migration in the Age of Globalization	
SOCI 633	Special Topics in Sociology [8]	
SOCI 670	Social Networks, New Media, and Inequality	
SOCI 803	Institutions and Inequalities	
SOCI 857	Sociology of Human Rights	
SOCW 652	Influencing Social Policy	
SOCW 654	Social Policy for Children and Youth	
SOCW 663	Global Human Rights Policy	
SOCW 687	Empowering Communities for Change	
WMST 504	Gender, Sexuality, and Disability	
WMST 506	Gender and Violence in Social Institutions	
WMST 507	Transnational Sexualities	
WMST 508	Gender, Sexuality, and Human Rights	
WMST 509	Gender, Sexuality, and International Migration	
WMST 516	Policing Black Bodies	
WMST 550	Current Topics in Women and Gender Studies [9]	
WMST 600	Special Topics [10]	
WMST 630	Feminist Theories	

WMST 640	Transnational Issues of Gender and Race	
Total Credits		6-9

1 When topic is New Media and Democracy.
2 When topic is Gender, Education, and Schooling
3 When topic is Disability in Children's Literature.
4 When topic is Contemporary and Critical Social Theories.
5 When topic is Gender and Racial Ideology in Jim Crow.
6 Chosen in consultation with concentration head.
7 When topic is Urban Agriculture.
8 When topic is Women and Global Issues.
9 When topic is Women, Law, and Justice.
10 When topic is Narratives of Human Rights: Violations Against Women and Girls.

Research Methods Course

Code	Title	Credits
Select one course from the following		3
GLOA 605	Interdisciplinary Research Methods	
HE 610	Research Methods in Higher Education	
WMST 610	Feminist Approaches to Social Research	
WMST 611	Feminist Research Practice	

Proposal

Code	Title	Credits
MAIS 797	Interdisciplinary Studies Proposal	1
Total Credits		1

Project or Thesis

Code	Title	Credits
Select one from the following:		1-4
MAIS 798	Interdisciplinary Studies Project (take 1 credit)	
MAIS 799	Interdisciplinary Studies Thesis (take 4 credits)	
Total Credits		1-4

Concentration in War and the Military in Society (WMS)

The concentration in war and the military in society equips students with skills and knowledge to evaluate, analyze, and solve problems related to the use of organized violence, including questions of national security and national strategy, international relations, defense policymaking, and domestic, fiscal, legal, and social policy surrounding the instruments of national defense. Students will engage in interdisciplinary coursework that provides a variety of methods and tools to frame and analyze these questions, using historical and contemporary case studies to better understand the dilemmas and opportunities facing policymakers and military professionals in their efforts to think strategically about a variety of challenges.

All students will complete a capstone research project that provides an opportunity to do deep research into an historic or contemporary case. In addition, students may also complete an experiential learning requirement that combines practical knowledge and real-world experience to engage in problems connected to war and society.

Required Course of Proseminar

Code	Title	Credits
MAIS 696	MAIS ProSeminar	1
Total Credits		1

Interdisciplinary Perspectives on War and the Military in Society (27-30 Credits)

Students take 9-10 courses from 2 or more interdisciplinary perspectives below to complement the skills and subject matter expertise they have already acquired through formal education and professional experience, or other courses to enhance their portfolio that are chosen in consultation with the concentration head. Students who do a project (1 credit) in lieu of a thesis (4 credits) for their capstone will take an additional 3-credit course.

Historical Perspectives

These courses draw upon conflicts from two thousand years of human experience, from ancient Rome to contemporary issues in civil-military relations. The historical perspective focuses upon the past and the way that problems related to war and society have changed over time.

Code	Title	Credits
HIST 615	Problems in American History (when topic is The Second World War or Civil Military Relations)	
HIST 617	Topics in the American Civil War Era (when the topic is The Civil War)	
HIST 631	Era of the American Revolution	
HIST 635	Problems in European History (when the topic is Fall of the Roman Empire, The First Global Wars, Revolutions in the Atlantic, The Second World War, or Technology and Power)	
HIST 677	The Vietnam War	
HIST 679	War and Remembrance	

Contemporary Policy Perspectives

These courses focus on the applied study of security and on concrete, modern-day issues related to the particular challenges of organized violence in the twenty-first century.

Code	Title	Credits
BIOD 609	Biodefense Strategy	
BIOD 709	Nonproliferation and Arms Control	
BIOD 722	Examining Terrorist Groups	
BIOD 725	Terrorism and Weapons of Mass Destruction	
CONF 695	Selected Topics (when the topic is Urban Warfare)	
GOVT 733	Islam and Politics	
POGO 750	Topics in Policy and Government (when the topic is Middle East Security, European Security, or International Money Laundering and Terror)	
PUBP 653	Interagency Operations in Conflict and Post-Conflict Settings	
PUBP 654	Analysis for Peace Operations	
PUBP 751	International Police Operations	

Theoretical Perspectives

These courses focus on theories of war, peace, and security across a broad range of contemporary and historic cases and through a variety of disciplinary lenses.

Code	Title	Credits
BIOD 610	Advanced Topics in Global Health Security (when the topic is Cyber Warfare Strategy/Policy)	
CONF 751	Dynamics of Civil Wars	
GGS 590	Selected Topics in Geography (when the topic is Military Geography or Insurgency)	
GOVT 540	International Relations	
GOVT 745	International Security	
POGO 750	Topics in Policy and Government (when the topic is Intelligence and Public Policy, Disruptive Technology and National Security, or Information Intelligence and Smart Power)	
PUBP 504	Grand Strategy	
PUBP 506	Ethics and the Use of Force	

Practical or Applied Perspectives

Code	Title	Credits
GBUS 551	Leadership	
MAIS 695	Experiential Learning	

[1] Students seek out and/or create an opportunity for experiential learning that aligns with their educational or professional interests. Experiential learning opportunities can include internships, service-learning, consulting projects, or field studies. Because the intention is to develop and apply newly acquired skills, students may not use work done previously or their current employment to fulfill this requirement. All experiential learning projects must be approved by the war and the military in society concentration head the semester before registering for the course.

Research Methods

Code	Title	Credits
Students select one research methods course from the following:		3
GLOA 605	Interdisciplinary Research Methods	
HIST 610	The Study and Writing of History	
OR 651	Military Operations Research I: Cost Analysis	
OR 652	Military Operations Research Modeling II: Effectiveness Analysis	
POGO 750	Topics in Policy and Government (when topic is Qualitative Research Methods)	
Total Credits		3

Proposal

Code	Title	Credits
MAIS 797	Interdisciplinary Studies Proposal	1
Total Credits		1

Project or Thesis

Code	Title	Credits
Select one from the following:		1-4
MAIS 798	Interdisciplinary Studies Project (take 1 credit)	
MAIS 799	Interdisciplinary Studies Thesis (take 4 credits)	
Total Credits		1-4

Concentration in Women and Gender Studies (WGST)

The concentration in women and gender studies promotes advanced scholarship that transcends traditional boundaries. Students combine required coursework in women and gender studies with courses in a discipline of interest such as history, literature, sociology, anthropology, health, education, philosophy, social work, conflict analysis and resolution, or the arts. The program accommodates both full-time and part-time students.

Of the coursework required for this concentration as described below, at least 24 credits must be in courses related to the study of women and gender and 12 credits in courses in a field focus. All courses related to the study of women and gender must be approved by the head of the concentration in women and gender studies. Students must earn a grade of B- or higher in the core courses.

Students interested in pursuing a dual master's program linking the MAIS degree and a master's degree in another discipline should discuss their interest with the graduate program directors of both programs and review the university policies regarding Individualized Dual Master's Degree Programs. Students approved to pursue dual master's study linking the MAIS degree with a concentration in women and gender studies and the MA philosophy degree will complete WMST 630 Feminist Theories /PHIL 658 Feminist Theory and 3 additional credits of WMST courses to apply to the philosophy degree as elective credit. Six credits of approved PHIL credits will apply to the MAIS degree as elective credit.

Required Course of Proseminar

Code	Title	Credits
MAIS 696	MAIS ProSeminar	1
Total Credits		1

Core Courses

Code	Title	Credits
WMST 630	Feminist Theories	3
WMST 640	Transnational Issues of Gender and Race	3
WMST 610	Feminist Approaches to Social Research	3
Students take one course from each of the following areas. [1]		6
Race and Intersectionality		
INTS 537	Critical Race Studies	
INTS 538	Representations of Race	
INTS 575	Special Topics [2]	
WMST 550	Current Topics in Women and Gender Studies [2]	
WMST 600	Special Topics [3]	
Queer and Sexuality Studies		
WMST 504	Gender, Sexuality, and Disability	
WMST 507	Transnational Sexualities	

WMST 509	Gender, Sexuality, and International Migration	
WMST 602	Queer Theory	
Total Credits		15

1 Students may take additional courses from these areas and count them toward their elective credits.

2 When topic is Geneology of Black Feminist Thought or Black Bodies, Policing and Historical Memory

3 When topic is Black Psychology or Gender, Cultures and Health in the US.

4 When topic is Gender, Race, Reform 1800-1920 or Gender and Racial Ideology in Jim Crow.

Electives

Code	Title	Credits
Students take 15-18 credits in elective courses that address the study of women and gender and that are not part of the core focus. Three of these credits must be in a WMST course from the list below. [1]		15-18
WMST 504	Gender, Sexuality, and Disability	
WMST 507	Transnational Sexualities	
WMST 508	Gender, Sexuality, and Human Rights	
WMST 509	Gender, Sexuality, and International Migration	
WMST 550	Current Topics in Women and Gender Studies (can be repeated for credit)	
WMST 600	Special Topics (can be repeated for credit)	
WMST 602	Queer Theory	
WMST 611	Feminist Research Practice (not required but highly recommended)	
WMST 695	Internship	
Total Credits		15-18

1 Or other WMST course chosen in consultation with the concentration head. Students may also take relevant courses from other disciplines chosen in consultation with the concentration head.

Proposal

Code	Title	Credits
MAIS 797	Interdisciplinary Studies Proposal	1
Total Credits		1

Project or Thesis

Code	Title	Credits
Select one from the following:		1-4
MAIS 798	Interdisciplinary Studies Project (take 1 credit)	
MAIS 799	Interdisciplinary Studies Thesis (take 4 credits)	
Total Credits		1-4

Individualized Concentration (IND)

This concentration is for students who wish to design a graduate program to meet the special needs of their careers and life plans. Students usually choose this option because traditional graduate programs do not meet their specific goals. Students, with help from their faculty advisor, design a unique program of study that includes courses from several academic departments.

Students have access to most graduate courses offered by Mason but must meet all course prerequisites. Each student must submit a curriculum worksheet approved by the student's advisor and director during the first semester enrolled. Any subsequent amendments must have the approval of the student's advisor and the director.

Required Course of Proseminar

Code	Title	Credits
MAIS 696	MAIS ProSeminar	1
Total Credits		1

Disciplinary Focus

Code	Title	Credits
Select a minimum of 12 and a maximum of 18 credits in one discipline		12-18
Total Credits		12-18

Complementary Disciplines

Code	Title	Credits
Students take 9-18 courses in complementary disciplines. These require the approval of faculty advisor and MAIS director.		9-18
Total Credits		9-18

Research Methods

Code	Title	Credits
Students take a research methods course approved by faculty advisor and MAIS director.		3
Total Credits		3

Proposal

Code	Title	Credits
MAIS 797	Interdisciplinary Studies Proposal	1
Total Credits		1

Project or Thesis

Code	Title	Credits
Select one from the following:		1-4
MAIS 798	Interdisciplinary Studies Project (take 1 credit)	
MAIS 799	Interdisciplinary Studies Thesis (take 4 credits)	
Total Credits		1-4

Dual Degree Options

Philosophy, MA and Interdisciplinary Studies, MAIS Dual Degree

Students interested in pursuing a dual master's program linking philosophy and another discipline should discuss their interest with the graduate program directors of both programs and review the university policies regarding Individualized Dual Master's Degree Programs. Students approved to pursue dual master's

study linking the MA philosophy degree and the Interdisciplinary Studies, MAIS with a concentration in women and gender studies will complete WMST 630 Feminist Theories across the Disciplines/PHIL 658 Feminist Theory and 3 additional credits of WMST courses approved by the Department of Philosophy to apply to the philosophy degree as elective credit. Six credits of approved PHIL credits will apply to the MAIS degree as elective credit. Application to the second master's program should be pursued with consultation of the directors of both programs. Admission to the second master's program will require that the student has met the minimum prerequisites for admission to the second program. If a student lacks the minimum prerequisites and seeks to be admitted to a second master's program, the director of the second program may identify ways in which the prerequisite can be completed prior to admission.

Accelerated Master's

Many accelerated master's programs are available for any bachelor's degree at Mason, including the ones below. See the full list of degrees (http://catalog.gmu.edu/programs/#filter=filter_24) with accelerated programs at George Mason.

Bachelor's Degree (any)/Interdisciplinary Studies, Accelerated MAIS (Computational Social Science Concentration)

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BS/BA in a chosen major and a Master of Arts in Interdisciplinary Studies (MAIS) with a concentration in Computational Social Science in an accelerated time-frame after satisfactory completion of a minimum of 144 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degrees for policies related to thie program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies. For information specific to this program, see Application Requirements and Deadlines (https://mais.gmu.edu/interdisciplinary-studies-accelerated-masters-application-process/) on the departmental website.

The accelerated MAIS with a concentration in Computational Social Science is appropriate for students in a variety of majors. Ideally applicants will have undergraduate backgrounds in both computer science/computational data science and the social sciences or humanities. Applicants pursuing an undergraduate degree in computer science/computational data science should have completed at least one upper-division course in communications, conflict analysis and resolution, criminology, economics, geography, government, history, psychology, or sociology. Applicants pursuing undergraduate degrees in these or other majors should have completed at least one upper-division computer science or computational data science course.Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits, and an overall minimum GPA of 3.50.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MAIS program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- Minimum overall GPA of 3.50
- Minimum grade of B in all advanced standing coursework
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing courses (up to 12 credits with a minimum grade of B in each)

- CSS 600 Introduction to Computational Social Science (3 credits)
- CSS 605 Object-Oriented Modeling in Social Science (3 credits)
- CSS 610 Agent-based Modeling and Simulation (3 credits)
- CSS 620 Origins of Social Complexity (3 credits)

Reserve Graduate Credit courses (up to 6 credits) taken while an undergraduate and will only count for the graduate degree program

- CSS 600 Introduction to Computational Social Science (3 credits)
- CSS 605 Object-Oriented Modeling in Social Science (3 credits)
- CSS 610 Agent-based Modeling and Simulation (3 credits)
- CSS 620 Origins of Social Complexity (3 credits)
- CSS 625 Complexity Theory in the Social Sciences (3 credits)
- CSS 645 Spatial Agent-Based Models of Human-Environment Interactions (3 credits)
- CSS 692 Social Network Analysis (3 credits)
- MAIS 696 MAIS ProSeminar

For more detailed information on coursework and timeline requirements see AP.6.7 Bachelor's Accelerated Master's Degree policies.

Bachelor's Degree (any)/Interdisciplinary Studies, Accelerated MAIS (Energy and Sustainability Concentration)

Overview

Highly-qualified Mason undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BA/BS in a chosen major and a Master of Arts in Interdisciplinary Studies (MAIS) with a concentration in energy and sustainability in an accelerated time-frame after satisfactory completion of a minimum of 144 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degrees for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/).

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's Accelerated Master's Degree policies. For information specific to this accelerated master's program, see Application Requirements and Deadlines (https://mais.gmu.edu/interdisciplinary-studies-accelerated-masters-application-process/) on the departmental website.

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits, with a minimum overall GPA of 3.50.

Students who are accepted in the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits.

Accelerated Master's Admissions Requirements

Students already admitted in the BAM Pathway will be admitted to the MAIS program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

Minimum overall GPA of 3.50

Minimum grade of B in each advanced standing course

Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing courses (up to 12 credits with a minimum grade of B in each)

ECON 695 Special Topics in Economics (3 credits) (when the topic involves environmental or sustainability issues)
EVPP 533 Energy Policy (3 credits)
EVPP 642 Environmental Policy (3 credits)
GGS 507 Geographic Approaches for Sustainable Development (3 credits)
GLOA 605 Interdisciplinary Research Methods (3 credits)
PHIL 643 Environmental Ethics (3 credits)
PHYS 581 Topics in Renewable Energy (3 credits)

Reserve Graduate credit courses (up to 6 credits) taken while an undergraduate and will only count for the graduate degree program

ECON 695 Special Topics in Economics (3 credits)

EVPP 533 Energy Policy (3 credits)

EVPP 642 Environmental Policy (3 credits)

GGS 507 Geographic Approaches for Sustainable Development (3 credits)

GLOA 605 Interdisciplinary Research Methods (3 credits)

MAIS 696 MAIS ProSeminar

PHIL 643 Environmental Ethics (3 credits)

PHYS 581 Topics in Renewable Energy (3 credits)

For more detailed information on coursework and timeline requirements see AP.6.7 Bachelor's Accelerated Master's Degree policies.

Bachelor's Degree (any)/Interdisciplinary Studies, Accelerated MAIS (Religious Studies Concentration)

Overview

Highly-qualified Mason undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BA/BS in a chosen major and a Master of Arts in Interdisciplinary Studies (MAIS) with a concentration in Religious Studies in an accelerated time-frame after satisfactory completion of a minimum of 144 credits.

If the students has not majored in religious studies it is preferred, thought not required, that the student have a minor in religious studies.

See AP.6.7 Bachelor's/Accelerated Master's Degrees for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/).

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's Accelerated Master's Degree policies. For information specific to this accelerated master's program, see Application Requirements and Deadlines (https://mais.gmu.edu/interdisciplinary-studies-accelerated-masters-application-process/) on the departmental website.

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits, with a minimum overall GPA of 3.50.

Students who are accepted in the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits.

Accelerated Master's Admissions Requirements

Students already admitted in the BAM Pathway will be admitted to the MAIS program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- Minimum overall GPA of 3.50
- Minimum grade of B in each advanced standing course
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing courses (up to 12 credits with a minimum grade of B in each)

- RELI 600 Interdisciplinary Pathways in the Study of Religion (3 credits)
- RELI 630 Theories and Methods in the Study of Religion (3 credits)
- RELI 632 Interreligious Dialogue (3 credits)
- RELI 633 Issues in Religious Ethics (3 credits)
- RELI 640 Religion and Law (3 credits)
- RELI 591 Special Topics in Religious Studies (3 credits)

Reserve Graduate Credit courses (up to 6 credits) taken while an undergraduate and will only count for the graduate degree program

- RELI 600 Interdisciplinary Pathways in the Study of Religion (3 credits)
- RELI 630 Theories and Methods in the Study of Religion (3 credits)
- RELI 632 Interreligious Dialogue (3 credits)
- RELI 633 Issues in Religious Ethics (3 credits)
- RELI 640 Religion and Law (3 credits)
- RELI 591 Special Topics in Religious Studies (3 credits)
- MAIS 696 MAIS ProSeminar

For more detailed information on coursework and timeline requirements see AP.6.7 Bachelor's Accelerated Master's Degree policies.

Bachelor's Degree (any)/Interdisciplinary Studies, Accelerated MAIS (Social Entrepreneurship Concentration)

Overview

Highly-qualified Mason undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BA/BS in a chosen major and a Master of Arts in Interdisciplinary Studies (MAIS) with a concentration in social entrepreneurship in an accelerated time-frame after satisfactory completion of a minimum of 144 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degrees for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/).

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's Accelerated Master's Degree policies. For information specific to this accelerated master's program, see Application Requirements and Deadlines (https://mais.gmu.edu/interdisciplinary-studies-accelerated-masters-application-process/) on the departmental website.

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits with a minimum overall GPA of 3.50.

Students who are accepted in the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits.

Accelerated Master's Admissions Requirements

Students already admitted in the BAM Pathway will be admitted to the MAIS program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- Minimum overall GPA of 3.50
- Minimum grade of B in all advanced credit courses
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing courses (up to 12 credits with a minimum grade of B in each)

- INTS 550 Social Innovation In Action (3 credits)
- INTS 535 Leadership in a Changing Environment (3 credits)
- INTS 540 Contemporary Issues in Social Justice Human Rights (3 credits)
- GBUS 540 Analysis of Financial Decisions (3 credits)

Reserve Graduate Credit courses (up to 6 credits) taken while an undergraduate and will only count for the graduate degree program

- PUAD 505 Introduction to Management of Nonprofits (3 credits)
- PUAD 540 Public Policy Process (3 credits)
- MAIS 696 MAIS ProSeminar

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees.

Bachelor's Degree (any)/Interdisciplinary Studies, Accelerated MAIS (Social Justice and Human Rights Concentration)

Overview

Highly-qualified Mason undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BA/BS in a chosen major and a Master of Arts in Interdisciplinary Studies (MAIS) with a concentration in social justice and human rights in an accelerated time-frame after satisfactory completion of a minimum of 144 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degrees for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/).

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's Accelerated Master's Degree policies. For information specific to this accelerated master's program, see Application Requirements and Deadlines (https://mais.gmu.edu/interdisciplinary-studies-accelerated-masters-application-process/) on the departmental website.

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits, with a minimum overall GPA of 3.50.

Students who are accepted in the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits.

Accelerated Master's Admissions Requirements

Students already admitted in the BAM Pathway will be admitted to the MAIS program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- Minimum overall GPA of 3.50
- Minimum grade of B in each advanced standing course
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing courses (up to 12 credits with a minimum grade of B in each)

- INTS 540 Contemporary Issues in Social Justice Human Rights (3 credits)
- INTS 534 Research for Social Change (3 credits)
- INTS 537 Critical Race Studies (3 credits)
- INTS 538 Representations of Race (4 credits)
- WMST 504 Gender, Sexuality, and Disability (3 credits)
- WMST 508 Gender, Sexuality, and Human Rights (3 credits)
- WMST 602 Queer Theory (3 credits)
- WMST 630 Feminist Theories (3 credits)
- PHIL 643 Environmental Ethics (3 credits)
- PUAD 540 Public Policy Process (3 credits)
- PUAD 649 Advocacy and Lobbying (3 credits)

Reserve Graduate Credit courses (up to 6 credits) taken while an undergraduate and will only count for the graduate degree program

- INTS 534 Research for Social Change (3 credits)
- INTS 537 Critical Race Studies (3 credits)
- INTS 538 Representations of Race (4 credits)
- WMST 504 Gender, Sexuality, and Disability (3 credits)
- WMST 508 Gender, Sexuality, and Human Rights (3 credits)
- WMST 602 Queer Theory (3 credits)
- WMST 630 Feminist Theories (3 credits)
- PHIL 643 Environmental Ethics (3 credits)
- PUAD 540 Public Policy Process (3 credits)
- PUAD 649 Advocacy and Lobbying (3 credits)
- MAIS 696 MAIS ProSeminar

For more detailed information on coursework and timeline requirements see AP.6.7 Bachelor's Accelerated Master's Degree policies.

Bachelor's Degree (any)/Interdisciplinary Studies, Accelerated MAIS (War and the Military in Society Concentration)

Overview

Highly-qualified Mason undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BA/BS in a chosen major and a Master of Arts in Interdisciplinary Studies (MAIS) with a concentration in War and Military in Society in an accelerated time-frame after satisfactory completion of a minimum of 144 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degrees for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/).

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's Accelerated Master's Degree policies. For information specific to this accelerated master's program, see Application Requirements and Deadlines (https://mais.gmu.edu/interdisciplinary-studies-accelerated-masters-application-process/) on the departmental website.

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits, with a minimum overall GPA of 3.50.

Students who are accepted in the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits.

Accelerated Master's Admissions Requirements

Students already admitted in the BAM Pathway will be admitted to the MAIS program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- Minimum overall GPA of 3.5
- Minimum grade of B in each advanced standing course
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing courses (up to 12 credits with a minimum grade of B in each)

- GOVT 540 International Relations (3 credits)
- HIST 617 Topics in the American Civil War Era (3 credits)
- HIST 631 Era of the American Revolution (3 credits)
- PUBP 504 Grand Strategy (3 credits)
- PUBP 506 Ethics and the Use of Force (3 credits)

Reserve Graduate Credit courses (up to 6 credits) taken while an undergraduate and will only count for the graduate degree program

- BIOD 609 Biodefense Strategy (3 credits)
- GLOA 620 (credits)
- MAIS 696 MAIS ProSeminar

For more detailed information on coursework and timeline requirements see AP.6.7 Bachelor's Accelerated Master's Degree policies.

Bachelor's Degree (any)/Interdisciplinary Studies, Accelerated MAIS (Women and Gender Studies Concentration)

Overview

Highly-qualified Mason undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BA/BS in a chosen major and a Master of Arts in Interdisciplinary Studies (MAIS) with a concentration in women and gender studies in an accelerated time-frame after satisfactory completion of a minimum of 144 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degrees for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/).

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's Accelerated Master's Degree policies. For information specific to this accelerated master's program, see Application Requirements and Deadlines (https://mais.gmu.edu/interdisciplinary-studies-accelerated-masters-application-process/) on the departmental website.

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits, with a minimum overall GPA of 3.50.

Students who are accepted in the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits.

Accelerated Master's Admissions Requirements

Students already admitted in the BAM Pathway will be admitted to the MA program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- Minimum overall GPA of 3.50
- Minimum grade of B in each advanced standing course
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing courses (up to 12 credits with a minimum grade of B in each)

- WMST 504 Gender, Sexuality, and Disability (3 credits)
- WMST 508 Gender, Sexuality, and Human Rights (3 credits)
- WMST 602 Queer Theory (3 credits)
- WMST 610 Feminist Approaches to Social Research (3 credits)
- WMST 630 Feminist Theories (3 credits)
- WMST 640 Transnational Issues of Gender and Race (3 credits)

Reserve Graduate Credit courses (up to 6 credits) taken while an undergraduate and will only count for the graduate degree program

- WMST 504 Gender, Sexuality, and Disability (3 credits)
- WMST 508 Gender, Sexuality, and Human Rights (3 credits)
- WMST 602 Queer Theory (3 credits)
- WMST 610 Feminist Approaches to Social Research (3 credits)
- WMST 630 Feminist Theories (3 credits)
- WMST 640 Transnational Issues of Gender and Race (3 credits)
- MAIS 696 MAIS ProSeminar

For more detailed information on coursework and timeline requirements see AP.6.7 Bachelor's Accelerated Master's Degree policies.

Latin American Studies Program

Email: las@gmu.edu
Website: las.gmu.edu

Faculty

Program Faculty

Berroa (Modern and Classical Languages), Bristol (History and Art History), Burt (Schar School of Policy and Government), Greet (History and Art History), Karush (History and Art History), Leeman (Modern and Classical Languages), Lepore (Dance), Meyer (Economics), Rabin (Modern and Classical Languages), Rogers (Modern and Classical Languages), Shutika (English), Vivancos-Pérez (Modern and Classical Languages)

Programs

- Latin American Studies Minor

Latin American Studies Minor

Banner Code: LAS

Academic Advising

Email: las@gmu.edu
Website: las.gmu.edu/programs/la-minor-la-las/requirements/

Latin American studies focuses on the diverse and connected regions, societies, and cultures of Latin America. Students find that combining this minor with a major in another discipline is particularly attractive to employers. Latin American studies enhances a major in Spanish or anthropology for a career in teaching or human rights work; a major in communication for a career in journalism; and a major in business for a career in the U.S. Foreign Service, other government agencies, or international commerce.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 18

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Core Courses

Code	Title	Credits
Select one course from the following:		3
HIST 271	Survey of Latin American History (Mason Core)	
HIST 272	Survey of Latin American History (Mason Core)	
GOVT 331	Government and Politics of Latin America	
Total Credits		3

Language Proficiency

Students minoring in Latin American studies must demonstrate reading, speaking, or writing knowledge of Spanish or Portuguese by exam or by achieving a minimum grade of 2.00 in a 300-level course in the language selected. Upper-level Latin American literature or culture courses taught in Spanish or Portuguese may be used to satisfy the electives requirement.

Electives

Code	Title	Credits
Select five electives [1]		15
Total Credits		15

[1] Students may satisfy the electives with any course that contains a significant emphasis on Latin America or the culture, politics, sociology, or history of Latinos living in the United States. Students choose electives from courses offered by at least three different departments in consultation with the program director. Upper-level Latin American literature or culture courses taught in Spanish or Portuguese may be used to satisfy the requirement.

Middle East and Islamic Studies Progam

Email: meis@gmu.edu
Website: meis.gmu.edu

The interdisciplinary program in Middle East and Islamic Studies offers a distinctive and innovative approach to the study of the Middle East, of Islam, and of Muslim societies across the globe. The program seeks to situate the study of the Middle East and Islam within a globalized world. Students develop a broad understanding of the region, its history and its contemporary complexities with respect to society, politics, culture, and economy.

The Middle East and Islamic Studies Program comprises four distinct curricula; a master's program in Middle East and Islamic studies (MEIS), a graduate certificate program, and two undergraduate minor programs (Middle East studies and Islamic studies). Because these programs are interdisciplinary, undergraduate and graduate students may take courses from a range of disciplines to fulfill minor, graduate degree or certificate requirements. Undergraduate students should consult the specific listing, Middle East Studies minor or Islamic Studies minor for more details. Graduate students should consult with the MEIS director.

Undergraduate Program

Minors

The Middle East and Islamic Studies Program offers two minors for undergraduates.

The Middle East Studies minor provides students with a firm grounding in the history, politics, and culture of this important region. Students develop an understanding of the diverse dynamics and complex forces that shape modern Middle East realities.

The Islamic Studies minor introduces students to the diverse and dynamic experience of Muslims globally and locally. Through interdisciplinary course offerings, students acquire an understanding of Islamic religious traditions, history, politics, society and culture. A three-credit course is also required in a language spoken in a Muslim majority country (Arabic, Persian, Turkish).

Graduate Program

Master's Degree

The program offers a master's degree in Middle East and Islamic studies. Students study historical and contemporary topics - as well as theory and methodology - from regional and global perspectives. The unique interdisciplinary nature of the program provides students with a thorough foundation in the major debates and issues in the study of the Middle East, of Islam, and of Muslim societies across the globe.

Graduate Certificate

The graduate certificate in Middle East and Islamic studies allows students to examine the complex issues involved in understanding the

Middle East and the broader Islamic world from a variety of perspectives. Students study both contemporary and historical developments in these regions; they take courses in various disciplines, including political science, history, and religious studies, and have the opportunity to take elective courses in an even broader set of disciplines, including sociology, anthropology, literature, and art history.

Bachelor's/Accelerated Master's Program

Highly qualified undergraduates in any major may apply to the accelerated master's degree program in Middle East and Islamic studies. If accepted, students will be able to earn an undergraduate degree in their chosen major and a graduate degree in Middle East and Islamic studies after satisfactory completion of 138 credits, generally within five years. Credit limits and course requirements require advanced planning and consultation with the student's undergraduate advisor and MEIS director.

Ali Vural Ak Center for Global Islamic Studies

web: islamicstudiescenter.gmu.edu (http://islamicstudiescenter.gmu.edu/)

The Ali Vural Ak Center for Global Islamic Studies is an interdisciplinary research center whose goal is to provide a sound and nuanced understanding of Muslim societies and the Islamic faith, its role in world history and patterns of globalization. The center regularly sponsors lectures and conferences, runs major research projects and hosts international scholars. The center supports the academic curriculum through its on-campus and off-campus activities.

Middle East Studies

web: meis.gmu.edu (http://meis.gmu.edu/)

The interdisciplinary Middle East Studies program at George Mason provides students with a firm grounding in the history, politics, and culture of this important region. Under the guidance of internationally recognized faculty, students develop an understanding of the diverse dynamics and complex forces that shape modern Middle East realities. Students have the opportunity to examine new Middle East diasporas and transnational communities in the West, as well as the role of the Middle East in a changing geopolitical environment marked by the rise of China, India and the re-emergence of Russia.

Faculty

Program Faculty

Core

Dakake, Haddad (director), Hamdani, McGlinchey, Mandaville, Sachedina (IIIT chair), Yilmaz

Affiliate

Amireh, Butt, DeCaroli, Dwyer, Hirsch, Hughes Rinker

Programs

- Islamic Studies Minor
- Middle East Studies Minor
- Middle East and Islamic Studies Graduate Certificate
- Middle East and Islamic Studies, MA

Islamic Studies Minor

Banner Code: ISLM

Academic Advising

3200 Horizon Hall
Fairfax Campus

Email: mes@gmu.edu
Website: meis.gmu.edu/programs/la-minor-la-islm

This minor is designed for students interested in the societies, cultures, history, and politics of the Islamic world. It offers students the opportunity to study the many societies that have significant Muslim populations. These societies are not just in the Middle East. They stretch from North Africa to Southeast Asia and beyond, including Europe as well as North America. To fulfill the requirements for the minor, students take a wide variety of courses from a range of departments. These courses provide students with a broad and well-rounded understanding of Islam.

The minor will enhance students' opportunities for future study and employment, especially in the Washington, D.C. area.

Faculty

Amireh, Bakhash, Dakake (director), DeCaroli, Haddad, Hamdani, Katz, Lukacs, Mandaville, McGlinchey, Paden, Salawdeh

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 21

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Core Courses

Code	Title	Credits
GOVT 345	Islam and Politics	3
HIST 281	Survey of Middle Eastern Civilization (Mason Core)	3
RELI 272	Islam	3
Total Credits		9

Foreign Language

Code	Title	Credits
Select one course in a foreign language of any country with a significant Muslim population [1]		3
Total Credits		3

[1] Arabic may be used to fulfill this requirement, but other languages of the Islamic world may be substituted with prior written approval of the director. This requirement may be waived for students who can demonstrate proficiency in a relevant foreign language. Contact the college Office of Undergraduate Affairs (http://chssundergrad.gmu.edu/). Such students will be required to take 3 additional elective credits.

Electives

Code	Title	Credits
Select three electives from the following: [1]		9
ARAB 420	Survey of Arabic Literature	
ARAB 440	Topics in Arabic Religious Thought and Texts (Mason Core)	
ANTH 308	Peoples and Cultures of the Middle East (Mason Core)	
ANTH 309	Peoples and Cultures of India (Mason Core)	
ARTH 320	Art of the Islamic World (Mason Core)	
ARTH 382	Arts of India (Mason Core)	
ARTH 386	The Silk Road (Mason Core)	
ENGH 309	Topics in Literature (when topic is Arab and Arab-American writers)	
FREN 453	Topics in North African Francophone Literature and Culture	
GGS 325	Geography of North Africa and the Middle East	
GGS 330	Geography of the Soviet Succession States	
GOVT 328	Global Political Theory	
GOVT 332	Government and Politics of the Middle East and North Africa	
GOVT 340	Central Asian Politics	
HIST 282	Survey of Middle Eastern Civilization (Mason Core)	
HIST 462	Women in Islamic Society (Mason Core)	
HIST 460	Modern Iran (Mason Core)	
HIST 465	The Middle East in the 20th Century	
RELI 355	Sufism	
RELI 374	Islamic Thought (Mason Core)	
RELI 375	Qur'an and Hadith	
Total Credits		9

[1] Special topics courses, when relevant, may be used to fulfill this requirement with prior written approval of the director.

Middle East and Islamic Studies Graduate Certificate

Banner Code: LA-CERG-MEIS

Academic Advising

347 Research Hall
Fairfax Campus

Email: mes@gmu.edu

Website: meis.gmu.edu/programs/LA-CERG-MEIS

This graduate certificate allows students to examine the complex issues involved in understanding the Middle East and the broader Islamic world from a variety of perspectives. Students study both contemporary and historical developments in these regions; they take core courses in various disciplines, including political science, history, and religious studies, and have the opportunity to take elective courses in an even broader set of disciplines, including sociology, anthropology, literature, and art history.

Admissions & Policies

Admissions

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions. For information specific to the graduate certificate in Middle East and Islamic Studies, see Application Requirements and Deadlines (http://meis.gmu.edu/programs/la-cerg-meis/application/).

Policies

For policies governing all graduate certificates, see AP.6.8 Requirements for Graduate Certificates.

Requirements

Certificate Requirements

Total credits: 18

This certificate may be pursued on a full-or part-time basis.

Core Courses

Code	Title	Credits
MEIS 500	Critical Issues and Debates in Middle East and Islamic Studies	3
HIST 575	Approaches to Middle East and Islamic History	3
GOVT 632	Politics and Societies of the Middle East	3
RELI 644	Islamic Texts and Contexts	3
Total Credits		12

Electives

Code	Title	Credits
Select two electives from the following:		6
ANTH 635	Regional Ethnography [1]	
ARTH 599	Special Topics in Art History [2]	
ARTH 699	Topics in Art History [2]	
CONF 653	World Religions, Diplomacy, and Conflict Resolution	
CONF 722	Conflict and Religion	
ENGH 665	Seminar in Global Culture [3]	
FREN 553	Topics in North African Francophone Literature and Culture	
FRLN 550	Special Topics [4]	

FRLN 551	Special Topics [4]
GGS 533	Issues in Regional Geography [5]
GOVT 731	Advanced Seminar in Comparative Politics [6]
GOVT 733	Islam and Politics
HIST 585	Problems in Middle Eastern History
MEIS 794	Graduate Internship in Middle East and Islamic Studies
MEIS 796	Directed Readings in Middle East and Islamic Studies
RELI 591	Special Topics in Religious Studies [7]
RELI 645	Muslim Comparative Theologies: Sunni-Shi`i Religious Thought
RELI 646	Islam and Human Rights
RELI 660	Islamic Biomedical Ethics
Total Credits	6

1 When topic is Middle East and North Africa.
2 When topic is Middle Eastern or Islamic art.
3 When topic is Middle East or Muslim world.
4 When topic is a language of the Middle East or Muslim world.
5 When topic is Middle East.
6 When topic is the Middle East or a Muslim world region.
7 When topic is Islam or Muslim communities.

Middle East and Islamic Studies, MA

Banner Code: LA-MA-MEIS

Academic Advising

6300 Horizon Hall
Fairfax Campus

Email: meis@gmu.edu
Website: meis.gmu.edu/programs/la-ma-meis

The Master of Arts in Middle East and Islamic Studies introduces students to the major methodological and theoretical issues and debates in the study of the Islamic tradition and of Middle Eastern societies. The program situates the study of the Middle East and Islam within a globalized world. The curriculum covers topics of recent scholarly significance including political Islam, the political economy of business-government networks, the relationship between "resource wars" and the "war on terrorism," new diasporas and transnational Muslim communities in the “West,” and the changed geopolitical environments of Muslim and Middle Eastern countries. The degree prepares students for a variety of post-graduate opportunities in academia, government, and an expanding job market for people with this expertise.

Admissions & Policies

Admissions

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions. For specific information, see Application Requirements and Deadlines (https://meis.gmu.edu/programs/la-ma-meis/application/) on the departmental website.

Policies

For policies governing all graduate degrees, see AP.6 Graduate Policies.

Requirements

Degree Requirements

Total credits: 30

Core Courses

Code	Title	Credits
MEIS 500	Critical Issues and Debates in Middle East and Islamic Studies	3
HIST 575	Approaches to Middle East and Islamic History	3
RELI 644	Islamic Texts and Contexts	3
GOVT 632	Politics and Societies of the Middle East	3
Select one methods course from the following:		3
ANTH 650	Methods in Anthropology	
GLOA 605	Interdisciplinary Research Methods	
GOVT 500	The Scientific Method and Research Design	
HIST 610	The Study and Writing of History	
SOCI 620	Methods and Logic of Social Inquiry	
RELI 630	Theories and Methods in the Study of Religion	
Total Credits		15

Language Proficiency

Prior to graduating, students must demonstrate professional competency in one of five major languages of the Middle East and Muslim world: Arabic, Persian, Turkish, Hebrew, or Urdu.

A waiver for this requirement may be received either through 1) documentation verifying primary language of instruction at either the high school or university level in respective foreign language; transcripts showing coursework at the advanced level in respective foreign language or 2) an examination with an appropriate faculty/examiner designated by the director in consultation with the program's steering committee.

Electives

In addition to the following list, electives may include special topics courses when relevant, directed readings and research, study abroad courses, internships, and other courses with the approval of the program director. Students who choose to complete a research project or write a thesis take 3 or 6 fewer elective credits.

Code	Title	Credits
Select five electives from the following:		15
ANTH 635	Regional Ethnography (when topic is Middle East and North Africa)	
ARTH 599	Special Topics in Art History (when topic is Middle Eastern or Islamic art)	
ARTH 699	Topics in Art History (when topic is Middle East or Islamic art)	

CONF 653	World Religions, Diplomacy, and Conflict Resolution
CONF 722	Conflict and Religion
ENGH 591	Topics in Folklore Studies
ENGH 665	Seminar in Global Culture (when topic is Middle East or Muslim world)
FREN 553	Topics in North African Francophone Literature and Culture
FRLN 550	Special Topics (when topic is a language of the Middle East or Muslim world)
FRLN 551	Special Topics (when topic is a language of the Middle East or Muslim world)
GGS 533	Issues in Regional Geography (when topic is Middle East)
GOVT 731	Advanced Seminar in Comparative Politics (when topic is the Middle East or a Muslim world region)
GOVT 733	Islam and Politics
HIST 535	Problems in Comparative World History
HIST 585	Problems in Middle Eastern History
MEIS 794	Graduate Internship in Middle East and Islamic Studies
MEIS 796	Directed Readings in Middle East and Islamic Studies
MEIS 599	Issues in Middle East and Islamic Studies
RELI 591	Special Topics in Religious Studies (when topic is Islam or Muslim communities)
RELI 645	Muslim Comparative Theologies: Sunni-Shi`i Religious Thought
RELI 646	Islam and Human Rights
RELI 660	Islamic Biomedical Ethics
Total Credits	15

Optional Research Project or Thesis

Research Project

Students choosing to complete a research project take one of the following courses, and one less elective.

Code	Title	Credits
Select one from the following:		3
GOVT 798	Political Science Research Project	
HIST 798	Directed Research and Writing in History	
SOCI 696	Independent Study	
ANTH 796	Master's Research Project	
MEIS 798	Research Project in Middle East and Islamic Studies	
Total Credits		3

Thesis

Students who choose to write a thesis should be aware of the policies governing theses as stated in AP.6.9.3 Master's Thesis. They must follow the thesis enrollment policy of the university and once enrolled in MEIS 799 Thesis Research and Writing in Middle East and Islamic Studies, maintain continuous enrollment.

Students choosing to complete a thesis take 6 fewer credits of electives.

Code	Title	Credits
Six credits of		6
MEIS 799	Thesis Research and Writing in Middle East and Islamic Studies	
Total Credits		6

Accelerated Master's

Bachelor's Degree (any)/Middle East and Islamic Studies, Accelerated MA

Overview

Highly qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BA/BS in a chosen major and an MA in Middle East and Islamic Studies in an accelerated time-frame after satisfactory completion of a minimum of 138 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degree for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Polices and Bachelor's/Accelerated Master's Degree policies. For information specific to this accelerated program, see Application Requirements and Deadlines (http://meis.gmu.edu/programs/la-ma-acel-meis/) on the departmental website.

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits and with a minimum overall GPA of 3.50.

Students who are accepted in the BAM Pathway will be allowed to register for graduate courses after successful completion of a minimum of 75 undergraduate credits.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MA program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- Minimum overall GPA of 3.50
- Completion of at least one core course in the MA in Middle East and Islamic Studies with a minimum grade of B
- Minimum grade of B in each advanced standing course
- Successfully met Mason's requirements for undergraduate degree conferral (graduation) and completed the application for graduation

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing courses (up to 12 credits with a minimum grade of B in each)

MEIS 500 Critical Issues and Debates in Middle East and Islamic Studies (3 credits)
HIST 575 Approaches to Middle East and Islamic History (3 credits)
RELI 644 Islamic Texts and Contexts (3 credits)
GOVT 632 Politics and Societies of the Middle East (3 credits)
ANTH 650 Methods in Anthropology (3 credits)
GLOA 605 Interdisciplinary Research Methods (3 credits)
GOVT 500 The Scientific Method and Research Design (3 credits)
HIST 610 The Study and Writing of History (3 credits)
SOCI 620 Methods and Logic of Social Inquiry (3 credits)
RELI 630 Theories and Methods in the Study of Religion (3 credits)

Reserve Graduate Credit courses (up to 6 credits) taken while an undergraduate and will only count for the graduate degree program

ANTH 635 Regional Ethnography (3 credits) (when topic is Middle East and North Africa)
ARTH 599 Special Topics in Art History (1-6 credits) (when topic is Middle Eastern or Islamic art)
ARTH 699 Topics in Art History (3 credits) (when topic is Middle East or Islamic art)
CONF 653 World Religions, Diplomacy, and Conflict Resolution (3 credits)
ENGH 591 Topics in Folklore Studies (3 credits)
ENGH 665 Seminar in Global Culture (3 credits) (when topic is Middle East or Muslim world)
FREN 553 Topics in North African Francophone Literature and Culture (3 credits)
FRLN 550 Special Topics (3 credits) (when topic is a language of the Middle East or Muslim world)
FRLN 551 Special Topics (3 credits) (when topic is a language of the Middle East or Muslim world)
GGS 533 Issues in Regional Geography (1-6 credits) (when topic is Middle East)
HIST 535 Problems in Comparative World History (3 credits)
HIST 585 Problems in Middle Eastern History (3 credits)
MEIS 599 Issues in Middle East and Islamic Studies (3 credits)
RELI 591 Special Topics in Religious Studies (3 credits) (when topic is Islam or Muslim communities)
RELI 645 Muslim Comparative Theologies: Sunni-Shi`i Religious Thought (3 credits)
RELI 646 Islam and Human Rights (3 credits)
RELI 660 Islamic Biomedical Ethics (3 credits)

For more detailed information on coursework and timeline requirements see AP.6.7 Bachelor's Accelerated Master's Degree policies.

Middle East Studies Minor

Banner Code: MES

Academic Advising

347 Research Hall
Fairfax Campus

Email: mes@gmu.edu
Website: meis.gmu.edu/programs/la-minor-la-mes

Today, more than ever before, Middle East politics have become intertwined with American politics and the lives of many Americans. This minor is designed to equip undergraduates with a firm multidisciplinary grounding in the region, its history, and its international relations.

Faculty

Amireh, Bakhash, Bryant, Dakake, Gopin, Haddad (director), Hamdani, Katz, Lukacs, Mandaville, Paczynska, Rouhana, Salawdeh

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 18

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

In partial fulfillment of coursework for the minor, students are strongly encouraged to participate in a study abroad program in the Middle East.

Core Courses

Code	Title	Credits
HIST 282	Survey of Middle Eastern Civilization (Mason Core)	3
GOVT 332	Government and Politics of the Middle East and North Africa	3
Total Credits		6

Electives

Code	Title	Credits
Select four electives from the following: [1]		12
ARAB 325	Major Arab Writers/Stories (Mason Core)	
ARAB 330	Reading and Conversation I	
ARAB 331	Reading and Conversation II	
ANTH 330	Peoples and Cultures of Selected Regions: Non-Western (if region studied is relevant to Middle East studies)	
ARTH 319	Art and Archaeology of the Ancient Near East (Mason Core)	
ARTH 320	Art of the Islamic World (Mason Core)	
CONF 340	Global Conflict Analysis and Resolution (Mason Core)	
ENGH 362	Global Voices (Mason Core) (if literatures studied are relevant to Middle East studies)	
GGS 325	Geography of North Africa and the Middle East	
GOVT 328	Global Political Theory	
GOVT 345	Islam and Politics	
GOVT 445	Human Rights	
HIST 281	Survey of Middle Eastern Civilization (Mason Core)	

HIST 387	Topics in Global History (Mason Core) (if region studied is relevant to Middle East studies)
HIST 460	Modern Iran (Mason Core)
HIST 461	Arab-Israeli Conflict
HIST 462	Women in Islamic Society (Mason Core)
HIST 465	The Middle East in the 20th Century
RELI 211	Religions of the West (Mason Core)
RELI 272	Islam
RELI 374	Islamic Thought (Mason Core)
RELI 375	Qur'an and Hadith
Total Credits	12

[1] One course in a relevant language may be used as an elective. Other courses including ANTH 399 Issues in Anthropology or CONF 399 Special Topics in Conflict Analysis and Resolution, when topic is relevant to the Middle East, may be used as electives with the prior written approval of the director.

Russian and Eurasian Studies Program

Phone: 703-993-1233
Website: russianstudies.gmu.edu

The Russian and Eurasian Studies program brings together experienced Mason faculty who will guide your exploration of this region's culture, gender, class, ethnicity, economy, government, and politics. All majors have the opportunity to study abroad in Moscow or St. Petersburg. They acquire the language skills needed to function successfully in social settings and a variety of careers.

The bachelor of arts degree in Russian and Eurasian studies allows students to choose a concentration in one of three areas:

- Russian language and culture
- Russia studies
- Eurasia studies

Faculty

Program Faculty

Barnes (History and Art History, director), Bockman (Global Affairs), Boettke (Economics), Guglielmi (Modern and Classical Languages), Katz (Schar School of Policy and Government), Kelly (History and Art History), Korostelina (Jimmy and Rosalynn Carter School for Peace and Conflict Resolution), McGlinchey (Schar School of Policy and Government)

Programs

- Russian and Eurasian Studies, BA

Russian and Eurasian Studies, BA

Banner Code: LA-BA-REST

Website: russianstudies.gmu.edu/programs/LA-BA-REST

Russian and Eurasian studies majors study the Russian language, spoken worldwide by some 250 million people, while also acquiring a foundational knowledge of the history, culture, literature, politics, sociology, economics, and geography of the region. This degree program is flexible, enabling students to focus their interests in one of three concentrations: Russia studies, Russian language and culture, and Eurasia studies. Russian and Eurasian studies prepares students for a wide range of career options in the private sector, government, and education. All students have opportunities for research, global-engagement, public service, and career preparation.

Admissions & Policies

Policies

Students pursuing this degree must complete 33 credits in one of the concentrations available with a minimum GPA of 2.00.

For policies governing all undergraduate degrees, see AP.5 Undergraduate Policies.

Requirements

Degree Requirements

Total credits: minimum 120

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Students pursuing this degree complete the requirements for one of the available concentrations.

Concentrations in the Major

Available Concentrations

- Concentration in Eurasia Studies (EURS)
- Concentration in Russia Studies (RUSS)
- Concentration in Russian Language and Culture (RULC)

Concentration in Eurasia Studies (EURS)

The Eurasia studies concentration is designed to provide students with interdisciplinary training in the study of Eurasia, with special focus on Central Asia and secondarily on Russia/the Soviet Union and Eastern Europe. Students will develop a high degree of competence in the history, politics, and culture of Eurasia and a basic competence in a relevant language.

Russian or Other Eurasian-Related Language

Code	Title	Credits
Select two courses of Russian or other Eurasian-related language		6
Total Credits		6

Courses used to meet this requirement may be in the same language that is used to meet the college language requirement, in which case the student needs to complete 6 credits beyond intermediate proficiency (beyond courses numbered 210 at Mason). With the approval of the director, courses used to meet this requirement may be in a Eurasian-

related language that was not used to meet the college language requirement at a level approved by the director.

Social Science Courses at the 300- and 400-Level

Code	Title	Credits
Select two social science courses at the 300- and 400-level		6
Total Credits		6

Courses used to fulfill this requirement must focus primarily on Central Asia and Eurasia and may be in any social science discipline (ANTH, ECON, GGS, GOVT, SOCI).

History Courses at the 300- and 400-Level

Code	Title	Credits
Select two history courses at the 300- and 400-level		6
Total Credits		6

Courses used to fulfill this requirement must focus primarily on Central Asia and Eurasia.

Literature or Film Courses at the 300- and 400-Level

Code	Title	Credits
Select two literature or film courses at the 300- and 400-level		6
Total Credits		6

Courses used to fulfill this requirement must be related to Eurasia.

Courses at the 300- and 400-Level

Students choose from courses that focus predominantly on Eurasia. The courses used to meet this requirement may be in any field of study including special topics courses and other courses that deal primarily with the geographic areas covered in the Russian and Eurasian studies major. To use a special topics course or other course with variable content to meet this requirement, students should seek the advanced written approval of the director. (Special topics courses may be repeated for credit when the topic is different.) The following courses when the topic is relevant, among others, may be used to meet this requirement.

Code	Title	Credits
Select three courses at the 300- and 400-level from the following:		9
ARTH 386	The Silk Road (Mason Core)	
HIST 328	Rise of Russia (Mason Core)	
HIST 329	Modern Russia and the Soviet Union (Mason Core)	
HIST 387	Topics in Global History (Mason Core)	
HIST 388	Topics in European History	
HIST 460	Modern Iran (Mason Core)	
HIST 462	Women in Islamic Society (Mason Core)	
HIST 499	RS: Senior Seminar in History (Mason Core)	
GOVT 338	Government and Politics of Russia	
GOVT 340	Central Asian Politics	
GOVT 345	Islam and Politics	
GOVT 444	Issues in International Studies	
GOVT 447	Revolution and International Politics	
RUSS 470	Topics in (Post) Soviet Film	
GGS 330	Geography of the Soviet Succession States	
ECON 380	Economies in Transition (Mason Core)	
Any 300- or 400-level CONF course		
Total Credits		9

Concentration in Russia Studies (RUSS)

The Russia studies concentration is designed to provide students with in-depth interdisciplinary training in Russia and the Soviet Union. Students will develop a high degree of competence in Russian history, politics, society, and culture as well as a basic competence in the Russian language and the broader Eurasian context.

Required Language Courses

Other relevant advanced language courses may be used to fulfill this requirement with the prior written approval of the director. Majors are encouraged to take additional advanced Russian language courses.

Code	Title	Credits
RUSS 202	Intermediate Russian II	3
RUSS 380	Advanced Russian I	3
Total Credits		6

Russian or Soviet History

When the topic is relevant, HIST 300 Introduction to Historical Method (Mason Core), HIST 388 Topics in European History, or HIST 499 RS: Senior Seminar in History (Mason Core) may be used to fulfill this requirement with the prior written approval of the director.

Code	Title	Credits
Select two courses from the following:		6
HIST 326	Stalinism	
HIST 327	The Soviet Union and Russia Since World War II	
HIST 328	Rise of Russia (Mason Core)	
HIST 329	Modern Russia and the Soviet Union (Mason Core)	
HIST 426	The Russian Revolution	
Total Credits		6

Social Sciences Dealing Primarily with Russia

Any topically appropriate courses in any social science discipline (ANTH, ECON, GGS, GOVT, SOCI) may be used to fulfill this requirement with the prior written approval of the director.

Code	Title	Credits
Select two courses from the following:		6
GOVT 338	Government and Politics of Russia	
GGS 330	Geography of the Soviet Succession States	
ECON 380	Economies in Transition (Mason Core)	
Total Credits		6

Russian Literature or Culture

Other relevant courses may be used to fulfill this requirement with the prior written approval of the director.

Code	Title	Credits
Select two courses from the following:		6
RUSS 310	Readings in Russian Literature	
RUSS 311	Contemporary Russian Short Fiction	

RUSS 325	Major Russian Writers (Mason Core)	
RUSS 326	A Survey of Russian Literature (Mason Core)	
RUSS 327	A Survey of Russian Literature (Mason Core)	
RUSS 353	Russian Civilization (Mason Core)	
RUSS 354	Contemporary Post-Soviet Life (Mason Core)	
Total Credits		6

Courses at the 300 and 400 Level

Students choose from courses that focus predominantly on Eastern Europe, Russia, or Central Asia. Courses used to meet this requirement may be in any field of study including special topics courses and other courses that deal primarily with the geographic areas covered in the Russian and Eurasian studies major. To use a special topics course or other course with variable content to meet this requirement, students should seek the advanced written approval of the director. (Special topics courses may be repeated for credit when the topic is different.) Examples of courses that may meet this requirement:

Code	Title	Credits
Select three courses from the following:		9
RUSS 302	Russian Conversation and Composition	
RUSS 303	Russian Advanced Conversation	
RUSS 310	Readings in Russian Literature	
RUSS 311	Contemporary Russian Short Fiction	
RUSS 325	Major Russian Writers (Mason Core)	
RUSS 326	A Survey of Russian Literature (Mason Core)	
RUSS 327	A Survey of Russian Literature (Mason Core)	
RUSS 353	Russian Civilization (Mason Core)	
RUSS 354	Contemporary Post-Soviet Life (Mason Core)	
RUSS 381	Advanced Russian II	
RUSS 401	Readings in the Social Sciences	
RUSS 407	Russian Drama and Theater	
RUSS 410	Russian Poetry	
RUSS 470	Topics in (Post) Soviet Film	
RUSS 480	Fourth-Year Russian	
RUSS 481	Fourth-Year Russian	
HIST 300	Introduction to Historical Method (Mason Core)	
HIST 312	Nationalism in Eastern Europe	
HIST 328	Rise of Russia (Mason Core)	
HIST 329	Modern Russia and the Soviet Union (Mason Core)	
HIST 387	Topics in Global History (Mason Core)	
HIST 388	Topics in European History	
HIST 426	The Russian Revolution	
HIST 499	RS: Senior Seminar in History (Mason Core)	
THR 352	Dramatic Literature Seminar	
ECON 380	Economies in Transition (Mason Core)	
GGS 330	Geography of the Soviet Succession States	
GOVT 338	Government and Politics of Russia	
GOVT 340	Central Asian Politics	
GOVT 444	Issues in International Studies	
GOVT 447	Revolution and International Politics	
Total Credits		9

Concentration in Russian Language and Culture (RULC)

Students in the Russian language and culture concentration develop a high degree of competence in Russian language and culture and a basic familiarity with Russian and Eurasian history and politics.

Required Courses in Advanced Russian

Code	Title	Credits
RUSS 380	Advanced Russian I	3
RUSS 381	Advanced Russian II	3
RUSS 480	Fourth-Year Russian	3
or RUSS 481	Fourth-Year Russian	
Total Credits		9

Russian Culture or History

Code	Title	Credits
RUSS 353	Russian Civilization (Mason Core)	3
or HIST 328	Rise of Russia (Mason Core)	
RUSS 354	Contemporary Post-Soviet Life (Mason Core)	3
or HIST 329	Modern Russia and the Soviet Union (Mason Core)	
Total Credits		6

Russian Literature or Cinema in Translation

Code	Title	Credits
Select two courses from the following:		6
RUSS 325	Major Russian Writers (Mason Core)	
RUSS 326	A Survey of Russian Literature (Mason Core)	
RUSS 327	A Survey of Russian Literature (Mason Core)	
RUSS 470	Topics in (Post) Soviet Film	
Total Credits		6

Courses Taught in Russian

Code	Title	Credits
Select three courses from the following:		9
RUSS 302	Russian Conversation and Composition	
RUSS 303	Russian Advanced Conversation	
RUSS 310	Readings in Russian Literature	
RUSS 311	Contemporary Russian Short Fiction	
RUSS 401	Readings in the Social Sciences	
RUSS 410	Russian Poetry	
RUSS 481	Fourth-Year Russian	
Total Credits		9

Social Sciences

Students choose from courses dealing with Russia. Any other topically appropriate course in a social science discipline (ANTH, ECON, GGS,

GOVT, SOCI) may be used to fulfill this requirement with the prior written approval of the director.

Code	Title	Credits
Select one course from the following:		3
GOVT 338	Government and Politics of Russia	
ECON 380	Economies in Transition (Mason Core)	
GGS 330	Geography of the Soviet Succession States	
Total Credits		3

Writing-Intensive Requirement

The university requires all students to complete at least one course designated "writing intensive" in their majors at the 300 level or above. Students majoring in Russian and Eurasian studies may fulfill this requirement by successfully completing RUSS 302 Russian Conversation and Composition, RUSS 325 Major Russian Writers (Mason Core), or RUSS 407 Russian Drama and Theater.

Upper Level Requirement

Students seeking a bachelor's degree must apply at least 45 credits of upper-level courses (numbered 300 or above) toward graduation requirements.

Additional Electives

Any remaining credits may be completed with elective courses to bring the degree total to 120.

College Level Requirements for the BA Degree

In addition to the Mason Core program, students pursuing a BA degree must complete the coursework below. Except where expressly prohibited, a course used to fulfill a college level requirement may also be used simultaneously to satisfy other requirements (Mason Core requirements or requirements for the major).

Philosophy or Religious Studies

Code	Title	Credits
Select 3 credits from the following:		3
PHIL [1]		
RELI		

[1] Note that the following courses may not be used to fulfill this requirement:

- PHIL 323 Classical Western Political Theory
- PHIL 324 Modern Western Political Theory
- PHIL 327 Contemporary Western Political Theory
- PHIL 393 Humanities College to Career
- PHIL 460 Senior Seminar in Philosophy, Politics, and Economics

Additionally, PHIL 253 Philosophy and Literature (Mason Core), RELI 235 Religion and Literature (Mason Core), and RELI 333 Spiritual Autobiography (Mason Core) cannot be used to fulfill both the philosophy/religious studies requirement and the Mason Core literature requirement.

Social and Behavioral Sciences

Code	Title	Credits
Select 3 credits of social and behavioral sciences from the following (additional to the Mason Core social and behavioral sciences requirement) [1]		3
ANTH		
CRIM		
ECON		
GOVT		
HIST [2]		
LING		
PSYC		
SOCI		
Or choose from the following GGS courses:		
GGS 101	Major World Regions (Mason Core)	
GGS 103	Human Geography (Mason Core)	
GGS 110	Introduction to Geoinformation Technologies	
GGS 301	Political Geography (Mason Core)	
GGS 303	Geography of Resource Conservation (Mason Core)	
GGS 304	Population Geography (Mason Core)	
GGS 305	Economic Geography	
GGS 306	Urban Geography	
GGS 315	Geography of the United States	
GGS 316	Geography of Latin America	
GGS 320	Geography of Europe	
GGS 325	Geography of North Africa and the Middle East	
GGS 330	Geography of the Soviet Succession States	
GGS 357	Urban Planning	
GGS 380	Geography of Virginia	

[1] The two courses used to fulfill the combined college and Mason Core requirements must be from different disciplines in the social and behavioral sciences.

[2] HIST 100 History of Western Civilization (Mason Core) and HIST 125 Introduction to World History (Mason Core) may not be used to fulfill this requirement.

Foreign Language

Code	Title	Credits
Intermediate-level proficiency in one foreign language, fulfilled by: [1]		
Completing 3 credits in a foreign language numbered 202 (or higher level courses taught in the language)		
Or achieving a satisfactory score on an approved proficiency test		
Or completing the following ASL three course sequence:		
EDSE 115	American Sign Language (ASL) I	
EDSE 116	American Sign Language (ASL) II	
EDSE 219	American Sign Language (ASL) III	

[1] Students who are already proficient in a second language may be eligible for a waiver of this requirement. Additional information on waivers can be found at the Office of Undergraduate Academic Affairs (http://chssundergrad.gmu.edu/).

Non-Western Culture

Select 3 credits of an approved course in the study of a non-Western culture (additional to the Mason Core requirement in global understanding)

Code	Title	Credits
Select 3 credits (additional to Mason Core Global Understanding requirement) [1]		
ANTH 114	Introduction to Cultural Anthropology (Mason Core)	3
ANTH 300	Civilizations	3
ANTH 302	Peoples and Cultures of Latin America (Mason Core)	3
ANTH 307	Ancient Mesoamerica (Mason Core)	3
ANTH 308	Peoples and Cultures of the Middle East (Mason Core)	3
ANTH 309	Peoples and Cultures of India (Mason Core)	3
ANTH 313	Myth, Magic, and Mind (Mason Core)	3
ANTH 314	Zombies	3
ANTH 330	Peoples and Cultures of Selected Regions: Non-Western	3
ANTH 332	Cross-Cultural Perspectives on Globalization (Mason Core)	3
ANTH 381	Medical Anthropology	3
ANTH 396	Issues in Anthropology: Social Sciences (Mason Core)	3
ARAB 360	Topics in Arabic Cultural Production	3
ARAB 420	Survey of Arabic Literature	3
ARAB 440	Topics in Arabic Religious Thought and Texts (Mason Core)	3
ARTH 203	Survey of Asian Art (Mason Core)	3
ARTH 204	Survey of Latin American Art (Mason Core)	3
ARTH 206	Survey of African Art (Mason Core)	3
ARTH 318	Art and Archaeology of Ancient Egypt	3
ARTH 319	Art and Archaeology of the Ancient Near East (Mason Core)	3
ARTH 320	Art of the Islamic World (Mason Core)	3
ARTH 382	Arts of India (Mason Core)	3
ARTH 383	Arts of Southeast Asia (Mason Core)	3
ARTH 384	Arts of China (Mason Core)	3
ARTH 385	Arts of Japan (Mason Core)	3
ARTH 386	The Silk Road (Mason Core)	3
ARTH 482	RS: Advanced Studies in Asian Art	3
CHIN 318	Introduction to Classical Chinese (Mason Core)	3
CHIN 320	Contemporary Chinese Film	3
CHIN 325	Major Chinese Writers (Mason Core)	3
CHIN 470	Special Topics in Chinese Studies	3
DANC 118	World Dance (Mason Core)	3
ECON 361	Economic Development of Latin America (Mason Core)	3
ECON 362	African Economic Development (Mason Core)	3
FREN 451	Topics in Sub-Saharan Francophone Literature and Culture	3
FREN 454	Topics in Caribbean Francophone Literature and Culture	3
GGS 101	Major World Regions (Mason Core)	3
GGS 316	Geography of Latin America	3
GGS 317	Geography of China (Mason Core)	3
GGS 325	Geography of North Africa and the Middle East	3
GGS 330	Geography of the Soviet Succession States	3
GGS 399	Select Topics in GGS	3
GOVT 328	Global Political Theory	3
GOVT 332	Government and Politics of the Middle East and North Africa	3
GOVT 333	Government and Politics of Asia	3
GOVT 338	Government and Politics of Russia	3
GOVT 340	Central Asian Politics	3
GOVT 341	Chinese Foreign Policy	3
GOVT 345	Islam and Politics	3
GOVT 433	Political Economy of East Asia	3
HIST 251	Survey of East Asian History (Mason Core)	3
HIST 252	Survey of East Asian History (Mason Core)	3
HIST 261	Survey of African History (Mason Core)	3
HIST 262	Survey of African History (Mason Core)	3
HIST 271	Survey of Latin American History (Mason Core)	3
HIST 272	Survey of Latin American History (Mason Core)	3
HIST 281	Survey of Middle Eastern Civilization (Mason Core)	3
HIST 282	Survey of Middle Eastern Civilization (Mason Core)	3
HIST 326	Stalinism	3
HIST 327	The Soviet Union and Russia Since World War II	3
HIST 328	Rise of Russia (Mason Core)	3
HIST 329	Modern Russia and the Soviet Union (Mason Core)	3
HIST 353	History of Traditional China	3
HIST 354	Modern China (Mason Core)	3
HIST 356	Modern Japan (Mason Core)	3
HIST 357	Postwar Japan (Mason Core)	3
HIST 358	Post-1949 China (Mason Core)	3
HIST 360	History of South Africa (Mason Core)	3
HIST 364	Revolution and Radical Politics in Latin America (Mason Core)	3
HIST 365	Conquest and Colonization in Latin America (Mason Core)	3
HIST 366	Comparative Slavery	3
HIST 367	History, Fiction, and Film in Latin America	3
HIST 387	Topics in Global History (Mason Core)	3-6

HIST 426	The Russian Revolution	3
HIST 460	Modern Iran (Mason Core)	3
HIST 461	Arab-Israeli Conflict	3
HIST 462	Women in Islamic Society (Mason Core)	3
HIST 465	The Middle East in the 20th Century	3
JAPA 310	Japanese Culture in a Global World (Mason Core)	3
JAPA 340	Topics in Japanese Literature (Mason Core)	3
KORE 320	Korean Popular Culture in a Global World	3
MUSI 103	Musics of the World (Mason Core)	3
RELI 211	Religions of the West (Mason Core)	3
RELI 212	Religions of Asia (Mason Core)	3
RELI 240	Death and the Afterlife in World Religions	3
RELI 272	Islam	3
RELI 313	Hinduism (Mason Core)	3
RELI 314	Chinese Philosophies and Religious Traditions	3
RELI 315	Buddhism (Mason Core)	3
RELI 317	Daoism	3
RELI 337	Mysticism: East and West	3
RELI 365	Muhammad: Life and Legacy	3
RELI 374	Islamic Thought (Mason Core)	3
RELI 375	Qur'an and Hadith	3
RELI 379	Islamic Law, Society, and Ethics	3
RELI 387	Islam, Democracy, and Human Rights	3
RELI 490	Comparative Study of Religions (Mason Core)	3
RUSS 353	Russian Civilization (Mason Core)	3
RUSS 354	Contemporary Post-Soviet Life (Mason Core)	3

[1] A course used to fulfill the Mason Core global understanding requirement may not be simultaneously used to satisfy this college-level requirement. A course used to fulfill this requirement may be used simultaneously to fulfill any other requirements (Mason Core requirements, college-level requirements, or requirements for the major). Additional information on waivers can be found at the Office of Undergraduate Academic Affairs (http://chssundergrad.gmu.edu/).

Mason Core

Some Mason Core requirements may already be fulfilled by the major requirements listed above. Students are strongly encouraged to consult their advisors to ensure they fulfill all remaining Mason Core requirements.

Code	Title	Credits
Foundation Requirements		
Written Communication (ENGH 101)		3
Oral Communication		3
Quantitative Reasoning		3
Information Technology and Computing		3
Exploration Requirements		
Arts		3
Global Understanding		3
Literature		3
Natural Science		7
Social and Behavioral Sciences		3
Western Civilization/World History		3
Integration Requirements		
Written Communications (ENGH 302)		3
Writing-Intensive [1]		3
Synthesis/Capstone [2]		3
Total Credits		40

[1] Most programs include the writing-intensive course designated for the major as part of the major requirements; this course is therefore not counted towards the total required for Mason Core.

[2] Minimum 3 credits required.

4-Year Plan

Bachelor of Arts in Russian and Eurasian Studies Sample Plan of Study

A sample four year graduation plan and degree planning worksheet can be found at https://academicaffairs.chss.gmu.edu/undergraduate-students/advising/advising-sheets (https://academicaffairs.chss.gmu.edu/undergraduate-students/advising/advising-sheets/). The plan is a recommended sequencing of courses based on prerequisites and scheduling. This may not fit every student's needs and is a guideline, not a requirement. Students should confirm major requirements with their academic advisor each semester and with their PatriotWeb Degree Evaluation to ensure they enroll in the proper courses and are on track to graduate.

School of Integrative Studies

Phone: 703-993-1436
Website: integrative.gmu.edu

About the School

The School of Integrative Studies (SIS) offers a distinctive experience that addresses contemporary social, global, and environmental challenges. Students connect academic interests with hands-on learning to prepare for a life and career with meaning and impact. Based in the College of Humanities and Social Sciences, SIS focuses on critical and creative thinking, engaged scholarship and diversity in thought. Graduates will lead the way as a new brand of professionals whose understanding of the liberal arts and commitment to a just world can build the cross-sector approaches necessary to solve pressing global, social, and environmental problems.

An integrative, interdisciplinary learning environment, SIS offers the benefits of small, discussion-based courses while providing access to the academic resources of a large public research university. Drawing on its award-winning faculty, SIS provides students with transformative experiential learning opportunities including internships, field and international study, and independent research and service. Both the structure and curriculum of SIS prepare graduates who are engaged, well-rounded scholars who consistently assume leadership roles in the fields

of business, law, government, healthcare, education, and the non-profit sector, among others.

Undergraduate Programs

The School of Integrative Studies offers a bachelor of arts and a bachelor of science degree in integrative studies, and a bachelor of arts in environmental and sustainability studies (joint degree with Environmental Science and Policy in the College of Science). The school also houses the Bachelor of Individualized Study Program.

The integrative studies curriculum is based on intensive, interdisciplinary learning communities, coordinated with traditional academic programs. The result is an integrated program of study that emphasizes collaboration, experiential learning, and self-reflection. All students complete their degree programs with an interdisciplinary concentration.

The environmental and sustainability studies degree provides students with theoretical and practical knowledge of three aspects of environmental and sustainability studies: people, prosperity, and planet. In addition to required core courses, students develop more in-depth knowledge in one of six concentrations. This degree prepares students for employment and graduate study in fields related to social justice, business and public policy, and environmental protection as they relate to the environment and sustainability.

The bachelor of individualized study (BIS) program is a degree completion program for adult learners. BIS offers students transfer credit options and a distinctive educational opportunity to integrate other college-level learning, such as professional or military experience, into university coursework. Students create interdisciplinary concentrations to meet their own educational needs including to advance professionally, to prepare for graduate or professional programs, or to plan a path toward a career change.

Transfer Students

The School of Integrative Studies welcomes transfer students from other four-year institutions or community colleges, as well as from other academic units within Mason. Academic advisors work with students to utilize transfer credits and create a plan for timely completion of the bachelor's degree. All transfer students are required to take INTS 391 Understanding Integrative Studies within their first two semesters and meet with an academic advisor as soon as possible.

Minor Programs

The School of Integrative Studies offers minors in childhood studies, leadership, non-profit studies, social justice and human rights, social innovation, and well-being. All are available to students in any major in the university.

The Sustainability Studies Minor is offered jointly by the Department of Environmental Science and Policy and the School of Integrative Studies.

Centers

The School of Integrative Studies houses Social Action and Integrative Learning (SAIL), which serves all students and faculty in the university.

Faculty

School Faculty

Administration

Kelly Dunne, Executive Director
Misty Krell, Director of Academic Affairs
Sara Montiel, Associate Director of Student Services
Aoi Yamanaka, Associate Director of Academic Services
Mark Sistek, Advising Director
Patricia Mathison, Director, Social Action and Integrative Learning (SAIL)

Professor

Garner

Associate Professors

Chen, Eby, Freeman, Gilmore, Muir, Owen, Wood, Wingfield, Unruh

Assistant Professors

Balakian, Erakat, McCarron, Shadur, Van Sant

Term Professor

Manuel-Scott

Term Associate Professor

Fuertes, Thurston

Term Assistant Professors

Ha Poirot, Dunne, Frye, Krell, Lazaroff, Maskell, Yamanaka

Term Instructor

Howard, Spradling

Adjunct Faculty

Bucy, Cairnie, Chollar, Christ, Gallas, Garland-Jackson, Green, Holder, Imamura, MacDonald, Miles, Parnell, Rose, Stephens, Sweetman, Taft, Teague, Zelensky, Zhang

Affiliate Faculty

Lennon

Programs

- Childhood Studies Minor
- Conservation Studies Minor (CHSS)
- Environmental and Sustainability Studies, BA (CHSS)
- Human Development and Family Science Minor (CHSS)
- Human Development and Family Science, BA (CHSS)
- Individualized Study, BIS
- Integrative Studies, BA
- Integrative Studies, BS
- Leadership Minor
- Nonprofit Studies Minor
- Social Innovation Minor
- Social Justice and Human Rights Minor
- Well-Being Minor

Childhood Studies Minor

Banner Code: CHDS

Academic Advising

402 Enterprise Hall

Fairfax Campus

Email: sisinfo@gmu.edu
Website: integrative.gmu.edu/programs/la-minor-nc-chds

The interdisciplinary minor is designed for students who have a child-related focus in their major and for those who want to explore the topic of childhood. This minor focuses on the study of issues concerning children and their representations, including their experiences in society within historical and contemporary cultures and global contexts. The curriculum fosters thinking about childhood theory, research, policy and the practical applications of this knowledge to decisions regarding children and youth. The minor provides enough flexibility for students to choose relevant courses in keeping with their primary interests.

Faculty

Dunne, Garcia-Gomez, Garner (director), Shadur

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must earn a minimum grade of 2.00 in all courses applied to the minor. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 16-17

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Core Courses

Code	Title	Credits
Three to four credits of		3-4
INTS 312	Images and Experiences of Childhood: Social Construct, Literature, and Film [1]	
INTS 316	Introduction to Childhood Studies (Mason Core)	4
Total Credits		7-8

[1] A maximum of 4 credits may be applied to the minor.

Electives

Code	Title	Credits
Select three courses from the following:		9
COMM 367	Children and Media	
CONF 392	Youth and Conflict	
CRIM 302	Delinquency and the Juvenile Justice System	
CRIM 406	Family Law and the Justice System	
ECED 201	Introduction to Early Childhood Education for Diverse Learners	
ECED 405	Introduction to Early Childhood Special Education	
EDSE 469	Individualized Supports and Specialized Care of Students with Severe Disabilities	
EDUC 302	Human Growth and Development	
EDUC 372	Human Development, Learning, and Teaching	
ELED 358	(Mason Core)	
ELED 443	Children, Family, Culture, and Schools, 4-12 Year Olds	
HDFS 301	The Hospitalized Child and Family	
INTS 319	Contemporary Youth Studies (Mason Core)	
INTS 321	Parent-Child Relations (Mason Core)	
INTS 344	Youth, Music, Social Change	
INTS 419	Youth Resistance and Advocacy	
PHED 360	Sport Based Youth Development	
PSYC 211	Developmental Psychology (Mason Core)	
PSYC 313	Child Development	
PSYC 314	Adolescent Development	
PSYC 414	Behavior Disorders of Childhood	
SOCI 302	Sociology of Delinquency	
SOCI 309	Marriage, Families, and Intimate Life	
SOCI 360	Youth Culture and Society (Mason Core)	
SOCW 415	Child and Family Welfare	
Total Credits		9

Conservation Studies Minor (CHSS)

Banner Code: CNST

Academic Advising

Sharon Spradling, Academic Program Coordinator and Advisor

Email: sspradli@gmu.edu
Website: smconservation.gmu.edu

This minor is designed for undergraduate students who wish to augment their primary academic program with conservation studies taught in an experiential manner. There are three semester-long options by which students can complete the minor including topics such as: "Conservation, Biodiversity and Society", "Wildlife Ecology and Conservation", or "Endangered Species Conservation." These semesters are grounded in natural science and offer a collection of interdisciplinary courses that combine public policy, sociology, conflict resolution, and global awareness with hands-on experience. Students are in residence at the Smithsonian Conservation Biology Institute (https://nationalzoo.si.edu/conservation/) in Front Royal, Virginia, and are taught by Mason faculty, Smithsonian scientists and practitioners.

The minor is available only to students who enroll in any of the Smithsonian Mason Semesters (https://smconservation.gmu.edu/), semester-long residential programs held at the Smithsonian Conservation Biology Institute (https://nationalzoo.si.edu/conservation/) in Front Royal, VA. The semesters are offered jointly by the College of Humanities and Social Sciences and the College of Science under the auspices of the Smithsonian-Mason School of Conservation (http://smconservation.gmu.edu/).

This is a Green Leaf program.

Admissions & Policies

Admissions

The minor is available only to students who enroll in either of the Smithsonian Mason Semesters, semester-long residential programs held at the Smithsonian Conservation Biology Institute in Front Royal, VA.

Policies

Eight credits of coursework must be unique to the minor and students pursuing this minor must complete one of the options with a minimum grade of 2.00 in each course. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 16

This is a Green Leaf program.

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Conservation, Biodiversity and Society Option

Code	Title	Credits
CONS 320	Conservation in Practice	3
CONS 401	Conservation Theory	3
CONS 402	Applied Conservation	4
CONS 410	Human Dimensions in Conservation (Mason Core)	3
CONS 490	RS: Integrated Conservation Strategies (Mason Core)	3
Total Credits		16

Wildlife Ecology and Conservation Option (fall semester only)

Code	Title	Credits
CONS 400	Conservation Seminar	2
CONS 404	Biodiversity Monitoring	4
CONS 405	Landscape and Macrosystems Ecology	4
CONS 496	Research in Conservation (Mason Core)	6
Total Credits		16

Endangered Species and Conservation Option (spring semester only)

Code	Title	Credits
CONS 400	Conservation Seminar	2
CONS 406	Small Population Management	4
CONS 491	RS: Conservation Management Planning (Mason Core)	4
CONS 496	Research in Conservation (Mason Core)	6
Total Credits		16

Environmental and Sustainability Studies, BA (CHSS)

Banner Code: LA-BA-EVSS

402 Enterprise Hall
Fairfax Campus

Website: https://ess.gmu.edu/

The BA in Environmental and Sustainability Studies is a joint program between the College of Humanities and Social Sciences and the College of Science.

This degree provides students with theoretical and practical knowledge of three aspects of environmental and sustainability studies: people, prosperity, and planet. In addition to required core courses, students develop more in-depth knowledge in their choice of concentration. This degree prepares students for employment and graduate study in fields related to social justice, business and public policy, and environmental protection as they relate to the environment and sustainability.

This is a Green Leaf program.

Admissions & Policies

Admissions

University-wide admissions policies can be found in the Undergraduate Admissions Policies section of this catalog.

To apply for this program, please complete the George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now/).

Policies

Students pursuing this degree must complete a minimum of 60 credits within the major, with a minimum grade of 2.00 in each course.

For policies governing all undergraduate degrees, see AP.5 Undergraduate Policies.

Requirements

Degree Requirements

Total credits: minimum 120

This is a Green Leaf program.

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Of the credits required for this degree, 14 credits simultaneously fulfill core requirements for the major and Mason Core requirements, and, depending on the concentration and electives chosen, up to 9 credits may simultaneously fulfill Mason Core requirements and college BA requirements.

Core Courses in the Major

Code	Title	Credits
Environmental Science and Society		
EVPP 377	Applied Ecology	3
And completion of one of the following sequences:		11-12
EVPP 108 & EVPP 109 & EVPP 112 & EVPP 113 & EVPP 336	Ecosphere - Introduction to Environmental Science I-Lecture (Mason Core) and Ecosphere- Introduction to Environmental Science I- Lab (Mason Core) and Ecosphere: Introduction to Environmental Science II-Lecture (Mason Core) and Ecosphere: Introduction to Environmental Science II–Lab (Mason Core) and Human Dimensions of the Environment	
or		
EVPP 210 & EVPP 301 & EVPP 302	Environmental Biology: Molecules and Cells and Environmental Science: Biological Diversity and Ecosystems and Environmental Science: Biomes and Human Dimensions	
Individual and Group Behavior		
INTS 334	Environmental Justice (Mason Core)	4
Business and Public Policy		
Select one course from the following:		3
ECON 100	Economics for the Citizen (Mason Core)	
ECON 103	Contemporary Microeconomic Principles (Mason Core)	
ECON 105	Environmental Economics for the Citizen (Mason Core)	
EVPP 322	Business and Sustainability	3
EVPP 361	Introduction to Environmental Policy [1]	3
or GOVT 361	Introduction to Environmental Policy	
Statistics		
Select one course from the following:		3-4
SOCI 313	Statistics for the Behavioral Sciences (Mason Core)	
BIOL 214	Biostatistics for Biology Majors	
STAT 250	Introductory Statistics I (Mason Core)	
Integration, Analysis, Innovation		
INTS 210	Sustainable World (Mason Core)	4
EVPP 480	Sustainability in Action (Mason Core)	4
Select one course from the following:		3
INTS 390	International Internship (Mason Core) (minimum of 3 credits required)	
INTS 398	Experiential Learning (minimum of 3 credits required)	
INTS 498	Experiential Learning (minimum of 3 credits required)	
INTS 490	Internship (minimum of 3 credits required)	
EVPP 395	Undergraduate Research in Environmental Science and Policy (minimum of 3 credits required)	
EVPP 494	Internship (minimum of 3 credits required)	
Total Credits		41-43

[1] Satisfies the college BA requirement for social and behavioral science.

Concentration in the Major

Available Concentrations

- Concentration in Business and Sustainability (BUSU)
- Concentration in Climate Change and Society (CCSO)
- Concentration in Conservation and Sustainability (CSUS)
- Concentration in Environmental Policy and Economics (EVPE)
- Concentration in Equity and Environmental Justice (EQEJ)
- Concentration in Sustainable Food and Agriculture (SFG)

Concentration in Business and Sustainability (BUSU)

The requirements for this concentration, depending on the electives chosen, may satisfy the college BA requirement in philosophy and religious studies (PHIL 243 Global Environmental Ethics (Mason Core), PHIL 305 Business Ethics).

Students who have already taken and received credit for MGMT 303 Principles of Management or OM 303 Operations Management shall substitute MGMT 303 Principles of Management for MBUS 301 Managing People and Organizations in a Global Economy and OM 303 Operations Management for MBUS 306 Managing Projects and Operations. Both courses cannot be taken for credit. Students who have taken and received credit for both ACCT 203 Survey of Accounting and FNAN 303 Financial Management shall substitute the combination for MBUS 300 Accounting in a Global Economy. All three courses cannot be taken for credit.

Core Courses

Code	Title	Credits
Required Courses		
MBUS 300	Accounting in a Global Economy	3
MBUS 301	Managing People and Organizations in a Global Economy	3
MBUS 306	Managing Projects and Operations	3
Additional Course		
Select one course (3 credits) from the following:		3
GOVT 353	Social Entrepreneurship	
EVPP 434	Food-Energy-Water Nexus	
INTS 375	Special Topics (when topic is relevant with approval)	
INTS 450	Social Innovation in Action	
INTS 475	Special Topics (when topic is relevant with approval)	
MBUS 304	Entrepreneurship: Starting and Managing a New Enterprise	
MGMT 451	Introduction to Entrepreneurship	
EVPP 490	Special Topics in Environmental Science and Policy (when topic is relevant with approval)	

EVPP 505	Selected Topics in Environmental Science (when topic is relevant with approval)	
Total Credits		12

Two Courses

Code	Title	Credits
Select two courses (6 credits) from the following:		6
ECON 335	Environmental Economics	
EVPP 338	Economics of Environmental Policy	
EVPP 362	Intermediate Environmental Policy	
GGS 307	Geographic Approaches for Sustainable Development	
INTS 204	Leadership Theory and Practice	
PHIL 243	Global Environmental Ethics (Mason Core)	
PHIL 305	Business Ethics	
Other course work with advisor approval		
Total Credits		6

Concentration in Climate Change and Society (CCSO)

The requirements for this concentration, depending on the electives chosen, may satisfy the college BA requirement in philosophy and religious studies (PHIL 243 Global Environmental Ethics (Mason Core), PHIL 343 Topics in Environmental Philosophy (Mason Core)).

Required Courses

Code	Title	Credits
CLIM 101	Global Warming: Weather, Climate, and Society (Mason Core)	3-4
or GGS 121	Dynamic Atmosphere and Hydrosphere (Mason Core)	
EVPP 432	Energy Policy	3
EVPP 436	The Human Dimensions of Global Climate Change	3
Total Credits		9-10

Three Courses

Code	Title	Credits
Select three courses (9 credits) from the following:		9
CLIM 102	Introduction to Global Climate Change Science (Mason Core)	
CLIM 314	Severe and Extreme Weather	
CLIM 319	Air Pollution	
EVPP 362	Intermediate Environmental Policy	
EVPP 378	RS: Ecological Sustainability (Mason Core)	
EVPP 434	Food-Energy-Water Nexus	
EVPP 442	Urban Ecosystems and Processes	
EVPP 490	Special Topics in Environmental Science and Policy (when topic is relevant with approval)	
EVPP 505	Selected Topics in Environmental Science (when topic is relevant with approval)	
GGS 302	Global Environmental Hazards	
GGS 304	Population Geography (Mason Core)	
GGS 306	Urban Geography	
GGS 309	Introduction to Weather and Climate	
GGS 312	Physical Climatology	
GGS 314	Severe and Extreme Weather	
INTS 375	Special Topics (when topic is relevant with approval)	
INTS 475	Special Topics (when topic is relevant with approval)	
PHIL 243	Global Environmental Ethics (Mason Core) [1]	
PHIL 343	Topics in Environmental Philosophy (Mason Core) [1]	
Other course work with advisor approval		
Total Credits		9

[1] Satisfies the college BA requirement in philosophy and religious studies.

Concentration in Conservation and Sustainability (CSUS)

Smithsonian-Mason Program

Students complete one of the programs offered through the Smithsonian-Mason School of Conservation in cooperation with the Smithsonian Conservation Biology Institute.

Conservation, Biodiversity and Society Option (16 credits)

Code	Title	Credits
CONS 320	Conservation in Practice	3
CONS 401	Conservation Theory	3
CONS 402	Applied Conservation	4
CONS 410	Human Dimensions in Conservation (Mason Core)	3
CONS 490	RS: Integrated Conservation Strategies (Mason Core)	3
Total Credits		16

Wildlife, Ecology, and Conservation Option (16 credits)

Offered only in Fall semesters, students complete four required courses:

Code	Title	Credits
CONS 400	Conservation Seminar	2
CONS 404	Biodiversity Monitoring	4
CONS 405	Landscape and Macrosystems Ecology	4
CONS 496	Research in Conservation (Mason Core)	6
Total Credits		16

Endangered Species and Conservation Option (16 credits)

Offered only in Spring semesters, students complete four required courses:

Code	Title	Credits
CONS 400	Conservation Seminar	2
CONS 406	Small Population Management	4
CONS 491	RS: Conservation Management Planning (Mason Core)	4
CONS 496	Research in Conservation (Mason Core)	6
Total Credits		16

Three Credits

Code	Title	Credits
Select a minimum of three credits from the following:		3
BIOL 332	Insect Biology (when topic is relevant with approval)	
BIOL 472	Introductory Animal Behavior	
EVPP 337	Environmental Policy Making in Developing Countries	
EVPP/BIOL 350	Freshwater Ecosystems	
EVPP 355	Ecological Engineering and Ecosystem Restoration	
EVPP 401	Integrated Environmental Assessment	
EVPP 408	Mushrooms, Molds and Society	
EVPP 419	Marine Mammal Biology and Conservation	
EVPP 421	Marine Conservation	
EVPP 423	Beekeeping and Sustainability	
EVPP/BIOL 427	Conservation Medicine	
EVPP 430	Fundamentals of Environmental Geographic Information Systems	
EVPP 432	Energy Policy	
EVPP 434	Food-Energy-Water Nexus	
EVPP 436	The Human Dimensions of Global Climate Change	
EVPP/BIOL 437	Orinthology	
EVPP/BIOL 438	Mammalogy	
EVPP/BIOL 439	Herpetology	
EVPP/BIOL 449	Marine Ecology	
EVPP 451	Fungi and Ecosystems	
EVPP 460	Infectious Diseases of Wildlife	
EVPP 475	Global Biodiversity Governance	
GGS 303	Geography of Resource Conservation (Mason Core)	
GGS 307	Geographic Approaches for Sustainable Development	
GGS 321/ BIOL 374	Biogeography	
INTS 211	Introduction to Conservation Studies (Mason Core)	
INTS 301	Science in the News (Mason Core)	
INTS 304	Social Movements and Community Activism (Mason Core)	
INTS 311	The Mysteries of Migration: Consequences for Conservation (Mason Core)	
INTS 331	The Nonprofit Sector (Mason Core)	
INTS 370	Sustainable Food Systems	
INTS 371	Food Systems and Policy (Mason Core)	
INTS 401	Conservation Biology (Mason Core)	
INTS 403	Conservation Behavior (Mason Core)	
INTS 375	Special Topics (when topic is relevant with approval)	
INTS 475	Special Topics (when topic is relevant with approval)	
EVPP 490	Special Topics in Environmental Science and Policy (when topic is relevant with approval)	
EVPP 505	Selected Topics in Environmental Science (when topic is relevant with approval)	
Other course work with advisor approval		
Total Credits		3

Concentration in Environmental Policy and Economics (EVPE)

The requirements for this concentration satisfy the Mason Core requirement in social and behavioral science (ECON 104 Contemporary Macroeconomic Principles (Mason Core)) and, depending on the elective chosen, may fulfill the college BA requirement in non-Western culture (ECON 362 African Economic Development (Mason Core)).

Required Courses

Completion of these courses will satisfy the Mason Core social and behavioral science requirement.

Code	Title	Credits
EVPP 338	Economics of Environmental Policy	3
EVPP 362	Intermediate Environmental Policy	3
or GOVT 362	Intermediate Environmental Policy	
GOVT 351	Administration in the Political System	3
Total Credits		9

Nine Credits

Code	Title	Credits
Select a minimum of nine credits from the following:		9
COMM 412	Politics and the Mass Media	
CONF 340	Global Conflict Analysis and Resolution (Mason Core)	
ECON 103	Contemporary Microeconomic Principles (Mason Core) (if not used to meet the Business and Public Policy core requirement)	
ECON 104	Contemporary Macroeconomic Principles (Mason Core)	
ECON 306	Intermediate Microeconomics	
ECON 311	Intermediate Macroeconomics	
ECON 330	Public Finance	
ECON 345	Introduction to Econometrics	
ECON 360	Economics of Developing Areas (Mason Core)	
ECON 412	Game Theory and Economics of Institutions	
EVPP 337	Environmental Policy Making in Developing Countries	
EVPP 396	Directed Topic in Environmental Science and Policy	
EVPP 401	Integrated Environmental Assessment	
EVPP 432	Energy Policy	
GEOL 420	Earth Science and Policy (Mason Core)	
GGS 305	Economic Geography	
GGS 307	Geographic Approaches for Sustainable Development	
GOVT 307	Legislative Behavior	

GOVT 343	International Political Economy
GOVT 357	Urban Planning
GOVT 364	Public Policy Making
GOVT 452	Administrative Law and Procedures
GOVT 464	Issues in Public Policy and Administration
INTS 331	The Nonprofit Sector (Mason Core)
INTS 371	Food Systems and Policy (Mason Core)
USST 301	Urban Growth in a Shrinking World
EVPP 490	Special Topics in Environmental Science and Policy (when topic is relevant with approval)
EVPP 505	Selected Topics in Environmental Science (when topic is relevant with approval)
INTS 375	Special Topics (when topic is relevant with approval)
INTS 475	Special Topics (when topic is relevant with approval)
Other course work with advisor approval	
Total Credits	9

Concentration in Equity and Environmental Justice (EQEJ)

Required Courses

Code	Title	Credits
EVPP 362	Intermediate Environmental Policy	3
EVPP 436	The Human Dimensions of Global Climate Change	3
INTS 336	Poverty, Wealth and Inequality in the US (Mason Core)	3
INTS 337	Social Justice Consciousness and Action	3
Total Credits		12

Six Credits

Code	Title	Credits
Select a minimum of six credits from the following:		6
CONF 394	Human Rights and Inequality	
GGS 304	Population Geography (Mason Core)	
GGS 307	Geographic Approaches for Sustainable Development	
GOVT 445	Human Rights	
INTS 304	Social Movements and Community Activism (Mason Core)	
INTS 331	The Nonprofit Sector (Mason Core)	
INTS 362	Social Justice and Human Rights (Mason Core)	
INTS 402	Plants and People - Sustenance, Ceremony, and Sustainability	
INTS 450	Social Innovation in Action	
SOCI 320	Globalization and Social Change (Mason Core)	
SOCI 355	Social Inequality (Mason Core)	
INTS 375	Special Topics (when topic is relevant with approval)	
INTS 475	Special Topics (when topic is relevant with approval)	
EVPP 490	Special Topics in Environmental Science and Policy (when topic is relevant with approval)	
EVPP 505	Selected Topics in Environmental Science (when topic is relevant with approval)	
Other course work with advisor approval		
Total Credits		6

Concentration in Sustainable Food and Agriculture (SFG)

Required Courses

Code	Title	Credits
INTS 370	Sustainable Food Systems	6
INTS 371	Food Systems and Policy (Mason Core)	3
INTS 470	Professional Pathways in Sustainable Food Systems	1
Total Credits		10

Eight Credits

Code	Title	Credits
Select a minimum of eight credits from the following:		8
ANTH 366	Food and Human Evolution	
ANTH 376	Food and Culture	
BIOL 344	Plant Diversity and Evolution	
BIOL 345	Plant Ecology	
EVPP 423	Beekeeping and Sustainability	
EVPP 434	Food-Energy-Water Nexus	
EVPP 436	The Human Dimensions of Global Climate Change	
GGS 303	Geography of Resource Conservation (Mason Core)	
INTS 331	The Nonprofit Sector (Mason Core)	
INTS 402	Plants and People - Sustenance, Ceremony, and Sustainability	
NUTR 295	Introduction to Nutrition (Mason Core)	
NUTR 318	Global Nutrition and Food Security	
NUTR 383	Taste and Place	
NUTR 408	Food Security	
NUTR 421	Community Nutrition	
NUTR 435	Urban Agriculture	
INTS 375	Special Topics (when topic is relevant with approval)	
INTS 475	Special Topics (when topic is relevant with approval)	
EVPP 490	Special Topics in Environmental Science and Policy (when topic is relevant with approval)	
EVPP 505	Selected Topics in Environmental Science (when topic is relevant with approval)	
Other course work with advisor approval		
Total Credits		8

Writing-Intensive Requirement

The university requires all students to complete at least one course designated as "writing intensive" in their major at the 300 level or above.

Students majoring in environmental and sustainability studies should consult an advisor to learn how to fulfill this requirement.

Upper Level Requirement

Students seeking a bachelor's degree must apply at least 45 credits of upper-level courses (numbered 300 or above) toward graduation requirements.

Additional Electives

Any remaining credits may be completed with elective courses to bring the degree total to 120.

College Level Requirements for the BA Degree

In addition to the Mason Core program, students pursuing a BA degree must complete the coursework below. Except where expressly prohibited, a course used to fulfill a college level requirement may also be used simultaneously to satisfy other requirements (Mason Core requirements or requirements for the major).

Philosophy or Religious Studies

Code	Title	Credits
Select 3 credits from the following:		3
PHIL [1]		
RELI		

[1] Note that the following courses may not be used to fulfill this requirement:

- PHIL 323 Classical Western Political Theory
- PHIL 324 Modern Western Political Theory
- PHIL 327 Contemporary Western Political Theory
- PHIL 393 Humanities College to Career
- PHIL 460 Senior Seminar in Philosophy, Politics, and Economics

Additionally, PHIL 253 Philosophy and Literature (Mason Core), RELI 235 Religion and Literature (Mason Core), and RELI 333 Spiritual Autobiography (Mason Core) cannot be used to fulfill both the philosophy/religious studies requirement and the Mason Core literature requirement.

Social and Behavioral Sciences

Code	Title	Credits
Select 3 credits of social and behavioral sciences from the following (additional to the Mason Core social and behavioral sciences requirement) [1]		3
ANTH		
CRIM		
ECON		
GOVT		
HIST [2]		
LING		
PSYC		
SOCI		
Or choose from the following GGS courses:		
GGS 101	Major World Regions (Mason Core)	
GGS 103	Human Geography (Mason Core)	
GGS 110	Introduction to Geoinformation Technologies	
GGS 301	Political Geography (Mason Core)	
GGS 303	Geography of Resource Conservation (Mason Core)	
GGS 304	Population Geography (Mason Core)	
GGS 305	Economic Geography	
GGS 306	Urban Geography	
GGS 315	Geography of the United States	
GGS 316	Geography of Latin America	
GGS 320	Geography of Europe	
GGS 325	Geography of North Africa and the Middle East	
GGS 330	Geography of the Soviet Succession States	
GGS 357	Urban Planning	
GGS 380	Geography of Virginia	

[1] The two courses used to fulfill the combined college and Mason Core requirements must be from different disciplines in the social and behavioral sciences.

[2] HIST 100 History of Western Civilization (Mason Core) and HIST 125 Introduction to World History (Mason Core) may not be used to fulfill this requirement.

Foreign Language

Code	Title	Credits
Intermediate-level proficiency in one foreign language, fulfilled by: [1]		
Completing 3 credits in a foreign language numbered 202 (or higher level courses taught in the language)		
Or achieving a satisfactory score on an approved proficiency test		
Or completing the following ASL three course sequence:		
EDSE 115	American Sign Language (ASL) I	
EDSE 116	American Sign Language (ASL) II	
EDSE 219	American Sign Language (ASL) III	

[1] Students who are already proficient in a second language may be eligible for a waiver of this requirement. Additional information on waivers can be found at the Office of Undergraduate Academic Affairs (http://chssundergrad.gmu.edu/).

Non-Western Culture

Select 3 credits of an approved course in the study of a non-Western culture (additional to the Mason Core requirement in global understanding)

Code	Title	Credits
Select 3 credits (additional to Mason Core Global Understanding requirement) [1]		
ANTH 114	Introduction to Cultural Anthropology (Mason Core)	3
ANTH 300	Civilizations	3
ANTH 302	Peoples and Cultures of Latin America (Mason Core)	3
ANTH 307	Ancient Mesoamerica (Mason Core)	3
ANTH 308	Peoples and Cultures of the Middle East (Mason Core)	3
ANTH 309	Peoples and Cultures of India (Mason Core)	3

ANTH 313	Myth, Magic, and Mind (Mason Core)	3
ANTH 314	Zombies	3
ANTH 330	Peoples and Cultures of Selected Regions: Non-Western	3
ANTH 332	Cross-Cultural Perspectives on Globalization (Mason Core)	3
ANTH 381	Medical Anthropology	3
ANTH 396	Issues in Anthropology: Social Sciences (Mason Core)	3
ARAB 360	Topics in Arabic Cultural Production	3
ARAB 420	Survey of Arabic Literature	3
ARAB 440	Topics in Arabic Religious Thought and Texts (Mason Core)	3
ARTH 203	Survey of Asian Art (Mason Core)	3
ARTH 204	Survey of Latin American Art (Mason Core)	3
ARTH 206	Survey of African Art (Mason Core)	3
ARTH 318	Art and Archaeology of Ancient Egypt	3
ARTH 319	Art and Archaeology of the Ancient Near East (Mason Core)	3
ARTH 320	Art of the Islamic World (Mason Core)	3
ARTH 382	Arts of India (Mason Core)	3
ARTH 383	Arts of Southeast Asia (Mason Core)	3
ARTH 384	Arts of China (Mason Core)	3
ARTH 385	Arts of Japan (Mason Core)	3
ARTH 386	The Silk Road (Mason Core)	3
ARTH 482	RS: Advanced Studies in Asian Art	3
CHIN 318	Introduction to Classical Chinese (Mason Core)	3
CHIN 320	Contemporary Chinese Film	3
CHIN 325	Major Chinese Writers (Mason Core)	3
CHIN 470	Special Topics in Chinese Studies	3
DANC 118	World Dance (Mason Core)	3
ECON 361	Economic Development of Latin America (Mason Core)	3
ECON 362	African Economic Development (Mason Core)	3
FREN 451	Topics in Sub-Saharan Francophone Literature and Culture	3
FREN 454	Topics in Caribbean Francophone Literature and Culture	3
GGS 101	Major World Regions (Mason Core)	3
GGS 316	Geography of Latin America	3
GGS 317	Geography of China (Mason Core)	3
GGS 325	Geography of North Africa and the Middle East	3
GGS 330	Geography of the Soviet Succession States	3
GGS 399	Select Topics in GGS	3
GOVT 328	Global Political Theory	3
GOVT 332	Government and Politics of the Middle East and North Africa	3
GOVT 333	Government and Politics of Asia	3
GOVT 338	Government and Politics of Russia	3
GOVT 340	Central Asian Politics	3
GOVT 341	Chinese Foreign Policy	3
GOVT 345	Islam and Politics	3
GOVT 433	Political Economy of East Asia	3
HIST 251	Survey of East Asian History (Mason Core)	3
HIST 252	Survey of East Asian History (Mason Core)	3
HIST 261	Survey of African History (Mason Core)	3
HIST 262	Survey of African History (Mason Core)	3
HIST 271	Survey of Latin American History (Mason Core)	3
HIST 272	Survey of Latin American History (Mason Core)	3
HIST 281	Survey of Middle Eastern Civilization (Mason Core)	3
HIST 282	Survey of Middle Eastern Civilization (Mason Core)	3
HIST 326	Stalinism	3
HIST 327	The Soviet Union and Russia Since World War II	3
HIST 328	Rise of Russia (Mason Core)	3
HIST 329	Modern Russia and the Soviet Union (Mason Core)	3
HIST 353	History of Traditional China	3
HIST 354	Modern China (Mason Core)	3
HIST 356	Modern Japan (Mason Core)	3
HIST 357	Postwar Japan (Mason Core)	3
HIST 358	Post-1949 China (Mason Core)	3
HIST 360	History of South Africa (Mason Core)	3
HIST 364	Revolution and Radical Politics in Latin America (Mason Core)	3
HIST 365	Conquest and Colonization in Latin America (Mason Core)	3
HIST 366	Comparative Slavery	3
HIST 367	History, Fiction, and Film in Latin America	3
HIST 387	Topics in Global History (Mason Core)	3-6
HIST 426	The Russian Revolution	3
HIST 460	Modern Iran (Mason Core)	3
HIST 461	Arab-Israeli Conflict	3
HIST 462	Women in Islamic Society (Mason Core)	3
HIST 465	The Middle East in the 20th Century	3
JAPA 310	Japanese Culture in a Global World (Mason Core)	3
JAPA 340	Topics in Japanese Literature (Mason Core)	3
KORE 320	Korean Popular Culture in a Global World	3
MUSI 103	Musics of the World (Mason Core)	3
RELI 211	Religions of the West (Mason Core)	3
RELI 212	Religions of Asia (Mason Core)	3
RELI 240	Death and the Afterlife in World Religions	3
RELI 272	Islam	3
RELI 313	Hinduism (Mason Core)	3

RELI 314	Chinese Philosophies and Religious Traditions	3
RELI 315	Buddhism (Mason Core)	3
RELI 317	Daoism	3
RELI 337	Mysticism: East and West	3
RELI 365	Muhammad: Life and Legacy	3
RELI 374	Islamic Thought (Mason Core)	3
RELI 375	Qur'an and Hadith	3
RELI 379	Islamic Law, Society, and Ethics	3
RELI 387	Islam, Democracy, and Human Rights	3
RELI 490	Comparative Study of Religions (Mason Core)	3
RUSS 353	Russian Civilization (Mason Core)	3
RUSS 354	Contemporary Post-Soviet Life (Mason Core)	3

[1] A course used to fulfill the Mason Core global understanding requirement may not be simultaneously used to satisfy this college-level requirement. A course used to fulfill this requirement may be used simultaneously to fulfill any other requirements (Mason Core requirements, college-level requirements, or requirements for the major). Additional information on waivers can be found at the Office of Undergraduate Academic Affairs (http://chssundergrad.gmu.edu/).

Mason Core

Some Mason Core requirements may already be fulfilled by the major requirements listed above. Students are strongly encouraged to consult their advisors to ensure they fulfill all remaining Mason Core requirements.

Code	Title	Credits
Foundation Requirements		
Written Communication (ENGH 101)		3
Oral Communication		3
Quantitative Reasoning		3
Information Technology and Computing		3
Exploration Requirements		
Arts		3
Global Understanding		3
Literature		3
Natural Science		7
Social and Behavioral Sciences		3
Western Civilization/World History		3
Integration Requirements		
Written Communications (ENGH 302)		3
Writing-Intensive [1]		3
Synthesis/Capstone [2]		3
Total Credits		40

[1] Most programs include the writing-intensive course designated for the major as part of the major requirements; this course is therefore not counted towards the total required for Mason Core.

[2] Minimum 3 credits required.

4-Year Plan

Bachelor of Arts in Environmental and Sustainability Studies Sample Plan of Study

A sample four year graduation plan and degree planning worksheet can be found at https://academicaffairs.chss.gmu.edu/undergraduate-students/advising/advising-sheets (https://academicaffairs.chss.gmu.edu/undergraduate-students/advising/advising-sheets/). The plan is a recommended sequencing of courses based on prerequisites and scheduling. This may not fit every student's needs and is a guideline, not a requirement. Students should confirm major requirements with their academic advisor each semester and with their PatriotWeb Degree Evaluation to ensure they enroll in the proper courses and are on track to graduate.

Accelerated Master's

The accelerated master's program below specifies the BA in environmental and sustainability studies as a feeder degree for its program. Many other accelerated master's programs are available for any bachelor's degree at Mason. See the full list of degrees (http://catalog.gmu.edu/programs/#filter=filter_24) with accelerated programs at George Mason.

Bachelor's Degree (selected)/ Environmental Science and Policy, Accelerated MS

Overview

This bachelor's/accelerated master's degree program allows academically strong undergraduates with a commitment to advance their education to obtain a Green Leaf-designated bachelor's degree and the Environmental Science and Policy, MS (https://catalog.gmu.edu/colleges-schools/science/environmental-policy/environmental-science-policy-ms/) degrees within an accelerated timeframe. Upon completion of this 141 credit accelerated program, students will be exceptionally well prepared for entry into their careers or into a doctoral program in the field or in a related discipline.

Students are eligible to apply for this accelerated program once they have earned at least 60 undergraduate credits and can enroll in up to 18 credits of graduate coursework after successfully completing 75 undergraduate credits. This flexibility makes it possible for students to complete a bachelor's and a master's in five years.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies. For more information on undergraduates enrolling in graduate courses, see AP.1.4.4 Graduate Course Enrollment by Undergraduates (https://catalog.gmu.edu/policies/academic/registration-attendance/#text).

Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate

study as specified in the Graduate Admission Policies section of this catalog.

Important application information and processes for this accelerated master's program can be found here (https://www2.gmu.edu/admissions-aid/how-apply/accelerated-masters/).

The GRE exam is not required for this accelerated master's program.

Students should submit three letters of recommendation (at least one from a former professor or someone with a PhD), a recent resume, a statement of interest/research goals and interests (including information on the candidate's proposed MS research), and a letter from their advisor (see Graduate Advisor section below) stating that the advisor agrees to take on the candidate as an MS student, how the candidate would be a good fit for them and why candidate's research topic would be suitable.

Students with an overall GPA of at least 3.20 who are pursuing any Green Leaf-designated major or minor may apply to this accelerated master's program after completing two semesters of chemistry (including CHEM 211 General Chemistry I (Mason Core) and CHEM 212 General Chemistry II (Mason Core) and three semesters of biology, including a course in ecology, or the equivalent, for example:

Code	Title	Credits
Select one of the following options:		13
Option 1:		
BIOL 213	Cell Structure and Function (Mason Core)	
BIOL 214	Biostatistics for Biology Majors	
BIOL 308	Foundations of Ecology and Evolution	
Option 2:		
EVPP 210	Environmental Biology: Molecules and Cells	
EVPP 301	Environmental Science: Biological Diversity and Ecosystems	
EVPP 302	Environmental Science: Biomes and Human Dimensions	
EVPP 305	Environmental Microbiology Essentials	
EVPP 306	Environmental Microbiology Essentials Laboratory	
Option 3:		
CONS 401	Conservation Theory	
CONS 402	Applied Conservation	
6 credits of BIOL or CONS electives		

Graduate Advisor

By at least the beginning of their senior year, students should seek out a faculty member in the Department of Environmental Science and Policy who is willing to serve as their advisor. This advisor will aid the student in choosing the appropriate graduate courses to take and help to prepare the student for graduate studies. Admission into a research-oriented master's concentration is dependent upon securing the agreement of a faculty advisor. Faculty from a variety of departments and colleges at George Mason University (called "program faculty") can serve as master's advisors. Potential students are encouraged to speak with the graduate program coordinator in the department to obtain guidance on this issue.

Accelerated Option Requirements

After the completion of 75 undergraduate credits, students may complete 3 to 12 credits of graduate coursework that can apply to both the undergraduate and graduate degrees.

In addition to applying to graduate from the undergraduate program, students in the accelerated program must submit a bachelor's/accelerated master's transition form (available from the Office of the University Registrar (https://registrar.gmu.edu/forms/)) to the College of Science's Office of Academic and Student Affairs (https://cos.gmu.edu/about/contact-us/) by the last day to add classes of their final undergraduate semester. Students should enroll for courses in the master's program in the fall or spring semester immediately following conferral of the bachelor's degree, but should contact an advisor if they would like to defer up to one semester.

Students must maintain an overall GPA of 3.00 or higher in all graduate coursework and should consult with their faculty advisor to coordinate their academic goals.

Reserve Graduate Credits

Accelerated master's students may also take up to 6 graduate credits as reserve graduate credits. These credits do not apply to the undergraduate degree, but will reduce the master's degree by up to 6 credits. With 12 graduate credits counted toward the undergraduate degree plus the maximum 6 reserve graduate credits, the credits necessary for the graduate degree can be reduced by up to 18.

Graduate Course Suggestions

The following list of suggested courses is provided for general reference. To ensure an efficient route to graduation and post-graduation readiness, students are strongly encouraged to meet with an advisor before registering for graduate-level courses.

Code	Title	Credits
EVPP 518	Conservation Biology	3
EVPP 529	Environmental Science Communication	3
EVPP 621	Overview of Biodiversity Conservation	3
EVPP 635	Environment and Society	3

Human Development and Family Science Minor (CHSS)

Banner Code: HDFS

Academic Advising

Email: HDFS@gmu.edu
Website: hdfs.gmu.edu/human-development-family-science/minor

This highly relevant and contemporary minor is a 15-credit interdisciplinary program designed especially for students who are interested in how individuals develop and how to improve the quality of life for families and communities. You'll explore the psychological, social, cultural, and biological development of individuals from conception through adulthood and aging, within the contexts of their families, communities, and the broader society.

The minor is an excellent complement to many majors at Mason. Due to it being offered as a collaboration between the College of Education and Human Development (CEHD) and the College of Humanities and Social

Sciences (CHSS), you'll have the opportunity to learn from outstanding faculty from both colleges who are dedicated to teaching and involved in cutting-edge research.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 15

Core Course

Code	Title	Credits
HDFS 200	Individual and Family Development (Mason Core)	3
HDFS 400	Advanced Family Processes (Mason Core)	3
Total Credits		6

Electives

Code	Title	Credits
Select at least one course from each of the two component areas (development and diversity) below		6
A third elective may be selected from any component or with permission of an HDFS advisor		3
Total Credits		9

To reflect the interdisciplinary nature of the HDFS minor, two courses must have prefixes from disciplines outside of your major area of study (e.g., for PSYC majors, two courses must come from CEHD prefixes: ATEP, ECED, EDUC, HEAL, PHED; for ECED majors, two courses must come from CHSS prefixes: ANTH, INTS, PSYC, SOCI).

Development

Code	Title	Credits
Select at least one from the following:		
ECED 401	Developmental Pathways of Diverse Learners, Birth-Adolescence	
EDUC 302	Human Growth and Development	
INTS 312	Images and Experiences of Childhood: Social Construct, Literature, and Film	
INTS 316	Introduction to Childhood Studies (Mason Core)	
INTS 319	Contemporary Youth Studies (Mason Core)	
PSYC 211	Developmental Psychology (Mason Core)	
PSYC 313	Child Development	
PSYC 314	Adolescent Development	
PSYC 415	Psychological Factors in Aging	
SOCI 360	Youth Culture and Society (Mason Core)	

Diversity

Code	Title	Credits
Select at least one from the following:		
ANTH 332	Cross-Cultural Perspectives on Globalization (Mason Core)	
ATEP 205	Cultural Competence	
ECED 405	Introduction to Early Childhood Special Education	
EDUC 203	Disability in American Culture (Mason Core)	
HEAL 350	Interventions for Populations and Communities at Risk	
HDFS 301	The Hospitalized Child and Family	
INTS 320	Construction of Differences: Race, Class, and Gender (Mason Core)	
INTS 336	Poverty, Wealth and Inequality in the US (Mason Core)	
INTS 362	Social Justice and Human Rights (Mason Core)	
PSYC 379	Applied Cross-Cultural Psychology (Mason Core)	
SOCI 308	Race and Ethnicity in a Changing World (Mason Core)	
SOCI 355	Social Inequality (Mason Core)	

Human Development and Family Science, BA (CHSS)

Banner Code: E1-BA-HDFS

Academic Advising

Phone: 703-993-5856
Email: HDFS@gmu.edu
Website: hdfs.gmu.edu/

This degree prepares its graduates to use family-centered and strengths-based approaches to support the health and well-being of individuals and families in diverse communities. Graduates will have a strong interdisciplinary foundation in the HDFS field and competencies in 10 areas as established by the National Council on Family Relations, including:

- internal dynamics of relationships and families
- human growth and development
- family-and community-based program planning, implementation, and evaluation
- social policies and laws affecting families
- family diversity
- research methodology
- professional ethics as related to the HDFS field

The HDFS curriculum prepares students to effectively engage with families across the lifespan and in a variety of service settings and professions, from early childhood education and care to family law and policy advocacy.

Our program prepares students to critically analyze complex family issues, advocate for families in schools, communities, and in the policy arena, and address social-structural factors contributing to and influencing family functioning, health, and well-being (e.g., poverty and wealth inequality, immigration and illegalization, family homelessness, incarceration, family violence, and discrimination and structural violence such as racism, nationalism, or heterosexism). Students are required to complete a 6-credit internship and integrate research training with service fieldwork. Such an experience is a critical component of HDFS student development and will further prepare our students for graduate education and diverse careers in the human development and family science field.

The HDFS program is a joint academic degree program sponsored by the College of Education and Human Development (CEHD) and the College of Humanities and Social Sciences (CHSS).

Requirements

Degree Requirements

Total credits: 120

Mason Core

Code	Title	Credits
Written Communication		6
Oral Communication		3
Information Technology and Ethics		3
Quantitative Reasoning		3
Literature		3
Arts		3
Western Civilization/World History		3
Social and Behavioral Sciences		3
Global Understanding		3
Natural Science		7
Synthesis		3
Total Credits		40

Additional Requirements for the BA

Code	Title	Credits
One PHIL or one RELI course:		3
Philosophy (PHIL)		
Religious Studies (RELI)		
Social and behavioral sciences course [1]		3
Non-Western culture		3
Proficiency in a foreign language through the intermediate level (coursework or testing to determine proficiency)		0-12
Total Credits		9-21

[1] This requirement is additional to the Mason Core social and behavioral sciences requirement.

Major Requirements

Code	Title	Credits
HDFS 200	Individual and Family Development (Mason Core)	3
HDFS 250	Family Financial Literacy and Resource Management	3
HDFS 300	Individual and Family Services Delivery	3
HDFS 400	Advanced Family Processes (Mason Core)	3
HDFS 401	Family Law and Public Policy [1]	3
HDFS 498	Internship and Analysis in Human Development and Family Science	3
HDFS 499	Advanced Internship and Analysis in Human Development and Family Science	3
INTS 321	Parent-Child Relations (Mason Core)	3
PSYC 211	Developmental Psychology (Mason Core)	3
Select one from the following:		3
SOCI 303	Methods and Logic of Inquiry	
PSYC 301	Research Methods in Psychology	
INTS 434	Research for Social Change	
Total Credits		30

[1] Fulfills writing intensive requirement (https://catalog.gmu.edu/archives/2019-2020/mason-core/#wi).

Code	Title	Credits
Major Elective Choices		**12**
Elective choices follow career and professional interests. Elective courses are suggested by advisors and mentors and approved by the Academic Program Coordinator. See below for areas of focus.		
Families and Individuals Across the Life Span		
BIOL 124	Human Anatomy and Physiology	
COMM 334	Family and Health Communication	
CRIM 302	Delinquency and the Juvenile Justice System	
CRIM 405	Law and Justice around the World (Mason Core)	
ECED 402	Foundations of Language and Literacy for Diverse Prekindergarten and Kindergarten Learners	
ECED 403	Inclusive Curriculum for Young Learners: Planning Instruction and Guidance	
ECED 405	Introduction to Early Childhood Special Education	
ECED 406	Medical and Developmental Aspects of Disabilities of Diverse Young Learners	
ECED 422	Developing Language, Literacy, and Communication of Diverse Infants and Toddlers	
ECED 423	Early Intervention for Infants Toddlers with Disabilities: Collaborative Consultative Approaches	
EDUC 203	Disability in American Culture (Mason Core)	
EDRD 301	Facilitating Literacy in School or Community Settings	
ELED 258	Children's Literature for Teaching in Diverse Settings (Mason Core)	
GCH 480	Health Maintenance and Health Aspects of Aging	
HAP 301	Health Care Delivery in the United States	

HAP 403	Assisted Living/Senior Housing Management and Philosophy
HAP 445	Introduction to Health Services Research
HDFS 301	The Hospitalized Child and Family
HEAL 220	Dimensions of Mental Health
HEAL 310	Drugs and Health
HEAL 327	Women's Health
HEAL 331	Men's Health
HEAL 351	Relationship Health
HEAL 372	Health Communication
HHS 432	Healthy Aging
INTS 310	Violence and Gender
INTS 312	Images and Experiences of Childhood: Social Construct, Literature, and Film
INTS 314	Conflict, Trauma and Healing
INTS 316	Introduction to Childhood Studies (Mason Core)
INTS 317	Issues in Family Relationships (Mason Core)
INTS 319	Contemporary Youth Studies (Mason Core)
INTS 405	Women and Leadership
INTS 410	Contemporary Health Issues
INTS 436	Social Justice Education (Mason Core)
INTS 440	Death, Dying, and Decision Making
NUTR 295	Introduction to Nutrition (Mason Core)
PSYC 231	Social Psychology (Mason Core)
PSYC 304	Principles of Learning
PSYC 313	Child Development
PSYC 314	Adolescent Development
PSYC 317	Cognitive Psychology
PSYC 362	Psychology of Gender
PSYC 379	Applied Cross-Cultural Psychology (Mason Core)
PSYC 414	Behavior Disorders of Childhood
PSYC 415	Psychological Factors in Aging
PSYC 418	Death, Dying, and Grieving
PSYC 466	Psychology of Intimate Relationships
SOCI 302	Sociology of Delinquency
SOCI 308	Race and Ethnicity in a Changing World (Mason Core)
SOCI 309	Marriage, Families, and Intimate Life
SOCI 310	Sociology of Deviance
SOCI 315	Contemporary Gender Relations (Mason Core)
SOCI 360	Youth Culture and Society (Mason Core)
SOCI 390	Sociology of Health, Illness, and Disability
SOCW 415	Child and Family Welfare
SOCW 435	Introduction to Gerontology
WMST 300	Current Issues in Women and Gender Studies
WMST 307	Women and Work
Family Advocacy	
COMM 334	Family and Health Communication
EDUC 203	Disability in American Culture (Mason Core)
GCH 300	Introduction to Public Health
GCH 310	Health Behavior Theories
GCH 332	Health and Disease
GCH 350	Health Promotion and Education
GCH 445	Social Determinants of Health
HAP 301	Health Care Delivery in the United States
HAP 445	Introduction to Health Services Research
HEAL 110	Personal Health
HEAL 220	Dimensions of Mental Health
HEAL 230	Introduction to Health Behavior (Mason Core)
HEAL 310	Drugs and Health
HEAL 325	Human Sexuality
HEAL 327	Women's Health
HEAL 331	Men's Health
HEAL 351	Relationship Health
HEAL 372	Health Communication
INTS 314	Conflict, Trauma and Healing
INTS 317	Issues in Family Relationships (Mason Core)
INTS 410	Contemporary Health Issues
INTS 440	Death, Dying, and Decision Making
NUTR 422	Nutrition throughout the Life Cycle
PSYC 379	Applied Cross-Cultural Psychology (Mason Core)
PSYC 418	Death, Dying, and Grieving
PSYC 466	Psychology of Intimate Relationships
SOCI 308	Race and Ethnicity in a Changing World (Mason Core)
SOCI 309	Marriage, Families, and Intimate Life
SOCI 355	Social Inequality (Mason Core)
SOCI 390	Sociology of Health, Illness, and Disability
WMST 300	Current Issues in Women and Gender Studies
Research and Policy	
CRIM 220	Introduction to Law and Society
CRIM 405	Law and Justice around the World (Mason Core)
GCH 376	Health Ethics, Leadership, and Advocacy
GOVT 301	Public Law and the Judicial Process
GOVT 318	Interest Groups, Lobbying, and the Political Process
GOVT 353	Social Entrepreneurship
GOVT 364	Public Policy Making
GOVT 366	Public Policy Analysis
GOVT 407	Law and Society
GOVT 414	Politics of Race and Gender
GOVT 427	Feminist Political Thought
GOVT 445	Human Rights
HAP 301	Health Care Delivery in the United States
HAP 312	Healthcare Law

HAP 442	Introduction to Health Care Politics and Policy
HAP 445	Introduction to Health Services Research
INTS 317	Issues in Family Relationships (Mason Core)
INTS 337	Social Justice Consciousness and Action
INTS 362	Social Justice and Human Rights (Mason Core)
INTS 405	Women and Leadership
PSYC 362	Psychology of Gender
PSYC 379	Applied Cross-Cultural Psychology (Mason Core)
PSYC 466	Psychology of Intimate Relationships
SOCI 308	Race and Ethnicity in a Changing World (Mason Core)
SOCI 309	Marriage, Families, and Intimate Life
SOCI 312	Qualitative Research Methods
SOCI 315	Contemporary Gender Relations (Mason Core)
SOCI 355	Social Inequality (Mason Core)
SOCW 380	Changing Social Policies and Systems
SOCW 400	Legal and Ethical Issues in Human Services
STAT 250	Introductory Statistics I (Mason Core)
STAT 350	Introductory Statistics II

Electives

Code	Title	Credits
Students choose additional elective courses.		17-29
Total Credits		17-29

Individualized Study, BIS

Banner Code: LA-BIS-INDV

300 Enterprise Hall
Fairfax Campus

Website: http://integrative.gmu.edu/programs/la-bis-indv

The Bachelor of Individualized Study (BIS) Program in the School of Integrative Studies is an undergraduate degree completion program with a 42-year history of serving adult students. It offers students a distinctive educational opportunity that allows them to integrate previous experiences into university coursework. Recognizing that college-level learning may be acquired through varied professional, military, and personal experience, the BIS program provides mechanisms for translating experiential learning into academic credit. The program combines an interdisciplinary academic framework and a writing-intensive, research-based curriculum to provide students with individualized degree plans.

In this degree program, most students design their own individualized interdisciplinary program of study. Other students who are interested in early childhood education and who meet specific eligibility requirements can pursue a more prescribed curriculum that leads to a concentration in early childhood education studies.

Admissions & Policies

Admissions

Students who are interested in the bachelor of individualized study degree must attend an information session. In addition to applying to Mason through the Office of Admissions, they need to apply separately to the BIS Program. The schedule of BIS information sessions and the BIS application are available on the BIS Program website (http://bis.gmu.edu/).

Eligibility

Adult transfer applicants, age 25 or older may be considered for the BIS only with the following minimum criteria:

1. 12 credits of transferable college coursework as determined by the Office of Admissions
2. Cumulative collegiate grade point average of 2.00+

Admission is directly to BIS with no change to another major without reapplying. The concentration in early childhood education studies is an exception to the age requirement.

Policies

Students pursuing a bachelor of individualized study must meet the baccalaureate degree requirements for all undergraduates: they need to complete 120 credits with 45 credits at or above the 300 level and at least 30 credits at Mason.

BIS students may elect to take a minor in addition to their BIS concentration. 15 credits of the minor must be applied uniquely to the minor and not to the concentration. For students pursuing the concentration in early childhood studies, the minor is required for the degree.

For policies governing all undergraduate degrees, see AP.5 Undergraduate Policies.

Credit for Nontraditional Modes of Learning

The BIS program allows students to receive college credit for learning acquired through a variety of nontraditional methods indicated below. The maximum allowable credits are indicated for each category.

- Nationally recognized exam programs such as the College Level Examination Program (CLEP) when the particular exam has been approved for Mason credit: See CLEP Examination for an approved list. A maximum of 45 maximum credits can be earned through exams. After matriculation, students are limited to taking and applying credits for the CLEP exam in "Information Systems and Computer Applications". Students with a qualifying score on this exam will be awarded credit for IT 104T. Students receiving credit for IT 104T must still meet the university information technology ethics requirement (see Mason Core section of this catalog). Credit for other CLEP exams awarded after matriculation may not be applied.
- Certain university approved industry, government, or military training credits if such credits are indexed and recommended as college-level credit by the American Council on Education (ACE). To be eligible for Mason credit, training and course specifics must exactly match what is in the ACE guide and be approved for Mason credit. The specific credits must also be approved by the program director and the dean. A maximum of 45 credits can be earned through ACE-approved

training. A maximum of 60 total combined credits can be accepted for exams and ACE-approved training. For example, if 45 credits are accepted by ACE-approved training, a maximum of 15 credits can be accepted for exams. Students may not take these courses for credit once they have matriculated at Mason.

- Experiential learning demonstrated by portfolios subject to approval by the program director and the dean (30 maximum credits).
- College-level credit earned at institutions accredited by Mason-recognized U.S. institutional accrediting agencies subject to approval by the program director and the dean. These credits can only be considered if the institution is listed in *Accredited Institutions of Postsecondary Education* published by ACE (30 maximum credits) and only if they are taken before the student matriculates at Mason.

Students may not pursue credit for options 1, 2, and 4 once they have matriculated at Mason. Although the types of credit noted above may be applied to a bachelor of individualized study degree, if a BIS student changes majors, credit awarded in these ways cannot be used toward other majors. These nontraditional credits are not transferable to other degree programs at Mason.

Requirements

Degree Requirements

Total credits: minimum 120

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Students pursuing a bachelor of individualized study degree must complete four required courses and one concentration.

Core Courses in the Major

Students must complete each of the four core courses with a minimum grade of 2.00.

In BIS 390 The Research Process (or BIS 391 The Research Process for Honors for students pursuing honors in the major), students develop a project proposal. An approved proposal from BIS 390 The Research Process or BIS 391 The Research Process for Honors is a prerequisite to enroll in BIS 490 RS: Senior Project (Mason Core).

In BIS 490 RS: Senior Project (Mason Core), students complete a senior capstone project that varies according to the individual program of study. It may be an investigative or creative project, and must be appropriate to the student's interdisciplinary concentration. This course requires significant writing and fulfills the Mason Core synthesis requirement. It is a research intensive course designated RS by OSCAR. The project is evaluated by the BIS 490 RS: Senior Project (Mason Core) instructor in consultation with the student's faculty mentor and others as determined by the BIS director.

BIS 490 RS: Senior Project (Mason Core) is taken when no more than 6 credits remain in the concentration.

Code	Title	Credits
BIS 300	Understanding Interdisciplinary Studies	3
BIS 304	Adult Student Transitions	1
BIS 390	The Research Process	3
or BIS 391	The Research Process for Honors	
BIS 490	RS: Senior Project (Mason Core)	4
Total Credits		11

Concentrations in the Major

Students must complete one concentration of 24-42 credits. Of the credits applied to the concentration, at least 15 credits must be at the 300 level or above and a maximum of 6 credits can have grades of C- or D (grades below 2.00). The total credits applied to the concentration must represent a minimum GPA of 2.00.

Courses applied to a concentration may not also be used to fulfill Mason Core requirements.

Individualized Concentration (IND)

Students may do an individualized concentration to meet their own academic needs and interests. The concentration is developed in close consultation with BIS staff and a faculty mentor. Students may incorporate into their individualized concentrations up to 9 credits of previously earned college course work or previously earned nontraditional credit from other institutions. In addition to the 4 core courses, students complete between 24 and 36 credits, depending on the topic and the student's preparation.

Code	Title	Credits
Select 24 to 36 credits from a minimum of two disciplines		24-36
Total Credits		24-36

Students are also encouraged to include BIS 489 Directed Readings and Research and complete it before taking BIS 490 RS: Senior Project (Mason Core).

Concentration in Early Childhood Education Studies (ECES)

This concentration offers students holding a Northern Virginia Community College associate's degree in applied science in early childhood development the opportunity to obtain a BIS in early childhood education studies and a minor in business or other relevant minor. This concentration does not lead to teacher licensure in early childhood education.

To receive this concentration, students complete a minimum of 34 credits beyond the associate's degree in addition to the four core BIS courses, electives, and Mason Core requirements needed to reach at least 120 credits.

Admission Requirements

Students are eligible for this concentration if they have an associate's degree in applied science in early childhood development. Unlike the individualized concentration, there is no age restriction regarding admission into this BIS concentration.

Interdisciplinary Courses

Code	Title	Credits
Human Growth and Development		
EDUC 302	Human Growth and Development	3
Course Focused on Diverse Young Learners		
ECED 402	Foundations of Language and Literacy for Diverse Prekindergarten and Kindergarten Learners	3
or ECED 403	Inclusive Curriculum for Young Learners: Planning Instruction and Guidance	
Linguistic Development of Infants and Toddlers		

ECED 422	Developing Language, Literacy, and Communication of Diverse Infants and Toddlers	3
or ECED 423	Early Intervention for Infants Toddlers with Disabilities: Collaborative Consultative Approaches	
Research Methods		
GOVT 300	Research Methods and Analysis	4
or SOCI 303	Methods and Logic of Inquiry	
Electives at the 300-400-level		
Select 6 credits of electives relevant to the concentration in consultation with their faculty mentor		6
Total Credits		19

Optional Self-Selected Minor

Code	Title	Credits
Select 15-23 credits of self-selected minor		15-23
Total Credits		15-23

Mason Core

BIS students complete a modified Mason Core program of 36 credits. The Mason Core requirements may include courses not listed here; consult the BIS program for more information. Courses used to meet the Mason Core requirements cannot be used to meet a requirement for a concentration.

Students pursuing the concentration in early childhood education studies meet Mason Core requirements as specified in the advising agreement between NVCC and Mason.

Mason Core for Early Childhood Education Studies Concentration

Code	Title	Credits
NVCC Coursework		
Lower Level Written Communication		
ENGH 101	Composition (Mason Core)	3
Oral Communication		
COMM 100	Public Speaking (Mason Core)	3
Social Sciences		6
MATH or STAT		3
Information Technology		3
Mason		
Upper Level Written Communication		
ENGH 302	Advanced Composition (Mason Core)	3
Natural Science		3-4
Humanities (including 3 credits of arts)		6
Social Science		3
BIS 490	RS: Senior Project (Mason Core) (synthesis)	4
Total Credits		37-38

Mason Core for Individualized Concentration

English Composition

Code	Title	Credits
ENGH 101	Composition (Mason Core)	3
ENGH 302	Advanced Composition (Mason Core)	3
Total Credits		6

Humanities

Code	Title	Credits
Select three courses from the following:		9
Any ARTH course		
Any AVT course		
Any COMM course		
Any DANC course		
Any ENGH course [1]		
Any MUSI course		
Any PHIL course [2]		
Any RELI course		
Any THR course		
Any course from a foreign language department		
Total Credits		9

1. Except for ENGH 100 Composition for Multilingual Writers (Mason Core), ENGH 101 Composition (Mason Core), ENGH 302 Advanced Composition (Mason Core)
2. Except for PHIL 173 Logic and Critical Thinking, PHIL 376 Symbolic Logic

Social and Behavioral Science

Code	Title	Credits
Select three courses from the following:		9
Any ANTH course		
Any CRIM course		
Any ECON course		
Any GGS course [1]		
Any GOVT course		
Any HIST course		
Any LING course		
Any PSYC course		
Any SOCI course		
WMST 200	Introduction to Women and Gender Studies (Mason Core)	
Total Credits		9

1. Except for GGS 102 Physical Geography (Mason Core), GGS 309 Introduction to Weather and Climate

Mathematics or Statistics

Code	Title	Credits
Select one course from the following:		3
MATH 106	Quantitative Reasoning (Mason Core) (or any MATH course above 106)	
STAT 250	Introductory Statistics I (Mason Core)	
Total Credits		3

Information Technology

Code	Title	Credits
Select one from the following:		3
IT 104	Introduction to Computing	
Any course that fulfills the Mason Core IT proficiency requirement		
Total Credits		3

Natural Science

Code	Title	Credits
Select any 3-4 credit lab or non lab course from the following:		3-4
Any ASTR course		
Any BIOL course		
Any CHEM course		
Any CLIM course		
Any EVPP course		
Any GEOL course		
Any PHYS course		
CONS 401	Conservation Theory	
GGS 102	Physical Geography (Mason Core)	
GGS 309	Introduction to Weather and Climate	
INTS 301	Science in the News (Mason Core)	
INTS 395	Field-Based Work	
INTS 401	Conservation Biology (Mason Core)	
Total Credits		3-4

Synthesis Course

Code	Title	Credits
BIS 490	RS: Senior Project (Mason Core)	4
Total Credits		4

Additional Electives

Any remaining credits may be completed with electives to bring the degree total to 120.

Honors

Honors in the Major

Highly-qualified students may apply to graduate with honors in the major. Students should apply the semester before they intend to enroll in BIS 390 The Research Process. If accepted, students must complete BIS 391 The Research Process for Honors in place of BIS 390 The Research Process, in addition to an individualized section of BIS 490 RS: Senior Project (Mason Core). To graduate with honors in the major, students must complete these two courses with a minimum GPA of 3.50, maintain a minimum cumulative GPA of 3.75, and successfully present their research during the Senior Project presentations (by earning a grade of 2.0 or better in BIS 490 RS: Senior Project (Mason Core))

Accelerated Master's

The accelerated master's programs below specify the individualized study BIS as a feeder degree for their programs. Many other accelerated master's programs are also available for any bachelor's degree at Mason. See the full list of degrees (http://catalog.gmu.edu/programs/#filter=filter_24) with accelerated programs at Mason.

Individualized Study, BIS/Applied Information Technology, Accelerated MS

Overview

Highly-qualified students in the Individualized Study, BIS have the option of obtaining an accelerated Applied Information Technology, MS.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies.

Application Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions. Mason undergraduate students in the BIS Program can apply in the semester in which they will have completed 90 or more credits (including 15 Mason resident credits) applicable toward the BIS. Students must have an overall GPA of at least 3.30 to apply to the program.

Reserve Graduate Credit

Students may take up to 6 additional graduate credits as reserve graduate credit. These credits do not apply to the undergraduate degree. The ability to take courses for reserve graduate credit is available to all high achieving undergraduates with the permission of the department. Permission to take a graduate course for reserve graduate credit is normally granted only to Mason seniors within 15 hours of graduation.

To apply these credits to the master's degree, students must request that the credits be moved from the undergraduate degree to the graduate degree using the Bachelor's/Accelerated Master's Transition Form (http://registrar.gmu.edu/forms/).

Accelerated Option Requirements

Students in the accelerated master's option must maintain a minimum 3.30 GPA in the undergraduate segment until they have satisfied all requirements for the BIS degree. On completion and conferral of the undergraduate degree they submit the Bachelor's/Accelerated Master's Transition Form (http://registrar.gmu.edu/forms/) and are admitted to graduate status.

As graduate students, accelerated master's students have an advanced standing. Students must complete all credits that satisfy requirements of the BIS program and those of the MSAIT program, with two courses overlapping from the courses necessary to earn the BIS with a concentration IND (individualized), applied information technology emphasis as listed below.

Code	Title	Credits
AIT 524	Database Management Systems	3
AIT 542	Fundamentals of Computing Platforms	3
Total Credits		6

Individualized Study, BIS/ Telecommunications, Accelerated MS

Overview

Highly-qualified students in the Individualized Study, BIS have the option of obtaining an accelerated Telecommunications, MS.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies.

Admission Requirements

Students in the Individualized Study, BIS program may apply for this option if they have earned 75 undergraduate credits (including 15 Mason resident credits) with an overall GPA of at least 3.00.

Criteria for admission are identical to criteria for admission to the Telecommunications, MS program.

Accelerated Option Requirements

Students must complete all requirements for the BIS and MS programs, with 6 credits overlap.

Students select TCOM courses from the list below to meet the requirements of the accelerated program. Six credits of TCOM courses will be applied to meet the requirements of both the BIS and MS TCOM programs. An additional three credits of TCOM courses is required for the BIS Individualized Concentration (IND) with emphasis on telecommunication. Note that accelerated students can only take the courses in the list below if they passed the listed prerequisite course with a B or higher.

BIS Concentration

Total credits: 34-46

Students who are pursuing the Individualized Study, BIS, Individualized concentration (IND) with an emphasis on telecommunications must take:

Code	Title	Credits
Select an additional 500-level TCOM course(s) from the list below		3
BIS 300	Understanding Interdisciplinary Studies	3
BIS 390	The Research Process	3
BIS 490	RS: Senior Project (Mason Core)	4
ECE 301	Digital Electronics	3
IT 341	Data Communications and Network Principles	3
TCOM 500	Modern Telecommunications	3
Select additional courses related to telecommunication [1]		9-21
Total Credits		31-43

[1] Required to reach the necessary number of credits for the BIS Individualized concentration.

Telecommunications Courses

Code	Title	Credits
TCOM 500	Modern Telecommunications	3
TCOM 535	The TCP/IP Suite of Internet Protocols	3
TCOM 608	Optical Communications Systems	3
TCOM 631	Voice Over IP	3

Note:

Accelerated students who have passed IT 341 Data Communications and Network Principles with a grade of B or higher will not be required to take TCOM 535 in the Telecommunications, MS core. Other TCOM courses may be approved on a case-by-case basis.

See each course for individual prerequisite requirements.

Degree Conferral

Students must apply the semester before they expect to complete the BIS requirements to have the BIS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and the VSE Graduate Admissions Office. At the completion of MS requirements, a master's degree is conferred.

Integrative Studies, BA

Banner Code: LA-BA-INTS

Academic Advising

402 Enterprise Hall

Fairfax Campus

Email: sisinfo@gmu.edu
Website: integrative.gmu.edu/programs/la-ba-ints

The Bachelor of Arts in Integrative Studies brings together research, theory and practice across numerous disciplines. Integrative studies majors select a multidisciplinary concentration or work with student services staff to develop their own concentration, uniquely suited to their academic and career goals. Integrative studies majors explore new topics and experiences while gaining the knowledge and skills needed to enter the workforce. Required coursework is offered in small classes with ample room for discussion, collaborative learning, and experiential learning, including in-community projects, volunteer opportunities, field work, internships and work with faculty on research that directly engages current social and global challenges.

Admissions & Policies

Policies

Students must fulfill all Requirements for Bachelor's Degrees including the Mason Core. Integrative studies students may fulfill lower level Mason Core requirements through approved integrative studies (INTS) coursework. Students pursuing a BA in integrative studies must complete a minimum of 30 credits of (INTS) coursework, with at least 15 credits at the 300 and 400 levels. These 30 INTS credits fulfill the writing intensive and synthesis Mason Core requirements.

Students must complete ENGH 302 Advanced Composition (Mason Core). A maximum of 15 credits of INTS 299 Study Abroad or INTS 399 Study Abroad can be applied to the major. Students must have a minimum GPA of 2.00 in courses applied to the major. Before registering, students should see an advisor to help plan their degree program to meet Mason requirements. The advisor also can help students choose electives or a minor.

For policies governing all undergraduate degrees, see AP.5 Undergraduate Policies.

Requirements

Degree Requirements

Total credits: minimum 120

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Integrative studies students complete INTS 391 Understanding Integrative Studies and choose a concentration from the options below. Before registering, students should see an advisor to help plan their

degree program to meet Mason requirements. The advisor also can help students choose electives or a minor.

Required Course

Code	Title	Credits
INTS 391	Understanding Integrative Studies	3

Concentration in the Major

A concentration is the equivalent of a major in a traditional degree program. Students choose from an established multidisciplinary concentration below or create with faculty an individualized program of study to fit their interests and needs. Concentration coursework combines integrative studies (INTS) classes with coursework from other Mason units (departments, schools, and colleges). While fulfilling the concentration requirements, students are also responsible for completing a minimum of 30 credits of INTS coursework. Any INTS courses required for the concentration will apply. Students must present a minimum GPA of 2.00 in courses applied to the concentration.

Available Concentrations

- Childhood Studies (CHDS)
- International Studies (INST)
- Leadership and Organizational Development (LODV)
- Legal Studies (LGLS)
- Education Studies (ESTU)
- Social Innovation (SINN)
- Social Justice and Human Rights (SJHR)
- Social Science for Education (SSED)
- Women and Gender Studies Concentration (WGST)
- Individualized Concentration (IND)

Concentration in Childhood Studies (CHDS)

Students complete the following coursework:

Seven Required Courses (minimum of 22 credits)

Code	Title	Credits
INTS 312	Images and Experiences of Childhood: Social Construct, Literature, and Film	3-6
INTS 316	Introduction to Childhood Studies (Mason Core)	4
INTS 317	Issues in Family Relationships (Mason Core)	3-4
or INTS 321	Parent-Child Relations (Mason Core)	
PSYC 100	Basic Concepts in Psychology (Mason Core)	3
PSYC 211	Developmental Psychology (Mason Core)	3
PSYC 313	Child Development	3
STAT 250	Introductory Statistics I (Mason Core)	3-4
or SOCI 313	Statistics for the Behavioral Sciences (Mason Core)	
Total Credits		22-27

Additional Courses

Code	Title	Credits
Select three courses from the following:		9-18
COMM 367	Children and Media	
CONF 392	Youth and Conflict	
ENGH 452	Critical Study of Children's Literature	
HEAL 350	Interventions for Populations and Communities at Risk	
INTS 305	Conflict Resolution and Transformation	
INTS 310	Violence and Gender	
INTS 319	Contemporary Youth Studies (Mason Core)	
INTS 320	Construction of Differences: Race, Class, and Gender (Mason Core)	
INTS 321	Parent-Child Relations (Mason Core)	
INTS 331	The Nonprofit Sector (Mason Core)	
INTS 344	Youth, Music, Social Change	
INTS 419	Youth Resistance and Advocacy	
NUTR 295	Introduction to Nutrition (Mason Core)	
NUTR 420	Strategies for Nutrition Education	
NUTR 421	Community Nutrition	
NUTR 422	Nutrition throughout the Life Cycle	
NUTR 423	Nutrition and Chronic Illnesses	
NUTR 466	Nutrition and Weight Management: Obesity, Anorexia, and Bulimia	
PHED 360	Sport Based Youth Development	
PSYC 314	Adolescent Development	
PSYC 324	Personality Theory	
PSYC 325	Abnormal Psychology	
PSYC 362	Psychology of Gender	
PSYC 414	Behavior Disorders of Childhood	
SOCW 415	Child and Family Welfare	
SOCI 302	Sociology of Delinquency	
SOCI 360	Youth Culture and Society (Mason Core)	
Oher relevant courses with approval of advisor		
Total Credits		9-18

Concentration in International Studies (INST)

Students complete the following coursework:

Language Proficiency

All students must demonstrate language proficiency at the intermediate level through coursework (a Mason course numbered 202) or proficiency testing.

Foundational Courses

Code	Title	Credits
INTS 303	Introduction to International Studies (Mason Core)	3
INTS 362	Social Justice and Human Rights (Mason Core)	3
INTS 435	Leadership in a Changing Environment	3-4
or INTS 406	Global Leadership (Mason Core)	
Total Credits		9-10

Religious Studies

Code	Title	Credits
Select one course from the following:		3
RELI 341	Global Perspectives on Spirituality and Healing (Mason Core)	
RELI 360	Religion and Politics	
RELI 405	Religion, Values, and Globalization	

RELI 407	Women in the World's Religions	
RELI 490	Comparative Study of Religions (Mason Core)	
Total Credits		3

Geography

Code	Title	Credits
Select one course from the following:		3
GGS 302	Global Environmental Hazards	
GGS 303	Geography of Resource Conservation (Mason Core)	
GGS 304	Population Geography (Mason Core)	
GGS 305	Economic Geography	
Total Credits		3

Globalization

Code	Title	Credits
Select one course from the following:		3
ANTH 300	Civilizations	
ANTH 332	Cross-Cultural Perspectives on Globalization (Mason Core)	
CULT 320	Globalization and Culture	
GLOA 101	Introduction to Global Affairs (Mason Core)	
INTS 348	Digital Futures	
SOCI 120	Globalization and Society (Mason Core)	
SOCI 320	Globalization and Social Change (Mason Core)	
Total Credits		3

Sustainability

Code	Title	Credits
Select one course from the following:		3-6
INTS 210	Sustainable World (Mason Core)	
INTS 334	Environmental Justice (Mason Core)	
INTS 401	Conservation Biology (Mason Core)	
INTS 402	Plants and People - Sustenance, Ceremony, and Sustainability	
PHIL 243	Global Environmental Ethics (Mason Core)	
Total Credits		3-6

Politics

Code	Title	Credits
Select one course from the following:		3
ANTH 312	Political Anthropology (Mason Core)	
GGS 301	Political Geography (Mason Core)	
GOVT 322	International Relations Theory	
INTS 422	An Experiential Approach to American Foreign Policy	
Total Credits		3

Social Action and Conflict Transformation

Code	Title	Credits
Select one course from the following:		3-6
INTS 300	Law and Justice (Mason Core)	
INTS 304	Social Movements and Community Activism (Mason Core)	
INTS 314	Conflict, Trauma and Healing	
INTS 315	Spirituality and Conflict Transformation (Mason Core)	
INTS 416	Refugee and Internal Displacement (Mason Core)	
INTS 417	Human Trafficking and Smuggling	
SOCI 308	Race and Ethnicity in a Changing World (Mason Core)	
Total Credits		3-6

Creative Arts

Code	Title	Credits
Select one course from the following:		3-4
DANC 118	World Dance (Mason Core)	
DANC 318	Global Perspectives: World Dance Forms (Mason Core)	
ENGH 362	Global Voices (Mason Core)	
ENGH 366	The Idea of a World Literature (Mason Core)	
ENGH 367	World Literatures in English	
MUSI 103	Musics of the World (Mason Core)	
INTS 346	Art as Social Action (Mason Core)	
THR 359	World Stages (Mason Core)	
Total Credits		3-4

Electives

Code	Title	Credits
Select three electives [1]		9-12
Total Credits		9-12

[1] Students take three additional courses focused on an international area of their interest with the advice and approval of an adviser.

Concentration in Leadership and Organizational Development (LODV)

Required Courses

Understanding the interdisciplinary nature of leadership and its application to personal, organizational and societal development

Code	Title	Credits
INTS 204	Leadership Theory and Practice	4
Choose one of the following:		3-4
INTS 435	Leadership in a Changing Environment	
or INTS 406	Global Leadership (Mason Core)	
or INTS 451	Leadership and Organizational Problem-Solving	
Total Credits		7-8

Additional Course

Developing a heightened sense of self, including: inner knowledge, core values, intersecting identities, well-being, and impact on others

Code	Title	Credits
Select one course from the following:		3-4
INTS 405	Women and Leadership	
INTS 355	Mindfulness, Meaning Well-Being	

PSYC 417	Science of Well Being	
Total Credits		3-4

Additional Course

Understanding ethical approaches to leadership and change, and applying ethics in personal and organizational processes

Code	Title	Credits
Select one course from the following:		3-4
INTS 404	Ethics and Leadership	
PHIL 305	Business Ethics	
PHIL 358	Ethics and Economics	
Total Credits		3-4

Additional Course

Understanding team and organizational learning

Code	Title	Credits
Select one course from the following:		3-4
INTS 420	Work Effectiveness Skills	
INTS 331	The Nonprofit Sector (Mason Core)	
MBUS 301	Managing People and Organizations in a Global Economy	
PSYC 231	Social Psychology (Mason Core)	
Total Credits		3-4

Additional Course

Demonstrating competence in personal and professional communication

Code	Title	Credits
Select one course from the following:		3-4
INTS 202	Public Speaking and Critical Thinking Skills (Mason Core)	
COMM 201	Small Group Communication	
COMM 306	Issues in Intercultural Communication	
COMM 332	Nonverbal Communication	
MIS 303	Introduction to Business Information Systems	
Total Credits		3-4

Additional Courses

Code	Title	Credits
Select four courses from the following that have not already been taken to fulfill a core concentration requirement.		12-18
ACCT 203	Survey of Accounting	
ACCT 303	Accounting for Decision Making	
BULE 303	Legal Environment of Business	
BUS 210	Business Analytics I	
BUS 303	Develop Professional Skills II: Advanced Elements	
BUS 310	Business Analytics II	
FNAN 303	Financial Management	
INTS 304	Social Movements and Community Activism (Mason Core)	
INTS 305	Conflict Resolution and Transformation	
INTS 331	The Nonprofit Sector (Mason Core)	
INTS 356	Foundations of Resilience and Well-Being	
INTS 451	Leadership and Organizational Problem-Solving	
INTS 406	Global Leadership (Mason Core)	
INTS 420	Work Effectiveness Skills	
INTS 431	Principles of Fund Raising	
MIS 303	Introduction to Business Information Systems	
MKTG 303	Principles of Marketing	
OM 303	Operations Management	
PSYC 231	Social Psychology (Mason Core)	
SOCI 304	The Future of Work	
any MBUS course		
Other relevant courses with approval of advisor		
Total Credits		12-18

Concentration in Legal Studies (LGLS)

Required Courses

Code	Title	Credits
PHIL 173	Logic and Critical Thinking	3
INTS 300	Law and Justice (Mason Core)	3
CRIM 423	Constitutional Law: Civil Rights and Liberties	3
or GOVT 423	Constitutional Law: Civil Rights and Liberties	
CRIM 424	Constitutional Law: Criminal Process and Rights	3
or CRIM 430	Criminal Law	
Total Credits		12

Advanced Writing or Research Course

Code	Title	Credits
Select one course from the following:		3
CRIM 315	Research Methods and Analysis in Criminology	
ENGH 380	Introduction to Writing and Rhetoric	
ENGH 382	Writing Nonfiction Genres	
ENGH 388	Professional and Technical Writing	
ENGH 393	Forms of Nonfiction	
INTS 434	Research for Social Change	
GOVT 300	Research Methods and Analysis	
SOCI 312	Qualitative Research Methods	
Total Credits		3

Additional Courses

Code	Title	Credits
Select a minimum of 15 credits from the following:		15
BULE 303	Legal Environment of Business	
CLAS 330	Roman Law and Society	
COMM 230	Case Studies in Persuasion	
COMM 430	Persuasion	
COMM 475	Journalism Law	
CONF 425	Mediating Conflict	
CRIM 100	Introduction to Criminal Justice (Mason Core)	
CRIM 220	Introduction to Law and Society	

CRIM 405	Law and Justice around the World (Mason Core)
CRIM 406	Family Law and the Justice System
CRIM 407	Advanced Topics in Law and Society
CRIM 422	Controversial Legal Issues
CRIM 301	Public Law and the Judicial Process
or GOVT 301	Public Law and the Judicial Process
ECON 415	Law and Economics
GOVT 103	Introduction to American Government (Mason Core)
GOVT 407	Law and Society
GOVT 443	Law and Ethics of War
GOVT 446	International Law and Organization
GOVT 452	Administrative Law and Procedures
HAP 312	Healthcare Law
HDFS 401	Family Law and Public Policy
INTS 202	Public Speaking and Critical Thinking Skills (Mason Core)
INTS 304	Social Movements and Community Activism (Mason Core)
INTS 305	Conflict Resolution and Transformation
INTS 362	Social Justice and Human Rights (Mason Core)
INTS 336	Poverty, Wealth and Inequality in the US (Mason Core)
INTS 416	Refugee and Internal Displacement (Mason Core)
INTS 417	Human Trafficking and Smuggling
PRLS 460	Sport and Recreation Law
PHIL 311	Philosophy of Law
RELI 364	Religion and Law in the United States
SOCI 301	Criminology
SOCI 302	Sociology of Delinquency
Other relevant courses with approval of advisor	
Total Credits	15

Concentration in Education Studies (ESTU)

Examines the foundations of formal education, the nature of learning, and contemporary issues & opportunities in education. This concentration prepares students for:

- *post-baccalaureate or graduate teacher licensure programs (including accelerated master's programs)*
- *graduate studies in fields such as higher education, educational psychology, school psychology, guidance counseling*
- *careers in educational policy & funding*
- *nonprofit leadership (museums, child-care centers, environmental centers, recreational centers, Boys & Girls Club)*

Core Courses

Code	Title	Credits
Choose two courses from the following:		6-7
INTS 322	Teacher: A Historical Perspective	
INTS 336	Poverty, Wealth and Inequality in the US (Mason Core)	
INTS 436	Social Justice Education (Mason Core)	
SOCI 382	Education in Contemporary Society	
Total Credits		6-7

Emphasis

Students complete one of the following emphases (pre-licensure or non-licensure).

Pre-Licensure Emphasis

Code	Title	Credits
9 credits of ENGH, including ENGH 101 or ENGH 302 and one literature course		9
3 credits of oral communication		3
9 credits of natural science (must include a lab science and coursework from at least two scientific disciplines)		9
9 credits of mathematics or statistics (only 3 credits of statistics or probability can be accepted)		9
3 credits of ECON coursework		3
3 credits of U.S. history		3
3 credits of any GGS course		3
3 credits of American government (GOVT 103 or 304)		3
3 credits of HIST 100 or HIST 125		3
3 credits of ARTH, AVT, MUSI, or THR coursework		3
3 credits of PHIL, RELI, or FRLN coursework		3
Minimum of 9 credits of EDCI, ECED, EDUC, EDLE, EDSE, EDRD, EDIT, EDEP, EDPO, or ELED coursework		9
Total Credits		60

Non-Licensure Emphasis

Code	Title	Credits
Complete 24 credits chosen from the following:		24
DSGN 101	Introduction to Design Thinking	
EDIT 401	Introduction to Learning Technologies	
EDLE 412	Schools and the Law	
EDLE 420	Organization and Management of Schools	
EDSE 201	Introduction to Special Education	
EDUC 200	Introduction to Education: Teaching, Learning and Schools (Mason Core)	
EDUC 300	Introduction to Teaching	
ELED 242	Foundations of Elementary Education	
GCH 350	Health Promotion and Education	
INTS 204	Leadership Theory and Practice	
INTS 316	Introduction to Childhood Studies (Mason Core)	
INTS 319	Contemporary Youth Studies (Mason Core)	
INTS 321	Parent-Child Relations (Mason Core)	
INTS 331	The Nonprofit Sector (Mason Core)	
INTS 431	Principles of Fund Raising	
INTS 435	Leadership in a Changing Environment	
NEUR 101	Introduction to Neuroscience (Mason Core)	
PHED 306	Psychomotor Learning	
PRLS 220	Experiential Education Theory and Application	
PSYC 211	Developmental Psychology (Mason Core)	

PSYC 231	Social Psychology (Mason Core)
PSYC 304	Principles of Learning
PSYC 312	Educational Psychology
PSYC 313	Child Development
PSYC 314	Adolescent Development
PSYC 317	Cognitive Psychology
PSYC 320	Psychological Tests and Measurements
PSYC 325	Abnormal Psychology
PSYC 333	Industrial and Organizational Psychology
PSYC 335	Psychology of Creativity and Innovation
PSYC 340	Human Factors Psychology
SOCI 355	Social Inequality (Mason Core)
SOCI 360	Youth Culture and Society (Mason Core)
SOCI 483	The Sociology of Higher Education (Mason Core)
WMST 413	LGBTQ Issues in Education
Coursework from core course list not used to meet that requirement	
Other course with advisor approval	
Total Credits	24

Concentration in Social Innovation (SINN)

Students complete a minimum of 33 credits of coursework.

Core Courses

Code	Title	Credits
INTS 203	Inquiry for Action: Facilitating Change (Mason Core)	4-6
or INTS 450	Social Innovation in Action	
INTS 435	Leadership in a Changing Environment	4
Total Credits		8-10

Social Impact

Code	Title	Credits
Select two courses from the following:		6-8
INTS 304	Social Movements and Community Activism (Mason Core)	
INTS 334	Environmental Justice (Mason Core)	
INTS 336	Poverty, Wealth and Inequality in the US (Mason Core)	
INTS 344	Youth, Music, Social Change	
INTS 346	Art as Social Action (Mason Core)	
INTS 419	Youth Resistance and Advocacy	
PSYC 427	Community Engagement for Social Change (Mason Core)	
SOCI 352	Social Problems and Solutions (Mason Core)	
SOCI 355	Social Inequality (Mason Core)	
Total Credits		6-8

Enterprise Course

Code	Title	Credits
Select two courses from the following:		7-8
AMGT 410	The Arts and Community Engagement	
GOVT 353	Social Entrepreneurship	
INTS 451	Leadership and Organizational Problem-Solving	
MBUS 304	Entrepreneurship: Starting and Managing a New Enterprise	
Total Credits		7-8

Policy Course

Code	Title	Credits
Select one course from the following:		3-6
GOVT 351	Administration in the Political System	
GOVT 364	Public Policy Making	
INTS 348	Digital Futures	
INTS 371	Food Systems and Policy (Mason Core)	
INTS 436	Social Justice Education (Mason Core)	
SOCI 307	Social Movements and Political Protest	
SOCI 340	Power, Politics, and Society	
Total Credits		3-6

Nonprofit Course

Code	Title	Credits
Select one course from the following:		4
GOVT 358	Nonprofit Financial Planning	
INTS 331	The Nonprofit Sector (Mason Core)	
INTS 431	Principles of Fund Raising	
Total Credits		4

Ethics Course

Code	Title	Credits
Select one course from the following:		3-4
COMM 454	Free Speech and Ethics (Mason Core)	
GCH 376	Health Ethics, Leadership, and Advocacy	
INTS 404	Ethics and Leadership	
GOVT 448	Ethics and International Politics	
PHIL 243	Global Environmental Ethics (Mason Core)	
PHIL 305	Business Ethics	
PHIL 344	Ethical Issues in Global Health	
PHIL 355	Theories of Ethics	
PHIL 358	Ethics and Economics	
Total Credits		3-4

Social Justice and Human Rights (SJHR)

Students complete the following coursework:

Core Courses

Code	Title	Credits
INTS 334	Environmental Justice (Mason Core)	4
INTS 362	Social Justice and Human Rights (Mason Core)	3
INTS 434	Research for Social Change	3
INTS 437	Critical Race Studies (Mason Core)	3
or INTS 438	Representations of Race (Mason Core)	
Total Credits		13

Electives

Code	Title	Credits
Select 18 credits from the following:		18
INTS 300	Law and Justice (Mason Core)	
INTS 304	Social Movements and Community Activism (Mason Core)	
INTS 305	Conflict Resolution and Transformation	
INTS 310	Violence and Gender	
INTS 315	Spirituality and Conflict Transformation (Mason Core)	
INTS 316	Introduction to Childhood Studies (Mason Core)	
INTS 319	Contemporary Youth Studies (Mason Core)	
INTS 320	Construction of Differences: Race, Class, and Gender (Mason Core)	
INTS 336	Poverty, Wealth and Inequality in the US (Mason Core)	
INTS 337	Social Justice Consciousness and Action	
INTS 346	Art as Social Action (Mason Core)	
INTS 347	Gender Representation in Popular Culture (Mason Core)	
INTS 361	Neighborhood, Community, and Identity (Mason Core)	
INTS 405	Women and Leadership	
INTS 416	Refugee and Internal Displacement (Mason Core)	
INTS 417	Human Trafficking and Smuggling	
INTS 435	Leadership in a Changing Environment	
INTS 436	Social Justice Education (Mason Core)	
Relevant coursework from AFAM, ANTH, COMM, CONF, CRIM, CULT, EVPP, FRLN, GLOA, GOVT, PHIL, PSYC, SOCI, WMST, and other coursework with advisor approval.		
Total Credits		18

Concentration in Social Science for Education (SSED)

Code	Title	Credits
ECON 103	Contemporary Microeconomic Principles (Mason Core)	3
ECON 104	Contemporary Macroeconomic Principles (Mason Core)	3
GGS 103	Human Geography (Mason Core)	3
GOVT 103	Introduction to American Government (Mason Core)	3
HIST 121	Formation of the American Republic (Mason Core)	3
HIST 125	Introduction to World History (Mason Core)	3
Select one course from the following:		3
HIST 391	History of Virginia to 1800	
HIST 392	History of Virginia Since 1800	
HIST 122	Development of Modern America (Mason Core)	
Select 9 credits of upper-division HIST coursework		9
Select 6 credits of GGS coursework		6
Select 15 credits from the following:		15
any GOVT course		
INTS 300	Law and Justice (Mason Core)	
INTS 331	The Nonprofit Sector (Mason Core)	
INTS 362	Social Justice and Human Rights (Mason Core)	
INTS 416	Refugee and Internal Displacement (Mason Core)	
INTS 422	An Experiential Approach to American Foreign Policy	
Total Credits		51

Concentration in Women and Gender Studies (WGST)

Code	Title	Credits
WMST 200	Introduction to Women and Gender Studies (Mason Core)	3
WMST 330	Feminist Theories of Gender, Sexuality, and Race	3
WMST 410	Feminist Approaches to Social Research	3
or INTS 434	Research for Social Change	
Queer and Sexuality Studies		
Select one course from the following:		3-4
WMST 208	Introduction to Lesbian, Gay, Bisexual, Transgender, and Queer Studies	
WMST 300	Current Issues in Women and Gender Studies [1]	
WMST 402	Queer Theory	
WMST 404	Gender, Sexuality, and Disability	
WMST 407	Transnational Sexualities	
WMST 408	Gender, Sexuality, and Human Rights	
WMST 409	Gender, Sexuality, and International Migration	
WMST 412	Race, Class, and LGBTQ Communities	
WMST 450	Current Topics in Women and Gender Studies [1]	
Race and Intersectionality		
Select one course from the following:		3-4
INTS 334	Environmental Justice (Mason Core)	
INTS 362	Social Justice and Human Rights (Mason Core)	
INTS 416	Refugee and Internal Displacement (Mason Core)	
INTS 437	Critical Race Studies (Mason Core)	
INTS 438	Representations of Race (Mason Core)	
SOCI 355	Social Inequality (Mason Core)	
WMST 309	Black Social Movements: Gendering of Violence and Activism	
WMST 315	Women During the Enslavement Era	
WMST 317	Women's Activism: From Jim Crow to Black Power	
WMST 375	Gender, Race, Sexuality, and TV	
WMST 406	Gender and Violence in Social Institutions	
Other WMST special topics courses with advisor approval		
Activism and Advocacy		
Select one course from the following:		3-4

INTS 304	Social Movements and Community Activism (Mason Core)
INTS 310	Violence and Gender
INTS 337	Social Justice Consciousness and Action
INTS 346	Art as Social Action (Mason Core)
INTS 417	Human Trafficking and Smuggling
INTS 436	Social Justice Education (Mason Core)
PSYC 427	Community Engagement for Social Change (Mason Core)
SOCI 307	Social Movements and Political Protest
WMST 319	Gender, Health, and Culture in the United States
INTS special topics courses with advisor approval	

History and Culture

Select one course from the following:	3-6
ANTH 488	Gender, Sexuality, and Culture
COMM 365	Gender, Race, and Class in the Media
HIST 350	U.S. Women's History
HIST 462	Women in Islamic Society (Mason Core)
INTS 400	Temptress: Constructs of Sex and Power
PHIL 338	Philosophy, Race, and Gender
RELI 407	Women in the World's Religions
WMST 307	Women and Work
WMST 309	Black Social Movements: Gendering of Violence and Activism
WMST 315	Women During the Enslavement Era
WMST 317	Women's Activism: From Jim Crow to Black Power
WMST 375	Gender, Race, Sexuality, and TV
Other WMST special topics courses with advisor approval	

Electives

Select four courses from the following:	12-14
CHIN 328	Asian American Women Writers (Mason Core)
COMM 465	Topics in Communication and Gender
ENGH 310	Topics: Women and Literature
ENGH 418	Cultural Constructions of Sexualities
HEAL 327	Women's Health
INTS 312	Images and Experiences of Childhood: Social Construct, Literature, and Film
INTS 317	Issues in Family Relationships (Mason Core)
INTS 319	Contemporary Youth Studies (Mason Core)
INTS 321	Parent-Child Relations (Mason Core)
INTS 405	Women and Leadership
PHIL 343	Topics in Environmental Philosophy (Mason Core)
PSYC 362	Psychology of Gender
SOCI 315	Contemporary Gender Relations (Mason Core)
THR 424	Contemporary Women Playwrights
Any undergraduate WMST course	
Courses in above areas not already taken	
WMST 600	Special Topics [2]
WMST 610	Feminist Approaches to Social Research [2]
WMST 630	Feminist Theories [2]
WMST 640	Transnational Issues of Gender and Race [2]
Total Credits	33-41

1 Various special topics courses with the approval of the undergraduate advisor.

2 Six credits of WMST 600 Special Topics, WMST 610 Feminist Approaches to Social Research, WMST 630 Feminist Theories , or WMST 640 Transnational Issues of Gender and Race may apply to elective requirement for students accepted into the accelerated master's degree in interdisciplinary studies (MAIS) with a concentration in women and gender studes.

Individualized Concentration (IND)

Code	Title	Credits
With approval of the executive director, students may construct an individualized concentration.		30
Total Credits		30

Additional Electives

Any remaining credits may be completed with electives to bring the degree total to 120.

4-Year Plan

Bachelor of Arts in Integrative Studies Sample Plan of Study

A sample four year graduation plan and degree planning worksheet can be found at https://academicaffairs.chss.gmu.edu/undergraduate-students/advising/advising-sheets (https://academicaffairs.chss.gmu.edu/undergraduate-students/advising/advising-sheets/). The plan is a recommended sequencing of courses based on prerequisites and scheduling. This may not fit every student's needs and is a guideline, not a requirement. Students should confirm major requirements with their academic advisor each semester and with their PatriotWeb Degree Evaluation to ensure they enroll in the proper courses and are on track to graduate.

Accelerated Master's

The accelerated master's program below specifies the BA in integrative studies as a feeder degree for its program. Many other accelerated master's programs are also available for any bachelor's degree at Mason. See the full list of degrees (http://catalog.gmu.edu/programs/#filter=filter_24) with accelerated programs at George Mason.

Integrative Studies, BA (Social Science for Education Concentration)/Curriculum and Instruction, Accelerated MEd (Secondary Education History and Social Science Concentration)

Overview

Highly-qualified Mason undergraduates may be admitted to the bachelor's/accelerated master's option and obtain a BA in Integrative Studies (concentration in social science for education) and an MEd in Curriculum and Instruction (Secondary Education History and Social Science concentration) (https://catalog.gmu.edu/colleges-schools/education-human-development/school-education/curriculum-instruction-med/)in an accelerated time-frame after satisfactory completion of a minimum of 143 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degree for policies related to this program.

This accelerated option is offered jointly by the School of Integrative Studies and the School of Education.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies (https://catalog.gmu.edu/admissions/graduate-policies/) and Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies. For information specific to this accelerated master's program, see Application Requirements and Deadlines (https://cehd.gmu.edu/bachelors-accelerated-masters-program/).

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits, and additional unit-specific criteria.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MEd program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- 3.0 overall GPA
- Completion of specific undergraduate coursework
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following which can be taken as Advanced Standing or Reserve Graduate credit (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) (to be determined by the student and their advisor):

Code	Title	Credits
EDRD 619	Literacy in the Content Areas	3
SEED 522	Foundations of Secondary Education	3
SEED 540	Human Development and Learning: Secondary Education	3
SEED 567	Teaching Social Studies in the Secondary School	3
SEED 667	Advanced Methods of Teaching Social Sciences in the Secondary School	3
SEED approved elective		

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies.

Integrative Studies, BS

Banner Code: LA-BS-INTS

Academic Advising

402 Enterprise Hall
Fairfax Campus

Email: sisinfo@gmu.edu
Website: integrative.gmu.edu/programs/la-bs-ints

The Bachelor of Science in Integrative Studies brings together research, theory and practice across numerous disciplines. Integrative studies majors select a multidisciplinary concentration or work with student services staff to develop their own concentration, uniquely suited to their academic and career goals. Integrative studies majors explore new topics and experiences while gaining the knowledge and skills needed to enter the workforce. Required coursework is offered in small classes with ample room for discussion, collaborative learning, and experiential learning, including in-community projects, volunteer opportunities, field work, internships and work with faculty on research that directly engages current social and global challenges.

The BS in Integrative Studies with a concentration in Applied Global Conservation is a Green Leaf Program.

Admissions & Policies

Policies

Students must fulfill all Requirements for Bachelor's Degrees including the Mason Core. Integrative studies students may fulfill lower level Mason Core requirements through approved integrative studies (INTS) coursework. Students pursuing a BS in Integrative Studies must complete a minimum of 30 credits of (INTS) coursework, with at least 15 credits at the 300 and 400 levels. These 30 INTS credits fulfill the writing intensive and synthesis Mason Core requirements.

Students must complete ENGH 302 Advanced Composition (Mason Core). A maximum of 15 credits of INTS 299 Study Abroad or INTS 399 Study Abroad can be applied to the major. Students must have a

minimum GPA of 2.00 in courses applied to the major. Before registering, students should see an advisor to help plan their degree program to meet Mason requirements. The advisor also can help students choose electives or a minor.

For policies governing all undergraduate degrees, see AP.5 Undergraduate Policies.

Requirements

Degree Requirements

Total credits: minimum 120

This is a Green Leaf program.

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Integrative studies students complete INTS 391 Understanding Integrative Studies and choose a concentration from the options below. Before registering, students should see an advisor to help plan their degree program to meet Mason requirements. The advisor also can help students choose electives or a minor.

Required Course

Code	Title	Credits
INTS 391	Understanding Integrative Studies	3

Concentration in the Major

A concentration is the equivalent of a major in a traditional degree program. Students choose from an established multidisciplinary concentration below or create with faculty an individualized program of study to fit their interests and needs. Concentration coursework combines integrative studies (INTS) classes with coursework from other Mason units (departments, schools, and colleges). While fulfilling the concentration requirements, students are also responsible for completing a minimum of 30 credits of INTS coursework. Any INTS courses required for the concentration will apply. Students must present a minimum GPA of 2.00 in courses applied to the concentration.

Concentrations

- Applied Global Conservation (AGCN)
- Life Sciences (LIFS)
- Individualized Concentration (IND)

Applied Global Conservation (AGCN)

Total credits: 40-44

Core Courses in Global Conservation

Code	Title	Credits
INTS 210	Sustainable World (Mason Core)	4
or INTS 211	Introduction to Conservation Studies (Mason Core)	
INTS 401	Conservation Biology (Mason Core)	6
INTS 402	Plants and People - Sustenance, Ceremony, and Sustainability	6
or INTS 403	Conservation Behavior (Mason Core)	
Total Credits		16

Additional Global Environmental Course

Code	Title	Credits
Select one course from the following:		3
ANTH 370	Environment and Culture	
EVPP 337	Environmental Policy Making in Developing Countries	
EVPP 436	The Human Dimensions of Global Climate Change	
GGS 302	Global Environmental Hazards	
EVPP 475	Global Biodiversity Governance	
GGS 303	Geography of Resource Conservation (Mason Core)	
Total Credits		3

Statistics

Code	Title	Credits
Choose one of the following:		3
STAT 250	Introductory Statistics I (Mason Core)	
or BIOL 312	Biostatistics for Bioinformatics	
or BIOL 214	Biostatistics for Biology Majors	
or CONS 460	Statistics and Study Design in Ecology and Conservation	
Total Credits		3

Additional Learning Community

In addition to the courses below, INTS 375 Special Topics, INTS 395 Field-Based Work, and INTS 398 Experiential Learning may be applied to the concentration when the topic is relevant to conservation studies.

Code	Title	Credits
Select one course from the following:		3-6
INTS 204	Leadership Theory and Practice	
INTS 305	Conflict Resolution and Transformation	
INTS 311	The Mysteries of Migration: Consequences for Conservation (Mason Core)	
INTS 331	The Nonprofit Sector (Mason Core)	
INTS 334	Environmental Justice (Mason Core)	
INTS 375	Special Topics	
INTS 395	Field-Based Work	
INTS 398	Experiential Learning	

Natural Science and Policy

Students may complete this requirement through regular coursework or through either option of the Smithsonian-Mason Semester Program.

Code	Title	Credits
Regular Coursework		
Three credits from the following:		3
INTS 390	International Internship (Mason Core)	
INTS 395	Field-Based Work	
INTS 490	Internship	
BIOL 308	Foundations of Ecology and Evolution	5
BIOL 300	BioDiversity	4
BIOL 377	Applied Ecology	3

or EVPP 361	Introduction to Environmental Policy	
Total Credits		15

Smithsonian-Mason Semester Program
Students complete one of the options offered through the Mason Center for Conservation Studies in cooperation with the Smithsonian Conservation Biology Institute. In this integrated series of courses, taken together in one semester, students live on site at the institute in Front Royal, VA. Students who apply this coursework to the concentration cannot also apply it to the minor in Conservation Studies.

Conservation, Biodiversity and Society Option (16 credits)

Code	Title	Credits
CONS 320	Conservation in Practice	3
CONS 401	Conservation Theory	3
CONS 402	Applied Conservation	4
CONS 410	Human Dimensions in Conservation (Mason Core)	3
CONS 490	RS: Integrated Conservation Strategies (Mason Core)	3
Total Credits		16

Wildlife Ecology and Conservation Option (16 credits)
Offered only in Fall semesters, students complete four required courses:

Code	Title	Credits
CONS 400	Conservation Seminar	2
CONS 404	Biodiversity Monitoring	4
CONS 405	Landscape and Macrosystems Ecology	4
CONS 496	Research in Conservation (Mason Core)	6
Total Credits		16

Endangered Species and Conservation Option (16 credits)
Offered only in Spring semesters, students complete four required courses:

Code	Title	Credits
CONS 400	Conservation Seminar	2
CONS 406	Small Population Management	4
CONS 491	RS: Conservation Management Planning (Mason Core)	4
CONS 496	Research in Conservation (Mason Core)	6
Total Credits		16

Life Sciences (LIFS)

Core Courses

Code	Title	Credits
Choose one course from the following;		3
PHIL 309	Bioethics (Mason Core)	
PHIL 344	Ethical Issues in Global Health	
Choose one course from the following		3-4
ANTH 363	Humans, Disease, and Death (Mason Core)	
ANTH 381	Medical Anthropology	
INTS 410	Contemporary Health Issues	
SOCI 390	Sociology of Health, Illness, and Disability	
WMST 319	Gender, Health, and Culture in the United States	
WMST 404	Gender, Sexuality, and Disability	
WMST 415	LGBTQ Health	
Total Credits		6-7

Emphasis
Students must complete one of the following emphases.

Pre-Occupational Therapy Emphasis

Code	Title	Credits
ATEP 201	Medical and Scientific Terminology	3
or HAP 202	Medical Terminology	
BIOL 102	Introductory Biology I-Survey of Biodiversity and Ecology (Mason Core)	4
BIOL 103	Introductory Biology II-Survey of Cell and Molecular Biology (Mason Core)	3
BIOL 105	Introductory Biology II Laboratory (Mason Core)	1
BIOL 124	Human Anatomy and Physiology	4
BIOL 125	Human Anatomy and Physiology	4
PSYC 100	Basic Concepts in Psychology (Mason Core)	3
PSYC 211	Developmental Psychology (Mason Core)	3
PSYC 325	Abnormal Psychology	3
ONE SOCI course		3
STAT 250	Introductory Statistics I (Mason Core)	3-4
or BIOL 214	Biostatistics for Biology Majors	
Total Credits		34-35

Pre-Medical Emphasis

Code	Title	Credits
BIOL 213	Cell Structure and Function (Mason Core)	4
BIOL 311	General Genetics	4
BIOL 483	General Biochemistry	4
or CHEM 463	General Biochemistry I	
CHEM 211 & CHEM 213	General Chemistry I (Mason Core) and General Chemistry Laboratory I (Mason Core)	4
CHEM 212 & CHEM 214	General Chemistry II (Mason Core) and General Chemistry Laboratory II (Mason Core)	4
CHEM 313 & CHEM 315	Organic Chemistry I and Organic Chemistry Lab I	5
CHEM 314 & CHEM 318	Organic Chemistry II and Organic Chemistry Lab II	5
STAT 250	Introductory Statistics I (Mason Core)	3-4
or BIOL 214	Biostatistics for Biology Majors	
PHYS 243 & PHYS 244	College Physics I (Mason Core) and College Physics I Lab (Mason Core)	4
PHYS 245 & PHYS 246	College Physics II (Mason Core) and College Physics II Lab (Mason Core)	4
PSYC 100	Basic Concepts in Psychology (Mason Core)	3
SOCI 101	Introductory Sociology (Mason Core)	3
Total Credits		47-48

Pre-Dental Emphasis

Code	Title	Credits
BIOL 213	Cell Structure and Function (Mason Core)	4
BIOL 311	General Genetics	4
CHEM 211 & CHEM 213	General Chemistry I (Mason Core) and General Chemistry Laboratory I (Mason Core)	4
CHEM 212 & CHEM 214	General Chemistry II (Mason Core) and General Chemistry Laboratory II (Mason Core)	4
CHEM 313	Organic Chemistry I	3
CHEM 315	Organic Chemistry Lab I	2
CHEM 314	Organic Chemistry II	3
CHEM 318	Organic Chemistry Lab II	2
CHEM 463	General Biochemistry I	4
CHEM 465	Biochemistry Lab	2
PHYS 243 & PHYS 244	College Physics I (Mason Core) and College Physics I Lab (Mason Core)	4
PHYS 245 & PHYS 246	College Physics II (Mason Core) and College Physics II Lab (Mason Core)	4
STAT 250	Introductory Statistics I (Mason Core)	3-4
or BIOL 214	Biostatistics for Biology Majors	
Total Credits		43-44

Pre-Pharmacy Emphasis

Code	Title	Credits
BIOL 124	Human Anatomy and Physiology	4
BIOL 125	Human Anatomy and Physiology	4
BIOL 213	Cell Structure and Function (Mason Core)	4
BIOL 305	Biology of Microorganisms	3
BIOL 306	Biology of Microorganisms Laboratory	1
BIOL 311	General Genetics	4
BIOL 483	General Biochemistry	4
or CHEM 463	General Biochemistry I	
CHEM 211 & CHEM 213	General Chemistry I (Mason Core) and General Chemistry Laboratory I (Mason Core)	4
CHEM 212 & CHEM 214	General Chemistry II (Mason Core) and General Chemistry Laboratory II (Mason Core)	4
CHEM 313	Organic Chemistry I	3
CHEM 315	Organic Chemistry Lab I	2
CHEM 314	Organic Chemistry II	3
CHEM 318	Organic Chemistry Lab II	2
ECON 100	Economics for the Citizen (Mason Core)	3
MATH 113	Analytic Geometry and Calculus I (Mason Core)	4
STAT 250	Introductory Statistics I (Mason Core)	3-4
or BIOL 214	Biostatistics for Biology Majors	
Total Credits		52-53

Pre-Physical Therapy Emphasis

Code	Title	Credits
BIOL 102	Introductory Biology I-Survey of Biodiversity and Ecology (Mason Core)	4
BIOL 103	Introductory Biology II-Survey of Cell and Molecular Biology (Mason Core)	3
BIOL 105	Introductory Biology II Laboratory (Mason Core)	1
BIOL 124	Human Anatomy and Physiology	4
BIOL 125	Human Anatomy and Physiology	4
PSYC 100	Basic Concepts in Psychology (Mason Core)	3
STAT 250	Introductory Statistics I (Mason Core)	3-4
or BIOL 214	Biostatistics for Biology Majors	
CHEM 103	Chemical Science in a Modern Society (Mason Core)	4
or CHEM 211 & CHEM 213	General Chemistry I (Mason Core) and General Chemistry Laboratory I (Mason Core)	
CHEM 104	Chemistry for Changing Times (Mason Core)	4
or CHEM 212 & CHEM 214	General Chemistry II (Mason Core) and General Chemistry Laboratory II (Mason Core)	
PHYS 243 & PHYS 244	College Physics I (Mason Core) and College Physics I Lab (Mason Core)	4
PHYS 245 & PHYS 246	College Physics II (Mason Core) and College Physics II Lab (Mason Core)	4
PSYC 211	Developmental Psychology (Mason Core)	3
or PSYC 231	Social Psychology (Mason Core)	
Total Credits		41-42

Pre-Physician's Assistant Emphasis

Code	Title	Credits
ATEP 201	Medical and Scientific Terminology	3
or HAP 202	Medical Terminology	
BIOL 124	Human Anatomy and Physiology	4
BIOL 125	Human Anatomy and Physiology	4
BIOL 213	Cell Structure and Function (Mason Core)	4
CHEM 211 & CHEM 213	General Chemistry I (Mason Core) and General Chemistry Laboratory I (Mason Core)	4
CHEM 212 & CHEM 214	General Chemistry II (Mason Core) and General Chemistry Laboratory II (Mason Core)	4
CHEM 313	Organic Chemistry I	3
CHEM 315	Organic Chemistry Lab I	2
CHEM 463	General Biochemistry I	4
or BIOL 483	General Biochemistry	
PSYC 100	Basic Concepts in Psychology (Mason Core)	3
PSYC 211	Developmental Psychology (Mason Core)	3
STAT 250	Introductory Statistics I (Mason Core)	3-4
or BIOL 214	Biostatistics for Biology Majors	
Total Credits		41-42

Pre-Optometry Emphasis

Code	Title	Credits
BIOL 213	Cell Structure and Function (Mason Core)	4
BIOL 305	Biology of Microorganisms	3
BIOL 306	Biology of Microorganisms Laboratory	1

BIOL 311	General Genetics	4
BIOL 483	General Biochemistry	4
or CHEM 463	General Biochemistry I	
CHEM 211 & CHEM 213	General Chemistry I (Mason Core) and General Chemistry Laboratory I (Mason Core)	4
CHEM 212 & CHEM 214	General Chemistry II (Mason Core) and General Chemistry Laboratory II (Mason Core)	4
CHEM 313	Organic Chemistry I	3
CHEM 315	Organic Chemistry Lab I	2
CHEM 314	Organic Chemistry II	3
CHEM 318	Organic Chemistry Lab II	2
MATH 113	Analytic Geometry and Calculus I (Mason Core)	4
PHYS 243 & PHYS 244	College Physics I (Mason Core) and College Physics I Lab (Mason Core)	4
PHYS 245 & PHYS 246	College Physics II (Mason Core) and College Physics II Lab (Mason Core)	4
STAT 250	Introductory Statistics I (Mason Core)	3-4
or BIOL 214	Biostatistics for Biology Majors	
PSYC 100	Basic Concepts in Psychology (Mason Core)	3
PSYC 211	Developmental Psychology (Mason Core)	3
or PSYC 231	Social Psychology (Mason Core)	
Total Credits		55-56

Pre-Veterinary Emphasis

Code	Title	Credits
BIOL 213	Cell Structure and Function (Mason Core)	4
BIOL 311	General Genetics	4
BIOL 483	General Biochemistry	4
or CHEM 463	General Biochemistry I	
CHEM 211 & CHEM 213	General Chemistry I (Mason Core) and General Chemistry Laboratory I (Mason Core)	4
CHEM 212 & CHEM 214	General Chemistry II (Mason Core) and General Chemistry Laboratory II (Mason Core)	4
CHEM 313	Organic Chemistry I	3
CHEM 315	Organic Chemistry Lab I	2
CHEM 314	Organic Chemistry II	3
CHEM 318	Organic Chemistry Lab II	2
MATH 113	Analytic Geometry and Calculus I (Mason Core)	4
PHYS 243 & PHYS 244	College Physics I (Mason Core) and College Physics I Lab (Mason Core)	4
PHYS 245 & PHYS 246	College Physics II (Mason Core) and College Physics II Lab (Mason Core)	4
STAT 250	Introductory Statistics I (Mason Core)	3-4
or BIOL 214	Biostatistics for Biology Majors	
Total Credits		45-46

Individualized Concentration (IND)

Code	Title	Credits
With approval of the executive director, students may construct an individualized concentration.		30
Total Credits		30

Additional Electives

Any remaining credits may be completed with electives to bring the degree total to 120

4-Year Plan

Bachelor of Science in Integrative Studies Sample Plan of Study

A sample four year graduation plan and degree planning worksheet can be found at https://academicaffairs.chss.gmu.edu/undergraduate-students/advising/advising-sheets (https://academicaffairs.chss.gmu.edu/undergraduate-students/advising/advising-sheets/). The plan is a recommended sequencing of courses based on prerequisites and scheduling. This may not fit every student's needs and is a guideline, not a requirement. Students should confirm major requirements with their academic advisor each semester and with their PatriotWeb Degree Evaluation to ensure they enroll in the proper courses and are on track to graduate.

Accelerated Master's

Many accelerated master's programs are available for any bachelor's degree at Mason. See the full list of degrees (http://catalog.gmu.edu/programs/#filter=filter_24) with accelerated programs at George Mason.

Leadership Minor

Banner Code: LSHP

Academic Advising

402 Enterprise Hall
Fairfax Campus

Website: integrative.gmu.edu/programs/la-minor-nc-lshp

This minor prepares students for transformative leadership in campus, local, national, and global contexts. Interdisciplinary and integrative classes examine leadership from multiple perspectives and disciplines, offering an understanding of socially-responsible leadership with an emphasis on community action. Through the required coursework and experiential learning, students critically examine diverse theories, research, and perspectives on leadership and are encouraged to explore topics such as social change and globalization, creative conflict resolution, the nature of power, oppression and influence, innovation, and systemic leadership. Civic engagement and multicultural competence are viewed as necessary requirements for leadership.

This minor is open to students in all academic programs, schools, and majors.

Faculty

Lennon, McCarron, Owen (director)

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: minimum of 15

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Core Courses

Code	Title	Credits
INTS 204	Leadership Theory and Practice	4
INTS 404	Ethics and Leadership	4-6
or MLSC 400 & MLSC 402	Leadership and Management and Leadership and Ethics	
INTS 435	Leadership in a Changing Environment	4
Total Credits		12-14

Electives

Code	Title	Credits
Select at least one course from the following: [1]		3-4
AVT 309	Art as Social Action	
AVT 370	Entrepreneurship in the Arts	
CONF 300	Conflict Resolution Techniques and Practice	
EVPP 361	Introduction to Environmental Policy	
FNAN 401	Advanced Financial Management	
GOVT 430	Comparative Political Leadership	
INTS 346	Art as Social Action (Mason Core)	
INTS 356	Foundations of Resilience and Well-Being	
INTS 406	Global Leadership (Mason Core)	
INTS 451	Leadership and Organizational Problem-Solving	
IT 304	IT in the Global Economy	
MGMT 413	Organizational Development and Management Consulting	
MKTG 471	Marketing Management	
MLSC 300	Applied Leadership I	
MLSC 400	Leadership and Management	
MLSC 402	Leadership and Ethics	
MBUS 301	Managing People and Organizations in a Global Economy	
MBUS 305	Introduction to International Business (Mason Core)	
MBUS 306	Managing Projects and Operations	
MIS 303	Introduction to Business Information Systems	
NURS 436	Leadership and Management of Health Care	
PRLS 316	Leadership and Outdoor Education	
PSYC 231	Social Psychology (Mason Core)	
PSYC 333	Industrial and Organizational Psychology	
SOCI 307	Social Movements and Political Protest	
TOUR 330	Resort Management	
Total Credits		3-4

[1] Other courses may be applied to this requirement with prior written approval of the director.

Nonprofit Studies Minor

Banner Code: NPS

Academic Advising

402 Enterprise Hall
Fairfax Campus

Email: sisinfo@gmu.edu
Website: integrative.gmu.edu/programs/la-minor-ncc-nps

Nonprofit organizations significantly contribute to the provision of human services, access to the arts, education, recreation and health care, and protection of the environment. Effective nonprofit organizations provide direct services, influence public policy and build a civil society. This minor is designed to introduce students to the theoretical foundations and practical skills needed to be successful in this sector. Through heavy emphasis on experiential learning with the many excellent nonprofit organizations in our region, students learn to apply theory within the context of today's complex and rapidly changing environment.

Faculty

Frye, Unruh

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 15

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Core Courses

Code	Title	Credits
INTS 331	The Nonprofit Sector (Mason Core) [1]	4
INTS 431	Principles of Fund Raising [1]	4
Select one course (3-4 credits) from the following:		3-4
COMM 389	Public Relations for Associations and Nonprofits	
GOVT 354	Nonprofit Sector in Society	
GOVT 358	Nonprofit Financial Planning	
INTS 435	Leadership in a Changing Environment	
Total Credits		11-12

[1] These courses are approved by the School of Integrative Studies to earn experiential learning credits.

Electives

Code	Title	Credits
Select 3-4 credits from the following:		3-4
AVT 370	Entrepreneurship in the Arts	
COMM 335	Organizational Communication	
COMM 389	Public Relations for Associations and Nonprofits (if not taken as required course)	
CONF 101	Conflict and Our World (Mason Core)	
CONF 300	Conflict Resolution Techniques and Practice	
ECON 309	Economic Problems and Public Policies	
ENGH 489	Proposal Writing and Development	
GOVT 358	Nonprofit Financial Planning	
GOVT 480	Internship	
INTS 210	Sustainable World (Mason Core)	
INTS 211	Introduction to Conservation Studies (Mason Core)	
INTS 304	Social Movements and Community Activism (Mason Core) [1]	
INTS 305	Conflict Resolution and Transformation	
INTS 375	Special Topics (when the topic is relevant with prior written approval of the director)	
INTS 390	International Internship (Mason Core) (when the topic is relevant with prior written approval of the director) [1]	
INTS 397	Add-On Experiential Learning	
INTS 406	Global Leadership (Mason Core)	
INTS 410	Contemporary Health Issues	
INTS 422	An Experiential Approach to American Foreign Policy	
INTS 435	Leadership in a Changing Environment (if not taken as required course)	
INTS 490	Internship (when the topic is relevant with prior written approval of the director) [1]	
MBUS 301	Managing People and Organizations in a Global Economy	
PSYC 427	Community Engagement for Social Change (Mason Core)	
SOCI 492	Sociology of Organizations	
SOCW 483	Selected Topics in Social Work Intervention	
TOUR 220	Introduction to Event Management	
Total Credits		3-4

[1] These courses are approved by the School of Integrative Studies to earn experiential learning credits.

Social Innovation Minor

Banner Code: SINN

Academic Advising

402 Enterprise Hall
Fairfax Campus

Website: integrative.gmu.edu/programs/la-minor-nc-sinn

Many approaches to addressing social and environmental issues start from a single professional perspective. Engineers, for example, will pursue a technical solution whereas a businessperson might employ an entrepreneurial approach. While professional avenues like these are powerful, a novel method is emerging known as *social innovation*. Social innovators develop solutions by integrating across the professional sectors of government, business, and nonprofit in ways that open new opportunities for addressing social and environmental challenges. This interdisciplinary minor in social innovation is designed to introduce students to the foundations of social innovation and the practical techniques social innovators employ to create solutions that balance people, profit, and the planet (i.e. the triple-bottom line). Through an emphasis on experiential learning in team-based innovation projects, students will integrate theory and practice as they develop the knowledge and skills of social innovators.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 15-16

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Core Courses

Code	Title	Credits
INTS 435	Leadership in a Changing Environment	4
INTS 450	Social Innovation in Action	4
Total Credits		8

Electives

Code	Title	Credits
Select seven-eight credits from the following:		7-8
AVT 370	Entrepreneurship in the Arts	
COMM 335	Organizational Communication	
ECON 309	Economic Problems and Public Policies	
GOVT 353	Social Entrepreneurship	
GOVT 358	Nonprofit Financial Planning	
INTS 210	Sustainable World (Mason Core)	
INTS 300	Law and Justice (Mason Core)	
INTS 304	Social Movements and Community Activism (Mason Core)	
INTS 316	Introduction to Childhood Studies (Mason Core)	
INTS 319	Contemporary Youth Studies (Mason Core)	
INTS 331	The Nonprofit Sector (Mason Core)	
INTS 334	Environmental Justice (Mason Core)	
INTS 337	Social Justice Consciousness and Action	
INTS 362	Social Justice and Human Rights (Mason Core)	
INTS 370	Sustainable Food Systems	
INTS 371	Food Systems and Policy (Mason Core)	
INTS 375	Special Topics	
INTS 390	International Internship (Mason Core)	
INTS 401	Conservation Biology (Mason Core)	
INTS 406	Global Leadership (Mason Core)	
INTS 422	An Experiential Approach to American Foreign Policy	
INTS 490	Internship	
MBUS 301	Managing People and Organizations in a Global Economy	
MBUS 305	Introduction to International Business (Mason Core)	
PSYC 427	Community Engagement for Social Change (Mason Core)	
Total Credits		7-8

Social Justice and Human Rights Minor

Banner Code: SJHR

Academic Advising

402 Enterprise Hall
Fairfax Campus

Email: sisinfo@gmu.edu
Website: https://integrative.gmu.edu/programs/la-minor-nc-sjhr

The minor engages students in both a critical examination of various forms of injustice (such as poverty, racism, and speciesism, and environmental degradation) and an exploration of strategies for creating and sustaining an equitable and just world. This minor is interdisciplinary in nature, drawing on disciplines as distinct as critical race studies, critical animal studies, and environmental science. It is designed particularly to help students consider the intersectional nature of all types of exploitation and their related movements for liberation.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

(formerly SOCJ)

Minor Requirements

Total credits: minimum 16

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Coursework

Code	Title	Credits
Core Courses		
INTS 334	Environmental Justice (Mason Core)	4
INTS 362	Social Justice and Human Rights (Mason Core)	3
INTS 437	Critical Race Studies (Mason Core)	3
or INTS 438	Representations of Race (Mason Core)	
Electives		
Select six credits from the following:		6
CONF 394	Human Rights and Inequality	
EDUC 301	Educating Diverse and Exceptional Learners	
GOVT 445	Human Rights	
INTS 300	Law and Justice (Mason Core)	
INTS 304	Social Movements and Community Activism (Mason Core)	
INTS 305	Conflict Resolution and Transformation	
INTS 310	Violence and Gender	
INTS 315	Spirituality and Conflict Transformation (Mason Core)	
INTS 316	Introduction to Childhood Studies (Mason Core)	
INTS 319	Contemporary Youth Studies (Mason Core)	
INTS 320	Construction of Differences: Race, Class, and Gender (Mason Core)	
INTS 336	Poverty, Wealth and Inequality in the US (Mason Core)	
INTS 337	Social Justice Consciousness and Action	
INTS 346	Art as Social Action (Mason Core)	
INTS 347	Gender Representation in Popular Culture (Mason Core)	

INTS 361	Neighborhood, Community, and Identity (Mason Core)
INTS 405	Women and Leadership
INTS 416	Refugee and Internal Displacement (Mason Core)
INTS 417	Human Trafficking and Smuggling
INTS 434	Research for Social Change
INTS 435	Leadership in a Changing Environment
INTS 436	Social Justice Education (Mason Core)
PSYC 427	Community Engagement for Social Change (Mason Core)
SOCI 307	Social Movements and Political Protest
SOCI 308	Race and Ethnicity in a Changing World (Mason Core)
SOCI 315	Contemporary Gender Relations (Mason Core)
SOCI 320	Globalization and Social Change (Mason Core)
SOCI 355	Social Inequality (Mason Core)
SOCI 382	Education in Contemporary Society
WMST 200	Introduction to Women and Gender Studies (Mason Core)
WMST 300	Current Issues in Women and Gender Studies
WMST 402	Queer Theory
Relevant coursework from AFAM, ANTH, COMM, CONF, CRIM, CULT, EVPP, FRLN, GLOA, GOVT, PHIL, PSYC, SOCI, WMST, and other coursework with advisor approval	
Total Credits	16

Well-Being Minor

Banner Code: WELB

Academic Advising

402 Enterprise Hall
Fairfax Campus

Email: sisinfo@gmu.edu
Website: integrative.gmu.edu/programs/la-minor-nc-welb

This minor provides students with a well-grounded understanding of the nature of human well-being, including both the historical foundations and modern research findings. Through the required coursework, students develop an ability to implement personal practices that foster deeper self-awareness, resilience, mind-body wellness, the regulation of stress factors in his or her life, and an emerging sense of meaning for his or her life. Students will learn to creatively and effectively apply principles from the exploration of the science of well-being to his or her own field of study.

Faculty

Fuertes, Thurston, Weinstein

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must earn a minimum grade of 2.00 in all courses applied to the minor. For policies governing all minors, see the Undergraduate Policies section of this catalog.

Requirements

Minor Requirements

Total credits: 15

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Core Courses

Code	Title	Credits
INTS 355	Mindfulness, Meaning Well-Being	3
GCH 325	Stress and Well-Being (Mason Core)	3
Total Credits		6

Electives

Code	Title	Credits
Select two to three courses from the following:		9
COMM 304	Foundations of Health Communication	
COMM 305	Foundations of Intercultural Communication (Mason Core)	
COMM 334	Family and Health Communication	
GCH 310	Health Behavior Theories	
GCH 332	Health and Disease	
GCH 350	Health Promotion and Education	
GCH 360	Health and Environment	
GCH 445	Social Determinants of Health	
or SOCW 445	Social Determinants of Health	
HEAL 351	Relationship Health	
HEAL 372	Health Communication	
INTS 305	Conflict Resolution and Transformation	
INTS 314	Conflict, Trauma and Healing	
INTS 315	Spirituality and Conflict Transformation (Mason Core)	
INTS 337	Social Justice Consciousness and Action	
INTS 356	Foundations of Resilience and Well-Being	
INTS 455	Consciousness and Transformation in Action	
INTS 456	Self-Care and Well-Being for Helping Professionals	
MUSI 455	Music as a Healing Art	
MUSI 477	Music and Consciousness	
PHIL 251	Happiness and the Good Life	
PRLS 300	People with Nature	
PSYC 408	Psychological Fitness	
PSYC 417	Science of Well Being	

RELI 337	Mysticism: East and West
RELI 341	Global Perspectives on Spirituality and Healing (Mason Core)
Total Credits	9

Women and Gender Studies Program

Phone: 703-993-2896
Website: wmst.gmu.edu

By choosing to pursue work in women and gender studies, students at all levels engage in an interdisciplinary exploration of gender in social, political, cultural, and economic life; gender in history; women and the media; feminist theory; the relationship between sex and gender; the impact of sex, race, class, disability, and sexual orientation on people's lives; and the ways in which gender stereotypes influence the self in relationship to others. Students in many courses have the opportunity to investigate these issues in a cross-cultural and global perspective.

Undergraduate Programs

The Women and Gender Studies Program offers two interdisciplinary minors. The minor in women and gender studies and the minor in LGBTQ studies are open to students from any major. Students have the opportunity to earn credit toward the minor while doing an internship that helps prepare them for the work place, a service learning course that combines work in a specific course with a service project, or research on gender issues on Mason's campus. Students pursuing these minors can take advantage of the many activities and resources provided by the Women and Gender Studies Center.

The program also sponsors the concentration in women and gender studies in the BA in integrative studies.

Graduate Programs

The program sponsors the concentration in women and gender studies in the master's degree in interdisciplinary studies (MAIS). This concentration promotes advanced scholarship that transcends traditional boundaries. Students combine required coursework in women and gender studies with courses in a discipline of interest such as history, literature, sociology, anthropology, health, education, philosophy, social work, conflict analysis and resolution, or the arts.

The program also offers a graduate certificate in women and gender studies. Students may take this as a stand-alone certificate or pursue it concurrently with any graduate degree program. A portion of the certificate coursework may be applied to the degree with the approval of the director of the graduate degree and dean. Students must apply and be accepted to a graduate certificate program.

Women and Gender Studies Center

The academic program in women and gender studies is integrated with the Women and Gender Studies Center (https://wgstcenter.gmu.edu/). The center organizes a wide variety of lectures, conferences, workshops, and other public events throughout the year. The center houses a library and functions as a community space for students and faculty.

Faculty

Core Faculty

Adams, Corwin, Lewis

Program Faculty

Baily, Davis, Diener, Dunne, Fuchs, Hanrahan, Harvey, Hirsch, Jones, Jordan, J. Kim, Manuel-Scott, Rudes, Xiong

Affiliate Faculty

Amireh, Bemak, Best, Cattaneo, C. Chen, Cherubin, Chesler, Chung, Copelman, Dakake, Dwyer, Eby, Goodman, Hemmann, Hughes Rinker, Karametou, Kirsch, Koch, Kravitz, Lindley, Michals, Olson, Owen, Parsa, Peters, Pichichero, Rabin, Samuelian, Sandole-Staroste, Stearns, Usher, Zylstra

Programs

- LGBTQ Studies Minor
- Women and Gender Studies Graduate Certificate
- Women and Gender Studies Minor

LGBTQ Studies Minor

Banner Code: LGBT

240K Johnson Center
Fairfax Campus

Email: wmst@gmu.edu
Website: wmst.gmu.edu/

Overview

The LGBTQ Studies minor is designed to engage students in the interdisciplinary field of LGBTQ studies through an intersectional framework. The courses will draw from the history of the LGBTQ movement in the United States as well as transnational movements on debates around gender and sexuality. Courses will also focus on theoretical frameworks important in LGBTQ studies such as queer theory, crip theory, feminist theory, and critical race theory. In addition to this focus, courses will also draw from activist frameworks to discuss LGBTQ issues. With these frameworks, students will explore issues of policy, legislation, media representation, theoretical debates, and activism within LGBTQ communities. This minor will prepare them to construct arguments and apply theory to practice in LGBTQ related coursework and professional organizations.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. For policies governing all minors, see the Undergraduate Policies section of this catalog.

Requirements

Minor Requirements

Total credits: 18

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Core Courses

Foundational Course

Code	Title	Credits
WMST 208	Introduction to Lesbian, Gay, Bisexual, Transgender, and Queer Studies	3
Total Credits		3

Theory Course

Code	Title	Credits
WMST 402	Queer Theory	3
Total Credits		3

LGBTQ Issues in Institutional Contexts

Code	Title	Credits
Select 3 credits from the following:		3
WMST 319	Gender, Health, and Culture in the United States	
WMST 375	Gender, Race, Sexuality, and TV	
WMST 399	Current Topics in LGBTQ Studies (in consultation with the minor advisor)	
WMST 409	Gender, Sexuality, and International Migration	
WMST 412	Race, Class, and LGBTQ Communities	
WMST 413	LGBTQ Issues in Education	
WMST 415	LGBTQ Health	
Other special topics courses with the approval of the minor advisor		
Total Credits		3

Electives

Code	Title	Credits
Select 9 credits that focus on sexuality studies not already used for above requirement. Six credits must be at the 300- or 400-level.		9
ENGH 370	Introduction to Documentary (Mason Core)	
ENGH 418	Cultural Constructions of Sexualities	
GCH 370	Sexuality and Human Behavior	
GCH 450	Culture, Sexuality and the Global AIDS Epidemic	
INTS 347	Gender Representation in Popular Culture (Mason Core)	
WMST 200	Introduction to Women and Gender Studies (Mason Core)	
WMST 300	Current Issues in Women and Gender Studies (with approval when topic is appropriate)	
WMST 318	Gender, Social Justice, and Activism (LLC course; with approval when topic is appropriate)	
WMST 330	Feminist Theories of Gender, Sexuality, and Race	
WMST 375	Gender, Race, Sexuality, and TV	
WMST 399	Current Topics in LGBTQ Studies	
WMST 404	Gender, Sexuality, and Disability	
WMST 407	Transnational Sexualities	
WMST 408	Gender, Sexuality, and Human Rights	
WMST 409	Gender, Sexuality, and International Migration	
WMST 412	Race, Class, and LGBTQ Communities	
WMST 413	LGBTQ Issues in Education	
WMST 415	LGBTQ Health	
WMST 450	Current Topics in Women and Gender Studies (with the approval of the minor advisor)	
Other special topics courses with the approval of the minor advisor.		
Total Credits		9

Women and Gender Studies Graduate Certificate

Banner Code: LA-CERG-WGST

Academic Advising

240K Johnson Center
Fairfax Campus

Email: wmst@gmu.edu
Website: wmst.gmu.edu/programs/la-cerg-wgst/

The graduate certificate may be taken alone or in conjunction with another graduate program. Courses applied to the certificate may be applied to a degree program, subject to approval of the director of the respective program.

Admissions & Policies

Admissions

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions. For information specific to the graduate certificate in women and gender studies, see Application Requirements and Deadlines (http://wmst.gmu.edu/programs/LA-CERG-WGST/application/).

Policies

In accordance with university policy, students may transfer up to 3 graduate credits earned at another accredited institution to the certificate program with the approval of the director of the program and the dean. They may transfer up to 6 graduate credits earned at Mason in non-

degree status toward the certificate, subject to approval of the director and the dean in accordance with university policy.

For policies governing all graduate certificates, see AP.6.8 Requirements for Graduate Certificates.

Requirements

Certificate Requirements

Total credits: 15

This certificate may be pursued on a full-or part-time basis.

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Core Courses

Code	Title	Credits
WMST 630	Feminist Theories	3
WMST 640	Transnational Issues of Gender and Race	3
Total Credits		6

Electives

Code	Title	Credits
Select 9 credits from the following:		9
Any WMST graduate course at the 500- or 600- level		
SOCI 605	Gender and Social Structure	
SOCI 634	Qualitative Research Methods	
INTS 534	Research for Social Change	
INTS 537	Critical Race Studies	
INTS 538	Representations of Race	
INTS 540	Contemporary Issues in Social Justice Human Rights	
CONF 707	Gender and Violence	
Other special topics course with the approval of the graduate director		
Total Credits		9

Capstone Portfolio

Students synthesize their work in the certificate program by reflecting on how issues, ideas, and theories raised in the core courses inform their understanding of gender issues within their area of interest. The portfolio includes three to five items produced in previous coursework and a 7-10 page essay discussing them. The portfolio may include course papers, performance videos, photos of exhibits, music, or other items as agreed on by the student and advisor. The portfolio must be approved by the graduate advisor and submitted to the Women and Gender Studies Program, where it will be presented, displayed, and archived.

Code	Title	Credits
WMST 699	Capstone Portfolio	0

Women and Gender Studies Minor

Banner Code: WGST

Academic Advising

240K Johnson Center
Fairfax Campus

Email: wmst@gmu.edu
Website: wmst.gmu.edu/programs/la-minor-wgst-wgst/

This minor is for students who are interested in gender, sexuality, and feminist perspectives. While it is an especially good complement to a major in the humanities, social sciences, health and human services, or natural sciences, it is open to students in any major in the university.

The interdisciplinary minor consists of two required courses and four electives. Students interested in feminist and gender issues choose their elective courses from a broad range of offerings.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. For policies governing all minors, see the Undergraduate Policies section of this catalog.

Requirements

Minor Requirements

Total credits: 18

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Core Courses

Code	Title	Credits
WMST 200	Introduction to Women and Gender Studies (Mason Core)	3
WMST 330	Feminist Theories of Gender, Sexuality, and Race	3
Total Credits		6

Electives

Students complete the minor with 12 credits of women and gender studies electives. Alternatively they can choose to focus their electives on gender based violence.

Code	Title	Credits
Interdisciplinary Historical Perspectives		
Select 3 credits from the following:		3
HIST 350	U.S. Women's History	
INTS 400	Temptress: Constructs of Sex and Power	
INTS 437	Critical Race Studies (Mason Core)	
WMST 307	Women and Work	
WMST 309	Black Social Movements: Gendering of Violence and Activism	
WMST 315	Women During the Enslavement Era	
WMST 317	Women's Activism: From Jim Crow to Black Power	
Other related Special Topics courses with approval		

Additional Electives

Select one WMST course		3
Select 6 credits of additional elective courses from the following:		6
Any undergraduate WMST course		
AFAM 200	Introduction to African American Studies (Mason Core)	
CHIN 328	Asian American Women Writers (Mason Core)	
HEAL 325	Human Sexuality	
HEAL 327	Women's Health	
PSYC 362	Psychology of Gender	
PSYC 466	Psychology of Intimate Relationships	
INTS 310	Violence and Gender	
INTS 312	Images and Experiences of Childhood: Social Construct, Literature, and Film	
INTS 317	Issues in Family Relationships (Mason Core)	
INTS 320	Construction of Differences: Race, Class, and Gender (Mason Core)	
INTS 346	Art as Social Action (Mason Core)	
INTS 347	Gender Representation in Popular Culture (Mason Core)	
INTS 400	Temptress: Constructs of Sex and Power	
INTS 405	Women and Leadership	
INTS 436	Social Justice Education (Mason Core)	
SOCI 309	Marriage, Families, and Intimate Life	
SOCI 315	Contemporary Gender Relations (Mason Core)	
SOCI 352	Social Problems and Solutions (Mason Core)	
SOCI 355	Social Inequality (Mason Core)	
Total Credits		12

Optional Focus in Gender Based Violence

Code	Title	Credits
INTS 310	Violence and Gender	3
Select 9 credits from the following:		9
WMST 400	Internship in Women and Gender Studies	
WMST 408	Gender, Sexuality, and Human Rights	
WMST 300	Current Issues in Women and Gender Studies	
WMST 406	Gender and Violence in Social Institutions	
WMST 409	Gender, Sexuality, and International Migration	
INTS 417	Human Trafficking and Smuggling	
INTS 314	Conflict, Trauma and Healing	
PSYC 382	Psychology of Crime Victims	
PSYC 441	Criminal Behavior: Psychological and Neurological Aspects	
PSYC 466	Psychology of Intimate Relationships	
CONF 335	Justice and Reconciliation	
or CONF 399	Special Topics in Conflict Analysis and Resolution	
CONF 393	Violence: Causes, Dynamics Alternatives	
CRIM 490	Special Topics (when topic is social inequality crime, and justice)	
CRIM 404	Crime Victims and Victimization	
GCH 626	Migrant Health	
GCH 445	Social Determinants of Health	
or SOCW 445	Social Determinants of Health	
SOCI 215	Gender and Society	
SOCI 315	Contemporary Gender Relations (Mason Core)	
SOCI 388	Violence and Religion (Additioal course with the approval of the minor advisor)	
Total Credits		12

College of Science

1450 Exploratory Hall
Fairfax Campus
MS 6A3

Undergraduate: ugradCOS@gmu.edu
Graduate: COSgrad@gmu.edu

Phone: 703-993-9532
Fax: 703-993-9033

Website: cos.gmu.edu

Administration

- Fernando R. Miralles-Wilhelm, Dean
- Ali Andalibi, Senior Associate Dean for Faculty Affairs and Strategic Initiatives
- Donna M. Fox, Associate Dean for Academic & Student Affairs
- Patrick M. Gillevet, Associate Dean for Research
- Padmanabhan Seshaiyer, Associate Dean for Curricular Initiatives and Community Engagement
- Tracy Mason, Assistant Dean for Strategic Communications
- Ute Shaw, Chief Business Officer
- Audrey Kelaher, Director of Development and Alumni Relations

College Code: SC

The College of Science at George Mason University is a leader in scientific discovery and the creation of innovative solutions for the rapidly-changing needs of today's world. The college prides itself in being home to a diverse population of students from across the U.S. and around the world. Here in our college, we are a magnet for minds interested in scientific disciplines and we offer enhanced undergraduate and graduate research opportunities to our students. The college is also one of Mason's leaders in entrepreneurship and is home to the NSF I-Corp Site grant. With new discoveries, we are adding to Mason's portfolio of patents, licenses, and spin-off companies.

The College of Science blends traditional science education with sought-after programs in disciplines as diverse as personalized medicine, infectious diseases, drug discovery, geoinformatics, chemistry, climate dynamics, environmental conservation, materials science, astronomy, forensic science, computational science, and applied mathematics. We encourage meaningful research at all levels of learning, pairing high

achieving undergraduate students with faculty mentors to undertake original projects. Many of our undergraduates go on to pursue advanced degrees in the sciences or medical professions, while others pursue careers in public service, nonprofit organizations, and the private sector. We also offer innovative minors, certificates, and graduate degree opportunities, as well as global, transfer-focused, and online or hybrid programs that allow professionals the opportunity to reskill or change careers.

The College of Science serves the university through teaching Mason Core courses in a variety of scientific disciplines and is a leader in the development of creative STEM initiatives to challenge and engage students at all levels. The college also serves the community and region as a resource for science education for K–12 students, teacher training, and community outreach programs. Our faculty strive to impart creativity, rigorous, analytical thinking, and clear communication as they help students explore new ideas and develop novel approaches to problem-solving. Students are thus prepared for their role as informed citizens in a complex, global society and are able to adapt to an ever-changing world.

Requirements & Policies

College Policies

The students of the college are governed by the policies and procedures of the university. Areas where the college provides additional guidance will be found in the Undergraduate Education and Graduate Education sections below.

Accommodations for Disabled Students

Students with documented disabilities should contact the Office of Disability Services (http://ds.gmu.edu/) (703-993-2474) to learn more about accommodations that may be available to them.

Undergraduate Education

The college offers numerous certificates, Bachelor of Arts, and Bachelor of Science degrees. These undergraduate degrees consist of coursework in the Mason Core, in a major area of study, and in elective courses. To earn a bachelor's degree, students must at a minimum:

- Complete 120 credits, of which at least 45 must be in upper-level courses (numbered 300 and above).
- Complete at least one course designated as "writing intensive" (at the 300 or 400-level).
- All entering students who have not yet satisfied the Mason Core requirement in 'Quantitative Reasoning' are required to take the Math Placement Test (http://math.gmu.edu/placement_test.php) prior to enrollment.
- Students should also consult AP.5 Undergraduate Policies for information concerning university-wide requirements for undergraduate degrees.

All students are responsible for meeting with their academic advisor and reviewing their transcripts and degree audits regularly to ensure that they are correct and meet all requirements. Transfer students are encouraged to meet with their academic advisor prior to registering for classes in order to review their transcripts and course equivalencies. In some cases, students may need to earn more than 120 credits to complete all of the requirements.

More information regarding the undergraduate programs administered by the college is available on the college's website (https://science.gmu.edu).

College-level Degree Requirements

The baccalaureate degree is designed to provide a broad knowledge of the world, develop in students the ability to think conceptually and critically, acquaint them with many different methods of inquiry, and provide skills to continue intellectual growth throughout life.

Bachelor of Arts

The Bachelor of Arts (BA) degree provides students with a breadth of knowledge as well as the necessary skills to make in-depth study of a major truly meaningful. In addition to the Requirements for Bachelor's Degrees and the Mason Core, students pursuing a BA degree must also complete the College Requirements for the BA Degree, and the degree program's requirements, both listed in the specific degree program's catalog page.

Bachelor of Science

The Bachelor of Science (BS) degree provides students with a more intensive approach to the technical core knowledge and concepts in their major field of study. Therefore, this curriculum has a reduced number of courses in humanities and social sciences in comparison with the BA degree in order to allow students to achieve greater depth in their majors. Students pursuing a BS degree must complete the Requirements for Bachelor's Degrees, including the Mason Core, and the requirements for their major. Requirements for each BS major are listed on the specific degree program's catalog page.

Minors

Students may elect to take a minor in addition to their major field of study. For policies governing all minors, see AP.5.3.4 Minors. Students interested in earning a minor should complete the Minor Declaration form (http://registrar.gmu.edu/forms/).

Teacher Licensure

Degree programs that help to prepare students for teaching careers are available in the following programs:

- Biology, BA
- Biology, BS
- Chemistry, BA
- Chemistry, BS
- Geology, BS
- Mathematics, BA
- Mathematics, BS
- Physics, BS

Students who wish to become teachers and who plan to seek teacher licensure should also consult the College of Education and Human Development and attend an information session early in their undergraduate career. For more information, visit the Graduate School of Education's website (http://gse.gmu.edu/).

Undergraduate Policies

Students should become familiar with the university's general academic policies in addition to those specific to each department. Please see AP.5 Undergraduate Policies.

Students with questions regarding exceptions to undergraduate academic policies and college-level requirements should contact the college's Office of Academic and Student Affairs (https://cos.gmu.edu/about/contact-us/) (email: ugradCOS@gmu.edu). Additional academic information (https://science.gmu.edu/academics/advising-student-support/) and forms (https://science.gmu.edu/academics/undergraduate-academic-affairs-forms/) are available online from the college's webpage.

Registration

Students are personally responsible for correctly registering for courses and paying all tuition and fees by the official university registration and payment deadlines. Instructors do not have the authority to add students to courses. All students should verify the accuracy of their enrollment before the end of the official add period. Calendars are available on the Office of the University Registrar's website (http://registrar.gmu.edu/calendars/).

Academic Load

Students should review the university policies regarding academic load in AP.1.2 Academic Load.

In order to be considered for an overload, students must fulfill all of the following criteria:

- Be in good academic standing,
- Have completed the prior semester with a GPA of 2.75 or higher,
- Have a cumulative GPA of 2.75 or higher,
- No grades of 'C-' or lower in the previous semester,
- Have demonstrated in prior semesters at George Mason the ability to handle an increased and demanding course load while maintaining high performance, and
- Have no remaining incompletes ('IN') from a previous semester

Freshmen and transfer students in their first semesters are not given permission for overloads as they have yet to establish an academic record at Mason.

If approved for an overload, the student is responsible for adding the additional class(es) and paying for the related tuition and fees by the official university deadlines. Calendars are available on the Office of the University Registrar's website (http://registrar.gmu.edu/calendars/).

Excluded Courses

The college's students are limited to 3 credits of coursework in Recreation (RECR) activity courses which may be taken to satisfy degree requirements and applied as general elective credits toward a degree in the college.

Military Science courses MLSC 400 Leadership and Management and MLSC 402 Leadership and Ethics can be used for credit toward a degree in the college, but credit from other MLSC courses may not be applied toward the college's degrees.

Once matriculated at Mason, students may not take CLEP exams and apply credits from those exams toward the college's degrees. Students may apply credits from CLEP exams to the college's degrees only if those credits were awarded and reported prior to admission.

University Consortium Registration

Students should review the university policies in AP.1.4 Special Registration Procedures, including the University Consortium listing.

In addition, students who have failed a course at Mason are not permitted to take the equivalent course through the consortium under any circumstances. All consortium registration requests must be submitted to the Office of Academic and Student Affairs (https://cos.gmu.edu/about/contact-us/) at least three weeks prior to the first day of classes for the relevant semester at Mason.

Permission to Study Elsewhere

Once enrolled in degree status at Mason, students with less than 60 hours of earned transfer credits (excluding any credits earned through the Consortium of Universities of the Washington Metropolitan Area (https://www.consortium.org/) or through Mason Abroad (http://studyabroad.gmu.edu/)) may take no more than 9 credits of coursework in the college's disciplines at another institution.

Students with 60 or more hours of transfer credits are prohibited from taking additional coursework in the college's disciplines at another institution. Students may request special permission for additional credits beyond these listed limits for summer registration if their permanent residence is more than 50 miles from Mason's Fairfax campus. See AP.1.4.2 Permission to Study Elsewhere for more information.

Study Abroad

In order to be considered for study through Mason Abroad (http://studyabroad.gmu.edu/), students must plan well in advance and receive prior, written permission from the college's associate dean for student affairs. Students must also meet all of the following criteria:

- Meet all eligibility criteria for their program as specified by Mason Abroad (http://studyabroad.gmu.edu/), including minimum GPA requirements,
- Completed the immediately preceding semester at Mason with a GPA of 2.00 or higher, and
- Completed the necessary forms and obtained all required signatures and course equivalencies.

Mason Abroad (http://studyabroad.gmu.edu/) may have higher academic standards and students must meet all eligibility requirements.

Students in danger of probation, suspension, or dismissal should plan very carefully before requesting to study abroad. Students who are not in good academic standing will not be permitted to study abroad.

Leave of Absence

Please consult AP.1.8 Undergraduate Leave of Absence regarding the leave of absence policy.

Withdrawals

Courses for which a withdrawal is approved receive a grade of 'W'.

Students are responsible for all courses in which they remain officially enrolled once the drop period has ended. Please review the applicable academic calendar (http://registrar.gmu.edu/calendars/) for pertinent dates.

Instructors do not have the authority to withdraw students from classes. Withdrawals require the approval of the college's associate dean for student affairs, are typically allowed only for full semesters at a

time (all enrolled courses), and are only permitted for non-academic reasons. Withdrawals cannot be approved for academic reasons. When submitting a withdrawal request, students must provide verifiable, third-party documentation for the reason for the withdrawal. Requests for withdrawals should be submitted as early in the semester as possible, and never after the last day of classes.

Credits graded 'W' do not affect a student's GPA, but do count as attempted hours. The total attempted hours and cumulative GPA determine a student's academic standing. If the cumulative GPA is below 2.00, withdrawals may affect whether a student will be on warning, probation, suspension, or dismissal. Students should be familiar with AP.5.2.3 Student Retention Categories.

Academic Clemency

Students should review the university policies regarding academic clemency in AP.5.2.9 Academic Clemency.

In extraordinary cases, students who (a) have been absent from Mason for a minimum of three consecutive calendar years, and (b) are currently in their first semester back at the university may request that the college's associate dean for student affairs consider allowing clemency from up to 16 hours of coursework from previous semesters.

To be considered for this clemency, students must meet all of the following criteria:

- Be absent from Mason for a minimum of three consecutive calendar years,
- Provide a detailed explanation for why they were unsuccessful in those courses and how they have made changes to ensure their academic progress upon their return,
- Submit their request within 12 months of the first day of the re-enrollment term,
- In order to make this request, students should
  a. Enroll in at least 6 hours during their first 12 months back at Mason and
  b. Earn a minimum GPA of 2.50 each semester back prior to making the clemency request, with no grade below 2.00.

If these minimum academic requirements are not met during the first semester of return, then clemency will not be allowed under any circumstances.

Appeals Process

Students may appeal departmental decisions concerning academic actions to Office of Academic and Student Affairs (https://cos.gmu.edu/about/contact-us/). They may further appeal the decisions of Office of Academic and Student Affairs (https://cos.gmu.edu/about/contact-us/) to the Dean's Council, a committee composed of college deans and faculty members. These levels of appeal are subject to the limits below concerning the final level of appeal for each type of academic action. Students who feel that the college appeal process was conducted unfairly may appeal to the Office of the Provost as specified in Student Rights and Responsibilities.

Grade appeals should first be made to the department or program, following the process specified in AP.3.9 Grade Appeals. If they are resolved within the department or program, that is the final level of appeal. The departmental decision may be appealed to the college's associate dean for student affairs only on the basis of procedural irregularity. Such appeals should be made through the Office of Academic and Student Affairs (https://cos.gmu.edu/about/contact-us/). If the grade appeal is not resolved within the department or program, the chair makes a recommendation to the college's associate dean for student affairs, who makes the final determination. The decision of the associate dean is not subject to review or further appeal.

Departments set the requirements for the majors and minors that they administer. Substitutions and waivers of requirements require the approval of Office of Academic and Student Affairs (https://cos.gmu.edu/about/contact-us/). When a department denies a substitution or waiver of a requirement, this decision may be appealed to the Office of Academic and Student Affairs (https://cos.gmu.edu/about/contact-us/) on the basis of procedural irregularity only, and is the final level of approval.

The Dean's Council is the final level of appeal for course overloads, consortium registration, study elsewhere, and withdrawals after the drop deadline within the semester.

The college's associate dean for student affairs is the final level of appeal for college-level requirements, retroactive adds, withdrawals, graduation, and return from suspension and dismissal.

There is no waiver or appeal of satisfactory performance standards (minimum grades or grade point average, GPA) that have been set by the department or program faculty for the courses in their major or minor.

Students should file all appeals in a timely manner, usually within the semester in which the original decision is rendered, but no later than the final day of classes in the following semester.

Grievances

Grievances should be directed in writing to the college's associate dean for student affairs. The Office of Academic and Student Affairs (https://cos.gmu.edu/about/contact-us/) may also provide guidance to students on how to resolve their concerns.

Transfer Students

Admitted and enrolled transfer students who have completed an AA, AS, or AA&S degree from the Virginia Community College System (VCCS) and have been offered admission to Mason by the Office of Admissions (https://www2.gmu.edu/admissions-aid/) may be eligible for a waiver of all of Mason's lower level Mason Core requirements in accordance with the Guaranteed Admission Agreement. Students eligible for this waiver are still required by the university to complete ENGH 302 Advanced Composition (Mason Core) and a synthesis course. Transfer students who have been offered admission under the terms of the Guaranteed Admission Agreement and are pursuing a degree in the college are considered to have met all college requirements except for proficiency in a foreign language (required of BA students).

Students with a bachelor's degree from an accredited institution who are pursuing a BA degree in the college are also considered to have met all college requirements except for proficiency in a foreign language.

Graduate Education

Mason's College of Science offers numerous graduate certificates, master's programs, and doctoral programs; the requirements for each can be found in the program's description in this catalog. More information regarding the college's graduate programs is available on the college's website (https://cos.gmu.edu/academics/graduate-academics/).

Graduate Admission

Admissions decisions are made by the faculty committee in the respective graduate program. Denial of admission is not subject to appeal. Further information can be found in Graduate Admission Policies.

Provisional and Conditional Admission

Provisionally admitted students are not eligible to participate in any consortium coursework, studying at another institution, or study abroad programs until the conditions of the provisional contract have been met. Transfer of credit requests for coursework taken in non-degree status at Mason or another institution will not be considered until the provisional contact has been fulfilled. Further information on provisional admission can be found in Graduate Admissions Policies.

Details on conditional admission, the need for additional requirements to be met before enrollment, can be found in Graduate Admission Policies (https://catalog.gmu.edu/admissions/graduate-policies/#text).

Non-degree Enrollment

The college gladly admits qualified students for non-degree studies. Some of the factors that are considered by the college while making non-degree admissions decisions include: previous academic performance, professional experience, and academic fit. To apply, applicants are to complete the non-degree George Mason University Graduate Application (https://www2.gmu.edu/admissions-aid/apply-now/) and provide official transcripts from all institutions attended. Further information can be found in Non-degree Enrollment and on the Office of Admissions' website (http://admissions.gmu.edu/nonDegree/).

Upon admission to graduate non-degree studies, students are considered graduate students and are charged tuition accordingly (regardless of the course's level). The college permits up to 12 credits of relevant graduate coursework earned in non-degree status to be considered for transfer into many of its graduate programs.

Reduction of Credits

Students accepted into a master's or doctoral program who have earned a degree in a relevant field from a regionally accredited institution may be eligible for a credit reduction. Students must request a reduction of credit from the graduate program director of their graduate program; reductions must be approved by both the graduate program director and the college's associate dean for student affairs. Further details and related restrictions can be found in AP.6.5.2 Reduction of Credits.

Transfer of Credit

Graduate credit earned prior to admission may be eligible to apply toward a graduate certificate or degree program. Details and related restrictions can be found in AP.6.5.3 Transfer of Credit. Additionally, courses with grades of 'P' or 'S' are not accepted for transfer unless the official transcript indicates that the grade is equivalent to a 3.00 ('B') or better. Some programs have more stringent standards regarding a transfer of credit; students should contact their graduate program for specific information.

Credit from Other Institutions (Permission to Study Elsewhere)

Students enrolled in a degree program may take graduate courses at another regionally accredited institution and apply these credits to a master's or doctoral degree with prior approval. Details and related restrictions can be found in AP.6.5.4 Permission to Study Elsewhere. Students enrolling in courses at other institutions with different drop/add timetables must still abide by Mason's drop/add deadlines in terms of acquiring necessary approvals.

Academic Load

Graduate students can enroll in up to 12 credits each semester; non-degree graduate students can enroll in up to 10 credits each semester. Students should review the university's policies in AP.1.2 Academic Load.

University Consortium

Students should review university policies regarding the University Consortium under AP.1.4.9 University Consortium.

In addition, in order to register for a consortium course, students must have an overall GPA of at least 3.00 and be in good academic standing. Students with grades of 'IN' on their record or who earned grades of 'C' or 'F' in the most recent semester are not eligible to register for a consortium course. Students who have received a grade less than 3.00 in a consortium course are not permitted to enroll in additional consortium courses. Newly admitted graduate students are not permitted to enroll in consortium courses during their first semester of graduate study. Students who wish to enroll in consortium courses during their second semester of study must wait until the grades for the previous semester have been posted.

Dissertation Committee

The college follows university policies regarding dissertation committees. Please see AP.6.10.5 Dissertation Committee. Please note that some programs within the college may have a more stringent policy.

Dissertation (998/999) Registration

Most programs within the college follow university policies regarding dissertation registration; please see AP.6.10.6 Dissertation Registration (998, 999). Some departments may require additional requirements.

Time Limit for Doctoral Students

The college follows university policies regarding doctoral time limits. Please see AP.6.10.1 Time Limit. If your catalog term was before this current catalog, please visit the archived catalogs page (http://catalog.gmu.edu/archives/) and find your catalog term's policy on time limits.

Requests for extension of time limits must be submitted in writing to the college's associate dean for student affairs. The request should explain the extenuating circumstances that prevented timely completion of the degree, corrective action that has been taken to address those circumstances, and a time line for completing the work within the limits of the extension. The request should include a letter from the student's graduate program director indicating the program's support for the extension and confirmation that the work can be completed within the limits of the extension.

Graduate Appeals of Termination

All graduate students should be familiar with the university's polices on termination; please see AP.6.6.2 Academic Termination. Students who meet the criteria for academic termination may submit a written appeal to the college's associate dean for student affairs. Appeals should include all relevant information on the basis for appeal, as well as any appropriate documentation and a letter of support from the graduate program.

Appeals of termination are reviewed by the college's associate dean for student affairs with input from appropriate faculty within the student's department. The ruling represents the college's final decision.

Academic Units

- Department of Atmospheric, Oceanic and Earth Sciences
- Department of Biology
- Department of Chemistry and Biochemistry
- Department of Computational and Data Sciences
- Department of Environmental Science and Policy
- Department of Geography and Geoinformation Science
- Department of Mathematical Sciences
- Department of Physics and Astronomy
- Forensic Science Program
- Interdisciplinary Program in Neuroscience
- School of Systems Biology

Programs

- Advanced Biomedical Sciences Graduate Certificate
- Pre-Medical Undergraduate Certificate
- STEM in Society Minor (COS)
- Scientific Leadership and Practice Minor

Note:

See individual academic units within the college for additional program offerings.

Advanced Biomedical Sciences Graduate Certificate

Banner Code: SC-CERG-ABS

Academic Advising

308 Bull Run Hall
Science and Technology Campus

Phone: 703-993-7136
Website: science.gmu.edu/academics/departments-units/georgesquared

The Advanced Biomedical Sciences (ABS) graduate certificate is a program offered jointly by George Mason University and Georgetown University Medical Center (GUMC) (http://gumc.georgetown.edu/). This program is designed for students who have all of their core coursework and extracurricular prerequisites for medical, dental or other health-related fields, but otherwise have a comparatively limited science background (non-science majors with only the pre-health curricular core, for example), modest grades in the sciences as undergraduates, and/or also need to improve their Medical College Admission Test, Dental Admission Test, or other pre-professional scores. This is a 9-month full-time program that begins each fall semester. Most classes are held at George Mason University's Science and Technology Campus in Manassas, Virginia with cadaveric anatomy labs held at GUMC.

The graduate certificate may be pursued on a full-time basis in either a lecture-based format or a hybrid format using recorded lectures and a discussion-based classroom experience. The program is premium-priced with no tuition distinction between the in-state or out-of-state residency status.

This certificate program qualifies for Title IV Federal Financial Aid.

Affiliated Faculty

Banerjee, Partha; Castilla, Marina; Djakiew, Daniel; Downey, Ryan; Johnson, Michael; Mulroney, Susan; Myers, Adam; Notario, Vicente; Whitney, Jennifer

Admissions & Policies

Admissions

University-wide admissions policies can be found in Graduate Admissions Policies.

To apply for this program, please complete the George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now/).

Applicants are expected to have a bachelor's degree from an institution of higher education accredited by a Mason-recognized U.S. institutional accrediting agency or international equivalent, the desire to pursue a career in medicine, dentistry, or other health-related career, completion of all of the prerequisite courses for medical or dental school (one year each of biology, chemistry, organic chemistry, physics and math), and overall credentials suitable for acceptance to graduate programs in the College of Science at George Mason University and the Georgetown University Graduate School of Arts and Sciences.

Policies

For policies governing all graduate programs, see AP.6 Graduate Policies.

Requirements

Certificate Requirements

Total credits: 20

This certificate may be pursued on a full-time basis only.

Students should refer to the Admissions & Policies tab for specific policies related to this certificate.

Coursework

Fall Semester	Credits	Spring Semester	Credits
BMED 601	4	BMED 604	5
BMED 602	3	BMED 605	3
BMED 603	3	BMED 651	1
BMED 652	1		
	11		9

Total Credits 20

Pre-Medical Undergraduate Certificate

Banner Code: SC-CERB-PMCL

Donna M. Fox, Ph.D.

Phone: 703-993-9532

The Pre-Medical Undergraduate Certificate is a premium program offered to enlisted members of the U.S. military who are chosen specifically from a federal program referred to as EMDP2 (Enlisted to Medical Degree Preparatory Program). This is a post-baccalaureate program aimed at active duty military enlisted members who have earned a bachelor's degree from a regionally accredited institution with a minimum cumulative GPA of 3.0, who have experience working in a health-related position in the military, and who meet all other requirements specified by the Uniformed Services University of the Health Sciences (USU) (https://www.usuhs.mil/), and who are interested in matriculating at the Uniformed Services University (military medical school) or another US accredited medical school. Only those individuals who are supported by EMDP2 are eligible to enroll in the Pre-Medical Undergraduate Certificate.

The Pre-Medical Undergraduate Certificate will provide a one-year undergraduate program that will allow qualified individuals to complete undergraduate pre-medical admissions requirements as currently specified by the American Association of Medical Colleges (https://www.aamc.org/) (AAMC).

This is a full-time program offered during the day and located at the Science and Technology Campus of George Mason University. Students are selected by the US military and are admitted as a cohort in the fall semester only.

Admissions & Policies

Admissions

University-wide admissions policies can be found in the Undergraduate Admissions Policies section of this catalog.

Applicants must be active duty military and selected by the EMDP2. Students are expected to have a bachelor's degree from a regionally accredited university and the desire to pursue a career in military medicine.

Applicants who do not meet the admissions requirements for this certificate may be interested in learning about the Career Changer's Biological Sciences Undergraduate Certificate.

Policies

For policies governing all undergraduate programs, see AP.5 Undergraduate Policies.

Requirements

Certificate Requirements

Total credits: minimum 42

This certificate may be pursued on a full-time basis only.

Students should refer to the Admissions & Policies tab for specific policies related to this certificate.

Coursework

Code	Title	Credits
Summer Semester One		
CHEM 211 & CHEM 213	General Chemistry I (Mason Core) and General Chemistry Laboratory I (Mason Core)	4
Fall Semester		
BIOL 213	Cell Structure and Function (Mason Core)	4
CHEM 212 & CHEM 214	General Chemistry II (Mason Core) and General Chemistry Laboratory II (Mason Core)	4
PHYS 243 & PHYS 244	College Physics I (Mason Core) and College Physics I Lab (Mason Core)	4
Spring Semester		
BIOL 214	Biostatistics for Biology Majors	4
BIOL 311	General Genetics	4
CHEM 463	General Biochemistry I	4
PHYS 245 & PHYS 246	College Physics II (Mason Core) and College Physics II Lab (Mason Core)	4
Summer Semester Two		
CHEM 313 & CHEM 315	Organic Chemistry I and Organic Chemistry Lab I	5
CHEM 314 & CHEM 318	Organic Chemistry II and Organic Chemistry Lab II	5
Total Credits		42

Scientific Leadership and Practice Minor

Banner Code: SCLP

Academic Advising

Phone: 703-993-4594
Email: aacos@gmu.edu

This minor has been designed to build scientific communication, engagement, and leadership practices so that students are (i) equipped to communicate effectively about the science they undertake and the challenges they face in ways that are meaningful in relation to their field of study, and (ii) equipped with the skills to participate and lead others in scientific ventures.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 16-20

Students should refer to the Admissions & Policies tab for specific policies related to this program.

Code	Title	Credits
Science Literacy Core		
COS 300	Professional Preparation for STEM Disciplines	3
COS 400	Problem Solving and Leadership in STEAM	3
Leadership or Communication		
Choose one course from the following:		3-4
EVPP 429	Environmental Science Communication	
COMM 302	Media Theory	
COMM 304	Foundations of Health Communication	
COMM 320	Business and Professional Communication	
CONF 300	Conflict Resolution Techniques and Practice	
ENGH 376	Rhetoric and New Media	
ENGH 388	Professional and Technical Writing	
ENGH 489	Proposal Writing and Development	
INTS 204	Leadership Theory and Practice	
INTS 406	Global Leadership (Mason Core)	
INTS 435	Leadership in a Changing Environment	
Quantitative Reasoning		
Choose one course from the following:		3-4
MATH 111	Linear Mathematical Modeling (Mason Core)	
MATH 113	Analytic Geometry and Calculus I (Mason Core)	
MATH 125	Discrete Mathematics I (Mason Core)	
Computational Thinking		
Choose one course from the following:		3
CDS 301	Scientific Information and Data Visualization	
CDS 302	Scientific Data and Databases	
GGS 110	Introduction to Geoinformation Technologies	
GGS 311	Geographic Information Systems	
PHYS 251	Introduction to Computer Techniques in Physics	
Internship		
Choose one course from the following: [1]		1-3
ASTR 409	Astronomy Internship	
CLIM 409	Research Internship	
GEOL 480	Internship	
CDS 491	Internship	
EVPP 494	Internship	
FRSC 406	Forensic Internship	
GGS 480	GGS Internship	
PHYS 409	Physics Internship	
Total Credits		16-20

[1] Or any other internship course as approved by the minor advisor.

STEM in Society Minor (COS)

Banner Code: STEM

The STEM in Society minor develops strategic and critical thinking capabilities to better understand how science, technology, engineering, and mathematics (STEM), as well as medicine, impact the human experience - past, present, and future. It provides a broad perspective of the STEM fields, to include how advances are developed, how they fit into the wider context of society and culture, and how historical contexts have in turn shaped advances in these fields.

The skills and competencies gained from this minor are useful to those seeking work in the tech and health care industries, as well as fields like international development and public policy or in non-profits, the government, or think tanks.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must earn a minimum grade of 2.00 in all courses applied to the minor. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 15

Required Course

Code	Title	Credits
HIST 315	STEM and Society: A History	3
Total Credits		3

Electives

Code	Title	Credits
Select 12 credits from any of the following courses		12
Historical		
HIST 202	Freshman/Sophomore Seminar in Global History	
HIST 378	History of Aviation	
HIST 390	The Digital Past	
BIOL 301	Biology and Society (Mason Core)	
COS 301	Great Ideas in Science (Mason Core)	
Medicine and Health		
PHIL 344	Ethical Issues in Global Health	
ANTH 363	Humans, Disease, and Death (Mason Core)	
ANTH 365	Scientific Racism and Human Variation	
ANTH 381	Medical Anthropology	

GCH 445	Social Determinants of Health
or SOCW 445	Social Determinants of Health
GCH 205	Global Health (Mason Core)
GCH 360	Health and Environment
Environment	
PHIL 243	Global Environmental Ethics (Mason Core)
ANTH 370	Environment and Culture
CEIE 100	Environmental Engineering around the World (Mason Core)
CLIM 101	Global Warming: Weather, Climate, and Society (Mason Core)
EVPP 436	The Human Dimensions of Global Climate Change
GGS 307	Geographic Approaches for Sustainable Development
Science and Technology	
PHIL 377	Darwin: Biology and Beyond (Mason Core)
ANTH 395	Work, Technology, and Society: An IT Perspective
ANTH 314	Zombies
SOCI 391	Big Data, Technology, and Society
INTS 301	Science in the News (Mason Core)
INTS 348	Digital Futures
IT 304	IT in the Global Economy
COS 400	Problem Solving and Leadership in STEAM
Policy	
EVPP 432	Energy Policy
EVPP 361	Introduction to Environmental Policy
NUTR 318	Global Nutrition and Food Security
NUTR 440	Nutrition Policy
BENG 475	
Special Topics Courses (with permission of minor director when topic is related to STEM in Society)	
HIST 387	Topics in Global History (Mason Core)
ANTH 396	Issues in Anthropology: Social Sciences (Mason Core)
ANTH 399	Issues in Anthropology
SOCI 395	Special Topics in Sociology
GLOA 400	Global Affairs Capstone (Mason Core)
GLOA 450	Topics in Global Affairs
ENGR 499	Special Topics in Engineering
INTS 375	Special Topics
INTS 475	Special Topics
NUTR 495	Nutrition and Food Studies Capstone
GCH 494	Special Topics in Global and Community Health
Total Credits	12

Department of Atmospheric, Oceanic and Earth Sciences

Phone: 703-993-5394

Website: aoes.gmu.edu

Administration

- Jim Kinter, Chair (through May 2021)
- Geoff Gilleaudeau, Graduate Program Director for Geology
- Stacey Verardo, Undergraduate Program Director for Geology
- Cristiana Stan, Undergraduate Program Director for Climate
- Barry Klinger, Graduate Coordinator for Climate

Scientists and students in the Department of Atmospheric, Oceanic, and Earth Sciences (AOES) are working to better understand our planet in myriad ways, from improving numerical model predictions of next year's atmospheric temperature to explaining geological strata laid down in previous eras, from monitoring water transport through the atmosphere to modeling water movement at the bottom of the ocean.

AOES is home to active research programs and to a doctoral program in Climate Dynamics, a master's degree in Earth Systems Science, undergraduate degrees in Atmospheric Science and Geology (BA and BS), and undergraduate minors in Atmospheric Science, Earth Science, Ocean and Estuarine Science, and Paleontology. The department has close ties to the Center for Ocean-Land-Atmosphere Studies (COLA) (http://cola.gmu.edu/).

Faculty

Department Faculty

Professors

DelSole, Dirmeyer, Hazen (Robinson Professor), Hinnov, Huang, Kinter (chair), Nord, Schneider, J. Shukla, Straus, Verardo

Associate Professors

Anders, Boybeyi, Chiu, Klinger, Mattietti, McBride, Stan, Tong, Uhen (associate chair)

Assistant Professors

Baddouh, Burls, Pegion

Research Faculty

Adams, Altshuler, Buckley, Cash, Chen, Doty, Erfani, Fennessy, Guo, Hao, Krishnamurthy, Manganello, Marx, Paolino, Shin, R. Shukla, Swenson, Trenary

Affiliate Faculty

Houser, Light, Lukes, Summers

Emeriti

Diecchio, Schopf

Programs

- Atmospheric Science Minor
- Atmospheric Sciences, BS
- Climate Dynamics, PhD
- Climate Science, MS
- Earth Science Minor

- Earth Systems Science, MS (AOES)
- Geology Minor
- Geology, BA
- Geology, BS
- Ocean and Estuarine Science Minor
- Paleontology Minor

Atmospheric Science Minor

Banner Code: ATMS

Dr. Cristiana Stan, Undergraduate Coordinator and Associate Professor

267 Research Hall
Fairfax Campus

Phone: 703-993-5391
Email: cstan@gmu.edu
Website: science.gmu.edu/academics/departments-units/atmospheric-oceanic-earth-sciences/majors-minors

Topics of study in this minor include weather forecasting, climate change, and the predictability of coupled ocean-atmosphere-land-variations. Students in physics, math, engineering, and computational sciences may be particularly attracted to this minor because it provides a compelling application of the fundamental methods of analysis learned in their major. Such students are ideal candidates for research in atmospheric science and climate dynamics; the minor will facilitate entry into graduate studies in these fields.

Students in Earth science, geography and geoinformation science, and environmental science may find this minor useful because the atmosphere is an important influence on geography, ecosystems, geological strata, and plays an important role in global change.

This is a Green Leaf program.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 17

This is a Green Leaf program.

Students should refer to the Admissions & Policies tab for specific policies related to this program.

Core Courses

Code	Title	Credits
CLIM 101	Global Warming: Weather, Climate, and Society (Mason Core)	3
CLIM 111	Introduction to the Fundamentals of Atmospheric Science (Mason Core)	3
CLIM 112	Introduction to the Fundamentals of Atmospheric Science Lab (Mason Core)	1
CLIM 301	Weather Analysis and Prediction	4
Total Credits		11

Electives

Code	Title	Credits
Select 6 credits from the following:		6
CLIM 314	Severe and Extreme Weather	
or GGS 314	Severe and Extreme Weather	
CLIM 408	Senior Research	
CLIM 412	Physical Oceanography	
CLIM 438	Atmospheric Chemistry	
or CHEM 438	Atmospheric Chemistry	
PHYS 475	Atmospheric Physics	
Total Credits		6

Atmospheric Sciences, BS

Banner Code: SC-BS-AOES

Dr. Cristiana Stan, Undergraduate Coordinator and Associate Professor

267 Research Hall
Fairfax Campus

Phone: 703-993-5391
Email: cstan@gmu.edu
Website: science.gmu.edu/academics/departments-units/atmospheric-oceanic-earth-sciences/atmospheric-sciences-bs

The undergraduate program in atmospheric sciences gives students a strong quantitative undergraduate education in atmospheric, climate, and related sciences to understand the basic principles behind current and emerging issues in weather, climate variability, and climate change. Students completing the atmospheric sciences degree will be prepared for a full range of career paths including forecast and analysis, operations and research support in meteorology, numerical weather prediction, data analytics, and climate. The curriculum meets the American Meteorological Society's (https://www.ametsoc.org/ams/) recommendations for a bachelor's degree in atmospheric sciences.

Admissions & Policies

Admissions

University-wide admissions policies can be found in the Undergraduate Admissions Policies section of this catalog.

To apply for this program, please complete the George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now/).

Policies

Students must fulfill all Requirements for Bachelor's Degrees, including the Mason Core.

The university's writing intensive requirement for the major will be met upon successful completion of CLIM 408 Senior Research.

For policies governing all undergraduate degrees, see AP.5 Undergraduate Policies.

Requirements

Degree Requirements

Total credits: minimum 120

This is a Green Leaf program.

Students should refer to the Admissions & Policies tab for specific policies related to this program.

A GPA of at least 2.00 is required for all core courses, with an overall GPA of at least 2.50.

Atmospheric Sciences Core

Code	Title	Credits
CLIM 102	Introduction to Global Climate Change Science (Mason Core)	4
CLIM 111	Introduction to the Fundamentals of Atmospheric Science (Mason Core)	3
CLIM 112	Introduction to the Fundamentals of Atmospheric Science Lab (Mason Core)	1
CLIM 301	Weather Analysis and Prediction	4
CLIM 408	Senior Research [1]	3
CLIM 411	Atmospheric Dynamics	3
CLIM 429	Atmospheric Thermodynamics	3
PHYS 475	Atmospheric Physics	3
Total Credits		24

[1] Fulfills the writing intensive requirement.

Chemistry

Code	Title	Credits
CHEM 211	General Chemistry I (Mason Core)	3
CHEM 213	General Chemistry Laboratory I (Mason Core)	1
Total Credits		4

Computer Science

Code	Title	Credits
Select one of the following:		3-4
CDS 130	Computing for Scientists	
CS 112	Introduction to Computer Programming [1]	
Total Credits		3-4

[1] Students selecting CS 112 must take an additional information technology ethics course in order to completely fulfill the Mason Core Information Technology requirement. Recommended courses include either CDS 151 Data Ethics in an Information Society (Mason Core) or CS 105 Computer Ethics and Society (Mason Core).

Mathematics

Code	Title	Credits
MATH 113	Analytic Geometry and Calculus I (Mason Core)	4
MATH 114	Analytic Geometry and Calculus II	4
MATH 213	Analytic Geometry and Calculus III	3
Total Credits		11

Statistics

Code	Title	Credits
STAT 250	Introductory Statistics I (Mason Core)	3
Total Credits		3

Physics

Code	Title	Credits
PHYS 160	University Physics I (Mason Core)	3
PHYS 161	University Physics I Laboratory (Mason Core)	1
PHYS 260	University Physics II (Mason Core)	3
PHYS 261	University Physics II Laboratory (Mason Core)	1
Total Credits		8

Options

Students in the atmospheric sciences major will select one of the following options in addition to the required courses above. These options reflect faculty expertise and provide two areas of research emphasis. The options will help in creating educated professionals who have the requisite training to support future weather and climate research, enabling the graduate's potential for providing substantial societal benefits.

Meteorology Option

This option is designed for students who are primarily interested in weather and weather forecasting. The required classes in this option emphasize atmospheric phenomena, especially those that have the greatest impact on society.

Code	Title	Credits
CLIM 312	Physical Climatology	3
or GGS 312	Physical Climatology	
or CLIM 440	Climate Dynamics	
CLIM 314	Severe and Extreme Weather	3
or GGS 314	Severe and Extreme Weather	
CLIM 319	Air Pollution	3
or GGS 319	Air Pollution	
Total Credits		9

Computational Atmospheric Sciences Option

The computational atmospheric sciences option gives students preparation in computational science, mathematics, and elements of numerical modeling in order to undertake quantitative research or operational work in a professional or graduate setting.

Code	Title	Credits
CLIM 470	Numerical Weather Prediction	3
MATH 214	Elementary Differential Equations	3

Select one from the following:		3
CDS 251	Introduction to Scientific Programming	
CDS 301	Scientific Information and Data Visualization	
CDS 302	Scientific Data and Databases	
CDS 303	Scientific Data Mining	
Total Credits		9

Required Electives

The required electives must be chosen from this list and be independent of courses taken in the selected option (Meteorology or Computational Atmospheric Sciences):

Code	Title	Credits
Select 9 credits from the following:		9
CDS 251	Introduction to Scientific Programming	
CDS 301	Scientific Information and Data Visualization	
CLIM 312	Physical Climatology	
or GGS 312	Physical Climatology	
CLIM 314	Severe and Extreme Weather	
or GGS 314	Severe and Extreme Weather	
CLIM 319	Air Pollution	
or GGS 319	Air Pollution	
CLIM 409	Research Internship	
CLIM 412	Physical Oceanography	
CLIM 438	Atmospheric Chemistry	
CLIM 440	Climate Dynamics	
CLIM 456	Introduction to Atmospheric Radiation	
or GGS 456	Introduction to Atmospheric Radiation	
CLIM 470	Numerical Weather Prediction	
GEOL 420	Earth Science and Policy (Mason Core)	
GGS 354	Data Analysis and Global Change Detection Techniques	
MATH 214	Elementary Differential Equations	
Total Credits		9

Mason Core and Elective Credits

In order to meet a minimum of 120 credits, this degree requires an additional 48-49 credits (dependent upon the course chosen for the Computer Science requirement), which may be applied toward any remaining Mason Core requirements (outlined below), Requirements for Bachelor's Degrees, and electives. Students are strongly encouraged to consult with their advisors to ensure that they fulfill all requirements.

Mason Core

Some Mason Core requirements may already be fulfilled by the major requirements listed above. Students are strongly encouraged to consult their advisors to ensure they fulfill all remaining Mason Core requirements.

Code	Title	Credits
Foundation Requirements		
Written Communication (ENGH 101)		3
Oral Communication		3
Quantitative Reasoning		3
Information Technology and Computing		3
Exploration Requirements		
Arts		3
Global Understanding		3
Literature		3
Natural Science		7
Social and Behavioral Sciences		3
Western Civilization/World History		3
Integration Requirements		
Written Communications (ENGH 302)		3
Writing-Intensive [1]		3
Synthesis/Capstone [2]		3
Total Credits		40

1 Most programs include the writing-intensive course designated for the major as part of the major requirements; this course is therefore not counted towards the total required for Mason Core.

2 Minimum 3 credits required.

Climate Dynamics, PhD

Banner Code: SC-PHD-CLIM

Dr. Barry Klinger, Graduate Coordinator

116 Research Hall
Fairfax Campus

Phone: 703-993-9227
Email: bklinger@gmu.edu
Website: science.gmu.edu/academics/departments-units/atmospheric-oceanic-earth-sciences/climate-dynamics-phd

The mission of this program is to train the next generation of scientists in climate dynamics and related fields. Through a comprehensive grounding in coursework, our students learn about how the atmosphere, ocean, and land surface work together to determine the climate. In collaboration with internationally-known scientists, students conduct independent work to further our understanding of climate, how it varies, and how much of it we can predict. Tools in the program include cutting-edge climate models, superb computing facilities, sophisticated statistical techniques, and comprehensive data sets. Our graduates have gone on to work at top laboratories and universities.

Understanding climate variability and predictability poses difficult mathematical, computational, and observational questions that have generated increasing intellectual excitement in recent years. Climate variability has important ramifications for society, from planning for next year's electrical demand and forecasting agricultural production to answering complex questions involving long-term change in global climate, sea level, and biodiversity. While it is impossible to predict day-to-day weather more than a few weeks in advance, progress in predicting El Niño supports the idea that seasonal averages of temperature, rainfall, and other factors may be at least partly predictable months or even years in advance. Likewise, there is a strong scientific basis for predicting long-term changes in global climate due to changing greenhouse gas concentrations.

Climate dynamics faculty members have a blend of expertise in dynamics, statistics, and computational methods. They are heavily involved with national and international collaborations. Faculty members and students work closely with scientists at the Center for Ocean-Land-Atmosphere Studies (COLA) (http://cola.gmu.edu/cola.html), a national leader in climate modeling.

Faculty research focuses on the areas of climate prediction and predictability, climate variability, coupled ocean-atmosphere-land dynamics, and dynamical systems and retrospective analysis. Recent research topics include predictability of weather and climate; modeling of the complex climate system; El Niño dynamics; monsoons; atmosphere-ocean interaction; land-climate interaction; decadal climate variability; ocean circulation theory; and climate change.

This has been designated a Green Leaf program.

Admissions & Policies

Admissions

University-wide admissions policies can be found in the Graduate Admissions Policies section of this catalog.

To apply for this program, please complete the George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now/).

Applicants should have demonstrated a high aptitude for quantitative reasoning, applied mathematics, and physical science. Applicants should have an undergraduate degree from an institution of higher education accredited by a Mason-recognized U.S. institutional accrediting agency or international equivalent with a GPA of at least 3.00 in undergraduate work, and a GRE verbal plus quantitative score of 301 (1,100 on the old scale). To apply, prospective students should submit a completed George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now/), a current résumé, three letters of recommendation, an expanded goals statement, and two copies of official transcripts from each college and graduate institution attended. An official report of scores obtained on the GRE-GEN should also be officially reported by ETS (https://www.ets.org/). The GRE requirement for admission to the doctoral programs can be waived if the student holds a master's degree from a regionally accredited U.S. institution. TOEFL scores are required of all international applicants who have not completed a master's degree in the United States.

Policies

For policies governing all graduate programs, see AP.6 Graduate Policies.

Reduction of Credit

For students entering the doctoral program with a master's degree in a related field from an institution of higher education accredited by a Mason-recognized U.S. institutional accrediting agency or international equivalent, the number of required credits may be reduced up to 30 credits, subject to approval of the program faculty and the college's associate dean for student affairs. See AP.6.5.2 Reduction of Credits for more information.

Requirements

Degree Requirements

Total credits: 72

This is a Green Leaf program.

Students should refer to the Admissions & Policies tab for specific policies related to this program.

Fundamental Climate Science Courses

Code	Title	Credits
CLIM 610	Introduction to the Physical Climate System	3
CLIM 614	Land-Climate Interactions	3
CLIM 711	Introduction to Atmospheric Dynamics	3
CLIM 712	Physical and Dynamical Oceanography	3
CLIM 751	Predictability and Prediction of Weather and Climate	3
Total Credits		15

Core Computational Courses

Code	Title	Credits
CLIM 680	Climate Data	3
or CSI 690	Numerical Methods	
CLIM 715	Numerical Methods for Climate Modeling	3
CLIM 762	Statistical Methods in Climate Research	3
Total Credits		9

Climate Seminar

Code	Title	Credits
CLIM 991	Climate Dynamics Seminar (taken three times)	3
Total Credits		3

Electives

Select 21 credits of graduate-level electives, including CLIM courses and other relevant courses as approved by the graduate coordinator[1].

Code	Title	Credits
CLIM courses		21
Total Credits		21

[1] Including up to 6 credits of CLIM 796 or CLIM 996.

Eligibility for Qualifying Exams

Satisfactory progress in the program is demonstrated by adequate research progress (as attested by the advisor) and by the student attaining a B- or higher in all CLIM courses and on the final exams of the “Core Climate” courses (CLIM 610 Introduction to the Physical Climate System, CLIM 614 Land-Climate Interactions, CLIM 711 Introduction to Atmospheric Dynamics, CLIM 712 Physical and Dynamical Oceanography). If any of these conditions are not met, the director of the Climate Dynamics program convenes a faculty committee to recommend whether the student should continue in the program. The director makes the final decision based upon input from the committee. A student who

is allowed to continue in the program may, in a later semester, retake any Core Climate final exam in which the student's score was below B-.

To be eligible for CLIM 997 Doctoral Qualification, students must have received a B- or higher on the final exam of each of the four Core Climate courses. Students who have taken the equivalent of any of these courses must take the Core course's final exam even if they do not take the course.

Qualifying Exams

Students take a qualifying exam by enrolling in CLIM 997 Doctoral Qualification. Students pass the exam by demonstrating an ability to analyze scientific problems, identify an open scientific question in climate dynamics, and outline a methodology to answer the question.

Students take CLIM 997 in their second spring semester in the program. Students who enter in the spring have the option of taking it in their 2nd or 3rd spring semester.

Code	Title	Credits
CLIM 997	Doctoral Qualification	3
Total Credits		3

Advancement to Candidacy

After the student has completed all coursework in CLIM 997 Doctoral Qualification, the Climate Dynamics Director decides whether the student continues in the doctoral program, based on performance in CLIM 997 and consultation with student's advisor and the instructors of CLIM 997 and Core Climate courses. To continue, the student forms a dissertation committee by the end of the following summer and thereafter enrolls in CLIM 998 Doctoral Dissertation Proposal.

Students who continue in the doctoral program are expected to submit a paper to a peer-reviewed journal, and to the dissertation committee, before the start of the Spring semester following the qualifier. If this deadline is not met, then the student submits a progress report to the thesis committee at the end of each semester until the paper is submitted. In all cases, student must satisfy the submission requirement before submitting and defending a dissertation proposal.

By the end of the student's third year, the student is expected to present a Dissertation Proposal to their thesis committee. The dissertation proposal will generally be an extension of the CLIM 997 proposal.

Once a dissertation committee approves the dissertation proposal and the student completes all non-dissertation program requirements, the student is formally advanced to doctoral candidacy.

Dissertation Research and Defense

After approval of the dissertation proposal, students are formally advanced to doctoral candidacy and produce the dissertation while taking CLIM 999 Doctoral Dissertation. The degree's requirements will be fulfilled upon completion of the required coursework and approval of a dissertation that makes an original and significant contribution to the field.

No more than 21 combined credits from CLIM 998 Doctoral Dissertation Proposal and CLIM 999 may be applied toward satisfying doctoral degree requirements, with no more than 18 credits of CLIM 998.

Code	Title	Credits
Choose credits for the following courses in consultation with an advisor:		21
CLIM 998	Doctoral Dissertation Proposal	
CLIM 999	Doctoral Dissertation (minimum 3 credits)	
Total Credits		21

Climate Science, MS

Banner Code: SC-MS-CLIS

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The understanding of climate science is essential to the interpretation of modern climate variations and the measurement of their impact. Climate data must be analyzed and interpreted in order to formulate useful responses and plan actions to meet specific climate challenges. The MS in Climate Science educates students to be climate professionals who can analyze and model advanced climate data. Students in the program learn to solve quantitative problems about atmospheric properties and variability, fluid dynamics, and the role of the ocean and land surface in climate. Students choose a concentration in either Climate Modeling or Climate Data to gain specific skills to understand and predict climate variations.

The program encourages applications from students with diverse backgrounds in physical science, mathematics, and engineering. Students with atmospheric science or meteorology degrees can deepen their understanding, enhance relevant computer skills, and gain insight into climate as a multi-component system. Students with physics, math, or other degrees will find that climate provides compelling applications of their mathematical and computational skills. All students will be taught by faculty of the Atmospheric, Oceanic, and Earth Sciences Department (https://catalog.gmu.edu/colleges-schools/science/atmospheric-oceanic-earth-sciences/) and the Center for Ocean-Land-Atmosphere Studies (http://cola.gmu.edu/), which includes scientists doing pioneering work in climate dynamics, climate modeling, predictability, and statistical analysis of climate data.

Admissions & Policies

Admissions

University-wide admissions policies can be found in the Graduate Admissions Policies section of this catalog.

To apply for this program, please complete the George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now/).

Admission requirements include:

- An earned baccalaureate degree from an institution of higher education accredited by a Mason-recognized U.S. institutional accrediting agency or international equivalent, verified from official transcripts.

- A minimum 3.00 GPA on a 4.00 scale in baccalaureate study.
- Complete the online application and submit all required materials.

Program admission decisions give preference to students with an undergraduate degree in physical science, mathematics, or engineering. Students with other undergraduate degrees should consult with the program's administration regarding the suitability of their undergraduate preparation.

Requirements

Degree Requirements

Total Credits: 33

Students must complete the Core Courses, Seminar, and Thesis or Non-thesis sections, and in addition, choose one concentration:

Core Courses

Code	Title	Credits
CLIM 511	Atmospheric Dynamics [1]	3
or CLIM 711	Introduction to Atmospheric Dynamics	
CLIM 512	Physical Oceanography [1]	3
or CLIM 712	Physical and Dynamical Oceanography	
CLIM 610	Introduction to the Physical Climate System	3
CLIM 614	Land-Climate Interactions	3
CLIM 690	Scientific Basis of Climate Change	3
Total Credits		15

[1] Students who wish to continue with the Climate Dynamics, PhD (https://catalog.gmu.edu/colleges-schools/science/atmospheric-oceanic-earth-sciences/climate-dynamics-phd/) should note that CLIM 711 Introduction to Atmospheric Dynamics and CLIM 712 Physical and Dynamical Oceanography are required for the PhD.

Seminar

Code	Title	Credits
CLIM 991	Climate Dynamics Seminar (1 credit, repeated three times)	3
Total Credits		3

Thesis or Non-thesis Options

Code	Title	Credits
Choose one of the following options:		3
Thesis Option		
CLIM 799	Master's Thesis in Climate	
Non-thesis Option		
Choose one unrestricted, graduate-level elective course [1]		
Total Credits		3

[1] Unrestricted, graduate-level elective courses may be chosen from the following prefixes: Climate Dynamics (CLIM) (https://catalog.gmu.edu/courses/clim/), Mathematics (MATH) (https://catalog.gmu.edu/courses/math/), Computational and Data Sciences (CDS) (https://catalog.gmu.edu/courses/cds/), Computational Science and Informatics (CSI) (https://catalog.gmu.edu/courses/csi/), Computational Social Science (CSS) (https://catalog.gmu.edu/courses/css/), Geography and Geoinformation Science (GGS) (https://catalog.gmu.edu/courses/ggs/), or chosen from the Climate-Relevant elective list (below).
Other courses can be approved by the graduate coordinator.

Concentrations

Concentration in Climate Modeling (CM)

Code	Title	Credits
CLIM 670	Earth System Modeling	3
CLIM 715	Numerical Methods for Climate Modeling	3
CLIM 751	Predictability and Prediction of Weather and Climate	3
Choose one course from the elective lists (below)		3
Total Credits		12

Concentration in Climate Data (CD)

Code	Title	Credits
CLIM 680	Climate Data	3
CLIM 762	Statistical Methods in Climate Research	3
Choose two courses from the Mathematical, Computational, or Geographical elective list (below)		6
Total Credits		12

Electives

Code	Title	Credits
Please pay close attention to course credit values and consider how they will work into your degree program.		
Climate Science		
CLIM 631	Urban Climate	
CLIM 680	Climate Data	
CLIM 690	Scientific Basis of Climate Change	
CLIM 713	Atmosphere-Ocean Interactions	
CLIM 750	Geophysical Fluid Dynamics	
CLIM 751	Predictability and Prediction of Weather and Climate	
CLIM 752	Ocean General Circulation	
CLIM 753	General Circulation of the Atmosphere	
CLIM 754	Elements of the Tropical Climate System	
CLIM 759	Topics in Climate Dynamics (when the topic is "Advanced Predictability" or "Convection") [2]	
GEOL 532	Paleoclimatology	
GEOL 535	Quantitative Stratigraphy	
GEOL 565	Paleoceanography	
GGS 670	Introduction to Atmosphere and Weather	
Mathematical, Computational, or Geographical		
CLIM 715	Numerical Methods for Climate Modeling	
CLIM 759	Topics in Climate Dynamics (when the topic is "Earth System Modeling") [2]	

CLIM 762	Statistical Methods in Climate Research
CLIM 763	Advanced Statistical Methods in Climate Research
GEOL 525	Modeling Earth Signals and Systems
GEOL 553	Field Mapping Techniques
CDS 501	Scientific Information and Data Visualization
CSI 501	Introduction to Scientific Programming
CSI 690	Numerical Methods
GGS 553	Geographic Information Systems
GGS 563	Advanced Geographic Information Systems
GGS 650	Introduction to GIS Algorithms and Programming
GGS 680	Earth Image Processing
GGS 692	Web-based Geographic Information Systems
PHYS 510	Computational Physics I
Climate-Relevant	
GEOL 506	Soil Science
GEOL 513	Hydrogeology
GEOL 563	Coastal Morphology and Processes
BIOL 650	Environment Analysis and Modeling
CDS 502	Introduction to Scientific Data and Databases
CSI 600	Quantitative Foundations for Computational Sciences
CSI 662	Introduction to Space Weather
EVPP 506	Science of the Environment I
EVPP 507	Science of the Environment II
EVPP 529	Environmental Science Communication
EVPP 542	Urban Ecosystems Processes
EVPP 543	Tropical Ecosystems
EVPP 550	Waterscape Ecology and Management
EVPP 607	Fundamentals of Ecology
EVPP 637	Human Dimensions of Climate Change (when the topic is "Climate Change Policy & Politics" or "Climate Change, Public Administration, and Management")
GGS 507	Geographic Approaches for Sustainable Development
GGS 531	Land-Use Modeling Techniques and Applications
GGS 550	Geospatial Science Fundamentals
GGS 579	Remote Sensing
GGS 656	The Hydrosphere
AIT 580	Analytics: Big Data to Information
AIT 582	Metadata Analytics for Big Data
COMM 660	Climate Change and Sustainability Communication Campaigns
CS 504	Principles of Data Management and Mining
PUBP 710	Topics in Public Policy (when the topic is "Climate Policy & Politics" or "Climate Change, Public Administration and Management")

[2] CLIM 759 Topics in Climate Dynamics is a special topics course in which different sections can address different subjects.

Earth Science Minor

Banner Code: ESCI

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Students taking this minor complete coursework in the solid Earth, oceanography, and the atmosphere. This minor pairs well with other degrees in the sciences such as chemistry or biology.

This has been designated a Green Leaf program.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor.

For policies governing all minors, see AP.5.3.4 Minors.

Students may not receive both the Geology Minor and the Earth Science Minor.

Requirements

Minor Requirements

Total credits: 18-19

This is a Green Leaf program.

Students should refer to the Admissions & Policies tab for specific policies related to this program.

Students must successfully complete the following coursework with a minimum GPA of 2.00.

Core Courses

Code	Title	Credits
GEOL 101	Introductory Geology I (Mason Core)	4
GEOL 309	Oceanography	3
or BIOL 309	Oceanography	
Select one of the following options:		3-4
Option One:		
CLIM 111	Introduction to the Fundamentals of Atmospheric Science (Mason Core)	

CLIM 112	Introduction to the Fundamentals of Atmospheric Science Lab (Mason Core)	
Option Two:		
GGS 309	Introduction to Weather and Climate	
Total Credits		10-11

Electives

Code	Title	Credits
Select 8 credits of GEOL electives		8
Total Credits		8

Earth Systems Science, MS (AOES)

Banner Code: SC-MS-ESSC

Geoff Gilleaudeau, Assistant Professor

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This is a shared program between the Department of Atmospheric, Oceanic, and Earth Sciences and the Department of Geography and Geoinformation Science.

The program addresses the growing demand for trained professionals in the Earth sciences. The degree emphasizes a research-oriented, global systems approach to studying the Earth and its systems- the atmosphere, the hydrosphere, and the lithosphere, including their interrelationships and interactions with the biosphere. Emphasis is on the observation, measurement, and analysis of Earth's systems.

Most student research projects and theses will relate to geologic and geographic topics, however studies of related topics in Earth science are welcome. Students completing the program are qualified to pursue careers that require knowledge of the basics of Earth systems science and the requisite tools, specifically pertaining to the area of Earth science that they choose to investigate. Students are encouraged to undertake a master's thesis but may choose a research project. In the latter case, students must pass a comprehensive exam.

Admissions & Policies

Admissions

University-wide admissions policies can be found in Graduate Admissions Policies.

To apply for this program, please complete the George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now/).

Eligibility

Applicants should have earned a BS degree in atmospheric, Earth, environmental, geological, geographical, ocean, or physical science. Previous coursework should include two semesters each of calculus, chemistry, and physics, and one semester of statistics. Applicants should have a minimum GPA of 3.00 in their undergraduate degree.

Application Requirements

Official transcripts from each college and graduate institution attended, a current résumé, and a goals statement are required. Applicants also need three letters of recommendation and an official report of scores obtained on the GRE-GEN. The GRE requirement for admission may be waived if the student holds a master's degree from an institution of higher education accredited by a Mason-recognized U.S. institutional accrediting agency or international equivalent. TOEFL scores are required of all international applicants.

Policies

For policies governing all graduate programs, see AP.6 Graduate Policies.

Requirements

Degree Requirements

Total credits: 30

Students should refer to the Admissions & Policies tab for specific policies related to this program.

Candidates must complete 10 credits of GGS courses and 10 credits of GEOL/CLIM courses toward their requirements. ("Culminating Experience" credits do not count towards this requirement).

Earth Science Core

Code	Title	Credits
Select one course from each of the following groups:		9
Atmosphere:		
CLIM 610	Introduction to the Physical Climate System	
CLIM 614	Land-Climate Interactions	
GEOL 532	Paleoclimatology	
GGS 670	Introduction to Atmosphere and Weather	
PHYS 575	Atmospheric Physics I	
Hydrosphere:		
CLIM 512	Physical Oceanography	
CLIM 712	Physical and Dynamical Oceanography	
GEOL 513	Hydrogeology	
GGS 656	The Hydrosphere	
Lithosphere:		
GEOL 506	Soil Science	
GGS 657	The Lithosphere	
or GEOL 601	The Lithosphere	
Total Credits		9

Techniques [1]

Code	Title	Credits
Select two courses from the following:		6
GGS 553	Geographic Information Systems	
GGS 560	Spatial Quantitative Methods	
GGS 579	Remote Sensing	
GGS 680	Earth Image Processing	

GGS 754	Earth Science Data and Advanced Data Analysis	
Total Credits		6

[1] Other courses can be substituted with advisor approval.

Colloquium

Code	Title	Credits
GGS 900	Geography and Geoinformation Science Colloquium	1
Select one from the following:		1
GEOL 536	Paleontology Seminar	
GEOL 792	Seminar in Earth Systems Science, Geology, Earth Science	
CLIM 991	Climate Dynamics Seminar	
Total Credits		2

Electives

Code	Title	Credits
Select 10 credits from courses at the 500 to 900-level (excluding 700, 798, and 799 courses)		10
CLIM Courses		
GEOL Courses		
GGS Courses		
EVPP Courses		
Total Credits		10

Culminating Experience

Choose the culminating experience of either a thesis or a project (either must total 3 credits):

Thesis

Code	Title	Credits
Select 3 credits from the following:		3
GGS 799	Thesis	
GEOL 799	Master's Thesis in Earth Systems Science	
CLIM 799	Master's Thesis in Climate	
Total Credits		3

Project

Code	Title	Credits
Select one from the following:		1
GGS 700	Comprehensive Exam	
GEOL 700	Comprehensive Exam	
CLIM 700	Climate Comprehensive Exam	
Select one from the following:		2
GGS 798	Master's Research Project	
GEOL 798	Master's Research Project in Earth Systems Science	
CLIM 798	Master's Climate Research Project	
Total Credits		3

Accelerated Master's

Geology, BS/Earth Systems Science, Accelerated MS

Overview

Geology, and Earth sciences more broadly, are extremely important to society and our economy as they deal with our planet, our oceans, and our climate. Degrees in Earth science are broadly useful in industry, government, conservation, and many other areas of our economy. While there are many positions in the field that only require a bachelor's degree, many employers either prefer a Master's degree, or a Master's degree can be the key to further promotion within a particular organization. This Accelerated Master's degree is designed to give students the skills and the degrees that they need to be both initially successful, and to ensure long-term advancement in their chosen professions.

Application Requirements

Applicants should be enrolled in the Geology, BS degree at Mason and have earned at least 60 credits. Previous coursework should include two semesters each of calculus, chemistry, and physics, and one semester of statistics. Applicants should have a minimum GPA of 3.00.

Applicants to all graduate programs at Mason must meet the admission standards and application requirements for graduate study as specified in the Graduate Admission Policies (https://catalog.gmu.edu/admissions/graduate-policies/) section of this catalog, excluding the GRE exam requirement (which is not required for those enrolled in the accelerated program). This includes three letters of recommendation (at least one from a former professor or someone with a PhD), a recent resume, a statement of interest/research goals (including information on the applicant's proposed MS research), and a letter from their advisor. This letter should state that the advisor agrees to take on the candidate as an MS student, addresses how the candidate would be a good fit for them, and indicate why the applicant's research topic would be suitable for study.

Accelerated Option Requirements

Students admitted to this program may take graduate courses after completing 75 undergraduate credits, and up to 12 credits of appropriate graduate coursework may be used in partial satisfaction of the requirements for the undergraduate degree. If students earn at least a 3.00 GPA in these classes, they are granted advanced standing in the master's program and must then complete an additional 24 credits to receive the master's degree. All other requirements for the Earth Systems Science, MS, must be met.

To apply these credits to the master's degree, students must request that the credits be moved from the undergraduate degree to the graduate degree using the Bachelor's/Accelerated Master's Transition form found on the Office of the University Registrar's website (https://registrar.gmu.edu/forms/).

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7). For policies governing all graduate programs, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/).

Reserve Graduate Credit

Undergraduate students may also take up to 6 additional and appropriate graduate credits as reserve graduate credit. These credits do not apply to the undergraduate degree, but will reduce the subsequent master's degree credits accordingly (e.g., with 12 credits counted toward the undergraduate and graduate degrees plus the maximum 6 reserve credits for the master's, an MS could be completed with 12 post-bachelor's credits). The ability to take courses for reserve graduate credit is available to all high achieving undergraduates with the permission of the department.

Graduate Course Suggestions

Students should consult with an advisor before registering for graduate credits.

Code	Title	Credits
GEOL 504	Sedimentary Geology	4
GEOL 506	Soil Science	3
GEOL 513	Hydrogeology	3
GEOL 521	Geology of Energy Resources	3
GEOL 532	Paleoclimatology	3
GEOL 534	Vertebrate Paleontology	4
GEOL 536	Paleontology Seminar	1-2
GEOL 553	Field Mapping Techniques	3

Geology Minor

Banner Code: GEOL

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Students take coursework in physical geology, historical geology, and mineralogy as the fundamental courses in this minor. This minor pairs well with other degrees in the sciences such as chemistry or biology.

This is a Green Leaf program.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor. For policies governing all minors, see AP.5.3.4 Minors.

Students may not receive both the Geology Minor and the Earth Science Minor.

Requirements

Minor Requirements

Total credits: 20

This is a Green Leaf program.

Students should refer to the Admissions & Policies tab for specific policies related to this program.

Students must successfully complete the following coursework with a minimum GPA of 2.00.

Geology Courses

Code	Title	Credits
GEOL 101	Introductory Geology I (Mason Core)	4
GEOL 102 & GEOL 104	Historical Geology (Mason Core) and Historical Geology Laboratory (Mason Core)	4
GEOL 302	Mineralogy	4
Total Credits		12

Additional Geology Courses

Code	Title	Credits
Select 8 credits from the following:		8
GEOL 304	Sedimentary Geology	
GEOL 308	Igneous and Metamorphic Petrology	
GEOL 312	Invertebrate Paleontology	
GEOL 317	Geomorphology	
GEOL 401	Structural Geology	
Total Credits		8

Geology, BA

Banner Code: SC-BA-GEOL

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The Geology, BA program aims to provide students with both high-quality conceptual knowledge and hands-on training in geology in preparation for careers within the earth-science field or for graduate studies in geology.

This is a Green Leaf program.

Admissions & Policies

Admissions

University-wide admissions policies can be found in the Undergraduate Admissions Policies section of this catalog.

To apply for this program, please complete the George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now/).

Policies

Students must fulfill all Requirements for Bachelor's Degrees including the Mason Core.

GEOL 317 Geomorphology fulfills the writing intensive requirement for this major.

For policies governing all undergraduate degrees, see AP.5 Undergraduate Policies.

Requirements

Degree Requirements

Total credits: minimum 120

This is a Green Leaf program.

Students should refer to the Admissions & Policies tab for specific policies related to this program.

Candidates for a degree in geology must complete all courses with a minimum GPA of 2.50.

Geology Core

Code	Title	Credits
GEOL 101	Introductory Geology I (Mason Core)	4
GEOL 102 & GEOL 104	Historical Geology (Mason Core) and Historical Geology Laboratory (Mason Core)	4
GEOL 302	Mineralogy	4
GEOL 304	Sedimentary Geology	4
GEOL 308	Igneous and Metamorphic Petrology	4
GEOL 312	Invertebrate Paleontology	4
GEOL 317	Geomorphology [2]	4
GEOL 401	Structural Geology	4
Six credits of		6
GEOL 404	Geological Field Techniques [3]	
Total Credits		38

[2] Fulfills writing-intensive requirement.

[3] A 6-credit geology field camp may be substituted for this requirement; see advisor for details.

Chemistry

Code	Title	Credits
CHEM 211	General Chemistry I (Mason Core)	3
CHEM 213	General Chemistry Laboratory I (Mason Core)	1
Total Credits		4

Physics

Code	Title	Credits
Select one from the following:		4
PHYS 243 & PHYS 244	College Physics I (Mason Core) and College Physics I Lab (Mason Core)	
PHYS 160 & PHYS 161	University Physics I (Mason Core) and University Physics I Laboratory (Mason Core)	
Total Credits		4

Mathematics

Code	Title	Credits
Select one from the following:		3-4
MATH 110	Introductory Probability (Mason Core)	
MATH 111	Linear Mathematical Modeling (Mason Core)	
MATH 113	Analytic Geometry and Calculus I (Mason Core)	
Total Credits		3-4

Computer Science

Code	Title	Credits
GGS 311	Geographic Information Systems	3
Total Credits		3

Program Courses

Code	Title	Credits
Students must take 9 credits of degree-related coursework in a coherent program designed in coordination with advisor and approved by department chair		9
Total Credits		9

Mason Core and Elective Credits

In order to meet a minimum of 120 credits, this degree requires an additional 58-59 credits, which may be applied toward any remaining Mason Core requirements (outlined below), Requirements for Bachelor's Degrees, College Requirements for the BA Degree (outlined below), and elective courses. Students are strongly encouraged to consult with their advisors to ensure that they fulfill all requirements.

Mason Core

Some Mason Core requirements may already be fulfilled by the major requirements listed above. Students are strongly encouraged to consult their advisors to ensure they fulfill all remaining Mason Core requirements.

Code	Title	Credits
Foundation Requirements		
Written Communication (ENGH 101)		3

Oral Communication	3
Quantitative Reasoning	3
Information Technology and Computing	3
Exploration Requirements	
Arts	3
Global Understanding	3
Literature	3
Natural Science	7
Social and Behavioral Sciences	3
Western Civilization/World History	3
Integration Requirements	
Written Communications (ENGH 302)	3
Writing-Intensive [1]	3
Synthesis/Capstone [2]	3
Total Credits	40

1 Most programs include the writing-intensive course designated for the major as part of the major requirements; this course is therefore not counted towards the total required for Mason Core.

2 Minimum 3 credits required.

College Requirements for the BA Degree

In addition to the program requirements and the Mason Core requirements, students pursuing a BA degree must complete the coursework below. Except where expressly prohibited, a course used to fulfill this college-level requirement may also be used simultaneously to satisfy other requirements such as Mason Core requirements, other college-level requirements, or requirements for the major. In some cases, the requirements listed below may be superseded by requirements of the degree program and the Mason Core.

Philosophy or Religious Studies

Code	Title	Credits
Select 3 credits from the following:		3
PHIL [1]		
RELI		

1 PHIL 323 Classical Western Political Theory and PHIL 324 Modern Western Political Theory may not be used to fulfill this requirement.

Social and Behavioral Sciences

Choose one approved Mason Core: Social and Behavioral Sciences course in addition to the Mason Core-required course for a total of 6 credits. The two courses used to fulfill the combined college-level and university requirements must be from different disciplines.

This requirement may be fulfilled by completing any course in ANTH, CRIM, ECON, GOVT, HIST[1], LING, PSYC, or SOCI, and the following GGS courses:

Code	Title	Credits
Select any course from the disciplines above or select from the following GGS courses:		3
GGS 101	Major World Regions (Mason Core)	
GGS 103	Human Geography (Mason Core)	
GGS 110	Introduction to Geoinformation Technologies	
GGS 301	Political Geography (Mason Core)	
GGS 303	Geography of Resource Conservation (Mason Core)	
GGS 304	Population Geography (Mason Core)	
GGS 305	Economic Geography	
GGS 306	Urban Geography	
GGS 315	Geography of the United States	
GGS 316	Geography of Latin America	
GGS 320	Geography of Europe	
GGS 325	Geography of North Africa and the Middle East	
GGS 330	Geography of the Soviet Succession States	
GGS 357	Urban Planning	
GGS 380	Geography of Virginia	
Total Credits		3

1 HIST 100 History of Western Civilization (Mason Core) and HIST 125 Introduction to World History (Mason Core)may not be used to fulfill this requirement.

Natural Science

Choose one credit in addition to the Mason Core: Natural Science requirement for a total of 8 credits[1]. This combined college-level and university requirement must be fulfilled by completing two of any approved Mason Core: Natural Science courses that include a laboratory experience[2].

Code	Title	Credits
Select an additional Mason Core Natural Science course		1

1 For Geography, BA majors, this extra credit is not required.

2 BIOL 124 Human Anatomy and Physiology and BIOL 125 Human Anatomy and Physiology may not be used to fulfill this requirement.

Foreign Language

Intermediate-level proficiency in one foreign language is required. This requirement may be fulfilled by completing a course in a foreign language numbered 202 (https://catalog.gmu.edu/colleges-schools/humanities-social-sciences/modern-classical-languages/) (or higher level courses taught in the language) or achieving a satisfactory score on an approved proficiency test. A three course sequence in American Sign Language (EDSE 115 (https://catalog.gmu.edu/search/?P=EDSE%20115) American Sign Language (ASL) I, EDSE 116 (https://catalog.gmu.edu/search/?P=EDSE%20116) American Sign Language (ASL) II, and EDSE 219 (https://catalog.gmu.edu/search/?P=EDSE%20219) American Sign Language (ASL) III) will also meet the foreign language requirement. Students who are already proficient in a second language may be eligible for a waiver of this requirement. Additional information on waivers can be found at the Office of Academic and Student Affairs (http://cosundergrad.gmu.edu/).

Non-Western Culture

Choose one approved Non-Western Culture Requirement[1] course in addition to the course used to fulfill the Mason Core: Global Understanding requirement. A course used to fulfill the Mason Core: Global Understanding requirement may not be simultaneously used to satisfy this college-level requirement. However, a course used to fulfill this requirement may be used simultaneously to fulfill

any *other* requirements (Mason Core requirements, college-level requirements, or requirements for the major).

Code	Title	Credits
Select 3 credits from approved Non-Western Culture courses if a waiver isn't applicable:		0-3
ANTH 114	Introduction to Cultural Anthropology (Mason Core)	3
ANTH 300	Civilizations	3
ANTH 302	Peoples and Cultures of Latin America (Mason Core)	3
ANTH 307	Ancient Mesoamerica (Mason Core)	3
ANTH 308	Peoples and Cultures of the Middle East (Mason Core)	3
ANTH 309	Peoples and Cultures of India (Mason Core)	3
ANTH 313	Myth, Magic, and Mind (Mason Core)	3
ANTH 314	Zombies	3
ANTH 330	Peoples and Cultures of Selected Regions: Non-Western	3
ANTH 332	Cross-Cultural Perspectives on Globalization (Mason Core)	3
ANTH 381	Medical Anthropology	3
ANTH 396	Issues in Anthropology: Social Sciences (Mason Core)	3
ARAB 360	Topics in Arabic Cultural Production	3
ARAB 420	Survey of Arabic Literature	3
ARAB 440	Topics in Arabic Religious Thought and Texts (Mason Core)	3
ARTH 203	Survey of Asian Art (Mason Core)	3
ARTH 204	Survey of Latin American Art (Mason Core)	3
ARTH 206	Survey of African Art (Mason Core)	3
ARTH 318	Art and Archaeology of Ancient Egypt	3
ARTH 319	Art and Archaeology of the Ancient Near East (Mason Core)	3
ARTH 320	Art of the Islamic World (Mason Core)	3
ARTH 382	Arts of India (Mason Core)	3
ARTH 383	Arts of Southeast Asia (Mason Core)	3
ARTH 384	Arts of China (Mason Core)	3
ARTH 385	Arts of Japan (Mason Core)	3
ARTH 386	The Silk Road (Mason Core)	3
ARTH 482	RS: Advanced Studies in Asian Art	3
CHIN 318	Introduction to Classical Chinese (Mason Core)	3
CHIN 320	Contemporary Chinese Film	3
CHIN 325	Major Chinese Writers (Mason Core)	3
CHIN 470	Special Topics in Chinese Studies	3
DANC 118	World Dance (Mason Core)	3
ECON 361	Economic Development of Latin America (Mason Core)	3
ECON 362	African Economic Development (Mason Core)	3
FREN 451	Topics in Sub-Saharan Francophone Literature and Culture	3
FREN 454	Topics in Caribbean Francophone Literature and Culture	3
GGS 101	Major World Regions (Mason Core)	3
GGS 316	Geography of Latin America	3
GGS 317	Geography of China (Mason Core)	3
GGS 325	Geography of North Africa and the Middle East	3
GGS 330	Geography of the Soviet Succession States	3
GGS 399	Select Topics in GGS	3
GOVT 328	Global Political Theory	3
GOVT 332	Government and Politics of the Middle East and North Africa	3
GOVT 333	Government and Politics of Asia	3
GOVT 338	Government and Politics of Russia	3
GOVT 340	Central Asian Politics	3
GOVT 341	Chinese Foreign Policy	3
GOVT 345	Islam and Politics	3
GOVT 433	Political Economy of East Asia	3
HIST 251	Survey of East Asian History (Mason Core)	3
HIST 252	Survey of East Asian History (Mason Core)	3
HIST 261	Survey of African History (Mason Core)	3
HIST 262	Survey of African History (Mason Core)	3
HIST 271	Survey of Latin American History (Mason Core)	3
HIST 272	Survey of Latin American History (Mason Core)	3
HIST 281	Survey of Middle Eastern Civilization (Mason Core)	3
HIST 282	Survey of Middle Eastern Civilization (Mason Core)	3
HIST 326	Stalinism	3
HIST 327	The Soviet Union and Russia Since World War II	3
HIST 328	Rise of Russia (Mason Core)	3
HIST 329	Modern Russia and the Soviet Union (Mason Core)	3
HIST 353	History of Traditional China	3
HIST 354	Modern China (Mason Core)	3
HIST 356	Modern Japan (Mason Core)	3
HIST 357	Postwar Japan (Mason Core)	3
HIST 358	Post-1949 China (Mason Core)	3
HIST 360	History of South Africa (Mason Core)	3
HIST 364	Revolution and Radical Politics in Latin America (Mason Core)	3
HIST 365	Conquest and Colonization in Latin America (Mason Core)	3
HIST 366	Comparative Slavery	3
HIST 367	History, Fiction, and Film in Latin America	3
HIST 387	Topics in Global History (Mason Core)	3-6
HIST 426	The Russian Revolution	3
HIST 460	Modern Iran (Mason Core)	3

HIST 461	Arab-Israeli Conflict	3
HIST 462	Women in Islamic Society (Mason Core)	3
HIST 465	The Middle East in the 20th Century	3
JAPA 310	Japanese Culture in a Global World (Mason Core)	3
JAPA 340	Topics in Japanese Literature (Mason Core)	3
KORE 320	Korean Popular Culture in a Global World	3
MUSI 103	Musics of the World (Mason Core)	3
RELI 211	Religions of the West (Mason Core)	3
RELI 212	Religions of Asia (Mason Core)	3
RELI 240	Death and the Afterlife in World Religions	3
RELI 272	Islam	3
RELI 313	Hinduism (Mason Core)	3
RELI 314	Chinese Philosophies and Religious Traditions	3
RELI 315	Buddhism (Mason Core)	3
RELI 317	Daoism	3
RELI 337	Mysticism: East and West	3
RELI 365	Muhammad: Life and Legacy	3
RELI 374	Islamic Thought (Mason Core)	3
RELI 375	Qur'an and Hadith	3
RELI 379	Islamic Law, Society, and Ethics	3
RELI 387	Islam, Democracy, and Human Rights	3
RELI 490	Comparative Study of Religions (Mason Core)	3
RUSS 353	Russian Civilization (Mason Core)	3
RUSS 354	Contemporary Post-Soviet Life (Mason Core)	3

[1] Students who can document attendance at a native school in a non-western country for at least four years may request a waiver from this requirement through the CHSS Undergraduate Academic Affairs Office (http://chssundergrad.gmu.edu/).

Honors

Honors in the Major

Earth science and geology majors who have completed 16 credits of math and science, including GEOL 302 Mineralogy with a GPA of 3.00 or higher are eligible to enter the departmental honors program. Transfer students who have an incoming GPA of 3.10 or higher in math and science and a grade of 'B' or better in GEOL 302 Mineralogy are also eligible. To graduate with honors in Earth Science, students are required to maintain a minimum GPA of 3.00 in math and science courses and complete one of the two following sets of courses with an average GPA of 3.50 or better.

Code	Title	Credits
First Set of Courses		
GEOL 410	Research Proposal Preparation	1
GEOL 411	Geological Research	3
GEOL 420	Earth Science and Policy (Mason Core)	3
Second Set of Courses		
CLIM 408	Senior Research	3
CLIM 409	Research Internship	3
GEOL 420	Earth Science and Policy (Mason Core)	3

Accelerated Master's

Bachelor's Degree (selected)/ Environmental Science and Policy, Accelerated MS

Overview

This bachelor's/accelerated master's degree program allows academically strong undergraduates with a commitment to advance their education to obtain a Green Leaf-designated bachelor's degree and the Environmental Science and Policy, MS (https://catalog.gmu.edu/colleges-schools/science/environmental-policy/environmental-science-policy-ms/) degrees within an accelerated timeframe. Upon completion of this 141 credit accelerated program, students will be exceptionally well prepared for entry into their careers or into a doctoral program in the field or in a related discipline.

Students are eligible to apply for this accelerated program once they have earned at least 60 undergraduate credits and can enroll in up to 18 credits of graduate coursework after successfully completing 75 undergraduate credits. This flexibility makes it possible for students to complete a bachelor's and a master's in five years.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies. For more information on undergraduates enrolling in graduate courses, see AP.1.4.4 Graduate Course Enrollment by Undergraduates (https://catalog.gmu.edu/policies/academic/registration-attendance/#text).

Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in the Graduate Admission Policies section of this catalog.

Important application information and processes for this accelerated master's program can be found here (https://www2.gmu.edu/admissions-aid/how-apply/accelerated-masters/).

The GRE exam is not required for this accelerated master's program.

Students should submit three letters of recommendation (at least one from a former professor or someone with a PhD), a recent resume, a statement of interest/research goals and interests (including information on the candidate's proposed MS research), and a letter from their advisor (see Graduate Advisor section below) stating that the advisor agrees to take on the candidate as an MS student, how the candidate would be a good fit for them and why candidate's research topic would be suitable.

Students with an overall GPA of at least 3.20 who are pursuing any Green Leaf-designated major or minor may apply to this accelerated master's program after completing two semesters of chemistry (including CHEM 211 General Chemistry I (Mason Core) and CHEM 212 General Chemistry II (Mason Core) and three semesters of biology, including a course in ecology, or the equivalent, for example:

Code	Title	Credits
Select one of the following options:		13
Option 1:		
BIOL 213	Cell Structure and Function (Mason Core)	
BIOL 214	Biostatistics for Biology Majors	
BIOL 308	Foundations of Ecology and Evolution	
Option 2:		
EVPP 210	Environmental Biology: Molecules and Cells	
EVPP 301	Environmental Science: Biological Diversity and Ecosystems	
EVPP 302	Environmental Science: Biomes and Human Dimensions	
EVPP 305	Environmental Microbiology Essentials	
EVPP 306	Environmental Microbiology Essentials Laboratory	
Option 3:		
CONS 401	Conservation Theory	
CONS 402	Applied Conservation	
6 credits of BIOL or CONS electives		

Graduate Advisor

By at least the beginning of their senior year, students should seek out a faculty member in the Department of Environmental Science and Policy who is willing to serve as their advisor. This advisor will aid the student in choosing the appropriate graduate courses to take and help to prepare the student for graduate studies. Admission into a research-oriented master's concentration is dependent upon securing the agreement of a faculty advisor. Faculty from a variety of departments and colleges at George Mason University (called "program faculty") can serve as master's advisors. Potential students are encouraged to speak with the graduate program coordinator in the department to obtain guidance on this issue.

Accelerated Option Requirements

After the completion of 75 undergraduate credits, students may complete 3 to 12 credits of graduate coursework that can apply to both the undergraduate and graduate degrees.

In addition to applying to graduate from the undergraduate program, students in the accelerated program must submit a bachelor's/accelerated master's transition form (available from the Office of the University Registrar (https://registrar.gmu.edu/forms/)) to the College of Science's Office of Academic and Student Affairs (https://cos.gmu.edu/about/contact-us/) by the last day to add classes of their final undergraduate semester. Students should enroll for courses in the master's program in the fall or spring semester immediately following conferral of the bachelor's degree, but should contact an advisor if they would like to defer up to one semester.

Students must maintain an overall GPA of 3.00 or higher in all graduate coursework and should consult with their faculty advisor to coordinate their academic goals.

Reserve Graduate Credits

Accelerated master's students may also take up to 6 graduate credits as reserve graduate credits. These credits do not apply to the undergraduate degree, but will reduce the master's degree by up to 6 credits. With 12 graduate credits counted toward the undergraduate degree plus the maximum 6 reserve graduate credits, the credits necessary for the graduate degree can be reduced by up to 18.

Graduate Course Suggestions

The following list of suggested courses is provided for general reference. To ensure an efficient route to graduation and post-graduation readiness, students are strongly encouraged to meet with an advisor before registering for graduate-level courses.

Code	Title	Credits
EVPP 518	Conservation Biology	3
EVPP 529	Environmental Science Communication	3
EVPP 621	Overview of Biodiversity Conservation	3
EVPP 635	Environment and Society	3

Ocean and Estuarine Science Minor

Banner Code: OES

Dr. Stacey Verardo, Undergraduate Coordinator and Professor

3451 Exploratory Hall
Fairfax Campus

Phone: 703-993-1045
Email: sverardo@gmu.edu
Website: science.gmu.edu/academics/departments-units/atmospheric-oceanic-earth-sciences/majors-minors

This minor is designed for students interested in oceans and coastlines. The fundamental courses include topics in oceanography, physical oceanography, coastal morphology and processes, marine geology, chemical oceanography, and marine ecology.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor.

For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 18-22

Students should refer to the Admissions & Policies tab for specific policies related to this program.

Students must successfully complete the following coursework with a minimum GPA of 2.00.

Core Requirements

Code	Title	Credits
GEOL 309	Oceanography	3
Select two courses from the following:		6-7
CLIM 412	Physical Oceanography	
GEOL 363	Coastal Morphology and Processes	

or EVPP 363	Coastal Morphology and Processes	
GEOL 364	Marine Geology	
GEOL 458	Chemical Oceanography	
or CHEM 458	Chemical Oceanography	
BIOL 449	Marine Ecology	
Total Credits		9-10

Additional Courses

Code	Title	Credits
Select 9-12 credits from the following: [1]		9-12
CLIM 101	Global Warming: Weather, Climate, and Society (Mason Core)	
CLIM 412	Physical Oceanography	
GEOL 304	Sedimentary Geology	
GEOL 308	Igneous and Metamorphic Petrology	
GEOL 312	Invertebrate Paleontology	
GEOL 363	Coastal Morphology and Processes	
or EVPP 363	Coastal Morphology and Processes	
GEOL 364	Marine Geology	
GEOL 458	Chemical Oceanography	
or CHEM 458	Chemical Oceanography	
BIOL 440	Field Biology (up to 4 credits of only marine or estuarine-oriented field courses)	
BIOL 449	Marine Ecology	
BIOL 450	Marine Conservation	
or EVPP 421	Marine Conservation	
BIOL 454 & BIOL 455	Marine Mammal Biology and Conservation and Marine Mammal Biology and Conservation Field Course [2]	
or EVPP 419 & EVPP 420	Marine Mammal Biology and Conservation and Marine Mammal Biology and Conservation Field Course	
EVPP 350	Freshwater Ecosystems	
EVPP 419 & EVPP 420	Marine Mammal Biology and Conservation and Marine Mammal Biology and Conservation Field Course [2]	
EVPP 536	The Diversity of Fishes	
EVPP 581 & EVPP 582	Estuarine and Coastal Ecology and Estuarine and Coastal Ecology Laboratory [2]	
INTS 495	Field-Based Work (up to 4 credits of only marine or estuarine-oriented field courses)	
Total Credits		9-12

1 Courses taken to satisfy the core requirements above cannot be repeated to count toward the additional courses requirement.

2 If chosen, students must take both the lecture and lab for a total of 4 credits.

Notes

RECR 161 Scuba Diving: Basic is strongly recommended, but is not required.

Paleontology Minor

Banner Code: PLEO

Dr. Stacey Verardo, Undergraduate Coordinator and Professor

3451 Exploratory Hall
Fairfax Campus

Phone: 703-993-1045
Email: sverardo@gmu.edu
Website: science.gmu.edu/academics/departments-units/atmospheric-oceanic-earth-sciences/majors-minors

Students interested in the evolution of life on Earth can take this minor in association with degrees from any field of study across the university. Fundamental courses include historical geology, invertebrate paleontology and vertebrate paleontology.

This has been designated a Green Leaf program.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 18-21

This is a Green Leaf program.

Students should refer to the Admissions & Policies tab for specific policies related to this program.

Students must successfully complete the following coursework with a minimum GPA of 2.00.

Required Core

Code	Title	Credits
GEOL 102 & GEOL 104	Historical Geology (Mason Core) and Historical Geology Laboratory (Mason Core)	4
GEOL 312	Invertebrate Paleontology	4
GEOL 334	Vertebrate Paleontology	4
or BIOL 334	Vertebrate Paleontology	
Total Credits		12

Electives

Many of the courses below have additional prerequisites beyond the required core courses above; please check the individual courses carefully.

Code	Title	Credits
Select two courses from the following:		6-9
GEOL 304	Sedimentary Geology	
GEOL 309	Oceanography	
or BIOL 309	Oceanography	
GEOL 332	Paleoclimatology	
GEOL 364	Marine Geology	
BIOL 300	BioDiversity	
BIOL 308	Foundations of Ecology and Evolution	
BIOL 320	Comparative Chordate Anatomy	
BIOL 331	Invertebrate Zoology	
BIOL 377	Applied Ecology	
BIOL 470	Dinosaur Biology	
BIOL 471	Evolution	
EVPP 419	Marine Mammal Biology and Conservation	
GGS 321	Biogeography	
or BIOL 374	Biogeography: Space, Time, and Life	
Total Credits		6-9

Department of Biology

Geraldine Grant, Chair

Phone: 703-993-1050
Website: biology.gmu.edu

Administration

- Geraldine Grant, Chair
- Charles Madden, Assistant Chair
- Deborah Polayes, Director of Undergraduate Studies
- Anne Verhoeven, Director of Medical Laboratory Sciences

The faculty in the Department of Biology is known for teaching excellence. Drs. Madden, Kocache, Forkner, Tondi, and Rockwood have all received teaching awards within the past several years, the latest being a university award presented to Dr. Kocache in May of 2017. Biology is the largest program in the College of Science; there are more than 1,300 students in the major and the department grants degrees to almost 300 students per year. Biology offers a broad spectrum of coursework in the biological sciences to both biology majors and to students in other departments, schools, and colleges.

Undergraduate Programs

The bachelor's degree programs in biology provide a sound liberal arts education with substantial experience in quantitative and analytical thought, along with preparation for a related profession. In addition to ensuring the strong background necessary for graduate study in the many fields of biological science, the broad range of courses available at Mason allow students to develop careers in many areas, including secondary school teaching, environmental management, microbiology, molecular biology, biotechnology, genetics, and natural history. Alternatively, students may prepare for postgraduate studies in medicine, dentistry, veterinary medicine, wildlife management, fisheries biology, or marine science.

The department also offers the Medical Laboratory Science, BS, please visit the program's catalog entry for details.

Additional information can be found at the Department of Biology's website (http://biology.gmu.edu/) or by visiting the department in Exploratory Hall, Suite 1200.

Graduate Programs

The Biology, MS is offered by the School of Systems Biology.
The Department of Biology supports the concentration in Evolutionary Biology within the MS degree. Students interested in this concentration should consult the Department of Biology's website (http://biology.gmu.edu/) for a list of faculty and their research interests.

Student Clubs

A variety of biologically-oriented student clubs are available for students. Each club has its own website; for more information visit the Department of Biology's website (http://biology.gmu.edu/).

Faculty

Department Faculty

Professors

Gillevet, Kocache, Lawrey, Madden, Polayes

Associate Professors

Edwards, Forkner, Grant, Laemmerzahl, Olmo, Tondi, Verhoeven, Weeks

Assistant Professors

Chiari, Crerar, Davis, Epstein, Fondufe, Froelich, Hanley, Hunt, Lim, Luther, Masterson, Scherer

Instructor

Tomson

Adjunct Faculty

Beck, Brown, Buckley-Beason, Einhorn, Hermoso, Holbeck, Hunnell, Jones, Kaushik, Munse, Radosavljevic, Rodriguez, Shirazi, Skacel, Starolis, van der Ham, Veerareddy, Wellner

Affiliate Faculty

Brown, Christacos, Clark, Coggins, Crosier, Dove, Drovetski, Elsheikh, Firmani, Fisher, Gostel, Ito, Karrar, Kiso, Kolowski, Lamoreaux, Lawton, Leimgruber, Lowe, Maldonado, Marra, Master, McKenna, McShea, Mehta, Muletz-Wolz, Pitt, Prado-Oviedo, Pukazhenthi, Shier, Shoemaker, Smith, Songsasen, Spence, Tupper, Valdez, Vandenburg, Vandercone

Affiliated Faculty

Andalibi, Couch, Deluycker, Fox, Lee, Lewis, Freeman, Gilmore, Lessard-Pilon, McNeil, Nix, Perilla, Verardo

Requirements & Policies

Requirements

Advising

All biology majors are strongly encouraged to see an academic advisor regularly to help in planning their schedule so that they can graduate on time. Biology majors should see an advisor for permission to register

prior to their first semester, again after completing 60 credits, and lastly after completing 90 credits.

Medical Laboratory Science, BS majors must see the director of the medical laboratory science program to obtain permission to register each semester.

Students returning from suspension are required to meet with the director of undergraduate studies or designee prior to being allowed to register.

For more information on advising or to set up an appointment, visit the Department of Biology's website (http://biology.gmu.edu/).

Residency Requirement for Transfer Students

Students majoring in biology are required to complete 16 credits in the major at the 300 and 400 levels at Mason in addition to meeting the university residency requirement of at least 30 credits at Mason.

Policies

Policy on Using Biology Program Laboratories

Only authorized experiments and exercises may be carried out in any research or teaching laboratory and must be done under the supervision of a university faculty or staff member. No unauthorized work is allowed in any laboratory.

Policy on Using Organisms in Classes

Direct observations of actual organisms are considered an essential part of learning biology at all levels. Direct observations of organisms may involve the use of living or preserved specimens, dissections of organisms or parts of organisms, and microscopic examination of organisms or parts of organisms. All use of live animals conforms to National Institutes of Health guidelines for the use and care of laboratory animals. Activities specified above may be a required part of a course and thus serve as a basis for grading in the course. Any questions about the administration of this policy should be directed to the course coordinator or instructor.

Writing-Intensive Requirement

Mason requires all students to complete at least one course designated as “writing intensive” in their majors at the 300-level or above. Students majoring in biology fulfill this requirement by successfully completing BIOL 308 Foundations of Ecology and Evolution. Medical laboratory science majors fulfill the requirement by completing MLAB 300 Science Writing.

Minor in Biology

Information about this minor can be found in the Biology Minor’s catalog entry.

Premedical, Predental, Prepharmacy, and Preveterinary Students

Web: prehealth.gmu.edu (http://prehealth.gmu.edu/)

Many students planning to enter medical, dental, pharmacy, veterinary, optometry, or other health professional schools choose to pursue a major in biology. These students should consult the health professions advising web site on required coursework and overall preparation.

Teacher Licensure

Students who wish to become teachers should pursue either the Biology, BA or the Biology, BS in addition to obtaining teaching certificates through the College of Education and Human Development. For more information, visit the Graduate School of Education’s website (https://gse.gmu.edu/).

Biology for Non-majors

Students who are not majoring in science or mathematics and wish to fulfill their natural science requirement may enroll in the biology classes listed in the Mason Core Natural Science section. Chemistry, physics, and mathematics majors should consult with their faculty advisor to determine which biology courses to take.

Programs

- Biology Minor
- Biology, BA
- Biology, BS
- Career Changer's Biological Sciences Undergraduate Certificate
- Medical Laboratory Science, BS

Biology Minor

Banner Code: BIOL

Academic Advising

1200 Exploratory Hall
Fairfax Campus

Website: biology.gmu.edu/academics/degree-programs/

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor. For policies governing all minors, see AP.5.3.4 Minors.

Candidates for the minor in biology must complete required coursework with a minimum GPA of 2.00 or better and must earn a grade of 'C' or better in BIOL 213 Cell Structure and Function (Mason Core).

Requirements

Minor Requirements

Total credits: 18-19

Students should refer to the Admissions & Policies tab for specific policies related to this program.

Coursework

Code	Title	Credits
BIOL 213	Cell Structure and Function (Mason Core)	4
BIOL 308	Foundations of Ecology and Evolution	4-5
or BIOL 300	BioDiversity	
BIOL 311	General Genetics	4

Elective courses in biology to achieve at least 18 credits (one of which may be lower-level)	6
Total Credits	18-19

Biology, BA

Banner Code: SC-BA-BIOL

Academic Advising

1200 Exploratory Hall
Fairfax Campus

Website: biology.gmu.edu/academics/degree-programs/

The Bachelor of Arts in Biology provides a sound liberal arts education with substantial experience in quantitative and analytical thought, along with preparation for related professions. The program provides the strong background necessary for not only for graduate study in the life sciences, but also enables students to develop careers in a wide variety of disciplines, including teaching, environmental management, microbiology, molecular biology, biotechnology, genetics, wildlife management, fisheries biology, and marine science. Furthermore, our curriculum prepares students for careers in the health sciences including medicine, dentistry, veterinary science, and related allied health disciplines.

Admissions & Policies

Admissions

University-wide admissions policies can be found in the Undergraduate Admissions Policies section of this catalog.

To apply for this program, please complete the George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now/).

Policies

Students must fulfill all Requirements for Bachelor's Degrees, including the Mason Core. Students in this bachelor's program must also complete the additional College Requirements for the BA Degree (see Requirements).

The writing intensive requirement is fulfilled by BIOL 308 Foundations of Ecology and Evolution. Transfer students who have transferred in BIOL 308 Foundations of Ecology and Evolution but did not meet the writing intensive requirement may take MLAB 300 Science Writing to meet the writing intensive requirement.

Important information and departmental policies are listed with the Department of Biology.

For policies governing all undergraduate programs, see AP.5 Undergraduate Policies.

Important Program Requirements

Students must complete the degree requirements with:

- A minimum GPA of 2.00 in the BIOL courses listed in the degree program
- A minimum GPA of 2.00 in the supporting courses listed in the degree program

Additionally:

- Students may apply no more than 4 credits of BIOL 103 Introductory Biology II-Survey of Cell and Molecular Biology (Mason Core) or BIOL 107 Intro Biology II Lecture (Mason Core) and BIOL 106 Introductory Biology II Laboratory (Mason Core) toward elective credit (or equivalent transfer credit at the 100 to 200-level) if taken before the successful completion of BIOL 213 Cell Structure and Function (Mason Core).
- Biology majors must earn a minimum grade of 'C' in all of the biology core courses. A grade of 'C' or better must be earned in BIOL 213 Cell Structure and Function (Mason Core) in order to advance to other core requirements.
- Students may repeat BIOL 213 Cell Structure and Function (Mason Core) once, but a second time only with permission of the Department of Biology.
- Students may **not** count BIOL 124 Human Anatomy and Physiology and/or BIOL 125 Human Anatomy and Physiology toward any biology major requirement.
- Students who take BIOL 300 BioDiversity may **not** count BIOL 303 Animal Biology and/or BIOL 304 Plant Biology toward any biology major requirement.
- BIOL 308 Foundations of Ecology and Evolution meets the writing intensive requirement for this major. Transfer students who have transferred in BIOL 308 Foundations of Ecology and Evolution but did not meet the writing intensive requirement may take MLAB 300 Science Writing to meet the writing intensive requirement.
- BIOL 493 Honors Research in Biology, BIOL 495 Directed Studies in Biology, and BIOL 497 Special Problems in Biology do not satisfy the requirements of the BA degree which state that students must complete at least one upper division course that includes a laboratory. The courses do, however, count as non-laboratory electives. The total limit for BIOL 493 Honors Research in Biology, BIOL 495 Directed Studies in Biology and BIOL 497 Special Problems in Biology combined is 3 credits toward 32 credits for the BA.

Teacher Licensure

Students majoring in biology who wish to pursue a career teaching secondary school may consider applying for the Secondary Education - Biology (6-12) Undergraduate Certificate offered by the College of Education and Human Development as an option in seeking an initial Virginia teaching license.

Other routes to licensure include the Biology, BA or BS/Curriculum and Instruction, Accelerated MEd (Secondary Education Biology Concentration) or select traditional Master's programs. Please contact the undergraduate advisor in the College of Education and Human Development for more information.

Requirements

Degree Requirements

Total credits: minimum 120

Students should refer to the Admissions & Policies tab for specific policies related to this program.

Biology, BA majors are required to complete the following coursework with the option of also completing the Biological Illustration Concentration.

Biology Core Courses

Code	Title	Credits
BIOL 213	Cell Structure and Function (Mason Core)	4
BIOL 214	Biostatistics for Biology Majors	4
BIOL 300	BioDiversity	4
BIOL 308	Foundations of Ecology and Evolution [1]	5
BIOL 311	General Genetics	4
Total Credits		21

[1] Fulfills the writing intensive requirement.
Transfer students who have transferred in BIOL 308 Foundations of Ecology and Evolution but did not meet the writing intensive requirement may take MLAB 300 Science Writing to meet the writing intensive requirement.

Biology Electives

Code	Title	Credits
Complete 11 credits of additional biology courses [1]		11

[1] Of which, at least 7 credits must be upper division, and at least one of these upper division courses must include a laboratory.

Chemistry

Code	Title	Credits
CHEM 211 & CHEM 213	General Chemistry I (Mason Core) and General Chemistry Laboratory I (Mason Core) (Natural Science course)	4
CHEM 212 & CHEM 214	General Chemistry II (Mason Core) and General Chemistry Laboratory II (Mason Core) (Natural Science course)	4
Total Credits		8

Math

Code	Title	Credits
Select one from the following:		3-6
MATH 111	Linear Mathematical Modeling (Mason Core) (Quantitative Reasoning courses)	
or MATH 113	Analytic Geometry and Calculus I (Mason Core)	
MATH 123 & MATH 124	Calculus with Algebra/Trigonometry, Part A and Calculus with Algebra/Trigonometry, Part B (Mason Core)	
Total Credits		3-6

Computer Science

Code	Title	Credits
Select one from the following:		3
CDS 130	Computing for Scientists [1]	
Any course(s) that fulfills the Mason Core: Information Technology requirement		
Total Credits		3

[1] Recommended by the Department of Biology

Natural Science

Code	Title	Credits
Select 6-7 credits from the following Mason Core: Natural Science courses:		6-7
ASTR 103	Astronomy (Mason Core)	
ASTR 111	The Solar System (Mason Core)	
ASTR 113	Stars, Galaxies, and the Universe (Mason Core)	
GEOL 101	Introductory Geology I (Mason Core)	
GEOL 102	Historical Geology (Mason Core)	
PHYS 160	University Physics I (Mason Core)	
PHYS 243	College Physics I (Mason Core)	
PHYS 245	College Physics II (Mason Core)	
PHYS 260	University Physics II (Mason Core)	
Total Credits		6-7

Concentration in Biological Illustration (BIOI)

This optional concentration consists of a selection of courses designed to address the needs and interests of students who wish to study biology and simultaneously have the aptitude to draw, animate, or design art for textbooks, videos, papers, etc. This concentration has significant biology, chemistry, and physics components like all biology majors, and includes art classes that will prepare students for the opportunity to use their love of biology and art in one degree.

Code	Title	Credits
AVT 180	New Media in the Creative Arts	3
AVT 222	Drawing I (Mason Core)	3
AVT 385	EcoArt (Mason Core)	3
or AVT 497	Senior Project (Mason Core)	
Choose 12 additional art credits from the following courses:		12
AVT 323	Drawing II	
AVT 324	Figure Drawing	
AVT 327	Illustration	
AVT 328	Mixed Media	
AVT 382	2D Experimental Animation	
AVT 383	3D Experimental Animation	
AVT 422	Drawing III	
Total Credits		21

Note for Students Expecting to Enter Graduate or Professional School

Students expecting to enter graduate or professional school are strongly encouraged to complete:

Code	Title	Credits
MATH 113 & MATH 114	Analytic Geometry and Calculus I (Mason Core) and Analytic Geometry and Calculus II	8

CHEM 313 & CHEM 315	Organic Chemistry I and Organic Chemistry Lab I	5
CHEM 314 & CHEM 318	Organic Chemistry II and Organic Chemistry Lab II	5
PHYS 243 & PHYS 244	College Physics I (Mason Core) and College Physics I Lab (Mason Core)	4
PHYS 245 & PHYS 246	College Physics II (Mason Core) and College Physics II Lab (Mason Core)	4

Mason Core and Elective Requirements

In order to meet a minimum of 120 credits, this degree requires an additional credits (specific credit counts by concentration are shown below), which may be applied toward any remaining Mason Core requirements (outlined below), Requirements for Bachelor's Degrees (refer to AP.5.3.2), College Requirements for the BA Degree (outlined below), and elective courses. Students are strongly encouraged to consult with their advisors to ensure that they fulfill all requirements.

- Without concentration: 64-68 credits
- BIOI concentration: 43-47 credits

Mason Core

Some Mason Core requirements may already be fulfilled by the major requirements listed above. Students are strongly encouraged to consult their advisors to ensure they fulfill all remaining Mason Core requirements.

Code	Title	Credits
Foundation Requirements		
Written Communication (ENGH 101)		3
Oral Communication		3
Quantitative Reasoning		3
Information Technology and Computing		3
Exploration Requirements		
Arts		3
Global Understanding		3
Literature		3
Natural Science		7
Social and Behavioral Sciences		3
Western Civilization/World History		3
Integration Requirements		
Written Communications (ENGH 302)		3
Writing-Intensive [1]		3
Synthesis/Capstone [2]		3
Total Credits		40

1. Most programs include the writing-intensive course designated for the major as part of the major requirements; this course is therefore not counted towards the total required for Mason Core.
2. Minimum 3 credits required.

College Requirements for the BA Degree

In addition to the program requirements and the Mason Core requirements, students pursuing a BA degree must complete the coursework below. Except where expressly prohibited, a course used to fulfill this college-level requirement may also be used simultaneously to satisfy other requirements such as Mason Core requirements, other college-level requirements, or requirements for the major. In some cases, the requirements listed below may be superseded by requirements of the degree program and the Mason Core.

Philosophy or Religious Studies

Code	Title	Credits
Select 3 credits from the following:		3
PHIL [1]		
RELI		

1. PHIL 323 Classical Western Political Theory and PHIL 324 Modern Western Political Theory may not be used to fulfill this requirement.

Social and Behavioral Sciences

Choose one approved Mason Core: Social and Behavioral Sciences course in addition to the Mason Core-required course for a total of 6 credits. The two courses used to fulfill the combined college-level and university requirements must be from different disciplines.

This requirement may be fulfilled by completing any course in ANTH, CRIM, ECON, GOVT, HIST[1], LING, PSYC, or SOCI, and the following GGS courses:

Code	Title	Credits
Select any course from the disciplines above or select from the following GGS courses:		3
GGS 101	Major World Regions (Mason Core)	
GGS 103	Human Geography (Mason Core)	
GGS 110	Introduction to Geoinformation Technologies	
GGS 301	Political Geography (Mason Core)	
GGS 303	Geography of Resource Conservation (Mason Core)	
GGS 304	Population Geography (Mason Core)	
GGS 305	Economic Geography	
GGS 306	Urban Geography	
GGS 315	Geography of the United States	
GGS 316	Geography of Latin America	
GGS 320	Geography of Europe	
GGS 325	Geography of North Africa and the Middle East	
GGS 330	Geography of the Soviet Succession States	
GGS 357	Urban Planning	
GGS 380	Geography of Virginia	
Total Credits		3

1. HIST 100 History of Western Civilization (Mason Core) and HIST 125 Introduction to World History (Mason Core)may not be used to fulfill this requirement.

Natural Science

Choose one credit in addition to the Mason Core: Natural Science requirement for a total of 8 credits[1]. This combined college-level and university requirement must be fulfilled by completing two of any approved Mason Core: Natural Science courses that include a laboratory experience[2].

Code	Title	Credits
Select an additional Mason Core Natural Science course		1

1 For Geography, BA majors, this extra credit is not required.

2 BIOL 124 Human Anatomy and Physiology and BIOL 125 Human Anatomy and Physiology may not be used to fulfill this requirement.

Foreign Language

Intermediate-level proficiency in one foreign language is required. This requirement may be fulfilled by completing a course in a foreign language numbered 202 (https://catalog.gmu.edu/colleges-schools/humanities-social-sciences/modern-classical-languages/) (or higher level courses taught in the language) or achieving a satisfactory score on an approved proficiency test. A three course sequence in American Sign Language (EDSE 115 (https://catalog.gmu.edu/search/?P=EDSE%20115) American Sign Language (ASL) I, EDSE 116 (https://catalog.gmu.edu/search/?P=EDSE%20116) American Sign Language (ASL) II, and EDSE 219 (https://catalog.gmu.edu/search/?P=EDSE%20219) American Sign Language (ASL) III) will also meet the foreign language requirement. Students who are already proficient in a second language may be eligible for a waiver of this requirement. Additional information on waivers can be found at the Office of Academic and Student Affairs (http://cosundergrad.gmu.edu/).

Non-Western Culture

Choose one approved Non-Western Culture Requirement[1] course in addition to the course used to fulfill the Mason Core: Global Understanding requirement. A course used to fulfill the Mason Core: Global Understanding requirement may not be simultaneously used to satisfy this college-level requirement. However, a course used to fulfill this requirement may be used simultaneously to fulfill any *other* requirements (Mason Core requirements, college-level requirements, or requirements for the major).

Code	Title	Credits
Select 3 credits from approved Non-Western Culture courses if a waiver isn't applicable:		0-3
ANTH 114	Introduction to Cultural Anthropology (Mason Core)	3
ANTH 300	Civilizations	3
ANTH 302	Peoples and Cultures of Latin America (Mason Core)	3
ANTH 307	Ancient Mesoamerica (Mason Core)	3
ANTH 308	Peoples and Cultures of the Middle East (Mason Core)	3
ANTH 309	Peoples and Cultures of India (Mason Core)	3
ANTH 313	Myth, Magic, and Mind (Mason Core)	3
ANTH 314	Zombies	3
ANTH 330	Peoples and Cultures of Selected Regions: Non-Western	3
ANTH 332	Cross-Cultural Perspectives on Globalization (Mason Core)	3
ANTH 381	Medical Anthropology	3
ANTH 396	Issues in Anthropology: Social Sciences (Mason Core)	3
ARAB 360	Topics in Arabic Cultural Production	3
ARAB 420	Survey of Arabic Literature	3
ARAB 440	Topics in Arabic Religious Thought and Texts (Mason Core)	3
ARTH 203	Survey of Asian Art (Mason Core)	3
ARTH 204	Survey of Latin American Art (Mason Core)	3
ARTH 206	Survey of African Art (Mason Core)	3
ARTH 318	Art and Archaeology of Ancient Egypt	3
ARTH 319	Art and Archaeology of the Ancient Near East (Mason Core)	3
ARTH 320	Art of the Islamic World (Mason Core)	3
ARTH 382	Arts of India (Mason Core)	3
ARTH 383	Arts of Southeast Asia (Mason Core)	3
ARTH 384	Arts of China (Mason Core)	3
ARTH 385	Arts of Japan (Mason Core)	3
ARTH 386	The Silk Road (Mason Core)	3
ARTH 482	RS: Advanced Studies in Asian Art	3
CHIN 318	Introduction to Classical Chinese (Mason Core)	3
CHIN 320	Contemporary Chinese Film	3
CHIN 325	Major Chinese Writers (Mason Core)	3
CHIN 470	Special Topics in Chinese Studies	3
DANC 118	World Dance (Mason Core)	3
ECON 361	Economic Development of Latin America (Mason Core)	3
ECON 362	African Economic Development (Mason Core)	3
FREN 451	Topics in Sub-Saharan Francophone Literature and Culture	3
FREN 454	Topics in Caribbean Francophone Literature and Culture	3
GGS 101	Major World Regions (Mason Core)	3
GGS 316	Geography of Latin America	3
GGS 317	Geography of China (Mason Core)	3
GGS 325	Geography of North Africa and the Middle East	3
GGS 330	Geography of the Soviet Succession States	3
GGS 399	Select Topics in GGS	3
GOVT 328	Global Political Theory	3
GOVT 332	Government and Politics of the Middle East and North Africa	3
GOVT 333	Government and Politics of Asia	3
GOVT 338	Government and Politics of Russia	3
GOVT 340	Central Asian Politics	3
GOVT 341	Chinese Foreign Policy	3
GOVT 345	Islam and Politics	3
GOVT 433	Political Economy of East Asia	3
HIST 251	Survey of East Asian History (Mason Core)	3
HIST 252	Survey of East Asian History (Mason Core)	3
HIST 261	Survey of African History (Mason Core)	3
HIST 262	Survey of African History (Mason Core)	3

HIST 271	Survey of Latin American History (Mason Core)	3
HIST 272	Survey of Latin American History (Mason Core)	3
HIST 281	Survey of Middle Eastern Civilization (Mason Core)	3
HIST 282	Survey of Middle Eastern Civilization (Mason Core)	3
HIST 326	Stalinism	3
HIST 327	The Soviet Union and Russia Since World War II	3
HIST 328	Rise of Russia (Mason Core)	3
HIST 329	Modern Russia and the Soviet Union (Mason Core)	3
HIST 353	History of Traditional China	3
HIST 354	Modern China (Mason Core)	3
HIST 356	Modern Japan (Mason Core)	3
HIST 357	Postwar Japan (Mason Core)	3
HIST 358	Post-1949 China (Mason Core)	3
HIST 360	History of South Africa (Mason Core)	3
HIST 364	Revolution and Radical Politics in Latin America (Mason Core)	3
HIST 365	Conquest and Colonization in Latin America (Mason Core)	3
HIST 366	Comparative Slavery	3
HIST 367	History, Fiction, and Film in Latin America	3
HIST 387	Topics in Global History (Mason Core)	3-6
HIST 426	The Russian Revolution	3
HIST 460	Modern Iran (Mason Core)	3
HIST 461	Arab-Israeli Conflict	3
HIST 462	Women in Islamic Society (Mason Core)	3
HIST 465	The Middle East in the 20th Century	3
JAPA 310	Japanese Culture in a Global World (Mason Core)	3
JAPA 340	Topics in Japanese Literature (Mason Core)	3
KORE 320	Korean Popular Culture in a Global World	3
MUSI 103	Musics of the World (Mason Core)	3
RELI 211	Religions of the West (Mason Core)	3
RELI 212	Religions of Asia (Mason Core)	3
RELI 240	Death and the Afterlife in World Religions	3
RELI 272	Islam	3
RELI 313	Hinduism (Mason Core)	3
RELI 314	Chinese Philosophies and Religious Traditions	3
RELI 315	Buddhism (Mason Core)	3
RELI 317	Daoism	3
RELI 337	Mysticism: East and West	3
RELI 365	Muhammad: Life and Legacy	3
RELI 374	Islamic Thought (Mason Core)	3
RELI 375	Qur'an and Hadith	3
RELI 379	Islamic Law, Society, and Ethics	3
RELI 387	Islam, Democracy, and Human Rights	3
RELI 490	Comparative Study of Religions (Mason Core)	3
RUSS 353	Russian Civilization (Mason Core)	3
RUSS 354	Contemporary Post-Soviet Life (Mason Core)	3

[1] Students who can document attendance at a native school in a non-western country for at least four years may request a waiver from this requirement through the CHSS Undergraduate Academic Affairs Office (http://chssundergrad.gmu.edu/).

Honors

Honors in the Major

Admissions

Minimum requirements for invitation:

- GPA in biology courses must be 3.33 or better
- GPA in supporting requirements (math and other science) must be 3.00 or better
- Grade of 'B' or better in BIOL 213 Cell Structure and Function (Mason Core)

Students should apply for admission to the Honors Program during their first or second year at the university. Contact the Department of Biology for information on applying.

Retention Requirements

Students in honors biology must maintain a biology GPA of 3.33 or better and a supporting GPA of 3.00 or better from the time they have accumulated 30 hours and thereafter. Students who fall below this standard will be given a one semester probationary period in which to bring their GPA back up to the minimum standard.

Requirements to Graduate with Biology Honors

Students are required to take 6 to 8 credits in honors courses in BIOL including three semesters of BIOL 494 Honors Seminar in Biology or two semesters of BIOL 494 Honors Seminar in Biology and one semester of BIOL 493 Honors Research in Biology. BIOL 498 Research Seminar may count toward one of the semester requirements of BIOL 494 Honors Seminar in Biology. The GPA requirements are as follows:

- Minimum 3.33 GPA in honors biology courses
- Minimum 3.33 GPA in biology requirements
- Minimum 3.00 GPA in supporting requirements
- Minimum 3.00 GPA overall

Accelerated Master's

Biology, BA or BS/Curriculum and Instruction, Accelerated MEd (Secondary Education Biology Concentration)

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BA or BS in Biology (degree without concentration) and an MEd in Curriculum and Instruction

(Secondary Education Biology concentration) (https://catalog.gmu.edu/colleges-schools/education-human-development/school-education/curriculum-instruction-med/) in an accelerated time-frame after satisfactory completion of a minimum of 143 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degree for policies related to this program.

This accelerated option is offered jointly by the Biology Undergraduate Program and the School of Education.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies (https://catalog.gmu.edu/admissions/graduate-policies/) and Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies. For information specific to this accelerated master's program, see Application Requirements and Deadlines (https://cehd.gmu.edu/bachelors-accelerated-masters-program/).

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits, and additional unit-specific criteria.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MEd program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- 3.0 overall GPA
- Completion of specific undergraduate coursework
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following which can be taken as Advanced Standing or Reserve Graduate credit (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) (to be determined by the student and their advisor):

Code	Title	Credits
EDRD 619	Literacy in the Content Areas	3
EDUC 547	Scientific Inquiry and the Nature of Science	3
SEED 522	Foundations of Secondary Education	3
SEED 540	Human Development and Learning: Secondary Education	3
SEED 573	Teaching Science in the Secondary School	3
SEED 673	Advanced Methods of Teaching Science in the Secondary School	3
SEED approved elective		

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies.

Biology, BS

Banner Code: SC-BS-BIOL

Academic Advising

1200 Exploratory Hall
Fairfax Campus

Website: biology.gmu.edu/academics/degree-programs/

The Bachelor of Science in Biology provides a sound liberal arts education with substantial experience in quantitative and analytical thought, along with preparation for related professions. The program provides the strong background necessary for not only graduate study in the life sciences, but also enables students to develop careers in a wide variety of disciplines, including teaching, environmental management, microbiology, molecular biology, biotechnology, genetics, wildlife management, fisheries biology, and marine science. Furthermore, our curriculum prepares students for careers in the health sciences including medicine, dentistry, veterinary science, and related allied health disciplines.

Admissions & Policies

Admissions

University-wide admissions policies can be found in Undergraduate Admissions Policies.

To apply for this program, please complete the George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now/).

Policies

Students must fulfill all Requirements for Bachelor's Degrees, including the Mason Core.

Important information and departmental policies are listed in the Department of Biology.

BIOL 308 Foundations of Ecology and Evolution meets the writing intensive requirement for this major. Transfer students who have transferred in BIOL 308 Foundations of Ecology and Evolution but did not meet the writing intensive requirement may take MLAB 300 Science Writing to meet the writing intensive requirement.

For policies governing all undergraduate degrees, see AP.5 Undergraduate Policies.

Important Program Requirements

- Students may apply no more than 8 credits of BIOL 103 Introductory Biology II-Survey of Cell and Molecular Biology (Mason Core) or BIOL 107 Intro Biology II Lecture (Mason Core) and BIOL 106

Introductory Biology II Laboratory (Mason Core) toward elective credit (or equivalent transfer credit at the 100 to 200-level) if taken before successful completion of BIOL 213 Cell Structure and Function (Mason Core).

- Biology majors must earn a minimum grade of 'C' in all biology core courses. A grade of 'C' or better must be earned in BIOL 213 Cell Structure and Function (Mason Core) in order to advance to other core requirements.
- Students may repeat BIOL 213 Cell Structure and Function (Mason Core) once, but a second time only with permission from the Department of Biology.
- Students may **not** count BIOL 124 Human Anatomy and Physiology and/or BIOL 125 Human Anatomy and Physiology toward any biology major requirement.
- Students who take BIOL 300 BioDiversity may **not** count BIOL 303 Animal Biology and/or BIOL 304 Plant Biology toward any biology major requirement.
- 44 credits must be in biology coursework.
- BIOL 493 Honors Research in Biology, BIOL 495 Directed Studies in Biology, and BIOL 497 Special Problems in Biology do not satisfy the requirements of the BS degree which state that students must complete at least two upper division courses that include a laboratory. The courses do, however, count as non-laboratory electives. The total limit for BIOL 493 Honors Research in Biology, BIOL 495 Directed Studies in Biology, and BIOL 497 Special Problems in Biology combined is 6 credits toward the 44 credits required for the BS.

Several optional concentrations are available; details on each can be found in the Requirements tab.

Teacher Licensure

Students majoring in biology who wish to pursue a career teaching secondary school may consider applying for the Secondary Education - Biology (6-12) Undergraduate Certificate offered by the College of Education and Human Development as an option in seeking an initial Virginia teaching license.

Other routes to licensure include the Biology, BA or BS/Curriculum and Instruction, Accelerated MEd (Secondary Education Biology Concentration) or select traditional Master's programs. Please contact the College of Education and Human Development for more information.

Requirements

Degree Requirements

Total credits: minimum 120

Students should refer to the Admissions & Policies tab for specific policies related to this program.

Students must complete their biology coursework and the supporting requirements which follow with a minimum GPA of 2.00.

All students must complete the Core Courses listed below. Students then elect to complete the BS degree either with a concentration or without a concentration.

Core Courses

Code	Title	Credits
Biology		
BIOL 213	Cell Structure and Function (Mason Core)	4
BIOL 214	Biostatistics for Biology Majors	4
BIOL 300	BioDiversity	4
BIOL 308	Foundations of Ecology and Evolution [1]	5
BIOL 311	General Genetics	4
Chemistry		
CHEM 211 & CHEM 213	General Chemistry I (Mason Core) and General Chemistry Laboratory I (Mason Core)	4
CHEM 212 & CHEM 214	General Chemistry II (Mason Core) and General Chemistry Laboratory II (Mason Core)	4
CHEM 313 & CHEM 315	Organic Chemistry I and Organic Chemistry Lab I	5
Physics		
Select from one of the following Mason Core Natural Science sequences:		8
PHYS 160 & PHYS 161 & PHYS 260 & PHYS 261	University Physics I (Mason Core) and University Physics I Laboratory (Mason Core) and University Physics II (Mason Core) and University Physics II Laboratory (Mason Core)	
PHYS 243 & PHYS 244 & PHYS 245 & PHYS 246	College Physics I (Mason Core) and College Physics I Lab (Mason Core) and College Physics II (Mason Core) and College Physics II Lab (Mason Core)	
Mathematics		
Select one from the following:		3-6
MATH 111	Linear Mathematical Modeling (Mason Core)	
or MATH 113	Analytic Geometry and Calculus I (Mason Core)	
MATH 123 & MATH 124	Calculus with Algebra/Trigonometry, Part A and Calculus with Algebra/Trigonometry, Part B (Mason Core)	
Computer Science		
Select one from the following:		3
CDS 130	Computing for Scientists [2]	
Any course(s) that fulfills the Mason Core: Information Technology requirement		
Total Credits		48-51

[1] Fulfills writing intensive requirement.
Transfer students who have transferred in BIOL 308 Foundations of Ecology and Evolution but did not meet the writing intensive requirement may take MLAB 300 Science Writing to meet the writing intensive requirement.

[2] Recommended by the Department of Biology.

BS without Concentration

Students who do not select an optional concentration must complete the biology core and shared courses shown above in addition to the curriculum requirements listed below.

Code	Title	Credits
Biology Electives		
Complete 23 credits of additional biology courses [1]		23
Additional Science Courses		
Students are encouraged to consult with a biology faculty advisor to determine which option (A, B, or C) best meets their career goals. Select one from the following options:		3-8
Option A:		
CHEM 314 & CHEM 318	Organic Chemistry II and Organic Chemistry Lab II	
Option B:		
One 3 credit chemistry course at the 300 or 400-level (not CHEM 314)		
Option C:		
GEOL 101	Introductory Geology I (Mason Core) (Natural Science courses)	
GEOL 102 & GEOL 104	Historical Geology (Mason Core) and Historical Geology Laboratory (Mason Core)	
Total Credits		26-31

Note:
Students expecting to enter a professional school are strongly encouraged to complete MATH 113 Analytic Geometry and Calculus I (Mason Core).

[1] Of which, at least 15 credits must be upper division, and at least two of the upper division courses must include a laboratory.

Concentration in Bioinformatics (BNF)

The highly interdisciplinary field of bioinformatics has emerged as a powerful modern science. There is a great demand for undergraduate and graduate-level trained individuals with a background in bioinformatics in industry as well as in academia.

Code	Title	Credits
Computer Science		**3**
Please note: CDS 130 is recommended to fulfill the Computer Science requirement in the shared core above.		
CDS 230	Modeling and Simulation I	
Bioinformatics		**6**
BINF 401	Bioinformatics and Computational Biology I	
BINF 402	Bioinformatics and Computational Biology II	
Biology		**14-16**
BIOL 312	Biostatistics for Bioinformatics	
BIOL 401	Phage Discovery	
BIOL 412	Phage Genomics	
Biology Lab Elective		
Select one from the following:		
BIOL 305 & BIOL 306	Biology of Microorganisms and Biology of Microorganisms Laboratory	
BIOL 320	Comparative Chordate Anatomy	
BIOL 322 & BIOL 323	Developmental Biology and Lab for Developmental Biology	
BIOL 331	Invertebrate Zoology	
BIOL 332	Insect Biology	
BIOL 334	Vertebrate Paleontology	
BIOL 336	Invertebrate Paleontology	
BIOL 344	Plant Diversity and Evolution	
BIOL 345	Plant Ecology	
BIOL 350	Freshwater Ecosystems	
BIOL 355	Ecological Engineering and Ecosystem Restoration	
BIOL 379	RS: Ecological Sustainability (Mason Core)	
BIOL 385 & BIOL 486	Biotechnology and Genetic Engineering and Molecular Biology and Biotechnology Laboratory	
BIOL 405	Microbial Genetics	
BIOL 407	Microbial Diversity	
BIOL 430	Advanced Human Anatomy and Physiology I	
BIOL 431	Advanced Human Anatomy and Physiology II	
BIOL 437	Orinthology	
BIOL 438	Mammalogy	
BIOL 439	Herpetology	
BIOL 452 & BIOL 453	Immunology and Immunology Laboratory	
BIOL 454 & BIOL 455	Marine Mammal Biology and Conservation and Marine Mammal Biology and Conservation Field Course	
BIOL 465	Histology	
BIOL 468	Vertebrate Natural History	
BIOL 472 & BIOL 473	Introductory Animal Behavior and Introductory Laboratory in Animal Behavior	
BIOL 484 & BIOL 485	Cell Signaling and Disease and Cell Signaling Laboratory	
BIOL 509 & BIOL 510	DNA Analysis of Biological Evidence and Forensic DNA Analysis Laboratory	
BIOL 543	Tropical Ecosystems	
Additional Science Courses		
Select one from the following options: [1]		3-8
Option A:		
CHEM 314	Organic Chemistry II	
CHEM 318	Organic Chemistry Lab II	
Option B:		
One 3 credit chemistry course at the 300 or 400-level [2]		
Option C:		
GEOL 101	Introductory Geology I (Mason Core)	

GEOL 102 & GEOL 104	Historical Geology (Mason Core) and Historical Geology Laboratory (Mason Core)	
Total Credits		26-33

[1] Students are encouraged to consult with a biology advisor to determine which option (A, B, or C) best meets their career goals.

[2] CHEM 314 Organic Chemistry II does not fulfill this requirement.

Concentration in Biopsychology (BP)

The biopsychology concentration consists of a selection of courses designed to address the needs and interest of students who wish to study biology in more depth while simultaneously exploring psychology and neurobiology. This concentration will help prepare students for the MCAT section related to psychology and provide veterinary students with a background in animal learning/behavior.

Code	Title	Credits
Biopsychology Courses		
BIOL 430	Advanced Human Anatomy and Physiology I	4
BIOL 431	Advanced Human Anatomy and Physiology II	4
PSYC 372	Biopsychology	3
PSYC 373	Biopsychology Laboratory	2
Additional Psychology/Neuroscience Course		
Select 3-4 credits from the following:		3-4
PSYC 304	Principles of Learning	
PSYC 376	Brain and Behavior	
PSYC 406	Psychology of Communication (Mason Core)	
NEUR 327	Cellular, Neurophysiological, and Pharmacological Neuroscience	
NEUR 335	Molecular, Developmental, and Systems Neuroscience	
Additional Biology Courses		
Select 7-8 credits from the following:		7-8
BIOL 305	Biology of Microorganisms	
BIOL 306	Biology of Microorganisms Laboratory	
BIOL 314	Introduction to Research Design and Analysis	
BIOL 322	Developmental Biology	
BIOL 323	Lab for Developmental Biology	
BIOL 437	Orinthology	
BIOL 438	Mammalogy	
BIOL 472	Introductory Animal Behavior	
BIOL 473	Introductory Laboratory in Animal Behavior	
BIOL 483	General Biochemistry	
Additional Chemistry Courses		
Select one from the following options: [1]		3-5
Option A:		
CHEM 314 & CHEM 318	Organic Chemistry II and Organic Chemistry Lab II	
Option B:		
One chemistry course at the 300 or 400-level [2]		
Total Credits		26-30

[1] Students are encouraged to consult with a biology faculty advisor to determine which option best meets their career goals.

[2] CHEM 314 Organic Chemistry II alone does not fulfill this requirement.

Concentration in Biotechnology and Molecular Biology (BTMB)

The biotechnology and molecular biology concentration consists of a selection of courses that provide essential skills to students who seek employment in the field or wish to include an applied component in their undergraduate training in biology.

Code	Title	Credits
Biotechnology Courses		
BIOL 305	Biology of Microorganisms	3
BIOL 306	Biology of Microorganisms Laboratory	1
BIOL 385	Biotechnology and Genetic Engineering	3
BIOL 483	General Biochemistry	4
Additional Biology Courses		
Select 12 credits from the following, at least one of the courses must include a laboratory:		12
Laboratory Courses:		
BIOL 402 & BIOL 403	Applied and Industrial Microbiology and Techniques in Applied and Industrial Microbiology	
BIOL 405	Microbial Genetics	
BIOL 452 & BIOL 453	Immunology and Immunology Laboratory	
BIOL 465	Histology	
BIOL 486	Molecular Biology and Biotechnology Laboratory	
Non-laboratory Courses:		
BIOL 314	Introduction to Research Design and Analysis	
BIOL 382	Introduction to Virology	
BIOL 401	Phage Discovery	
BIOL 411	Advanced General Genetics	
BIOL 412	Phage Genomics	
BIOL 417	Selected Topics in Molecular and Cellular Biology [1]	
BIOL 418	Current Topics in Microbiology [1]	
BIOL 420	Vaccines	
BIOL 421	Genetics of Human Diseases	
BIOL 422	Stem Cell Biology and Regenerative Medicine	
BIOL 482	Introduction to Molecular Genetics	
BIOL 484	Cell Signaling and Disease	
BIOL 497	Special Problems in Biology [1]	
Additional Chemistry Courses		
CHEM 314	Organic Chemistry II	3

CHEM 318	Organic Chemistry Lab II	2
Total Credits		28

[1] Registration for BIOL 417 Selected Topics in Molecular and Cellular Biology, BIOL 418 Current Topics in Microbiology, or BIOL 497 Special Problems in Biology is subject to approval by the Director of Undergraduate Studies and the Chair of the Department of Biology.

Concentration in Environmental and Conservation Biology (ESCB)

This concentration is offered to students seeking a biology degree that focuses on ecology and organismal biology and prepares them for graduate work or employment in environmental and conservation fields, such as natural resources management, fisheries, forestry, water quality management, aquatic and wetland ecology, and conservation biology. The concentration is staffed and supported by the Department of Environmental Science and Policy.

Code	Title	Credits
Environmental and Conservation Biology		
BIOL 318	Conservation Biology	3
BIOL 377	Applied Ecology	3
Biology Electives		
Select 17 credits from the following: [1]		17
BIOL 309	Oceanography	
BIOL 314	Introduction to Research Design and Analysis	
BIOL 326	Animal Physiology	
BIOL 331	Invertebrate Zoology	
BIOL 332	Insect Biology	
BIOL 344	Plant Diversity and Evolution	
BIOL 345	Plant Ecology	
BIOL 350	Freshwater Ecosystems	
BIOL 355	Ecological Engineering and Ecosystem Restoration	
BIOL 378	Applied Ecology Laboratory	
BIOL 379	RS: Ecological Sustainability (Mason Core)	
BIOL 437	Orinthology	
BIOL 438	Mammalogy	
BIOL 439	Herpetology	
BIOL 440	Field Biology	
BIOL 446	Ecological and Evolutionary Physiology	
BIOL 449	Marine Ecology	
BIOL 450	Marine Conservation	
BIOL 454	Marine Mammal Biology and Conservation	
BIOL 455	Marine Mammal Biology and Conservation Field Course	
BIOL 457	Reproductive Strategies	
BIOL 459	Fungi and Ecosystems	
BIOL 468	Vertebrate Natural History	
BIOL 472 & BIOL 473	Introductory Animal Behavior and Introductory Laboratory in Animal Behavior	
BIOL 480	The Diversity of Fishes	
BIOL 497	Special Problems in Biology [4]	
Additional Science Courses		
Select one from the following options: [2]		3-8
Option A:		
CHEM 314 & CHEM 318	Organic Chemistry II and Organic Chemistry Lab II	
Option B:		
One chemistry course at the 300 or 400-level [3]		
Option C:		
GEOL 101	Introductory Geology I (Mason Core)	
GEOL 102 & GEOL 104	Historical Geology (Mason Core) and Historical Geology Laboratory (Mason Core)	
Total Credits		26-31

[1] Of which, two courses must be selected from the list above and must have either: 2 laboratory courses or 1 laboratory course and 1 field course (consult with an advisor for guidance).

[2] Students are encouraged to consult with a biology faculty advisor to determine which option best meets their career goals.

[3] CHEM 314 Organic Chemistry II alone does not fulfill this requirement.

[4] Registration in BIOL 497 Special Problems in Biology is subject to approval by the Director of Undergraduate Studies and the Chairman of the Department of Biology.

Concentration in Microbiology (MIB)

This concentration offers lecture and laboratory courses in microbiology to prepare students for employment or advanced study in microbial genetics, physiology, diversity, and related fields.

Code	Title	Credits
Microbiology Courses		
BIOL 305	Biology of Microorganisms	3
BIOL 306	Biology of Microorganisms Laboratory	1
BIOL 405	Microbial Genetics	4
BIOL 407	Microbial Diversity	4
Biology Electives		
Select 11 credits from the following:		11
BIOL 314	Introduction to Research Design and Analysis	
BIOL 382	Introduction to Virology	
BIOL 385	Biotechnology and Genetic Engineering	
BIOL 401	Phage Discovery	
BIOL 402	Applied and Industrial Microbiology	
BIOL 403	Techniques in Applied and Industrial Microbiology	
BIOL 404	Medical Microbiology	
BIOL 412	Phage Genomics	
BIOL 418	Current Topics in Microbiology	
BIOL 420	Vaccines	
BIOL 452	Immunology	
BIOL 453	Immunology Laboratory	
BIOL 459	Fungi and Ecosystems	
BIOL 483	General Biochemistry	

Additional Chemistry Courses		
CHEM 314	Organic Chemistry II	3
CHEM 318	Organic Chemistry Lab II	2
Total Credits		28

Mason Core and Elective Credits

In order to meet a minimum of 120 credits, this degree requires additional credits (specific credit counts by concentration are shown below), which may be applied toward any remaining Mason Core requirements (outlined below), Requirements for Bachelor's Degrees (https://catalog.gmu.edu/policies/academic/undergraduate-policies/#ap-5-3-2), and electives. Students are strongly encouraged to consult with their advisors to ensure that they fulfill all requirements.

- Without concentration: 38-46 credits
- BNF concentration: 36-46 credits
- BP concentration: 39-46 credits
- BTMB concentration: 41-44 credits
- ESCB concentration: 38-46 credits
- MIB concentration: 41-44 credits

Mason Core

Some Mason Core requirements may already be fulfilled by the major requirements listed above. Students are strongly encouraged to consult their advisors to ensure they fulfill all remaining Mason Core requirements.

Code	Title	Credits
Foundation Requirements		
Written Communication (ENGH 101)		3
Oral Communication		3
Quantitative Reasoning		3
Information Technology and Computing		3
Exploration Requirements		
Arts		3
Global Understanding		3
Literature		3
Natural Science		7
Social and Behavioral Sciences		3
Western Civilization/World History		3
Integration Requirements		
Written Communications (ENGH 302)		3
Writing-Intensive [1]		3
Synthesis/Capstone [2]		3
Total Credits		40

1. Most programs include the writing-intensive course designated for the major as part of the major requirements; this course is therefore not counted towards the total required for Mason Core.
2. Minimum 3 credits required.

Honors

Honors in the Major

Admissions

Minimum requirements for invitation:

- GPA in biology courses must be 3.33 or better
- GPA in supporting requirements (math and other science) must be 3.00 or better
- Grade of 'B' or better in BIOL 213 Cell Structure and Function (Mason Core)

Students should apply for admission to the Honors Program during their first or second year at the university. Contact the Department of Biology for information on applying.

Retention Requirements

Students in honors biology must maintain a biology GPA of 3.33 or better and a supporting GPA of 3.00 or better from the time they have accumulated 30 hours and thereafter. Students who fall below this standard will be given a one semester probationary period in which to bring their GPA back up to the minimum standard.

Requirements to Graduate with Biology Honors

Students are required to take 6 to 8 credits in honors courses in BIOL including three semesters of BIOL 494 Honors Seminar in Biology or two semesters of BIOL 494 Honors Seminar in Biology and one semester of BIOL 493 Honors Research in Biology. BIOL 498 Research Seminar may count towards one of the semester requirements of BIOL 494 Honors Seminar in Biology. The GPA requirements are as follows:

- Minimum 3.33 GPA in honors biology courses
- Minimum 3.33 GPA in biology requirements
- Minimum 3.00 GPA in supporting requirements
- Minimum 3.00 GPA overall

Accelerated Master's

Biology, BA or BS/Curriculum and Instruction, Accelerated MEd (Secondary Education Biology Concentration)

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BA or BS in Biology (degree without concentration) and an MEd in Curriculum and Instruction (Secondary Education Biology concentration) (https://catalog.gmu.edu/colleges-schools/education-human-development/school-education/curriculum-instruction-med/) in an accelerated time-frame after satisfactory completion of a minimum of 143 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degree for policies related to this program.

This accelerated option is offered jointly by the Biology Undergraduate Program and the School of Education.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies (https://catalog.gmu.edu/admissions/graduate-policies/) and Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies. For information specific to this accelerated master's program, see Application Requirements and Deadlines (https://cehd.gmu.edu/bachelors-accelerated-masters-program/).

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits, and additional unit-specific criteria.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MEd program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- 3.0 overall GPA
- Completion of specific undergraduate coursework
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following which can be taken as Advanced Standing or Reserve Graduate credit (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) (to be determined by the student and their advisor):

Code	Title	Credits
EDRD 619	Literacy in the Content Areas	3
EDUC 547	Scientific Inquiry and the Nature of Science	3
SEED 522	Foundations of Secondary Education	3
SEED 540	Human Development and Learning: Secondary Education	3
SEED 573	Teaching Science in the Secondary School	3
SEED 673	Advanced Methods of Teaching Science in the Secondary School	3
SEED approved elective		

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies.

Biology, BS/Biology, Accelerated MS

Overview

This bachelor's/accelerated master's degree program allows academically strong undergraduates with a commitment to advance their education to obtain both the Biology, BS and the Biology, MS degrees within an accelerated timeframe. Upon completion of this 138 credit accelerated program, students will be exceptionally well prepared for entry into their careers or into a doctoral program in the field or in a related discipline.

Students are eligible to apply for this accelerated program once they have earned at least 60 undergraduate credits and can enroll in up to 18 credits of graduate coursework after successfully completing 75 undergraduate credits. This flexibility makes it possible for students to complete a bachelor's and a master's in five years.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies. For more information on undergraduates enrolling in graduate courses, see AP.1.4.4 Graduate Course Enrollment by Undergraduates (https://catalog.gmu.edu/policies/academic/registration-attendance/#text).

Application Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in the Graduate Admission Policies section of this catalog.

Important application information and processes for this accelerated master's program can be found here (https://www2.gmu.edu/admissions-aid/how-apply/accelerated-masters/).

Students should seek out the graduate program's advisor who will aid in choosing the appropriate graduate courses and help prepare the student for graduate studies.

Three letters of recommendation, including one from a prospective thesis or project advisor, are required.

GRE scores are not required for students in this accelerated program.

Successful applicants will have an overall undergraduate GPA of at least 3.10. Additionally, they will have completed the following courses with a GPA of 3.00 or higher[2]:

Code	Title	Credits
BIOL 213	Cell Structure and Function (Mason Core)	4
BIOL 214	Biostatistics for Biology Majors	4
BIOL 300	BioDiversity [1]	4
or BIOL 311	General Genetics	
CHEM 313 & CHEM 315	Organic Chemistry I and Organic Chemistry Lab I [2]	5

1. Students should speak with an advisor to choose the course most appropriate for their post-graduation goals.
2. Grades of 2.50 in CHEM 313 Organic Chemistry I and CHEM 315 Organic Chemistry Lab I are acceptable for admission into this accelerated pathway.

Accelerated Option Requirements

After the completion of 60 undergraduate credits, students must submit a bachelor's/accelerated master's transition form (available from the Office of the University Registrar (http://registrar.gmu.edu/)) to the College of Science's Office of Academic and Student Affairs (https://cos.gmu.edu/about/contact-us/).

At the completion of 75 undergraduate credits, students may begin completing up to 12 credits of graduate coursework that will count toward their bachelor's and master's.

Students must maintain an overall GPA of 3.00 or higher in graduate coursework and should consult with their faculty advisor to coordinate their academic goals.

Reserve Graduate Credit

Accelerated master's students may also take up to 6 graduate credits as reserve graduate credits. These credits do not apply to the undergraduate degree, but will reduce the master's degree by up to 6 credits. With 12 graduate credits counted toward the undergraduate degree plus the maximum 6 reserve graduate credits, the credits necessary for the graduate degree can be reduced by up to 18.

Graduate Course Suggestions

The following list of suggested courses is provided for general reference. To ensure an efficient route to graduation and post-graduation readiness, students are strongly encouraged to meet with an advisor before registering for graduate-level courses.

Code	Title	Credits
BIOL 508	Selected Topics in Animal Biology (When the topic is "Research and Development in a Biotechnological Company")	1-4
BIOL 682	Advanced Eukaryotic Cell Biology	3
BIOL 689	Interdisciplinary Tools in the Biosciences	3
BIOL 690	Introduction to Graduate Studies in Biology	1-2
BIOL 695	Seminar in Molecular, Microbial, and Cellular Biology	1

Bachelor's Degree (selected), Bioinformatics Management, Accelerated PSM

Overview

This bachelor's/accelerated master's degree program allows academically strong undergraduates with a commitment to advance their education to obtain both the Biology, BS (https://catalog.gmu.edu/colleges-schools/science/biology/biology-bs/), or the Chemistry, BS, or the Computational and Data Sciences, BS (https://catalog.gmu.edu/colleges-schools/science/computational-data-sciences/computational-data-sciences-bs/), or the Physics, BS (https://catalog.gmu.edu/colleges-schools/science/physics-astronomy/physics-bs/), or the Neuroscience, BS (https://catalog.gmu.edu/colleges-schools/science/neuroscience-program/neuroscience-bs/) and the Bioinformatics Management, PSM (https://catalog.gmu.edu/colleges-schools/science/systems-biology/bioinformatics-management-professional-science-masters/) degrees within an accelerated timeframe. Upon completion of this 138 credit accelerated program, students will be exceptionally well prepared for entry into their careers or into a doctoral program in the field or in a related discipline.

Students are eligible to apply for this accelerated program once they have earned at least 60 undergraduate credits and can enroll in up to 18 credits of graduate coursework after successfully completing 75 undergraduate credits. This flexibility makes it possible for students to complete a bachelor's and a master's in five years.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies. For more information on undergraduates enrolling in graduate courses, see AP.1.4.4 Graduate Course Enrollment by Undergraduates (https://catalog.gmu.edu/policies/academic/registration-attendance/#text).

Application Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in the Graduate Admission Policies section of this catalog.

Important application information and processes for this accelerated master's program can be found here (https://www2.gmu.edu/admissions-aid/how-apply/accelerated-masters/).

Students in the Biology, BS (https://catalog.gmu.edu/colleges-schools/science/biology/biology-bs/); Chemistry, BS (https://catalog.gmu.edu/colleges-schools/science/chemistry-biochemistry/chemistry-bs/); Computational and Data Sciences, BS (https://catalog.gmu.edu/colleges-schools/science/computational-data-sciences/computational-data-sciences-bs/); Neuroscience, BS (https://catalog.gmu.edu/colleges-schools/science/neuroscience-program/neuroscience-bs/); or Physics, BS (https://catalog.gmu.edu/colleges-schools/science/physics-astronomy/physics-bs/) with an overall GPA of at least 3.00 in their last 60 credits are welcome to apply to the Bioinformatics Management, PSM accelerated master's program. Applicants to this accelerated master's should have previously taken courses in molecular biology, computer science, calculus, physical chemistry, and statistics. Students with deficiencies in one or more of these areas may be required to take additional courses from the undergraduate curriculum.

The GRE requirement is waived for students accepted into this accelerated program.

Students should seek out the graduate program's advisor who will aid in choosing the appropriate graduate courses and help prepare the student for graduate studies.

Accelerated Option Requirements

After the completion of 75 undergraduate credits, students may complete 3 to 12 credits of graduate coursework that can apply to both the undergraduate and graduate degrees.

In addition to applying to graduate from the undergraduate program, students in the accelerated program must submit a bachelor's/accelerated master's transition form (available from the Office of the University Registrar (https://registrar.gmu.edu/forms/)) to the College of Science's Office of Academic and Student Affairs (https://cos.gmu.edu/about/contact-us/) by the last day to add classes of their final undergraduate semester. Students should enroll for courses in the master's program in the fall or spring semester immediately following

conferral of the bachelor's degree, but should contact an advisor if they would like to defer up to one semester.

Students must maintain an overall GPA of 3.00 or higher in all graduate coursework and should consult with their faculty advisor to coordinate their academic goals.

Reserve Graduate Credits

Accelerated master's students may also take up to 6 graduate credits as reserve graduate credits. These credits do not apply to the undergraduate degree, but will reduce the master's degree by up to 6 credits. With 12 graduate credits counted toward the undergraduate degree plus the maximum 6 reserve graduate credits, the credits necessary for the graduate degree can be reduced by up to 18.

Graduate Course Suggestions

The following list of suggested courses is provided for general reference. To ensure an efficient route to graduation and post-graduation readiness, students are strongly encouraged to meet with an advisor before registering for graduate-level courses.

Code	Title	Credits
BINF 630	Bioinformatics Methods	3
BINF 631	Molecular Cell Biology for Bioinformatics	3
BINF 702	Biological Data Analysis	3
GBUS 738	Data Mining for Business Analytics	3
or MBA 738	Data Mining for Business Analytics	

Career Changer's Biological Sciences Undergraduate Certificate

Banner Code: SC-CERB-CCBS

Academic Advising

1200 Exploratory Hall
Fairfax Campus

Website: biology.gmu.edu/academics/degree-programs/

Post-baccalaureate students are invited to enroll in this unique certificate opportunity. By completing this certificate, students will be qualified to apply for most graduate programs in the biological sciences including medical, dental, optometry, podiatry, pharmacy, and veterinary schools. However, undergraduate coursework requirements for admission into graduate and professional schools can vary; it is prudent to check the coursework requirements for each individual school.

This certificate may be pursued on a part-time or full-time basis.

Admissions & Policies

Admissions

University-wide admissions policies can be found in the Undergraduate Admissions Policies section of this catalog.

To apply for this program, please complete the George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now/).

Additionally, admission into this certificate requires:

- The desire to pursue a career in biological sciences or the health professions (research, medicine, dentistry, teaching, law, etc.)
- A conferred bachelor's degree from a regionally accredited institution with a GPA of 3.00 or higher
- A completed George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now/) along with a the appropriate application fee
- Two sets of official transcripts from each institution attended

Standardized test scores are not required.

Policies

For policies governing all undergraduate programs, see AP.5 Undergraduate Policies.

Some courses can be waived if previously taken during undergraduate training. Substitutions will be recommended where appropriate.

Certificate Fees

In addition to tuition and the usual laboratory and College of Science fees, a fee of $500 per semester will be assessed to defray the costs of the outside speakers and the additional administrative work associated with this certificate.

Notes

- Each student must see an advisor in the Department of Biology prior to registration each semester.
- The program will normally take four semesters to complete for a full-time student.
- It is recommended that students interested in healthcare professions do the following:
  - Register for the HEALTHPROFESSIONSADVISOR listserv (http://prehealth.gmu.edu/listserv/);
  - Attend at least one group advising session conducted by the Health Professions Advisor (http://prehealth.gmu.edu/); and
  - Consider participating in Health Professions Advising (http://prehealth.gmu.edu/) activities designed for students in a relevant application cycle

Requirements

Certificate Requirements

Total credits: 63-64

This certificate may be pursued on a full-or part-time basis.

Students should refer to the Admissions & Policies tab for specific policies related to this program.

To earn this certificate, a student must pass all of the courses listed below with a grade no lower than 'B-' and achieve a GPA of at least 3.40.

Cell Biology, Biostatistics, and Genetics

Code	Title	Credits
BIOL 213	Cell Structure and Function (Mason Core)	4
BIOL 214	Biostatistics for Biology Majors	4

BIOL 311	General Genetics	4
Total Credits		12

Additional Upper-level Biology

Code	Title	Credits
Select three additional 300, 400, or 500-level BIOL courses (with the exception of BIOL 300) in consultation with an academic advisor.		12
Total Credits		12

General Chemistry

Code	Title	Credits
CHEM 211 & CHEM 213	General Chemistry I (Mason Core) and General Chemistry Laboratory I (Mason Core)	4
CHEM 212 & CHEM 214	General Chemistry II (Mason Core) and General Chemistry Laboratory II (Mason Core)	4
Total Credits		8

Organic Chemistry and Biochemistry

Code	Title	Credits
BIOL 483	General Biochemistry	4
CHEM 313 & CHEM 315	Organic Chemistry I and Organic Chemistry Lab I	5
CHEM 314 & CHEM 318	Organic Chemistry II and Organic Chemistry Lab II	5
Total Credits		14

Physics

Code	Title	Credits
PHYS 243 & PHYS 244	College Physics I (Mason Core) and College Physics I Lab (Mason Core)	4
PHYS 245 & PHYS 246	College Physics II (Mason Core) and College Physics II Lab (Mason Core)	4
Total Credits		8

Psychology and Sociology

Code	Title	Credits
Select 6 credits of psychology and/or sociology courses in consultation with the biology advisor.		6
Total Credits		6

Mathematics

Code	Title	Credits
MATH 111	Linear Mathematical Modeling (Mason Core) [1]	3-4
or MATH 113	Analytic Geometry and Calculus I (Mason Core)	
Total Credits		3-4

[1] Calculus is recommended, but not required.

Career Seminars

These seminars will be organized each semester and will feature outside speakers from a wide variety of biologically-oriented professions.

Medical Laboratory Science, BS

Banner Code: SC-BS-MLAB

Academic Advising

1200 Exploratory Hall
Fairfax Campus

Website: biology.gmu.edu/academics/degree-programs/

The BS in Medical Laboratory Science prepares students for careers in hospitals and clinics as well as in biotechnology and industrial laboratories. Medical Laboratory Science (MLS) is a profession of highly knowledgeable and skilled individuals who perform clinical laboratory tests on blood, other body fluids, or tissue samples. This is a critical part of health care, as the results obtained by these laboratory tests are vital tools for physicians in the diagnosis, treatment, and prevention of disease.

People trained as medical laboratory scientists may work in a variety of settings. Many work in clinical laboratories in large medical centers, hospitals, or clinics. Some do research in industrial, public health, or medical laboratories. Others teach in hospitals, colleges, or universities. An MLS may practice as a generalist, using knowledge in several of the scientific disciplines, or may specialize in one scientific area in larger hospitals. A successful MLS is an individual who enjoys studying the biological, chemical, and physical sciences. He or she may also find personal satisfaction and intellectual reward in applying scientific methods to the diagnosis and evaluation of disease.

Admissions & Policies

Admissions

University-wide admissions policies can be found in the Undergraduate Admissions Policies section of this catalog.

To apply for this program, please complete the George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now/).

Policies

Students must fulfill all Requirements for Bachelor's Degrees including the Mason Core[1].

MLAB 300 Science Writing fulfills this major's writing intensive requirement.

Important information and departmental policies are available with the Department of Biology.

This program requires the equivalent of three years of full-time pre-professional study at the college level preceding a senior year of professional education in an affiliated program of medical laboratory science. Affiliated schools (see below) are accredited by the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS) (http://www.naacls.org/Home.aspx). Quest Diagnostics (http://www.questdiagnostics.com/home.html) in Chantilly, Virginia also provides professional education for this program.

[1] Note: Because of the extensive pre-professional education requirements stipulated by NAACLS, students majoring in medical laboratory science are exempt from the Mason Core 'Arts' requirement.

Important Program Requirements

- Students must complete MLAB 200 Introduction to Medical Laboratory Science and present their biology coursework and supporting requirements with a minimum GPA of 2.00.
- A grade of 'C' or better must be earned in BIOL 213 Cell Structure and Function (Mason Core) in order to advance to other major requirements. Students may repeat BIOL 213 Cell Structure and Function (Mason Core) once and a second time only with permission of the Department of Biology.
- Medical laboratory science majors must earn a minimum of 'C' in all biology core courses.

Major in Medical Laboratory Science as a Second Bachelor's Degree

While the standard program for medical laboratory sciences is three years on campus followed by a fourth year at a clinical affiliate (3+1), many students elect to complete a bachelor's degree before entering the clinical program (4+1). Students who have completed the Biology, BS or Chemistry, BS at Mason and then undertake a fifth year at a clinical affiliate may be eligible for a second bachelor's degree with a major in medical laboratory science. Students wishing to receive the second degree must apply before entering their fifth year. For further information, contact a laboratory sciences advisor.

Applying to Medical Laboratory Sciences Schools

Responsibility for applying to schools of medical laboratory sciences and gaining admission rests with the student; however, guidance is provided by the medical laboratory sciences program director. Admission to medical laboratory sciences schools is selective, so candidates should strive for strong academic standing (2.5 science GPA or higher). Students who fail to gain admission to a NAACLS-approved school are unable to complete this degree program. Such students may transfer to Biology, BA or the Biology, BS without loss of credits.

Application to medical laboratory sciences schools should be initiated about a year before the desired entrance date. This fact, coupled with the large number of required courses in the pre-professional curriculum, makes it imperative that students in the program consult regularly with their faculty advisor. All medical laboratory sciences majors and prospective majors are urged to enroll in MLAB 200 Introduction to Medical Laboratory Science as early as possible. This course provides information on the profession, as well as the educational demands placed on candidates.

Senior Year

Students should be aware that the senior year spent off campus requires the following special interpretation of university policies:

- Students may present no more than 6 credits of 'D' grades in biology and chemistry courses required in three years of pre-professional study.
- No unsatisfactory grades (less than 'C') may be presented for courses in the senior year of professional study.
- Transfer students must present at least 16 credits of 300 to 400-level biology or chemistry coursework taken at Mason.
- Transfer students entering with more than 45 transfer credits are often unable to complete the pre-professional phase of their program in the usual three years of full-time study.

Senior students are registered at the university through special procedures. For details, consult the program director.

Affiliated NAACLS-Approved Schools

This program requires the equivalent of three years of full time professional study at the college level preceding a senior year of professional education in an affiliated school of medical laboratory sciences. All affiliated schools are accredited by the NAACLS:

- Augusta Health- School of Clinical Laboratory Science (https://www.augustahealth.com/cls/)
- George Washington University- School of Medicine and Health Sciences: The Medical Laboratory Sciences Program (http://smhs.gwu.edu/medical-laboratory-sciences/)
- INOVA Fairfax Hospital- Medical Laboratory Science Program (https://www.inova.org/education/medical-laboratory-science/)
- Sentara Rockingham Memorial Hospital- School of Medical Laboratory Science (https://www.sentara.com/harrisonburg-virginia/hospitalslocations/locations/school-of-medical-laboratory-science.aspx)

Requirements

Degree Requirements

Total credits: minimum 120

Students should refer to the Admissions & Policies tab for specific policies related to this program.

Students must complete the requirements outlined below, choosing one Professional Study/Concentration option:

- Not choosing a concentration ("Professional Study: Generalist Option") will provide students generalist training. Upon graduation, the board certification test may be taken and would allow graduates to practice in any area of a hospital or laboratory.
- Choosing a concentration will allow students to complete their clinical rotations in that specific area. Upon graduation, the Molecular Biology or Microbiology (depending upon the concentration chosen) board certification test may be taken.

Biology Core

Code	Title	Credits
BIOL 213	Cell Structure and Function (Mason Core)	4
BIOL 214	Biostatistics for Biology Majors	4
BIOL 311	General Genetics	4
Total Credits		12

MLAB and BIOL Additional Courses

Code	Title	Credits
MLAB 200	Introduction to Medical Laboratory Science	1
MLAB 300	Science Writing [1]	2
BIOL 305	Biology of Microorganisms	3
BIOL 306	Biology of Microorganisms Laboratory	1

BIOL 430	Advanced Human Anatomy and Physiology I	4
BIOL 431	Advanced Human Anatomy and Physiology II	4
BIOL 452	Immunology	3
BIOL 453	Immunology Laboratory	1
Total Credits		19

[1] Fulfills writing intensive requirement.

Chemistry

Code	Title	Credits
CHEM 211 & CHEM 213	General Chemistry I (Mason Core) and General Chemistry Laboratory I (Mason Core)	4
CHEM 212 & CHEM 214	General Chemistry II (Mason Core) and General Chemistry Laboratory II (Mason Core)	4
CHEM 313	Organic Chemistry I	3
CHEM 315	Organic Chemistry Lab I	2
Select one from the following:		4-5
BIOL 483	General Biochemistry	
CHEM 314 & CHEM 318	Organic Chemistry II and Organic Chemistry Lab II	
Total Credits		17-18

Mathematics

Code	Title	Credits
Select one from the following:		3-6
MATH 111	Linear Mathematical Modeling (Mason Core)	
or MATH 113	Analytic Geometry and Calculus I (Mason Core)	
MATH 123 & MATH 124	Calculus with Algebra/Trigonometry, Part A and Calculus with Algebra/Trigonometry, Part B (Mason Core)	
Total Credits		3-6

Information Technology

Code	Title	Credits
Select one from the following:		3
CDS 130	Computing for Scientists [1]	
Any course(s) which fulfills the Mason Core: Information Technology requirement		
Total Credits		3

[1] Recommended course for this major

Professional Study: Generalist Option

Senior students are registered at the university through special procedures. For details, consult the medical laboratory science program director.

The senior year spent off campus requires the following special interpretation of university policies:

- Transfer students must present at least 16 credits of 300 to 400-level biology or chemistry coursework taken at Mason.
- No unsatisfactory grades (less than 'C') may be presented for courses in the senior year of professional study.
- Transfer students entering with more than 45 transfer credits are often unable to complete the pre-professional phase of their program in the usual three years of full-time study.

Students may have up to 30 credits of professional study during the senior year awarded for clinical education at an affiliated school of medical technology. No more than 30 professional credits may be applied toward the degree.

Code	Title	Credits
The distribution of credits in these courses varies with the school of medical technology. In consultation with the advisor, select from the following:		30
MLAB 401	Orientation to the Problems and Practices of the Clinical Laboratory	
MLAB 402	Clinical Hematology and Coagulation	
MLAB 403	Clinical Microscopy	
MLAB 404	Serology and Immunohematology	
MLAB 405	Clinical Microbiology	
MLAB 406	Clinical Chemistry	
MLAB 407	Clinical Molecular Biology	
Total Credits		30

Notes:

Students are encouraged to elect additional basic science courses during their pre-professional years. Recommended courses include:

Code	Title	Credits
BIOL 465	Histology	4
BIOL 483	General Biochemistry	4
BIOL 484	Cell Signaling and Disease	3
BIOL 485	Cell Signaling Laboratory	2-3
CHEM 321	Quantitative Chemical Analysis	4
PHYS 243	College Physics I (Mason Core)	3
PHYS 244	College Physics I Lab (Mason Core)	1
PHYS 245	College Physics II (Mason Core)	3
PHYS 246	College Physics II Lab (Mason Core)	1

Professional Study: Molecular Biology Concentration (MOB)

Senior students are registered at the university through special procedures. For details, consult the medical laboratory science program director.

The senior year spent off campus requires the following special interpretation of university policies:

- Transfer students must present at least 16 credits of 300 to 400-level biology or chemistry coursework taken at Mason.
- No unsatisfactory grades (less than 'C') may be presented for courses in the senior year of professional study.

- Transfer students entering with more than 45 transfer credits are often unable to complete the pre-professional phase of their program in the usual three years of full-time study.

Students may have up to 30 credits of professional study during the senior year awarded for clinical education at an affiliated school of medical technology. No more than 30 professional credits may be applied toward the degree.

This concentration is a pathway leading to eligibility for categorical certification as a Certified Technologist by the American Society for Clinical Pathology (ASCP) (https://www.ascp.org/content/) Board of Certification (BOC) (https://www.ascp.org/content/board-of-certification/). The concentration is one year long, consisting of about 20% classroom and 80% hands-on laboratory experience. Instructors include the expert clinical scientists and technologists of Quest Diagnostics (http://www.questdiagnostics.com/home.html) in Chantilly, Virginia.

Code	Title	Credits
In addition to the courses required for all Medical Laboratory Science students, the following are required:		30
MLAB 401	Orientation to the Problems and Practices of the Clinical Laboratory	
MLAB 407	Clinical Molecular Biology	
Total Credits		30

Notes:

Students are encouraged to elect additional basic science courses during their pre-professional years. Recommended courses include:

Code	Title	Credits
BIOL 465	Histology	4
BIOL 483	General Biochemistry	4
BIOL 484	Cell Signaling and Disease	3
BIOL 485	Cell Signaling Laboratory	2-3
CHEM 321	Quantitative Chemical Analysis	4
PHYS 243	College Physics I (Mason Core)	3
PHYS 244	College Physics I Lab (Mason Core)	1
PHYS 245	College Physics II (Mason Core)	3
PHYS 246	College Physics II Lab (Mason Core)	1

Professional Study: Microbiology Concentration (MIB)

Senior students are registered at the university through special procedures. For details, consult the medical laboratory science program director.

The senior year spent off campus requires the following special interpretation of university policies:

- Transfer students must present at least 16 credits of 300 to 400-level biology or chemistry coursework taken at Mason.
- No unsatisfactory grades (less than 'C') may be presented for courses in the senior year of professional study.
- Transfer students entering with more than 45 transfer credits are often unable to complete the pre-professional phase of their program in the usual three years of full-time study.

Students may have up to 30 credits of professional study during the senior year awarded for clinical education at an affiliated school of medical technology. No more than 30 professional credits may be applied toward the degree.

This concentration is a pathway leading to eligibility for categorical certification as a Certified Technologist by the American Society for Clinical Pathology (ASCP) (https://www.ascp.org/content/) Board of Certification (BOC) (https://www.ascp.org/content/board-of-certification/). The concentration is one year long, consisting of about 20% classroom and 80% hands-on laboratory experience. Instructors include the expert clinical scientists and technologists of Quest Diagnostics (http://www.questdiagnostics.com/home.html) in Chantilly, Virginia.

Code	Title	Credits
In addition to the courses required for all Medical Laboratory Science students, the following are required:		30
MLAB 401	Orientation to the Problems and Practices of the Clinical Laboratory	
MLAB 405	Clinical Microbiology	
Total Credits		30

Notes:

Students are encouraged to elect additional basic science courses during their pre-professional years. Recommended courses include:

Code	Title	Credits
BIOL 465	Histology	4
BIOL 483	General Biochemistry	4
BIOL 484	Cell Signaling and Disease	3
BIOL 485	Cell Signaling Laboratory	2-3
CHEM 321	Quantitative Chemical Analysis	4
PHYS 243	College Physics I (Mason Core)	3
PHYS 244	College Physics I Lab (Mason Core)	1
PHYS 245	College Physics II (Mason Core)	3
PHYS 246	College Physics II Lab (Mason Core)	1

Professional Study: Histotechnology Concentration (HISO)

Code	Title	Credits
In addition to the courses required for all Medical Laboratory Science students, the following are required:		30
MLAB 401	Orientation to the Problems and Practices of the Clinical Laboratory	
MLAB 408	Clinical Histology	
MLAB 409	Clinical Histology Practicum	
Total Credits		30

MLAB 401 Topics

The following topics will be covered under MLAB 401 Orientation to the Problems and Practices of the Clinical Laboratory:

1. Introduction to CLS and Laboratory Operations

This course is a brief introduction to the Clinical Laboratory Science professions and Laboratory Operations. Topics include: Introduction to Laboratory Operations, Pre-analytics and Specimen Types, Quality Management Concepts, Quality Control, Laboratory Professions,

Professional Ethics, Laboratory Mathematics, Proper use of Laboratory Equipment, Introduction to Laboratory Instrumentation.

2. Board Exam Preparation
This course is a structured review and practice in preparation for the American Society for Clinical Pathology (https://www.ascp.org/content/) Technologist in Molecular Biology Board of Certification Exam. Practice tests and questions from a variety of published and authoritative sources are used to reinforce the content of the Technologist in Molecular Biology program.

MLAB 405 Topics
The following topics are covered under MLAB 405 Clinical Microbiology:

1. Introduction to Clinical Microbiology
This course is a brief introduction to the discipline of Clinical Microbiology, and laboratory diagnostic techniques. Topics include: Overview of Microbiology Theory, Methods and Applications, Instrumentation, Staining, and Media, Immunology, Serology, and Molecular Diagnostics.

2. Medical Virology
This course is a survey of the characteristics, pathogenicity, and laboratory diagnosis of important human viruses. Topics include viral taxonomy and classical virology. Special emphasis is placed on the epidemiology and the laboratory's role in influenza pandemics.

3. Medical Mycology
This course is a comprehensive presentation of medically important fungi. Emphasis is placed on clinical presentation and laboratory identification of pathogenic species and opportunistic pathogens. Topics include general mycology methods, yeasts, susceptibility testing, molds (Hyaline, Mucor, Dematiaceous), Dermatophytes, Systemic infections, and Pneumocystis.

4. Medical Parasitology
This course is a comprehensive presentation of human parasites. Emphasis is placed on clinical presentation and laboratory identification. Topics include Flagellates, Ciliates, Coccidians, Malaria and Babesia, Other Blood Born and Tissue Born parasites, Nematodes, Cestodes, Trematodes, and Arthropods.

5. Molecular Detection of Infectious Disease
This course examines the advances in using molecular methods to detect human infectious disease. Careful attention is given to the comparison of molecular technologies with traditional microbiology methods. Topics include molecular methods and applications, including PCR, sequencing, TMA, and PEGE, specimens of choice, sample preparation, Quality Control, primer selection, Molecular methods in selecting antimicrobial agents, molecular epidemiology, and target organisms: fungi, bacteria, parasites, and viruses.

6. Medical Bacteriology
This course is a comprehensive presentation of bacteria isolated in the clinical laboratory. Emphasis is placed on the laboratory identification of isolates from a variety of specimen sources, and pathogenic species. Topics include Instrumentation and MALDI, Gram Positive Cocci, Gram Positive Baccili, Enterics, non-fermenters, *Moraxella, Neisseria, Pasteurella, Haemophilus and HACEK, Camphylobacter, Helicobacter, Legionella*, CDC Select Agents, *Chlamdydia, Mycoplasm, Ureaplasm*, Spirochetes, Anaerobes, Antibiotics and Susceptibility testing, and Acid Fast Bacilli.

7. Microbiology Clinical Correlations
Designed as the capstone for the Technologist in Microbiology program, this course takes a body system view of the pathogenicity of infectious disease. Attention is given to integrating clinical presentation and case history to laboratory investigation and diagnosis. Topics include UTI/Genital, Food Borne/GI, Cystic Fibrosis, Blood, CSF, Body Fluids, and Wounds.

MLAB 407 Topics
The following topics will be covered under MLAB 407 Clinical Molecular Biology:

1. Introduction to Clinical Molecular Biology
This course presents the fundamentals of nucleic acid testing in the clinical laboratory and the underlying human genetics. Topics include: Fundamentals of Nucleic Acid Biochemistry, Common Techniques in Molecular Biology (Extraction, Resolution and Detection of Nucleic Acids, Analysis and Characterization, Amplification, Chromosomal Structure and Mutations, Gene Mutations, and DNA Sequencing).

2. Advanced Methods in Clinical Molecular Biology
This course applies the fundamentals of nucleic acid testing to advanced methods commonly used in the contemporary clinical and research laboratory. Topics include: PCR, Transcription-Based Amplification, Probe Amplification, Branched DNA, Hybrid Capture, Amplification: Signal, Cleavage-Based, Cycling Probe, Sequencing: Direct, Next Gen, Pyrosequencing, Bisulfite, RNA Sequencing, Bioinformatics, Human Genome Project.

3. Molecular Detection of Infectious Disease
This course examines the advances in using molecular methods to detect human infectious disease. Careful attention is given to the comparison of molecular technologies with traditional microbiology methods. Topics include: Molecular methods and applications, including PCR, sequencing, TMA, and PEGE, specimens of choice, sample preparation, Quality Control, primer selection, Molecular methods in selecting antimicrobial agents, molecular epidemiology, and target organisms: fungi, bacteria, parasites, and viruses.

4. Human Molecular and Chromosomal Applications and Pathology
This course presents advanced methods in nucleic acid testing to human medico-legal, forensic, and pathology applications. Topics include: Polymorphisms, RFLP, Paternity Testing, Linkage, Single Nucleotide Polymorphisms, Bone Marrow Engraftment, Mitochondrial DNA Polymorphisms and Disorders, Chromosomal Abnormalities, Patterns of Inheritance, Single Gene Disorders, Lysosomal Storage Disorders, Cystic Fibrosis, Trinucleotide Repeats, Genomic Imprinting, Array CGH, Molecular Oncology, HLA and Transplantation.

Mason Core and Electives
In order to meet a minimum of 120 credits, this degree requires an additional 32-36 credits, which may be applied toward any remaining Mason Core requirements (outlined below), Requirements for Bachelor's Degrees, and electives. Students are strongly encouraged to consult with their advisors to ensure that they fulfill all requirements.

Mason Core
Some Mason Core requirements may already be fulfilled by the major requirements listed above. Students are strongly encouraged to consult their advisors to ensure they fulfill all remaining Mason Core requirements.

Code	Title	Credits
Foundation Requirements		
Written Communication (ENGH 101)		3
Oral Communication		3
Quantitative Reasoning		3
Information Technology and Computing		3
Exploration Requirements		
Arts		3
Global Understanding		3
Literature		3
Natural Science		7
Social and Behavioral Sciences		3
Western Civilization/World History		3
Integration Requirements		
Written Communications (ENGH 302)		3
Writing-Intensive [1]		3
Synthesis/Capstone [2]		3
Total Credits		40

1 Most programs include the writing-intensive course designated for the major as part of the major requirements; this course is therefore not counted towards the total required for Mason Core.

2 Minimum 3 credits required.

Department of Chemistry and Biochemistry

303 Planetary Hall
Fairfax Campus

Phone: 703-993-1070
Email: chem@gmu.edu
Website: chemistry.gmu.edu

Administration

- Gerald Weatherspoon, Chair
- Megan Erb, Associate Chair
- Mikell Paige, Associate Chair for Research
- Benoit Van Aken, Graduate Coordinator

Undergraduate Programs

The Department of Chemistry and Biochemistry offers undergraduate programs leading to the BA (https://catalog.gmu.edu/colleges-schools/science/chemistry-biochemistry/chemistry-ba/) and BS (https://catalog.gmu.edu/colleges-schools/science/chemistry-biochemistry/chemistry-bs/) degree in Chemistry, with optional concentrations in Analytical Chemistry, Biochemistry, and Environmental Chemistry, as well as a five-year BS/Accelerated MS degree (https://catalog.gmu.edu/colleges-schools/science/chemistry-biochemistry/chemistry-bs/#acceleratedmasterstextcontainer). Our comprehensive undergraduate education in chemistry is designed to prepare students for professional careers in chemistry and for advanced studies in chemistry and chemistry-related areas such as environmental science, material science, biochemistry, medicinal chemistry, geochemistry, chemical waste management, pharmacy, forensic chemistry, and chemical engineering. Students planning medical, dental, or veterinary careers may meet the requirements of these professional schools by majoring in chemistry.

Pre-Medical, Pre-Dental, Pre-Pharmacy, and Pre-Veterinary Students

Web: prehealth.gmu.edu (http://prehealth.gmu.edu)

Many students planning medical, dental, pharmacy, veterinary, optometry, or other health professional careers choose to pursue a major in chemistry. These students should consult the health professions advising web site on required coursework and overall preparation.

Pre-Pharmacy Society

Mason students who are interested in pursuing careers in pharmacy are encouraged to participate in the Pre-Pharmacy Society. This student organization organizes supplemental programming focused toward pharmacy as a career.

Chemistry Club

The Chemistry Club provides a social and informational network for students. It serves the Department of Chemistry and Biochemistry by sponsoring informational programs and allowing students to work at university events.

Graduate Programs

The department's graduate programs (MS (https://catalog.gmu.edu/colleges-schools/science/chemistry-biochemistry/chemistry-ms/) and PhD (https://catalog.gmu.edu/colleges-schools/science/chemistry-biochemistry/chemistry-biochemistry-phd/)) provide advanced training for students who are recent college graduates, professionals in teaching, or technical workers in local research organizations. Students select a specialization from the fields of analytical, biological, environmental, inorganic, organic, physical, or computational chemistry. The graduate chemistry courses for these programs are usually offered during the late afternoon or evening hours for the convenience of students who are employed full-time. Graduate fellowships and teaching/research assistantships are available to the most qualified students.

The department offers a Chemistry, MS (https://catalog.gmu.edu/colleges-schools/science/chemistry-biochemistry/chemistry-ms/) with a research project (thesis option) or an all coursework program (non-thesis option). Within the MS, students may pursue a concentration in biochemistry. The PhD in all branches of chemistry is available through the Chemistry and Biochemistry, PhD. Students may also pursue Chemistry-related PhD research through the Environmental Science and Public Policy, PhD and the Biosciences, PhD. An area of emphasis in computational chemistry is available through the Computational Sciences and Informatics, PhD, offered in conjunction with the Department of Computational and Data Sciences.

Faculty

Department Faculty

Professors

Foster, Hussam

Associate Professors

Bishop, Couch, Erb (associate chair), Jones, Paige (associate chair), Salvador-Morales, Schreifels, Slayden, Van Aken, Weatherspoon (chair)

Assistant Professors

Banerjee, Clayborne, Fayissa, Luo, Jing, Okoromoba, Roy, Solomon, Tan

Emeriti

Cozzens, Davies

Requirements & Policies

Requirements

Writing Intensive Requirement

Mason requires all undergraduate students to complete at least one course designated as "writing intensive" in their majors at the 300 level or above. Students majoring in chemistry fulfill this requirement by successfully completing CHEM 336 Physical Chemistry Lab I or CHEM 465 Biochemistry Lab.

Teacher Licensure

Students who wish to become teachers should consult the College of Education and Human Development and attend an information session early in their studies. For more information, visit gse.gmu.edu (http://gse.gmu.edu).

Programs

- Chemistry Minor
- Chemistry and Biochemistry, PhD
- Chemistry, BA
- Chemistry, BS
- Chemistry, MS

Chemistry and Biochemistry, PhD

Banner Code: SC-PHD-CBCM

Academic Advising

Email: cbgrad@gmu.edu
Website: science.gmu.edu/academics/departments-units/chemistry-biochemistry/graduate-programs

The program is intended to prepare students for advanced work in the chemical sciences and related areas. Graduates with the PhD in this field can seek employment in research and development, process control, or higher education. In addition to these traditional science career paths, graduates are also positioned to pursue careers in non-traditional areas such as the intellectual property and regulatory fields. The program is designed to provide students with a firm foundation in advanced coursework, which is followed by an independent research project completed under the guidance of a faculty advisor. The culmination of the program is a dissertation representing original research that is publishable in a peer-reviewed scientific journal.

Admissions & Policies

Admissions

University-wide admissions policies can be found in the Graduate Admissions Policies section of this catalog.

To apply for this program, please complete the George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now/).

To be considered for admission to degree status, students must have a bachelor's and/or master's degree in chemistry, biochemistry, or a related field and must meet general admission requirements for graduate study as specified in Graduate Admission Policies (https://catalog.gmu.edu/admissions/graduate-policies/). Applicants with a bachelor's degree in other fields of study who have at least three years of chemistry or biochemistry coursework may be accepted into the program. In some cases, students may be accepted provisionally and will be required to successfully complete the selected remedial courses, some of which may not be applicable toward the doctoral requirements.

Admission is based upon a departmental evaluation of the applicant's background as evidenced by transcripts, résumés, and letters of recommendation.

The GRE requirement for the PhD program is waived for students with a master's degree in chemistry, biochemistry, or a related field from an institution of higher education accredited by a Mason-recognized U.S. institutional accrediting agency or international equivalent degree.

Policies

For policies governing all graduate programs, see AP.6 Graduate Policies.

Academic Advising

Upon acceptance into the Chemistry and Biochemistry, PhD, a student will be assigned an academic advisor. Prior to registering for classes, students are required to meet with their academic advisor who will provide guidance in selecting courses that are consistent with the student's area of interest. Once a student has selected a research/dissertation advisor, that person then assumes the role of providing academic advisement to the student.

Reduction of Credits

For students entering the doctoral program with a master's degree in a related field from an institution of higher education accredited by a Mason-recognized U.S. institutional accrediting agency or international equivalent, the number of required credits may be reduced up to 30 credits, subject to approval of the program faculty and the associate dean for student affairs. See AP.6.5.2 Reduction of Credits for more information.

Requirements

Degree Requirements

Total credits: 72

Students should refer to the Admissions & Policies tab for specific policies related to this program.

Doctoral Coursework

Code	Title	Credits
Core Courses		
CHEM 817	Organic Structural Spectroscopy	3
CHEM 833	Physical Chemistry and Biochemistry	3
Seminar		**3**
CHEM 790	Graduate Seminar (taken three times)	
Electives		
Select 39 credits of approved elective courses in consultation with the student's advisor		39
Total Credits		48

Dissertation Committee and Supervisor

By the end of the first year, a student in the program is expected to have selected a dissertation/research supervisor and to have formed the dissertation committee. This committee will consist of at least four graduate faculty members (including the dissertation supervisor), with at least two members from the Department of Chemistry and Biochemistry. At least one member must be from outside the department. Qualified individuals who are not members of the graduate faculty, including faculty at other universities or government laboratories, may serve on the committee with the approval of the department chair and the college's associate dean.

Candidacy Examinations

The student must successfully complete separate written and oral candidacy examinations prepared and administered by the Dissertation Committee. The written exam consists of questions submitted by the Dissertation Committee. Successful completion of the written exam should be followed by the oral portion within one month. The oral exam consists of questions submitted by each member of the Dissertation Committee. Either or both portions of the qualifying exam may be repeated once at the discretion of the Dissertation Committee. A student must satisfactorily pass the two portions of the exam by the end of the third year from the date of enrollment in the PhD program.

Dissertation Proposal and Advancement to Candidacy

Prior to completing the sixth semester in the program, a student is expected to have advanced to candidacy. The student's committee will determine whether a candidate is ready to begin preparation of the research proposal and approve enrollment in CHEM 998 Doctoral Dissertation Proposal based upon their familiarity with the student's progress.

In order to advance to candidacy in a given semester, a student is required to fulfill the following requirements:

- The student will prepare and submit a research proposal (based on the thesis research) for approval by the dissertation committee.
- The student must pass a written qualifying exam prepared by the dissertation committee. The exam can be based on the student's research and/or completed coursework, with the composition of the exam being determined by the student's dissertation committee.
- The final stage is an oral defense of the student's research proposal. Questions at the proposal defense may also be drawn from material covered in the written qualifying exam.

In order the advance to candidacy in a given semester and register for CHEM 999 in the following semester, students must submit the requested documentation to the Department Graduate Coordinator by the following deadlines:

- To advance in the fall and register for CHEM 999 Doctoral Dissertation Research in the spring, November 8.
- To advance in the spring and register for CHEM 999 Doctoral Dissertation Research in the summer, March 8.
- To advance in the summer and register for CHEM 999 Doctoral Dissertation Research in the fall, May 25.

Dissertation Research

No more than 24 combined credits from CHEM 998 Doctoral Dissertation Proposal and CHEM 999 Doctoral Dissertation Research may be applied toward satisfying doctoral degree requirements, with no more than 12 credits of CHEM 998 Doctoral Dissertation Proposal.

Code	Title	Credits
Select 24 credits from the following:		24
CHEM 998	Doctoral Dissertation Proposal (maximum of 12 credits)	
CHEM 999	Doctoral Dissertation Research	
Total Credits		24

Exit Seminar

Each PhD candidate presents his or her research in a seminar in the Department of Chemistry and Biochemistry (a departmental seminar), which takes place in the same semester as the final defense of the dissertation (below).

Dissertation Research and Defense

With the approval of the dissertation committee, the student will enroll in CHEM 998 Doctoral Dissertation Proposal and CHEM 999 Doctoral Dissertation Research. The dissertation research should represent a significant contribution to the appropriate scientific field(s), and it should be deemed to represent a body of work that is publishable in a refereed scientific journal. The dissertation must be presented and defended in a public forum consisting of the dissertation committee and other interested members of the George Mason University community.

Chemistry Minor

Banner Code: CHEM

Academic Advising

Phone: 703-993-1070
Website: science.gmu.edu/academics/departments-units/chemistry-biochemistry/majors-minors

This minor provides a firm foundation in chemical science. It is designed to be as flexible as possible so students can choose courses to complement their interests in areas such as biochemistry or environmental chemistry.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor.

A minimum GPA of 2.00 is required for all coursework applied to the minor.

For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 16

Students should refer to the Admissions & Policies tab for specific policies related to this program.

Coursework

Code	Title	Credits
Select 16 credits of CHEM courses at the 300-level or above		16
Total Credits		16

Chemistry, BA

Banner Code: SC-BA-CHEM

Academic Advising

Phone: 703-993-1070
Website: science.gmu.edu/academics/departments-units/chemistry-biochemistry/majors-minors

This program, when coordinated with the necessary courses in education, meets requirements for teacher licensure. It also meets requirements for entrance to medical and other professional schools.

Teacher Licensure

Students who wish to become teachers and plan to seek teacher licensure should consider the following options:

- Chemistry, BA or BS/Curriculum and Instruction, Accelerated MEd (Secondary Education Chemistry concentration)
- Secondary Education - Chemistry (6-12) Undergraduate Certificate

Interested students should attend an information session early in their studies. For more information, visit the School of Education's website (http://gse.gmu.edu/).

Admissions & Policies

Admissions

University-wide admissions policies can be found in the Undergraduate Admissions Policies section of this catalog.

To apply for this program, please complete the George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now/).

Policies

Students must fulfill all Requirements for Bachelor's Degrees, including the Mason Core. As outlined in the Requirements section, students in this bachelor's program must also complete the additional College Requirements for the BA Degree.

CHEM 336 Physical Chemistry Lab I or CHEM 465 Biochemistry Lab will fulfill the writing intensive requirement.

For policies governing all undergraduate programs, see AP.5 Undergraduate Policies.

Termination from the Major

To ensure the academic integrity of the Chemistry and Biochemistry undergraduate major program, students are expected to maintain a satisfactory level of academic performance.

No chemistry, math, or science course that is required for the major may be attempted more than three times. Students who do not successfully complete such a course with a grade of C or better by the third attempt may be terminated from the major.

Students who have been terminated from the chemistry major may not register for a chemistry course without the permission of the Department of Chemistry and Biochemistry.

A student may not declare a major in chemistry if the student has previously met the termination criteria for the major at any time, regardless of what the student's major was at the time the courses were taken.

Requirements

Degree Requirements

Total credits: minimum 120

Students should refer to the Admissions & Policies tab for specific policies related to this program.

Students must complete the chemistry program requirements with a minimum GPA of 2.30 and present no more than two courses with a grade of 'D' (1.00) in CHEM coursework at graduation.

BA without Concentration

Students who do not select the optional concentration complete the curriculum requirements listed below.

Chemistry Courses

Code	Title	Credits
CHEM 211	General Chemistry I (Mason Core)	3
CHEM 213	General Chemistry Laboratory I (Mason Core)	1
CHEM 212	General Chemistry II (Mason Core)	3
CHEM 214	General Chemistry Laboratory II (Mason Core)	1
CHEM 313	Organic Chemistry I	3
CHEM 314	Organic Chemistry II	3
CHEM 315	Organic Chemistry Lab I	2
CHEM 318	Organic Chemistry Lab II	2
CHEM 321	Quantitative Chemical Analysis	4
CHEM 331	Physical Chemistry I	3
CHEM 332	Physical Chemistry II	3
CHEM 336	Physical Chemistry Lab I [1]	2

CHEM 337	Physical Chemistry Lab II	2
Select 5 credits of electives in chemistry		5
Total Credits		37

[1] Fulfills the writing intensive requirement.

Mathematics Courses

Code	Title	Credits
MATH 113	Analytic Geometry and Calculus I (Mason Core)	4
MATH 114	Analytic Geometry and Calculus II	4
MATH 213	Analytic Geometry and Calculus III	3
Total Credits		11

Physics Courses

Code	Title	Credits
Select one sequence:		8
PHYS 243 & PHYS 244 & PHYS 245 & PHYS 246	College Physics I (Mason Core) and College Physics I Lab (Mason Core) and College Physics II (Mason Core) and College Physics II Lab (Mason Core)	
PHYS 160 & PHYS 161 & PHYS 260 & PHYS 261	University Physics I (Mason Core) and University Physics I Laboratory (Mason Core) and University Physics II (Mason Core) and University Physics II Laboratory (Mason Core)	
Total Credits		8

Concentration in Biochemistry (BC)

The concentration in biochemistry is designed for students interested in studying chemistry at its interface with the biological sciences. Those interested in health science careers can obtain an excellent science background through this concentration.

Students majoring in chemistry with a concentration in biochemistry will complete the coursework below:

Chemistry Courses

Code	Title	Credits
CHEM 211	General Chemistry I (Mason Core)	3
CHEM 213	General Chemistry Laboratory I (Mason Core)	1
CHEM 212	General Chemistry II (Mason Core)	3
CHEM 214	General Chemistry Laboratory II (Mason Core)	1
CHEM 313	Organic Chemistry I	3
CHEM 314	Organic Chemistry II	3
CHEM 315	Organic Chemistry Lab I	2
CHEM 318	Organic Chemistry Lab II	2
CHEM 321	Quantitative Chemical Analysis	4
CHEM 331	Physical Chemistry I	3
CHEM 336	Physical Chemistry Lab I [1]	2
CHEM 446	Bioinorganic Chemistry	3
CHEM 463	General Biochemistry I	4
CHEM 464	General Biochemistry II	3
CHEM 465	Biochemistry Lab [1]	2
Total Credits		39

[1] Fulfills the writing intensive requirement.

Mathematics and Statistics Courses

Code	Title	Credits
MATH 113	Analytic Geometry and Calculus I (Mason Core)	4
MATH 114	Analytic Geometry and Calculus II	4
STAT 250	Introductory Statistics I (Mason Core)	3
Total Credits		11

Physics Courses

Code	Title	Credits
PHYS 243	College Physics I (Mason Core)	3
PHYS 244	College Physics I Lab (Mason Core)	1
PHYS 245	College Physics II (Mason Core)	3
PHYS 246	College Physics II Lab (Mason Core)	1
Total Credits		8

Biology Courses

Code	Title	Credits
BIOL 213	Cell Structure and Function (Mason Core)	4
Total Credits		4

Mason Core and Elective Credits

In order to meet a minimum of 120 credits, this degree requires additional credits (specific credit counts by concentration are shown below), which may be applied toward any remaining Mason Core requirements (outlined below), Requirements for Bachelor's Degrees, College Requirements for the BA Degree (outlined below), and elective courses. Students are strongly encouraged to consult with their advisors to ensure that they fulfill all requirements.

- Without concentration: 64 credits
- BC concentration: 58 credits

Mason Core

Some Mason Core requirements may already be fulfilled by the major requirements listed above. Students are strongly encouraged to consult their advisors to ensure they fulfill all remaining Mason Core requirements.

Code	Title	Credits
Foundation Requirements		
Written Communication (ENGH 101)		3
Oral Communication		3
Quantitative Reasoning		3
Information Technology and Computing		3
Exploration Requirements		
Arts		3
Global Understanding		3
Literature		3
Natural Science		7
Social and Behavioral Sciences		3
Western Civilization/World History		3

Integration Requirements	
Written Communications (ENGH 302)	3
Writing-Intensive [1]	3
Synthesis/Capstone [2]	3
Total Credits	40

[1] Most programs include the writing-intensive course designated for the major as part of the major requirements; this course is therefore not counted towards the total required for Mason Core.

[2] Minimum 3 credits required.

College Requirements for the BA Degree

In addition to the program requirements and the Mason Core requirements, students pursuing a BA degree must complete the coursework below. Except where expressly prohibited, a course used to fulfill this college-level requirement may also be used simultaneously to satisfy other requirements such as Mason Core requirements, other college-level requirements, or requirements for the major. In some cases, the requirements listed below may be superseded by requirements of the degree program and the Mason Core.

Philosophy or Religious Studies

Code	Title	Credits
Select 3 credits from the following:		3
PHIL [1]		
RELI		

[1] PHIL 323 Classical Western Political Theory and PHIL 324 Modern Western Political Theory may not be used to fulfill this requirement.

Social and Behavioral Sciences

Choose one approved Mason Core: Social and Behavioral Sciences course in addition to the Mason Core-required course for a total of 6 credits. The two courses used to fulfill the combined college-level and university requirements must be from different disciplines.

This requirement may be fulfilled by completing any course in ANTH, CRIM, ECON, GOVT, HIST[1], LING, PSYC, or SOCI, and the following GGS courses:

Code	Title	Credits
Select any course from the disciplines above or select from the following GGS courses:		3
GGS 101	Major World Regions (Mason Core)	
GGS 103	Human Geography (Mason Core)	
GGS 110	Introduction to Geoinformation Technologies	
GGS 301	Political Geography (Mason Core)	
GGS 303	Geography of Resource Conservation (Mason Core)	
GGS 304	Population Geography (Mason Core)	
GGS 305	Economic Geography	
GGS 306	Urban Geography	
GGS 315	Geography of the United States	
GGS 316	Geography of Latin America	
GGS 320	Geography of Europe	
GGS 325	Geography of North Africa and the Middle East	
GGS 330	Geography of the Soviet Succession States	
GGS 357	Urban Planning	
GGS 380	Geography of Virginia	
Total Credits		3

[1] HIST 100 History of Western Civilization (Mason Core) and HIST 125 Introduction to World History (Mason Core)may not be used to fulfill this requirement.

Natural Science

Choose one credit in addition to the Mason Core: Natural Science requirement for a total of 8 credits[1]. This combined college-level and university requirement must be fulfilled by completing two of any approved Mason Core: Natural Science courses that include a laboratory experience[2].

Code	Title	Credits
Select an additional Mason Core Natural Science course		1

[1] For Geography, BA majors, this extra credit is not required.

[2] BIOL 124 Human Anatomy and Physiology and BIOL 125 Human Anatomy and Physiology may not be used to fulfill this requirement.

Foreign Language

Intermediate-level proficiency in one foreign language is required. This requirement may be fulfilled by completing a course in a foreign language numbered 202 (https://catalog.gmu.edu/colleges-schools/humanities-social-sciences/modern-classical-languages/) (or higher level courses taught in the language) or achieving a satisfactory score on an approved proficiency test. A three course sequence in American Sign Language (EDSE 115 (https://catalog.gmu.edu/search/?P=EDSE%20115) American Sign Language (ASL) I, EDSE 116 (https://catalog.gmu.edu/search/?P=EDSE%20116) American Sign Language (ASL) II, and EDSE 219 (https://catalog.gmu.edu/search/?P=EDSE%20219) American Sign Language (ASL) III) will also meet the foreign language requirement. Students who are already proficient in a second language may be eligible for a waiver of this requirement. Additional information on waivers can be found at the Office of Academic and Student Affairs (http://cosundergrad.gmu.edu/).

Non-Western Culture

Choose one approved Non-Western Culture Requirement[1] course in addition to the course used to fulfill the Mason Core: Global Understanding requirement. A course used to fulfill the Mason Core: Global Understanding requirement may not be simultaneously used to satisfy this college-level requirement. However, a course used to fulfill this requirement may be used simultaneously to fulfill any *other* requirements (Mason Core requirements, college-level requirements, or requirements for the major).

Code	Title	Credits
Select 3 credits from approved Non-Western Culture courses if a waiver isn't applicable:		0-3
ANTH 114	Introduction to Cultural Anthropology (Mason Core)	3
ANTH 300	Civilizations	3
ANTH 302	Peoples and Cultures of Latin America (Mason Core)	3
ANTH 307	Ancient Mesoamerica (Mason Core)	3

ANTH 308	Peoples and Cultures of the Middle East (Mason Core)	3
ANTH 309	Peoples and Cultures of India (Mason Core)	3
ANTH 313	Myth, Magic, and Mind (Mason Core)	3
ANTH 314	Zombies	3
ANTH 330	Peoples and Cultures of Selected Regions: Non-Western	3
ANTH 332	Cross-Cultural Perspectives on Globalization (Mason Core)	3
ANTH 381	Medical Anthropology	3
ANTH 396	Issues in Anthropology: Social Sciences (Mason Core)	3
ARAB 360	Topics in Arabic Cultural Production	3
ARAB 420	Survey of Arabic Literature	3
ARAB 440	Topics in Arabic Religious Thought and Texts (Mason Core)	3
ARTH 203	Survey of Asian Art (Mason Core)	3
ARTH 204	Survey of Latin American Art (Mason Core)	3
ARTH 206	Survey of African Art (Mason Core)	3
ARTH 318	Art and Archaeology of Ancient Egypt	3
ARTH 319	Art and Archaeology of the Ancient Near East (Mason Core)	3
ARTH 320	Art of the Islamic World (Mason Core)	3
ARTH 382	Arts of India (Mason Core)	3
ARTH 383	Arts of Southeast Asia (Mason Core)	3
ARTH 384	Arts of China (Mason Core)	3
ARTH 385	Arts of Japan (Mason Core)	3
ARTH 386	The Silk Road (Mason Core)	3
ARTH 482	RS: Advanced Studies in Asian Art	3
CHIN 318	Introduction to Classical Chinese (Mason Core)	3
CHIN 320	Contemporary Chinese Film	3
CHIN 325	Major Chinese Writers (Mason Core)	3
CHIN 470	Special Topics in Chinese Studies	3
DANC 118	World Dance (Mason Core)	3
ECON 361	Economic Development of Latin America (Mason Core)	3
ECON 362	African Economic Development (Mason Core)	3
FREN 451	Topics in Sub-Saharan Francophone Literature and Culture	3
FREN 454	Topics in Caribbean Francophone Literature and Culture	3
GGS 101	Major World Regions (Mason Core)	3
GGS 316	Geography of Latin America	3
GGS 317	Geography of China (Mason Core)	3
GGS 325	Geography of North Africa and the Middle East	3
GGS 330	Geography of the Soviet Succession States	3
GGS 399	Select Topics in GGS	3
GOVT 328	Global Political Theory	3
GOVT 332	Government and Politics of the Middle East and North Africa	3
GOVT 333	Government and Politics of Asia	3
GOVT 338	Government and Politics of Russia	3
GOVT 340	Central Asian Politics	3
GOVT 341	Chinese Foreign Policy	3
GOVT 345	Islam and Politics	3
GOVT 433	Political Economy of East Asia	3
HIST 251	Survey of East Asian History (Mason Core)	3
HIST 252	Survey of East Asian History (Mason Core)	3
HIST 261	Survey of African History (Mason Core)	3
HIST 262	Survey of African History (Mason Core)	3
HIST 271	Survey of Latin American History (Mason Core)	3
HIST 272	Survey of Latin American History (Mason Core)	3
HIST 281	Survey of Middle Eastern Civilization (Mason Core)	3
HIST 282	Survey of Middle Eastern Civilization (Mason Core)	3
HIST 326	Stalinism	3
HIST 327	The Soviet Union and Russia Since World War II	3
HIST 328	Rise of Russia (Mason Core)	3
HIST 329	Modern Russia and the Soviet Union (Mason Core)	3
HIST 353	History of Traditional China	3
HIST 354	Modern China (Mason Core)	3
HIST 356	Modern Japan (Mason Core)	3
HIST 357	Postwar Japan (Mason Core)	3
HIST 358	Post-1949 China (Mason Core)	3
HIST 360	History of South Africa (Mason Core)	3
HIST 364	Revolution and Radical Politics in Latin America (Mason Core)	3
HIST 365	Conquest and Colonization in Latin America (Mason Core)	3
HIST 366	Comparative Slavery	3
HIST 367	History, Fiction, and Film in Latin America	3
HIST 387	Topics in Global History (Mason Core)	3-6
HIST 426	The Russian Revolution	3
HIST 460	Modern Iran (Mason Core)	3
HIST 461	Arab-Israeli Conflict	3
HIST 462	Women in Islamic Society (Mason Core)	3
HIST 465	The Middle East in the 20th Century	3
JAPA 310	Japanese Culture in a Global World (Mason Core)	3
JAPA 340	Topics in Japanese Literature (Mason Core)	3
KORE 320	Korean Popular Culture in a Global World	3
MUSI 103	Musics of the World (Mason Core)	3
RELI 211	Religions of the West (Mason Core)	3
RELI 212	Religions of Asia (Mason Core)	3

RELI 240	Death and the Afterlife in World Religions	3
RELI 272	Islam	3
RELI 313	Hinduism (Mason Core)	3
RELI 314	Chinese Philosophies and Religious Traditions	3
RELI 315	Buddhism (Mason Core)	3
RELI 317	Daoism	3
RELI 337	Mysticism: East and West	3
RELI 365	Muhammad: Life and Legacy	3
RELI 374	Islamic Thought (Mason Core)	3
RELI 375	Qur'an and Hadith	3
RELI 379	Islamic Law, Society, and Ethics	3
RELI 387	Islam, Democracy, and Human Rights	3
RELI 490	Comparative Study of Religions (Mason Core)	3
RUSS 353	Russian Civilization (Mason Core)	3
RUSS 354	Contemporary Post-Soviet Life (Mason Core)	3

[1] Students who can document attendance at a native school in a non-western country for at least four years may request a waiver from this requirement through the CHSS Undergraduate Academic Affairs Office (http://chssundergrad.gmu.edu/).

Honors

Honors in the Major

Chemistry majors who have completed prerequisites for CHEM 455 Honors Research in Chemistry and CHEM 456 Honors Research in Chemistry and have maintained an overall GPA of at least 3.00 in mathematics and science courses are eligible to enter the departmental honors program. To graduate with honors in chemistry, a student is required to maintain a minimum GPA of 3.00 in mathematics and science courses and successfully complete the two semesters of CHEM 455 Honors Research in Chemistry and CHEM 456 Honors Research in Chemistry with a minimum GPA of 3.50.

In order to apply for Chemistry Honors, please complete the application (https://cos.gmu.edu/chemistry/wp-content/uploads/sites/7/2015/08/form-honors-program-application-2016.pdf) and submit it to the undergraduate coordinator.

Accelerated Master's

Chemistry, BA or BS/Curriculum and Instruction, Accelerated MEd (Secondary Education Chemistry Concentration)

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's option and obtain a BA or BS in Chemistry (degree without concentration) and an MEd in Curriculum and Instruction (Secondary Education Chemistry concentration) (https://catalog.gmu.edu/colleges-schools/education-human-development/school-education/curriculum-instruction-med/) in an accelerated time-frame after satisfactory completion of a minimum of 143 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degree for policies related to this program.

This accelerated option is offered jointly by the Department of Chemistry and Biochemistry and the School of Education.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies (https://catalog.gmu.edu/admissions/graduate-policies/) and Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies. For information specific to this accelerated master's program, see Application Requirements and Deadlines (https://cehd.gmu.edu/bachelors-accelerated-masters-program/).

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits, and additional unit-specific criteria.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MEd program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- 3.0 overall GPA
- Completion of specific undergraduate coursework
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following which can be taken as Advanced Standing or Reserve Graduate credit (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) (to be determined by the student and their advisor):

Code	Title	Credits
EDRD 619	Literacy in the Content Areas	3
EDUC 547	Scientific Inquiry and the Nature of Science	3
SEED 522	Foundations of Secondary Education	3
SEED 540	Human Development and Learning: Secondary Education	3
SEED 573	Teaching Science in the Secondary School	3

SEED 673	Advanced Methods of Teaching Science in the Secondary School	3

SEED approved elective

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies.

Chemistry, BS

Banner Code: SC-BS-CHEM

Academic Advising

Phone: 703-993-1070
Website: science.gmu.edu/academics/departments-units/chemistry-biochemistry/majors-minors

This program is approved by the American Chemical Society (https://www.acs.org/content/acs/en.html). Upon completion, students who choose either the BS in Chemistry with no concentration or with the Analytical Chemistry concentration are certified to the society. Students that have a keen interest in sustainability should choose the Environmental Chemistry concentration. Students planning professional careers in chemistry should choose this degree.

Teacher Licensure

Students who wish to become teachers and plan to seek teacher licensure should consider the following options:

- Chemistry, BA or BS/Curriculum and Instruction, Accelerated MEd (Secondary Education Chemistry concentration)
- Secondary Education - Chemistry (6-12) Undergraduate Certificate

Interested students should attend an information session early in their undergraduate career. For more information, visit the Graduate School of Education's website (http://gse.gmu.edu/).

Admissions & Policies

Admissions

University-wide admissions policies can be found in the Undergraduate Admissions Policies section of this catalog.

To apply for this program, please complete the George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now/).

Policies

Students must fulfill all Requirements for Bachelor's Degrees, including the Mason Core.

CHEM 336 Physical Chemistry Lab I or CHEM 465 Biochemistry Lab will fulfill the writing intensive requirement for students majoring in chemistry.

Termination from the Major

To ensure the academic integrity of the Chemistry and Biochemistry undergraduate major program, students are expected to maintain a satisfactory level of academic performance.

No chemistry, math, or science course that is required for the major may be attempted more than three times. Students who do not successfully complete such a course with a grade of C or better by the third attempt may be terminated from the major.

Students who have been terminated from the Chemistry major may not register for a chemistry course without the permission of the Department of Chemistry and Biochemistry.

A student may not declare a major in chemistry if the student has previously met the termination criteria for the major at any time, regardless of what the student's major was at the time the courses were taken.

Requirements

Degree Requirements

Total credits: minimum 120

Students should refer to the Admissions & Policies tab for specific policies related to this program.

Students majoring in chemistry must complete the chemistry program requirements with a minimum GPA of 2.30 and present no more than two courses with a grade of 'D' (1.00) in CHEM coursework at graduation.

BS without Concentration

Students who do not select an optional concentration complete the curriculum requirements listed below.

Chemistry Courses

Code	Title	Credits
CHEM 211	General Chemistry I (Mason Core)	3
CHEM 212	General Chemistry II (Mason Core)	3
CHEM 213	General Chemistry Laboratory I (Mason Core)	1
CHEM 214	General Chemistry Laboratory II (Mason Core)	1
CHEM 313	Organic Chemistry I	3
CHEM 314	Organic Chemistry II	3
CHEM 315	Organic Chemistry Lab I	2
CHEM 318	Organic Chemistry Lab II	2
CHEM 321	Quantitative Chemical Analysis	4
CHEM 331	Physical Chemistry I	3
CHEM 332	Physical Chemistry II	3
CHEM 336	Physical Chemistry Lab I [1]	2
CHEM 337	Physical Chemistry Lab II	2
CHEM 422	Instrumental Methods of Chemical Analysis	3
CHEM 423	Instrumental Methods of Chemical Analysis Laboratory	2
CHEM 441	Properties and Bonding of Inorganic Compounds	3
CHEM 445	Inorganic Preparations and Techniques	2
CHEM 463	General Biochemistry I	4
Select 3 credits of chemistry electives [2]		3
In Depth Electives		
Select one from the following:		3

CHEM 413	Synthetic and Mechanistic Organic Chemistry	
CHEM 427	Aquatic Environmental Chemistry	
CHEM 438	Atmospheric Chemistry	
CHEM 458	Chemical Oceanography	
CHEM 464	General Biochemistry II	
CHEM 467	The Chemistry of Enzyme-Catalyzed Reactions	
CHEM 468	Bioorganic Chemistry	
Total Credits		52

[1] Fulfills the writing intensive requirement.

[2] Any lecture, lab or research course(s)

Mathematics Courses

Code	Title	Credits
MATH 113	Analytic Geometry and Calculus I (Mason Core)	4
MATH 114	Analytic Geometry and Calculus II	4
MATH 213	Analytic Geometry and Calculus III	3
Total Credits		11

Physics Courses

Code	Title	Credits
PHYS 160	University Physics I (Mason Core)	3
PHYS 161	University Physics I Laboratory (Mason Core)	1
PHYS 260	University Physics II (Mason Core)	3
PHYS 261	University Physics II Laboratory (Mason Core)	1
Total Credits		8

Concentration in Environmental Chemistry (EVCH)

Students who choose this concentration will have a broad knowledge of chemistry and a firm foundation in the environmental sciences covering atmospheric, aquatic, and soil. The major prepares students to work in the public or private sector as environmental chemists as well as to pursue an advanced degree.

Chemistry Courses

Code	Title	Credits
CHEM 211	General Chemistry I (Mason Core)	3
CHEM 213	General Chemistry Laboratory I (Mason Core)	1
CHEM 212	General Chemistry II (Mason Core)	3
CHEM 214	General Chemistry Laboratory II (Mason Core)	1
CHEM 313	Organic Chemistry I	3
CHEM 314	Organic Chemistry II	3
CHEM 315	Organic Chemistry Lab I	2
CHEM 318	Organic Chemistry Lab II	2
CHEM 321	Quantitative Chemical Analysis	4
CHEM 331	Physical Chemistry I	3
CHEM 332	Physical Chemistry II	3
CHEM 336	Physical Chemistry Lab I [1]	2
CHEM 337	Physical Chemistry Lab II	2
CHEM 422	Instrumental Methods of Chemical Analysis	3
CHEM 423	Instrumental Methods of Chemical Analysis Laboratory	2
CHEM 427	Aquatic Environmental Chemistry	3
CHEM 438	Atmospheric Chemistry	3
CHEM 441	Properties and Bonding of Inorganic Compounds	3
or CHEM 446	Bioinorganic Chemistry	
CHEM Elective (lecture or research course)		3
Total Credits		49

[1] Fulfills the writing intensive requirement.

Physics Courses

Code	Title	Credits
Select one option:		8
Option One:		
PHYS 160	University Physics I (Mason Core)	
PHYS 161	University Physics I Laboratory (Mason Core)	
PHYS 260	University Physics II (Mason Core)	
PHYS 261	University Physics II Laboratory (Mason Core)	
Option Two:		
PHYS 243	College Physics I (Mason Core)	
PHYS 244	College Physics I Lab (Mason Core)	
PHYS 245	College Physics II (Mason Core)	
PHYS 246	College Physics II Lab (Mason Core)	
Total Credits		8

Mathematics Courses

Code	Title	Credits
MATH 113	Analytic Geometry and Calculus I (Mason Core)	4
MATH 114	Analytic Geometry and Calculus II	4
MATH 213	Analytic Geometry and Calculus III	3
or STAT 250	Introductory Statistics I (Mason Core)	
Total Credits		11

Science Core Courses

Code	Title	Credits
GEOL 101	Introductory Geology I (Mason Core)	4
GEOL 306	Soil Science	3
EVPP 210	Environmental Biology: Molecules and Cells	4
or BIOL 213	Cell Structure and Function (Mason Core)	
Total Credits		11

Supporting Science Electives

Code	Title	Credits
Select two courses from the following: [1]		6-8
CHEM 458	Chemical Oceanography	
or BIOL 309	Oceanography	
or EVPP 309	Oceanography	

or GEOL 309	Oceanography
EVPP 301	Environmental Science: Biological Diversity and Ecosystems
EVPP 445	Principles of Environmental Toxicology
GEOL 305	Environmental Geology
GEOL 313	Hydrogeology
BIOL 305 & BIOL 306	Biology of Microorganisms and Biology of Microorganisms Laboratory
or EVPP 305 & EVPP 306	Environmental Microbiology Essentials and Environmental Microbiology Essentials Laboratory
GGS 302	Global Environmental Hazards
Total Credits	6-8

[1] The discipline sequences may be interchanged only with approval by the program coordinator.

The remaining credits are fulfilled by Mason Core requirements or general electives.

Concentration in Analytical Chemistry (ANAC)

The Analytical Chemistry concentration is designed to introduce and train students in modern aspects of analytical chemistry. Students who choose this program will be well prepared to run sophisticated analytical instruments in industry and research laboratories and to pursue an advanced degree specializing in analytical chemistry.

Chemistry Courses

Code	Title	Credits
CHEM 211	General Chemistry I (Mason Core)	3
CHEM 213	General Chemistry Laboratory I (Mason Core)	1
CHEM 212	General Chemistry II (Mason Core)	3
CHEM 214	General Chemistry Laboratory II (Mason Core)	1
CHEM 313	Organic Chemistry I	3
CHEM 314	Organic Chemistry II	3
CHEM 315	Organic Chemistry Lab I	2
CHEM 318	Organic Chemistry Lab II	2
CHEM 321	Quantitative Chemical Analysis	4
CHEM 331	Physical Chemistry I	3
CHEM 332	Physical Chemistry II	3
CHEM 336	Physical Chemistry Lab I [1]	2
CHEM 337	Physical Chemistry Lab II	2
CHEM 422	Instrumental Methods of Chemical Analysis	3
CHEM 423	Instrumental Methods of Chemical Analysis Laboratory	2
CHEM 427	Aquatic Environmental Chemistry	3
or CHEM 355	Undergraduate Research	
or CHEM 451	Special Projects in Chemistry	
or CHEM 452	Special Projects in Chemistry	
CHEM 463	General Biochemistry I	4
CHEM 441	Properties and Bonding of Inorganic Compounds	3
CHEM 465	Biochemistry Lab	2
or CHEM 445	Inorganic Preparations and Techniques	
CHEM 424	Principles of Chemical Separation	3
or CHEM 425	Electroanalytical Chemistry	
Total Credits		52

[1] Fulfills the writing intensive requirement.

Physics Courses

Code	Title	Credits
PHYS 160	University Physics I (Mason Core)	3
PHYS 161	University Physics I Laboratory (Mason Core)	1
PHYS 260	University Physics II (Mason Core)	3
PHYS 261	University Physics II Laboratory (Mason Core)	1
Total Credits		8

Mathematics Courses

Code	Title	Credits
MATH 113	Analytic Geometry and Calculus I (Mason Core)	4
MATH 114	Analytic Geometry and Calculus II	4
MATH 213	Analytic Geometry and Calculus III	3
Total Credits		11

Supporting Science Electives

Code	Title	Credits
Select 6 credits from the following:		6
BENG 101	Introduction to Bioengineering	
or STAT 250	Introductory Statistics I (Mason Core)	
ECE 101	Introduction to Electrical and Computer Engineering	
or CHEM 620	Modern Instrumentation	
Total Credits		6

The remaining hours are used to fulfill the Mason Core requirements and general elective courses.

CDS 130 Computing for Scientists is required to fulfill the Mason Core IT requirement.

Concentration in Biochemistry (BC)

Students planning professional careers in biochemistry, the pharmaceutical industry, medicine, biotechnology, or related fields with a chemistry emphasis should choose this program instead of the Chemistry, BS without a concentration. This concentration provides students with a focus on biochemistry while retaining a strong chemistry foundation. Students are allowed to tailor the concentration to their interests with 9 credits of biology or chemistry elective credits.

Chemistry Courses

Code	Title	Credits
CHEM 211	General Chemistry I (Mason Core)	3
CHEM 213	General Chemistry Laboratory I (Mason Core)	1
CHEM 212	General Chemistry II (Mason Core)	3

CHEM 214	General Chemistry Laboratory II (Mason Core)	1
CHEM 313	Organic Chemistry I	3
CHEM 314	Organic Chemistry II	3
CHEM 315	Organic Chemistry Lab I	2
CHEM 318	Organic Chemistry Lab II	2
CHEM 321	Quantitative Chemical Analysis	4
CHEM 331	Physical Chemistry I	3
CHEM 336	Physical Chemistry Lab I [1]	2
CHEM 446	Bioinorganic Chemistry	3
CHEM 463	General Biochemistry I	4
CHEM 464	General Biochemistry II	3
CHEM 465	Biochemistry Lab [1]	2
Total Credits		39

[1] Fulfills the writing intensive requirement.

Mathematics Courses

Code	Title	Credits
MATH 113	Analytic Geometry and Calculus I (Mason Core)	4
MATH 114	Analytic Geometry and Calculus II	4
Total Credits		8

Physics Courses

Code	Title	Credits
Select one option:		8
Option One:		
PHYS 243	College Physics I (Mason Core)	
PHYS 244	College Physics I Lab (Mason Core)	
PHYS 245	College Physics II (Mason Core)	
PHYS 246	College Physics II Lab (Mason Core)	
Option Two:		
PHYS 160	University Physics I (Mason Core)	
PHYS 161	University Physics I Laboratory (Mason Core)	
PHYS 260	University Physics II (Mason Core)	
PHYS 261	University Physics II Laboratory (Mason Core)	
Total Credits		8

Biology Courses

Code	Title	Credits
BIOL 213	Cell Structure and Function (Mason Core)	4
BIOL 305	Biology of Microorganisms	3
BIOL 306	Biology of Microorganisms Laboratory	1
Total Credits		8

Approved Science Electives

Code	Title	Credits
Select 9 credits of approved science electives chosen from CHEM or BIOL courses numbered 302-499 [1]		9
Total Credits		9

[1] Other science or math courses may be approved as electives, subject to prior approval of the undergraduate coordinator.

Concentration in Materials Chemistry (MATC)

Students in the Materials Chemistry concentration explore nanostructures and how they relate to the macroscale physical and chemical properties of a material. Students interested in a career specializing in the synthesis and characterization of materials, as well as applied areas of materials chemistry, obtain a firm foundation in this subfield of chemistry.

Chemistry Courses

Code	Title	Credits
CHEM 211	General Chemistry I (Mason Core)	3
CHEM 213	General Chemistry Laboratory I (Mason Core)	1
CHEM 212	General Chemistry II (Mason Core)	3
CHEM 214	General Chemistry Laboratory II (Mason Core)	1
CHEM 313	Organic Chemistry I	3
CHEM 314	Organic Chemistry II	3
CHEM 315	Organic Chemistry Lab I	2
CHEM 318	Organic Chemistry Lab II	2
CHEM 321	Quantitative Chemical Analysis	4
CHEM 331	Physical Chemistry I	3
CHEM 332	Physical Chemistry II	3
CHEM 336	Physical Chemistry Lab I [1]	2
CHEM 337	Physical Chemistry Lab II	2
CHEM 441	Properties and Bonding of Inorganic Compounds	3
CHEM 445	Inorganic Preparations and Techniques	2
CHEM 472	Modern Polymer Chemistry	3
Total Credits		40

Mathematics Courses

Code	Title	Credits
MATH 113	Analytic Geometry and Calculus I (Mason Core)	4
MATH 114	Analytic Geometry and Calculus II	4
MATH 213	Analytic Geometry and Calculus III	3
Total Credits		11

Physics Courses

Code	Title	Credits
PHYS 160	University Physics I (Mason Core)	3
PHYS 161	University Physics I Laboratory (Mason Core)	1
PHYS 260	University Physics II (Mason Core)	3
PHYS 261	University Physics II Laboratory (Mason Core)	1
Total Credits		8

Additional Science Courses

Code	Title	Credits
Choose 12 credits from the following:		12
CHEM 355	Undergraduate Research	

CHEM 413	Synthetic and Mechanistic Organic Chemistry
CHEM 422	Instrumental Methods of Chemical Analysis
CHEM 423	Instrumental Methods of Chemical Analysis Laboratory
CHEM 451	Special Projects in Chemistry
CHEM 463	General Biochemistry I
CHEM 465	Biochemistry Lab
CHEM 471	Solid State Chemistry
CHEM 480	Fundamentals of Nanoscience and Nanomaterials
BENG 240	Biomaterials
ME 313	Material Science
Total Credits	12

Mason Core and Elective Credits

In order to meet a minimum of 120 credits, this degree requires additional credits (specific credit counts by concentration are shown below), which may be applied toward any remaining Mason Core requirements (outlined below), Requirements for Bachelor's Degrees, and electives. Students are strongly encouraged to consult with their advisors to ensure that they fulfill all requirements.

- Without concentration: 49 credits
- Environmental concentration: 33-35 credits
- Analytical concentration: 43 credits
- Biochemistry concentration: 48 credits
- Materials Chemistry concentration: 49 credits

Mason Core

Some Mason Core requirements may already be fulfilled by the major requirements listed above. Students are strongly encouraged to consult their advisors to ensure they fulfill all remaining Mason Core requirements.

Code	Title	Credits
Foundation Requirements		
Written Communication (ENGH 101)		3
Oral Communication		3
Quantitative Reasoning		3
Information Technology and Computing		3
Exploration Requirements		
Arts		3
Global Understanding		3
Literature		3
Natural Science		7
Social and Behavioral Sciences		3
Western Civilization/World History		3
Integration Requirements		
Written Communications (ENGH 302)		3
Writing-Intensive [1]		3
Synthesis/Capstone [2]		3
Total Credits		40

1 Most programs include the writing-intensive course designated for the major as part of the major requirements; this course is therefore not counted towards the total required for Mason Core.

2 Minimum 3 credits required.

Honors

Honors in the Major

Chemistry majors who have completed prerequisites for CHEM 455 Honors Research in Chemistry and CHEM 456 Honors Research in Chemistry and have maintained an overall GPA of at least 3.00 in mathematics and science courses are eligible to enter the departmental honors program. To graduate with honors in chemistry, a student is required to maintain a minimum GPA of 3.00 in mathematics and science courses and successfully complete the two semesters of CHEM 455 Honors Research in Chemistry and CHEM 456 Honors Research in Chemistry with a minimum GPA of 3.50.

In order to apply for Chemistry Honors, please complete the application (https://cos.gmu.edu/chemistry/wp-content/uploads/sites/7/2015/08/form-honors-program-application-2016.pdf) and submit it to the undergraduate coordinator.

Accelerated Master's

Chemistry, BA or BS/Curriculum and Instruction, Accelerated MEd (Secondary Education Chemistry Concentration)

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's option and obtain a BA or BS in Chemistry (degree without concentration) and an MEd in Curriculum and Instruction (Secondary Education Chemistry concentration) (https://catalog.gmu.edu/colleges-schools/education-human-development/school-education/curriculum-instruction-med/) in an accelerated time-frame after satisfactory completion of a minimum of 143 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degree for policies related to this program.

This accelerated option is offered jointly by the Department of Chemistry and Biochemistry and the School of Education.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies (https://catalog.gmu.edu/admissions/graduate-policies/) and Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies. For information specific to this accelerated master's program, see Application Requirements and Deadlines (https://cehd.gmu.edu/bachelors-accelerated-masters-program/).

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits, and additional unit-specific criteria.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MEd program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- 3.0 overall GPA
- Completion of specific undergraduate coursework
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following which can be taken as Advanced Standing or Reserve Graduate credit (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) (to be determined by the student and their advisor):

Code	Title	Credits
EDRD 619	Literacy in the Content Areas	3
EDUC 547	Scientific Inquiry and the Nature of Science	3
SEED 522	Foundations of Secondary Education	3
SEED 540	Human Development and Learning: Secondary Education	3
SEED 573	Teaching Science in the Secondary School	3
SEED 673	Advanced Methods of Teaching Science in the Secondary School	3
SEED approved elective		

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies.

Chemistry, BS/Chemistry, Accelerated MS

Overview

This bachelor's/accelerated master's degree program allows academically strong undergraduates with a commitment to advance their education to obtain both the Chemistry, BS and the Chemistry, MS degrees within an accelerated timeframe. Upon completion of this 138 credit accelerated program, students will be exceptionally well prepared for entry into their careers or into a doctoral program in the field or in a related discipline.

Students are eligible to apply for this accelerated program once they have earned at least 60 undergraduate credits. They will be able to enroll in up to 18 credits of graduate coursework after successfully completing 75 undergraduate credits. This flexibility makes it possible for students to complete a bachelor's and a master's in five years.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies. For more information on undergraduates enrolling in graduate courses, see AP.1.4.4 Graduate Course Enrollment by Undergraduates (https://catalog.gmu.edu/policies/academic/registration-attendance/#text).

Application Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in the Graduate Admission Policies section of this catalog.

Important application information and processes for this accelerated master's program can be found here (https://www2.gmu.edu/admissions-aid/how-apply/accelerated-masters/).

Students should seek out the graduate program's advisor who will aid in choosing the appropriate graduate courses and help prepare the student for graduate studies.

Successful applicants will have earned 60 undergraduate credits and have an overall GPA of at least 3.00. Additionally, they will have completed 36 credits of CHEM courses with a GPA of at least 3.00.

Accelerated Option Requirements

After the completion of 75 undergraduate credits, students may complete 3 to 12 credits of graduate coursework that can apply to both the undergraduate and graduate degrees.

In addition to applying to graduate from the undergraduate program, students in the accelerated program must submit a bachelor's/accelerated master's transition form (available from the Office of the University Registrar (https://registrar.gmu.edu/forms/)) to the College of Science's Office of Academic and Student Affairs (https://cos.gmu.edu/about/contact-us/) by the last day to add classes of their final undergraduate semester. Students should enroll for courses in the master's program in the fall or spring semester immediately following conferral of the bachelor's degree, but should contact an advisor if they would like to defer up to one semester.

Students must maintain an overall GPA of 3.00 or higher in all graduate coursework and should consult with their faculty advisor to coordinate their academic goals.

Reserve Graduate Credit

Accelerated master's students may also take up to 6 graduate credits as reserve graduate credits. These credits do not apply to the undergraduate degree, but will reduce the master's degree by up to 6 credits. With 12 graduate credits counted toward the undergraduate degree plus the maximum 6 reserve graduate credits, the credits necessary for the graduate degree can be reduced by up to 18.

Graduate Course Suggestions

The following list of suggested courses is provided for general reference. To ensure an efficient route to graduation and post-graduation readiness, students are strongly encouraged to meet with an advisor before registering for graduate-level courses.

Code	Title	Credits
CHEM 633	Chemical Thermodynamics and Kinetics [1]	
For Students Interested in the Environmental Sciences		

CHEM 627	Aquatic Environmental Chemistry
CHEM 651	Environmental Chemistry of Organic Substances
For Students Interested in Biochemistry	
CHEM 567	The Chemistry of Enzyme-Catalyzed Reactions
CHEM 660	Protein Biochemistry
For Students Interested in Organic Chemistry	
CHEM 568	Bioorganic Chemistry
CHEM 613	Modern Polymer Chemistry
CHEM 614	Physical Organic Chemistry
For Students Interested in Inorganic Chemistry	
CHEM 641	Solid State Chemistry
CHEM 646	Bioinorganic Chemistry
For Students Interested in Analytical Chemistry	
CHEM 624	Principles of Chemical Separation
CHEM 625	Electroanalytical Chemistry
For Students Interested in Materials Science	
CHEM 680	Fundamentals of Nanoscience and Nanomaterials

[1] This course covers the advanced concepts necessary to understand the mechanism and kinetics of chemical reactions.

Bachelor's Degree (selected), Bioinformatics Management, Accelerated PSM

Overview

This bachelor's/accelerated master's degree program allows academically strong undergraduates with a commitment to advance their education to obtain both the Biology, BS (https://catalog.gmu.edu/colleges-schools/science/biology/biology-bs/), or the Chemistry, BS, or the Computational and Data Sciences, BS (https://catalog.gmu.edu/colleges-schools/science/computational-data-sciences/computational-data-sciences-bs/), or the Physics, BS (https://catalog.gmu.edu/colleges-schools/science/physics-astronomy/physics-bs/), or the Neuroscience, BS (https://catalog.gmu.edu/colleges-schools/science/neuroscience-program/neuroscience-bs/) and the Bioinformatics Management, PSM (https://catalog.gmu.edu/colleges-schools/science/systems-biology/bioinformatics-management-professional-science-masters/) degrees within an accelerated timeframe. Upon completion of this 138 credit accelerated program, students will be exceptionally well prepared for entry into their careers or into a doctoral program in the field or in a related discipline.

Students are eligible to apply for this accelerated program once they have earned at least 60 undergraduate credits and can enroll in up to 18 credits of graduate coursework after successfully completing 75 undergraduate credits. This flexibility makes it possible for students to complete a bachelor's and a master's in five years.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies. For more information on undergraduates enrolling in graduate courses, see AP.1.4.4 Graduate Course Enrollment by Undergraduates (https://catalog.gmu.edu/policies/academic/registration-attendance/#text).

Application Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in the Graduate Admission Policies section of this catalog.

Important application information and processes for this accelerated master's program can be found here (https://www2.gmu.edu/admissions-aid/how-apply/accelerated-masters/).

Students in the Biology, BS (https://catalog.gmu.edu/colleges-schools/science/biology/biology-bs/); Chemistry, BS (https://catalog.gmu.edu/colleges-schools/science/chemistry-biochemistry/chemistry-bs/); Computational and Data Sciences, BS (https://catalog.gmu.edu/colleges-schools/science/computational-data-sciences/computational-data-sciences-bs/); Neuroscience, BS (https://catalog.gmu.edu/colleges-schools/science/neuroscience-program/neuroscience-bs/); or Physics, BS (https://catalog.gmu.edu/colleges-schools/science/physics-astronomy/physics-bs/) with an overall GPA of at least 3.00 in their last 60 credits are welcome to apply to the Bioinformatics Management, PSM accelerated master's program. Applicants to this accelerated master's should have previously taken courses in molecular biology, computer science, calculus, physical chemistry, and statistics. Students with deficiencies in one or more of these areas may be required to take additional courses from the undergraduate curriculum.

The GRE requirement is waived for students accepted into this accelerated program.

Students should seek out the graduate program's advisor who will aid in choosing the appropriate graduate courses and help prepare the student for graduate studies.

Accelerated Option Requirements

After the completion of 75 undergraduate credits, students may complete 3 to 12 credits of graduate coursework that can apply to both the undergraduate and graduate degrees.

In addition to applying to graduate from the undergraduate program, students in the accelerated program must submit a bachelor's/accelerated master's transition form (available from the Office of the University Registrar (https://registrar.gmu.edu/forms/)) to the College of Science's Office of Academic and Student Affairs (https://cos.gmu.edu/about/contact-us/) by the last day to add classes of their final undergraduate semester. Students should enroll for courses in the master's program in the fall or spring semester immediately following conferral of the bachelor's degree, but should contact an advisor if they would like to defer up to one semester.

Students must maintain an overall GPA of 3.00 or higher in all graduate coursework and should consult with their faculty advisor to coordinate their academic goals.

Reserve Graduate Credits

Accelerated master's students may also take up to 6 graduate credits as reserve graduate credits. These credits do not apply to the undergraduate degree, but will reduce the master's degree by up to 6 credits. With 12 graduate credits counted toward the undergraduate degree plus the

maximum 6 reserve graduate credits, the credits necessary for the graduate degree can be reduced by up to 18.

Graduate Course Suggestions

The following list of suggested courses is provided for general reference. To ensure an efficient route to graduation and post-graduation readiness, students are strongly encouraged to meet with an advisor before registering for graduate-level courses.

Code	Title	Credits
BINF 630	Bioinformatics Methods	3
BINF 631	Molecular Cell Biology for Bioinformatics	3
BINF 702	Biological Data Analysis	3
GBUS 738	Data Mining for Business Analytics	3
or MBA 738	Data Mining for Business Analytics	

Chemistry, MS

Banner Code: SC-MS-CHEM

Academic Advising

Email: cbgrad@gmu.edu
Website: science.gmu.edu/academics/departments-units/chemistry-biochemistry/graduate-programs

This master's degree provides advanced training for recent college graduates, professionals in teaching, and technical workers in research organizations who have an interest in chemistry or biochemistry. With a Thesis Option Master's in Chemistry, the serious student will perform original research and write an MS thesis under the direction of a faculty member. This option is for students planning to continue with a PhD, or to work in industry, academia, or a national laboratory. The Non Thesis Option is often used by those going on to a professional degree or to teach chemistry at the secondary school level.

Admissions & Policies

Admissions

University-wide admissions policies can be found in the Graduate Admissions Policies section of this catalog.

To apply for this program, please complete the George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now/).

To be considered for admission to degree status, students must have a bachelor's degree in chemistry, biochemistry, or a related field and must meet general admission requirements for graduate study as specified in Graduate Admission Policies (https://catalog.gmu.edu/admissions/graduate-policies/). Applicants with a bachelor's degree in other fields of study who have at least three years of chemistry or biochemistry coursework may be accepted into the program. In some cases, students may be accepted provisionally and will be required to successfully complete the selected remedial courses, some of which may not be applicable toward the master's requirements.

Admission is based upon a departmental evaluation of the applicant's background as evidenced by transcripts, résumés, and letters of recommendation.

GRE scores are not required for admission into this program.

Policies

CHEM 500 Selected Topics in Modern Chemistry may not be applied toward the MS degree.

CHEM courses numbered 502 through 510 may be applied toward the degree only with prior written approval of the department.

For policies governing all graduate programs, see AP.6 Graduate Policies.

Requirements

Degree Requirements

Total credits: 30

Students should refer to the Admissions & Policies tab for specific policies related to this program.

Core Courses

Code	Title	Credits
Select three of the following core courses. Courses must be selected from three different core areas shown below: [1]		9
Analytical:		
CHEM 624	Principles of Chemical Separation	
Biochemistry:		
CHEM 660	Protein Biochemistry	
CHEM 662	Modern Methods of Drug Discovery	
Environmental:		
CHEM 651	Environmental Chemistry of Organic Substances	
Inorganic:		
CHEM 641	Solid State Chemistry	
CHEM 646	Bioinorganic Chemistry	
Organic:		
CHEM 613	Modern Polymer Chemistry	
CHEM 614	Physical Organic Chemistry	
Total Credits		9

[1] These listed courses may also be taken as electives beyond the stated credit requirement for each option.

MS without Concentration

General chemistry students who do not wish to pursue a concentration complete the core courses above, the following requirements, and choose either the Thesis Option or the Non Thesis Option:

Code	Title	Credits
Additional Core Course		**3**
CHEM 633	Chemical Thermodynamics and Kinetics	
Chemistry Electives		**9**
Select 3 credits of CHEM designated courses		
Select 6 credits of courses in chemistry or related fields, approved by the graduate committee prior to registration		
Seminar		**3**
CHEM 790	Graduate Seminar	

Thesis or Non Thesis		**6**
Select the Thesis Option or the Non Thesis Option		
Total Credits		21

Thesis Option

The Thesis Option is designed for students planning to pursue a doctoral degree or a career involving research in the chemical, biochemical, environmental, or pharmaceutical industries.

Students must choose a research laboratory advisor during their first semester in the program and begin working on their thesis project no later than the second semester. The thesis is based on research that must be preapproved by the thesis or advisory committee, which is appointed prior to the first semester of registration in CHEM 799 Master's Thesis. Students must complete CHEM 799 Master's Thesis and present a seminar, followed by an oral defense.

Code	Title	Credits
Thesis Option		**6**
CHEM 799	Master's Thesis	
Total Credits		6

Non Thesis Option

The Non Thesis Option is designed for those seeking to go on to professional school, teach chemistry in secondary schools, or pursue other careers in which advanced work in chemistry is necessary or advantageous.

Students selecting this option are not required to complete a laboratory-based thesis. Instead, they must complete a research project or gain teaching experience in undergraduate chemistry labs, as described below.

Any combination of CHEM 670 Teaching Practicum and CHEM 796 Directed Reading and Research may be used to fulfill this requirement. However, CHEM 796 Directed Reading and Research may only be used to fulfill this requirement with prior written approval of the department and must be used to complete a laboratory or library-based research project, or must otherwise enhance the student's teaching skills.

Code	Title	Credits
Non Thesis Option		
Select 3 credits of the following:		3
CHEM 670	Teaching Practicum	
CHEM 796	Directed Reading and Research	
Additional Chemistry Electives		3
Select 3 credits of CHEM designated courses		
Total Credits		6

MS with Concentration in Biochemistry (BC)

Students who wish to pursue an optional concentration in biochemistry complete the core courses above, the following requirements, and choose either Thesis Option or the Non Thesis Option:

Code	Title	Credits
Additional Core Course		**3**
CHEM 633	Chemical Thermodynamics and Kinetics	
Chemistry Electives		**3**
Select 3 credits of CHEM designated courses		
Seminar		**3**
CHEM 790	Graduate Seminar	
Thesis or Non Thesis		**12**
Select the Thesis Option or the Non Thesis Option		
Total Credits		21

Thesis Option

The Thesis Option is designed for students planning to pursue a doctoral degree or a career involving research in the chemical, biochemical, environmental, or pharmaceutical industries.

Students must choose a research laboratory advisor during their first semester in the program and begin working on their thesis project no later than the second semester. The thesis is based on research that must be preapproved by the thesis or advisory committee, which is appointed prior to the first semester of registration in CHEM 799 Master's Thesis. Students must complete CHEM 799 Master's Thesis and present a seminar, followed by an oral defense.

Code	Title	Credits
Biochemistry Electives		**6**
Select 6 credits of electives in biochemistry or related fields with approval from the department		
Thesis		**6**
CHEM 799	Master's Thesis	
Total Credits		12

Non Thesis Option

The Non Thesis Option is designed for those seeking to go on to professional school, teach chemistry in secondary schools, or pursue other careers in which advanced work in chemistry is necessary or advantageous.

Students selecting this option are not required to complete a laboratory-based thesis. Instead, they must complete a research project or gain teaching experience in undergraduate chemistry labs, as described below.

Any combination of CHEM 670 Teaching Practicum and CHEM 796 Directed Reading and Research may be used to fulfill this requirement. However, CHEM 796 Directed Reading and Research may only be used to fulfill this requirement with prior written approval of the department and must be used to complete a laboratory or library-based research project, or must otherwise enhance the student's teaching skills.

Code	Title	Credits
Non Thesis Option		
Select 3 credits of the following:		3
CHEM 670	Teaching Practicum	
CHEM 796	Directed Reading and Research [1]	
Biochemistry Electives		9
Electives in biochemistry or related fields with approval from department		
Total Credits		12

Accelerated Master's

Chemistry, BS/Chemistry, Accelerated MS

Overview

This bachelor's/accelerated master's degree program allows academically strong undergraduates with a commitment to advance their education to obtain both the Chemistry, BS and the Chemistry, MS degrees within an accelerated timeframe. Upon completion of this 138 credit accelerated program, students will be exceptionally well prepared for entry into their careers or into a doctoral program in the field or in a related discipline.

Students are eligible to apply for this accelerated program once they have earned at least 60 undergraduate credits. They will be able to enroll in up to 18 credits of graduate coursework after successfully completing 75 undergraduate credits. This flexibility makes it possible for students to complete a bachelor's and a master's in five years.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies. For more information on undergraduates enrolling in graduate courses, see AP.1.4.4 Graduate Course Enrollment by Undergraduates (https://catalog.gmu.edu/policies/academic/registration-attendance/#text).

Application Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in the Graduate Admission Policies section of this catalog.

Important application information and processes for this accelerated master's program can be found here (https://www2.gmu.edu/admissions-aid/how-apply/accelerated-masters/).

Students should seek out the graduate program's advisor who will aid in choosing the appropriate graduate courses and help prepare the student for graduate studies.

Successful applicants will have earned 60 undergraduate credits and have an overall GPA of at least 3.00. Additionally, they will have completed 36 credits of CHEM courses with a GPA of at least 3.00.

Accelerated Option Requirements

After the completion of 75 undergraduate credits, students may complete 3 to 12 credits of graduate coursework that can apply to both the undergraduate and graduate degrees.

In addition to applying to graduate from the undergraduate program, students in the accelerated program must submit a bachelor's/accelerated master's transition form (available from the Office of the University Registrar (https://registrar.gmu.edu/forms/)) to the College of Science's Office of Academic and Student Affairs (https://cos.gmu.edu/about/contact-us/) by the last day to add classes of their final undergraduate semester. Students should enroll for courses in the master's program in the fall or spring semester immediately following conferral of the bachelor's degree, but should contact an advisor if they would like to defer up to one semester.

Students must maintain an overall GPA of 3.00 or higher in all graduate coursework and should consult with their faculty advisor to coordinate their academic goals.

Reserve Graduate Credit

Accelerated master's students may also take up to 6 graduate credits as reserve graduate credits. These credits do not apply to the undergraduate degree, but will reduce the master's degree by up to 6 credits. With 12 graduate credits counted toward the undergraduate degree plus the maximum 6 reserve graduate credits, the credits necessary for the graduate degree can be reduced by up to 18.

Graduate Course Suggestions

The following list of suggested courses is provided for general reference. To ensure an efficient route to graduation and post-graduation readiness, students are strongly encouraged to meet with an advisor before registering for graduate-level courses.

Code	Title	Credits
CHEM 633	Chemical Thermodynamics and Kinetics [1]	
For Students Interested in the Environmental Sciences		
CHEM 627	Aquatic Environmental Chemistry	
CHEM 651	Environmental Chemistry of Organic Substances	
For Students Interested in Biochemistry		
CHEM 567	The Chemistry of Enzyme-Catalyzed Reactions	
CHEM 660	Protein Biochemistry	
For Students Interested in Organic Chemistry		
CHEM 568	Bioorganic Chemistry	
CHEM 613	Modern Polymer Chemistry	
CHEM 614	Physical Organic Chemistry	
For Students Interested in Inorganic Chemistry		
CHEM 641	Solid State Chemistry	
CHEM 646	Bioinorganic Chemistry	
For Students Interested in Analytical Chemistry		
CHEM 624	Principles of Chemical Separation	
CHEM 625	Electroanalytical Chemistry	
For Students Interested in Materials Science		
CHEM 680	Fundamentals of Nanoscience and Nanomaterials	

1 This course covers the advanced concepts necessary to understand the mechanism and kinetics of chemical reactions.

Department of Computational and Data Sciences

Academic Programs Administrator

Phone: 703-993-9298
Email: cds@gmu.edu
Website: cds.gmu.edu

Administration

- Jason Kinser, Chair
- Eduardo Lopez, Graduate Coordinator CSI, COMP, Data Science Certificate
- Anamaria Berea, Graduate Coordinator CSS
- Zachary Henderson, Undergraduate Advisor

The mission of the Department of Computational and Data Sciences (CDS) is comprised of two objectives:

- The first is the systematic development and application of computational techniques for modeling and simulation of scientific and social phenomena or social processes.
- The second objective is the systematic development and application of techniques for mining, managing, and analyzing large sets of data.

The resulting interdisciplinary approach leads to understanding, interpretation, and prediction of phenomena that traditional theory or experiment cannot provide alone. CDS's mission aims toward excellence in faculty and graduate student state-of-the-art research activities, as well as providing modern approaches to student education at both the graduate and undergraduate levels. The educational and research directions pursued in CDS are focused to reflect the interests of neighboring federal laboratories, scientific institutions, and high-technology firms to provide the students opportunities for continued or new employment. Graduate courses are also designed to accommodate part-time students, with most courses meeting once a week in the late afternoon or early evening.

The research and teaching activities associated with CDS's programs are a reflection of the present central role of computation in the arenas of "big data" and of modeling and simulation.

Undergraduate Programs

This department offers the Computational and Data Sciences, BS, the Computational and Data Sciences Minor, and the Government Analytics Minor (https://catalog.gmu.edu/colleges-schools/science/computational-data-sciences/government-analytics-minor/) in cooperation with the Schar School of Policy and Government (https://catalog.gmu.edu/colleges-schools/policy-government/). Accelerated master's options are also available for undergraduate students interested in the Computational Science, MS or the Bioinformatics Management, PSM (https://catalog.gmu.edu/colleges-schools/science/systems-biology/bioinformatics-management-professional-science-masters/).

Many opportunities exist for undergraduate students to become involved with research. Students should consult with faculty working on research topics of interest to them based on their exploration of the departmental website (https://cos.gmu.edu/cds/).

Graduate Programs

This department offers the Data Science Graduate Certificate, the Computational Social Science Graduate Certificate, the Computational Science, MS, the Computational Sciences and Informatics, PhD, and the Computational Social Science, PhD. An accelerated master's option is also available for undergraduate students interested in the Computational Science, MS. The department also supports the Computational Social Science Concentration in the Interdisciplinary Studies, MAIS. These graduate programs are strongly supported by the extensive research activities of the faculty, including their collaborations with scientists and engineers at regional government laboratories.

Faculty

Department Faculty

Professors

Axtell, Blaisten-Barojas

Associate Professors

Berea, Crooks, Kennedy, Kinser, Rothman

Assistant Professors

Gkountouna, Kavak, Lopez, Mahabir, White

Affiliated Faculty

Renz

Emeritus Professors

Cioffi-Revilla, Gentle, Papaconstantopoulos

Adjunct Faculty

Boone, Ken Comer, Kevin Comer, Cruz, Dos Santos, Hui, Lyver, Miller, Patrick, Rajeev, Romanelli, Scott, Silayi, Sponseller, Sweet, Valko

Programs

- Computational Science, MS
- Computational Sciences and Informatics, PhD
- Computational Social Science Graduate Certificate
- Computational Social Science, PhD
- Computational and Data Sciences Minor
- Computational and Data Sciences, BS
- Data Science Graduate Certificate
- Government Analytics Minor (COS)

The Department of Computational and Data Sciences also supports the Computational Social Science Concentration in the Interdisciplinary Studies, MAIS.

Computational and Data Sciences Minor

Banner Code: CDS

Academic Programs Administrator

Email: cds@gmu.edu
Website: science.gmu.edu/academics/departments-units/computational-data-sciences/computational-data-sciences-minor

The minor provides an attractive option for students majoring in science, technology, engineering, or mathematics (STEM) who wish to augment their major degree program with additional courses in modeling, simulation, data science, and scientific computing. The combination of computer science, numerical methods, science, and computational and data sciences (CDS) synthesis courses will significantly enhance

the practical knowledge and computational skills of the students when compared with the major field alone. Students will acquire the knowledge, skills, and techniques commonly used across scientific disciplines, which will allow them to apply their George Mason University education in a practical way in industrial, government, and academic settings. Computational and data sciences skills are highly sought after in today's marketplace.

For additional information, please contact the CDS undergraduate coordinator/advisor.

Admissions & Policies

Policies

At least 8 credits must be unique to this minor and may not be used to fulfill requirements of the student's major, concentration, or another minor or undergraduate certificate. Students must complete at least 6 credits in their minor at George Mason and achieve a minimum GPA of 2.00 in courses applied to the minor.

For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 15

Students should refer to the Admissions & Policies tab for specific policies related to this program.

Students should note that many of the required courses have prerequisites. Nonetheless, this minor is within efficient reach of most students majoring in science, mathematics, engineering, or computer science. It is very likely that students with these backgrounds will already have the prerequisites completed.

CDS Courses

Code	Title	Credits
CDS 101	Introduction to Computational and Data Sciences (Mason Core)	3
or CDS 130	Computing for Scientists	
Total Credits		3

CDS or CSI Courses

Code	Title	Credits
Select 9 credits from any CDS or CSI courses		9
CDS		
CSI		
Total Credits		9

Upper-level Courses

Code	Title	Credits
Select 3 credits from any College of Science or Volgenau School of Engineering course at the 300 level or above [1]		3
Total Credits		3

[1] Other discipline-based courses may be permitted with permission of the undergraduate program director.

Computational and Data Sciences, BS

Banner Code: SC-BS-CDS

Academic Programs Administrator

Email: cds@gmu.edu
Website: science.gmu.edu/academics/departments-units/computational-data-sciences/computational-and-data-science-bs

The aim of this degree is to provide students with technical skills and knowledge for rigorously investigating physical and social phenomena. The BS is a transformative approach that integrates science at George Mason University based on the combination of real-world computer science skills, data acquisition and analysis, scientific modeling, applied mathematics, and simulation. As an interdisciplinary STEM-designated program, this degree addresses the current central role of computation in the areas of "big data," modeling, and simulation. Graduates of the program will possess the computational, scientific, and mathematical skills necessary for participating effectively as members of the scientific simulation and data analysis groups that are of increasing importance in the federal and public sectors, and in high technology firms. Additionally, graduates of the program will be well prepared to pursue graduate studies.

Admissions & Policies

Admissions

University-wide admissions policies can be found in the Undergraduate Admissions Policies section of this catalog.

To apply for this program, please complete the George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now/).

Policies

Students must fulfill all Requirements for Bachelor's Degrees, including the Mason Core.

The university's writing intensive requirement for the major will be met upon successful completion of CDS 302 Scientific Data and Databases.

For policies governing all undergraduate programs, see AP.5 Undergraduate Policies.

Requirements

Degree Requirements

Total credits: minimum 120

Students should refer to the Admissions & Policies tab for specific policies related to this program.

Core Required Courses

Code	Title	Credits
CDS 130	Computing for Scientists	3
CDS 151	Data Ethics in an Information Society (Mason Core)	1
CDS 230	Modeling and Simulation I	3
CDS 301	Scientific Information and Data Visualization	3
CDS 302	Scientific Data and Databases [1]	3
CDS 303	Scientific Data Mining	3
Total Credits		16

[1] Fulfills the writing intensive requirement.

Extended Core Courses

Code	Title	Credits
Select 18 credits from the following:		18
CDS 101 & CDS 102	Introduction to Computational and Data Sciences (Mason Core) and Introduction to Computational and Data Sciences Lab (Mason Core)	
CDS 201	Introduction to Computational Social Science	
CDS 205	Introduction to Agent-based Modeling and Simulation	
CDS 251	Introduction to Scientific Programming	
CDS 290	Topics in Computational and Data Sciences	
CDS 292	Introduction to Social Network Analysis (Mason Core)	
CDS 403	Machine Learning Applications in Science	
CDS 411	Modeling and Simulation II	
CDS 486	Topics in Computational and Data Sciences	
CSI 500	Computational Science Tools	
CSI 501	Introduction to Scientific Programming	
Total Credits		18

Mathematics Courses

Code	Title	Credits
Select 10-11 credits from the following:		10-11
MATH 113	Analytic Geometry and Calculus I (Mason Core)	
MATH 114	Analytic Geometry and Calculus II	
MATH 125	Discrete Mathematics I (Mason Core)	
MATH 203	Linear Algebra	
MATH 446	Numerical Analysis I	
Total Credits		10-11

Statistics Courses

Code	Title	Credits
Select 6 credits from the following:		6
STAT 250	Introductory Statistics I (Mason Core)	
STAT 350	Introductory Statistics II	
STAT 344	Probability and Statistics for Engineers and Scientists I	
STAT 346	Probability for Engineers	
Total Credits		6

Science and Engineering Courses

Code	Title	Credits
Select 6 credits from either one of the following:		6
	Additional Mason Core: Natural Science or Mason Core: Information Technology courses.	
	Any course offered by the College of Science or the Volgenau School of Engineering.	
Total Credits		6

Mason Core and Elective Credits

In order to meet a minimum of 120 credits, this degree requires an additional 63-64 credits, which may be applied toward any remaining Mason Core requirements (outlined below), Requirements for Bachelor's Degrees, and elective courses. Students are strongly encouraged to consult with their advisors to ensure that they fulfill all requirements.

Elective Course Suggestions

Code	Title	Credits
CDS 410	Numerical Analysis II	3
or MATH 447	Numerical Analysis II	
CDS 421	Computational Data Science	3
CDS 461	Molecular Dynamics and Monte Carlo Simulations	3
CDS 487	Electronic Structure Computations	3
CDS 490	Directed Study and Research	1-3
CDS 491	Internship	1-3
CDS 492	Capstone in Data Science (Mason Core)	3

Mason Core

Some Mason Core requirements may already be fulfilled by the major requirements listed above. Students are strongly encouraged to consult their advisors to ensure they fulfill all remaining Mason Core requirements.

Code	Title	Credits
Foundation Requirements		
Written Communication (ENGH 101)		3
Oral Communication		3
Quantitative Reasoning		3
Information Technology and Computing		3
Exploration Requirements		
Arts		3
Global Understanding		3
Literature		3
Natural Science		7
Social and Behavioral Sciences		3
Western Civilization/World History		3
Integration Requirements		
Written Communications (ENGH 302)		3
Writing-Intensive [1]		3

Synthesis/Capstone [2]	3
Total Credits	40

1 Most programs include the writing-intensive course designated for the major as part of the major requirements; this course is therefore not counted towards the total required for Mason Core.

2 Minimum 3 credits required.

Accelerated Master's

Computational and Data Sciences, BS/ Computational Science, Accelerated MS

Overview

This bachelor's/accelerated master's degree program allows academically strong undergraduates with a commitment to advance their education to obtain both the Computational and Data Sciences, BS and the Computational Science, MS degrees within an accelerated timeframe. Upon completion of this 138 credit accelerated program, students will be exceptionally well prepared for entry into their careers or into a doctoral program in the field or in a related discipline.

Students are eligible to apply for this accelerated program once they have earned at least 60 undergraduate credits and can enroll in up to 18 credits of graduate coursework after successfully completing 75 undergraduate credits. This flexibility makes it possible for students to complete a bachelor's and a master's in five years.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies. For more information on undergraduates enrolling in graduate courses, see AP.1.4.4 Graduate Course Enrollment by Undergraduates (https://catalog.gmu.edu/policies/academic/registration-attendance/#text).

Application Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in the Graduate Admission Policies section of this catalog.

Important application information and processes for this accelerated master's program can be found here (https://www2.gmu.edu/admissions-aid/how-apply/accelerated-masters/).

Students should seek out the graduate program's advisor who will aid in choosing the appropriate graduate courses and help prepare the student for graduate studies.

GRE-general scores are waived for graduates of BS degrees from any program in the College of Science or in the Volgenau School of Engineering at George Mason University.

Applicants must have an overall undergraduate GPA of at least 3.00. Additionally, applicants will have completed the following courses with a GPA of 3.00 or better:

Code	Title	Credits
CDS 205	Introduction to Agent-based Modeling and Simulation	3
or CDS 251	Introduction to Scientific Programming	
CDS 230	Modeling and Simulation I	3
CDS 301	Scientific Information and Data Visualization	3
CDS 302	Scientific Data and Databases	3
CDS 303	Scientific Data Mining	3
CDS 411	Modeling and Simulation II	3
Select one from the following:		3
CDS 461	Molecular Dynamics and Monte Carlo Simulations	
CDS 490	Directed Study and Research	
CSI 500	Computational Science Tools	
Total Credits		21

Reserve Graduate Credit

Accelerated master's students may also take up to 6 graduate credits as reserve graduate credits. These credits do not apply to the undergraduate degree, but will reduce the master's degree by up to 6 credits. With 12 graduate credits counted toward the undergraduate degree plus the maximum 6 reserve graduate credits, the credits necessary for the graduate degree can be reduced by up to 18.

Graduate Course Suggestions

The following list of suggested courses is provided for general reference. To ensure an efficient route to graduation and post-graduation readiness, students are strongly encouraged to meet with an advisor before registering for graduate-level courses.

Code	Title	Credits
For students focusing on Data Science, the following courses are suggested:		
CSI 501	Introduction to Scientific Programming	3
CSI 672	Statistical Inference	3
CSI 695	Scientific Databases	3
STAT 544	Applied Probability	3
For students focusing on Modeling, the following courses are suggested:		
CSI 500	Computational Science Tools	3
CSI 501	Introduction to Scientific Programming	3
CSI 600	Quantitative Foundations for Computational Sciences	3
CSI 690	Numerical Methods	3

Bachelor's Degree (selected), Bioinformatics Management, Accelerated PSM

Overview

This bachelor's/accelerated master's degree program allows academically strong undergraduates with a commitment to advance their education to obtain both the Biology, BS (https://catalog.gmu.edu/colleges-schools/science/biology/biology-bs/), or the Chemistry, BS, or the Computational and Data Sciences, BS (https://catalog.gmu.edu/colleges-schools/science/computational-data-sciences/computational-data-sciences-bs/), or the Physics, BS (https://catalog.gmu.edu/colleges-schools/science/physics-astronomy/physics-bs/), or the Neuroscience, BS (https://catalog.gmu.edu/colleges-schools/science/neuroscience-

program/neuroscience-bs/) and the Bioinformatics Management, PSM (https://catalog.gmu.edu/colleges-schools/science/systems-biology/bioinformatics-management-professional-science-masters/) degrees within an accelerated timeframe. Upon completion of this 138 credit accelerated program, students will be exceptionally well prepared for entry into their careers or into a doctoral program in the field or in a related discipline.

Students are eligible to apply for this accelerated program once they have earned at least 60 undergraduate credits and can enroll in up to 18 credits of graduate coursework after successfully completing 75 undergraduate credits. This flexibility makes it possible for students to complete a bachelor's and a master's in five years.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies. For more information on undergraduates enrolling in graduate courses, see AP.1.4.4 Graduate Course Enrollment by Undergraduates (https://catalog.gmu.edu/policies/academic/registration-attendance/#text).

Application Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in the Graduate Admission Policies section of this catalog.

Important application information and processes for this accelerated master's program can be found here (https://www2.gmu.edu/admissions-aid/how-apply/accelerated-masters/).

Students in the Biology, BS (https://catalog.gmu.edu/colleges-schools/science/biology/biology-bs/); Chemistry, BS (https://catalog.gmu.edu/colleges-schools/science/chemistry-biochemistry/chemistry-bs/); Computational and Data Sciences, BS (https://catalog.gmu.edu/colleges-schools/science/computational-data-sciences/computational-data-sciences-bs/); Neuroscience, BS (https://catalog.gmu.edu/colleges-schools/science/neuroscience-program/neuroscience-bs/); or Physics, BS (https://catalog.gmu.edu/colleges-schools/science/physics-astronomy/physics-bs/) with an overall GPA of at least 3.00 in their last 60 credits are welcome to apply to the Bioinformatics Management, PSM accelerated master's program. Applicants to this accelerated master's should have previously taken courses in molecular biology, computer science, calculus, physical chemistry, and statistics. Students with deficiencies in one or more of these areas may be required to take additional courses from the undergraduate curriculum.

The GRE requirement is waived for students accepted into this accelerated program.

Students should seek out the graduate program's advisor who will aid in choosing the appropriate graduate courses and help prepare the student for graduate studies.

Accelerated Option Requirements

After the completion of 75 undergraduate credits, students may complete 3 to 12 credits of graduate coursework that can apply to both the undergraduate and graduate degrees.

In addition to applying to graduate from the undergraduate program, students in the accelerated program must submit a bachelor's/accelerated master's transition form (available from the Office of the University Registrar (https://registrar.gmu.edu/forms/)) to the College of Science's Office of Academic and Student Affairs (https://cos.gmu.edu/about/contact-us/) by the last day to add classes of their final undergraduate semester. Students should enroll for courses in the master's program in the fall or spring semester immediately following conferral of the bachelor's degree, but should contact an advisor if they would like to defer up to one semester.

Students must maintain an overall GPA of 3.00 or higher in all graduate coursework and should consult with their faculty advisor to coordinate their academic goals.

Reserve Graduate Credits

Accelerated master's students may also take up to 6 graduate credits as reserve graduate credits. These credits do not apply to the undergraduate degree, but will reduce the master's degree by up to 6 credits. With 12 graduate credits counted toward the undergraduate degree plus the maximum 6 reserve graduate credits, the credits necessary for the graduate degree can be reduced by up to 18.

Graduate Course Suggestions

The following list of suggested courses is provided for general reference. To ensure an efficient route to graduation and post-graduation readiness, students are strongly encouraged to meet with an advisor before registering for graduate-level courses.

Code	Title	Credits
BINF 630	Bioinformatics Methods	3
BINF 631	Molecular Cell Biology for Bioinformatics	3
BINF 702	Biological Data Analysis	3
GBUS 738	Data Mining for Business Analytics	3
or MBA 738	Data Mining for Business Analytics	

Computational Science, MS

Banner Code: SC-MS-COMP

Academic Programs Administrator

227 Research Hall
Fairfax Campus

Phone: 703-993-9298
Email: cds@gmu.edu
Website: science.gmu.edu/academics/departments-units/computational-data-sciences/computational-science-ms

The Master of Science in Computational Science addresses the growing demand for trained computational scientists and engineers, and data scientists. It combines a solid foundation in computational science skills with courses in a variety of scientific and engineering computer-intensive areas where modeling and simulation, data analysis, and high performance computing play a central role.

Working with an advisor, a student may choose to pursue an area of emphasis. The areas of emphasis are:

- Computer Modeling and Simulation: Intended for students who wish to learn computational solution techniques for modeling and simulation of scientific and engineering phenomena.
- Data Science: Intended for students who wish to learn computational methods for acquiring, extracting, and analyzing large-scale data

obtained by observations, experiments, modeling, and database searches.

Students may also combine areas of emphasis to create their own customized curriculum under the guidance of the graduate coordinator.

Most of the courses are offered in the late afternoon or early evening to accommodate students with full-time employment outside of the university.

Admissions & Policies

Admissions

University-wide admissions policies can be found in the Graduate Admissions Policies section of this catalog.

To apply for this program, please complete the George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now/).

Eligibility

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in the Graduate Admissions Policies section of this catalog. Applicants to the Computational Science, MS should have academic backgrounds in the following appropriate fields: physical or biological sciences, engineering, mathematics, or computer science. They should have an undergraduate degree from an institution of higher education accredited by a Mason-recognized U.S. institutional accrediting agency or international equivalent with a GPA of at least 3.00 in their last 60 credits of study. In addition, applicants should have taken at least one course in differential equations and have facility in using a high-level computer programming language.

Application Requirements

To apply, prospective students should complete the George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now/), supply two copies of official transcripts from each university attended, a current résumé, and an expanded goals statement. Applicants should also provide two letters of recommendation and an official report of scores on the GRE-GEN. The GRE-SUB is recommended if it is given in the student's undergraduate major. The GRE requirement will be waived if the student holds a bachelor's or a master's degree from an institution of higher education accredited by a Mason-recognized U.S. institutional accrediting agency or international equivalent in the appropriate fields listed above. Acceptable TOEFL scores (as determined by university policy) are required of all international applicants; for more information visit Admission of International Students. The ETS code for Mason is 5827.

Policies

For policies governing all graduate degrees, see AP.6 Graduate Policies.

Requirements

Degree Requirements

Total credits: 30

Students should refer to the Admissions & Policies tab for specific policies related to this program.

Core Courses

Code	Title	Credits
Select 6 credits from the following:		6
CSI 690	Numerical Methods	
CSI 695	Scientific Databases	
CSI 702	High-Performance Computing	
CSI 703	Scientific and Statistical Visualization	
Total Credits		6

Computational Extended Core

Code	Title	Credits
Select 15 credits from any graduate-level CSI, CDS, or CSS courses [1]		15
CDS		
CSI		
CSS		
Total Credits		15

1 Not including the following research courses: CSI 796 Directed Reading and Research, CSI 798 Research Project, CSI 799 Master's Thesis, CSI 898 Research Colloquium in Computational Sciences and Informatics, CSI 899 Colloquium in Computational and Data Sciences, CSI 991 Seminar in Scientific Computing, CSI 996 Doctoral Reading and Research, or from courses previously taken.

Electives

Code	Title	Credits
Select 9 credits of electives [1,2,3]		9
Total Credits		9

1 Typically chosen from computational sciences and informatics, chemistry, mathematics, physics, engineering, information technology, and statistics courses.

2 Students should create a curriculum plan for an area of emphasis or combined areas of emphases in consultation with their academic advisor.

3 No more than 6 credits may be chosen from areas outside of CSI.

Elective credits may also include:

Code	Title	Credits
CSI 796	Directed Reading and Research	1-6
CSI 798	Research Project	1-3
CSI 799	Master's Thesis	1-6

Accelerated Master's

Computational and Data Sciences, BS/ Computational Science, Accelerated MS

Overview

This bachelor's/accelerated master's degree program allows academically strong undergraduates with a commitment to advance their

education to obtain both the Computational and Data Sciences, BS and the Computational Science, MS degrees within an accelerated timeframe. Upon completion of this 138 credit accelerated program, students will be exceptionally well prepared for entry into their careers or into a doctoral program in the field or in a related discipline.

Students are eligible to apply for this accelerated program once they have earned at least 60 undergraduate credits and can enroll in up to 18 credits of graduate coursework after successfully completing 75 undergraduate credits. This flexibility makes it possible for students to complete a bachelor's and a master's in five years.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies. For more information on undergraduates enrolling in graduate courses, see AP.1.4.4 Graduate Course Enrollment by Undergraduates (https://catalog.gmu.edu/policies/academic/registration-attendance/#text).

Application Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in the Graduate Admission Policies section of this catalog.

Important application information and processes for this accelerated master's program can be found here (https://www2.gmu.edu/admissions-aid/how-apply/accelerated-masters/).

Students should seek out the graduate program's advisor who will aid in choosing the appropriate graduate courses and help prepare the student for graduate studies.

GRE-general scores are waived for graduates of BS degrees from any program in the College of Science or in the Volgenau School of Engineering at George Mason University.

Applicants must have an overall undergraduate GPA of at least 3.00. Additionally, applicants will have completed the following courses with a GPA of 3.00 or better:

Code	Title	Credits
CDS 205	Introduction to Agent-based Modeling and Simulation	3
or CDS 251	Introduction to Scientific Programming	
CDS 230	Modeling and Simulation I	3
CDS 301	Scientific Information and Data Visualization	3
CDS 302	Scientific Data and Databases	3
CDS 303	Scientific Data Mining	3
CDS 411	Modeling and Simulation II	3
Select one from the following:		3
CDS 461	Molecular Dynamics and Monte Carlo Simulations	
CDS 490	Directed Study and Research	
CSI 500	Computational Science Tools	
Total Credits		21

Reserve Graduate Credit

Accelerated master's students may also take up to 6 graduate credits as reserve graduate credits. These credits do not apply to the undergraduate degree, but will reduce the master's degree by up to 6 credits. With 12 graduate credits counted toward the undergraduate degree plus the maximum 6 reserve graduate credits, the credits necessary for the graduate degree can be reduced by up to 18.

Graduate Course Suggestions

The following list of suggested courses is provided for general reference. To ensure an efficient route to graduation and post-graduation readiness, students are strongly encouraged to meet with an advisor before registering for graduate-level courses.

Code	Title	Credits
For students focusing on Data Science, the following courses are suggested:		
CSI 501	Introduction to Scientific Programming	3
CSI 672	Statistical Inference	3
CSI 695	Scientific Databases	3
STAT 544	Applied Probability	3
For students focusing on Modeling, the following courses are suggested:		
CSI 500	Computational Science Tools	3
CSI 501	Introduction to Scientific Programming	3
CSI 600	Quantitative Foundations for Computational Sciences	3
CSI 690	Numerical Methods	3

Mechanical Engineering, BS/ Computational Science, Accelerated MS

Overview

This option enables enthusiastic, highly qualified, undergraduates to obtain the Mechanical Engineering, BS (https://catalog.gmu.edu/colleges-schools/engineering/mechanical/mechanical-engineering-bs/) and the Computational Science, MS within the accelerated time frame of five years. The program requires 139 credits total, allowing students to undertake graduate coursework during their final year in the bachelor's degree. Upon completion of this 139 credit BS/MS combined program, students are exceptionally well prepared for undertaking doctoral studies or entering the professional workforce.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies.

Application Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in the Graduate Admission Policies section of this catalog[1]. Application information for this Accelerated Master's program can be found on the Department of Computational and Data Sciences (http://cos.gmu.edu/cds/academic-programs/) website. Applicants must have an overall undergraduate GPA of at least 3.00 and have completed at least 60 credits. Additionally, applicants will have completed the following courses with a GPA of 3.00 or better:

Code	Title	Credits
CS 112	Introduction to Computer Programming	4
ME 212	Solid Mechanics	3
ME 231	Dynamics	3

ME 313	Material Science	3
ME 322	Fluid Mechanics	3
ME 323	Heat Transfer	3
ME 351	Analytical Methods in Engineering	3
Total Credits		22

Students must maintain an overall GPA of 3.00 or higher in graduate coursework and should consult with their faculty advisor to coordinate their academic goals within the modeling and simulation or data science emphases of the Computational Science, MS.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites

[1] GRE-general scores are waived for graduates of BS degrees from any program in the College of Science or the Volgenau School of Engineering at George Mason University.

Accelerated Option Requirements

Students must complete all credits that satisfy requirements for both the BS and MS programs, with up to twelve credits overlap chosen from the following courses:

Code	Title	Credits
CSI 500	Computational Science Tools	3
CSI 501	Introduction to Scientific Programming	3
CSI 600	Quantitative Foundations for Computational Sciences	3
Select one course from the following options:		3
Any CDS, CSI, or CSS-prefixed courses numbered 500-689, or		
STAT 544	Applied Probability	
STAT 554	Applied Statistics I	
Total Credits		12

While still in undergraduate status, a maximum of 6 additional graduate credits may be taken as reserve graduate credit and applied to the master's program. Reserve graduate credits do not apply to the undergraduate degree.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees.

Computational Sciences and Informatics, PhD

Banner Code: SC-PHD-CSI

Academic Programs Administrator

227 Research Hall
Fairfax Campus

Phone: 703-993-9298
Email: cds@gmu.edu
Website: science.gmu.edu/academics/departments-units/computational-data-sciences/computational-sciences-and-informatics-phd

Founded in 1992, the program addresses the role of computation in science, mathematics, and engineering, and is designed around the emphases of Computer Modeling and Simulation and of Data Science. Computational science, focused on modeling and simulation, is defined as the systematic development and application of computing systems and computational solution techniques for modeling and simulation of scientific and engineering phenomena. Informatics, focused on data science, is defined as the systematic development and application of computing systems and computational solution techniques for analyzing data obtained through experiments, modeling, database searches, and instrumentation. The resulting interdisciplinary approach leads to an understanding that traditional theory or experimentation alone cannot provide. The close relationship of the PhD to the research and development activities in federal laboratories, scientific institutions, and high-technology firms affords students opportunities for continued or new employment. Scheduled courses and sequences accommodate part-time students, with most courses meeting once a week in the late afternoon or early evening. The research and teaching activities associated with the program reflect the recognized role of computation and data analysis as part of a triad with theory and experiment, leading to a better understanding of nature. The program is designed to be completed in four to five years.

Admissions & Policies

Admissions

University-wide admissions policies can be found in the Graduate Admissions Policies section of this catalog.

To apply for this program, please complete the George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now/).

Eligibility

Students interested in applying for admission should have a bachelor's degree in computational science, any natural science, mathematics, engineering, or computer science with a minimum GPA of 3.00 in their last 60 credits of study. Applicants to the PhD program should have a mathematics background up to and including differential equations and should also have knowledge of a computer programming language such as C, C++, Fortran, Python, etc.

Application Requirements

The GRE is required, unless the applicant holds a master's degree from an institution of higher education accredited by a Mason-recognized U.S. institutional accrediting agency or international equivalent. An acceptable TOEFL score (as determined by the university) is required for international students; for more information visit the Admission of International Students (https://catalog.gmu.edu/admissions/international-students/) section of the catalog. The ETS code for Mason is 5827.

Students should submit a completed George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now/) along with three letters of recommendation, an expanded goals statement, and application fee in addition to the items listed above.

Application deadlines can be found on the Office of Admissions website (https://www2.gmu.edu/admissions-aid/apply-now/how-apply/graduate/). Applications requesting financial support must be received by

February 1 for the fall semester. Applications from local applicants may be accepted after these general deadlines.

For additional information, please contact the CSI graduate coordinator.

Policies

For policies governing all graduate degrees, see AP.6 Graduate Policies.

Reduction of Credit

For students entering the doctoral program with a master's degree in a related field from an institution of higher education accredited by a Mason-recognized U.S. institutional accrediting agency or international equivalent, the required coursework may be reduced up to 24 credits, subject to approval of the graduate coordinator and the college's associate dean. Research-based courses and seminar courses are not eligible for reduction.

Transfer of Credit

Students who have prior graduate coursework that has not been applied to any degree may request to have a maximum of 30 of those graduate credits transferred, with approval of the graduate coordinator, the college's associate dean, and in accord with university policy. Research-based courses and seminar courses are not eligible for transfer.

Requirements

Degree Requirements

Total: 72 credits

Students should refer to the Admissions & Policies tab for specific policies related to this program.

General Core Courses

Code	Title	Credits
Select two courses (6 credits) from the following:		6
CSI 690	Numerical Methods	
CSI 695	Scientific Databases	
CSI 702	High-Performance Computing	
CSI 703	Scientific and Statistical Visualization	
Total Credits		6

Areas of Emphasis Courses

From the list below, students are advised to select six courses that correspond to areas of emphasis in:

- *Computer Modeling and Simulation*- Including applications to the natural sciences
- *Data Science*- Including computational learning, statistics, and data analytics

Code	Title	Credits
Select six courses (18 credits) from the following: [1]		18
CSI 500	Computational Science Tools	
CSI 501	Introduction to Scientific Programming	
CSI 672	Statistical Inference	
CSI 674	Bayesian Inference and Decision Theory	
CSI 676	Regression Analysis	
CSI 678	Times Series Analysis and Forecasting	
CSI 685	Fundamentals of Materials Science	
CSI 690	Numerical Methods	
CSI 695	Scientific Databases	
CSI 701	Foundations of Computational Science	
CSI 702	High-Performance Computing	
CSI 703	Scientific and Statistical Visualization	
CSI 709	Topics in Computational Sciences and Informatics	
CSI 721	Computational Fluid Dynamics I	
CSI 739	Topics in Bioinformatics	
CSI 740	Numerical Linear Algebra	
CSI 742	The Mathematics of the Finite Element Method	
CSI 744	Linear and Nonlinear Modeling in the Natural Sciences	
CSI 747	Nonlinear Optimization and Applications	
CSI 754	Earth Science Data and Advanced Data Analysis	
CSI 758	Visualization and Modeling of Complex Systems	
CSI 771	Computational Statistics	
CSI 772	Statistical Learning	
CSI 773	Statistical Graphics and Data Exploration	
CSI 777	Principles of Knowledge Mining	
CSI 780	Principles of Modeling and Simulation in Science	
CSI 782	Statistical Mechanics for Modeling and Simulation	
CSI 783	Computational Quantum Mechanics	
CSI 786	Molecular Dynamics Modeling	
CSI 787	Computational Materials Science	
CSI 788	Simulation of Large Scale Systems	
CSI 873	Computational Learning and Discovery	
CSI 876	Measure and Linear Spaces	
CSI 877	Geometric Methods in Statistics	
Total Credits		18

[1] When choosing courses, avoid courses previously taken to fulfill the 'General Core Courses' requirement and only choose one 500-level course.

Colloquium/Seminar

The department offers weekly colloquia and seminar series to ensure that students are exposed to the latest developments at area research institutions. One credit may be chosen from:

Code	Title	Credits
CSI 898	Research Colloquium in Computational Sciences and Informatics	1
or CSI 899	Colloquium in Computational and Data Sciences	
or CSI 991	Seminar in Scientific Computing	
Total Credits		1

Electives

Electives should be chosen to bring the total number of credits to 72. Courses must be approved by the student's advisor and the graduate coordinator. Additionally,

- A maximum of 2 credits of CSI 898 Research Colloquium in Computational Sciences and Informatics, CSI 899 Colloquium in Computational and Data Sciences, and/or CSI 991 Seminar in Scientific Computing may be applied as electives.
- A maximum of two 500-level courses may be applied between both the 'Areas of Emphasis Courses' requirement and the 'Electives' requirement.
- CSI 796 Directed Reading and Research and CSI 996 Doctoral Reading and Research are the only allowable research-based courses that can be used as electives.
- The following courses may not be used as electives: CSI 798 Research Project, CSI 799 Master's Thesis, CSI 998 Doctoral Dissertation Proposal, and CSI 999 Doctoral Dissertation.
- Students may pursue interdisciplinary research that supplements the 'Areas of Emphasis Courses' and 'Electives' requirements with each other and also with bioinformatics, climate dynamics, computational chemistry, computational social science, geoinformation sciences, and several other autonomous PhD program areas within the College of Science.

Doctoral Research

No more than 24 combined credits from CSI 998 Doctoral Dissertation Proposal and CSI 999 Doctoral Dissertation may be applied toward satisfying doctoral degree requirements, with a minimum of 6 credits of CSI 999 Doctoral Dissertation.

Students become eligible to register for CSI 998 Doctoral Dissertation Proposal upon having an approved dissertation committee. Upon advancement to candidacy, students will be eligible to register for CSI 999 Doctoral Dissertation.

Code	Title	Credits
Select 24 credits from the following:		24
CSI 998	Doctoral Dissertation Proposal	
CSI 999	Doctoral Dissertation	
Total Credits		24

Candidacy Examination

The student must successfully complete separate written, computational, and oral candidacy examinations prepared and administered by the student's dissertation committee.

Dissertation Proposal and Advancement to Candidacy

Students advance to doctoral candidacy by fulfilling the following requirements:

- The student must successfully complete all coursework and candidacy examinations as stated above.
- The student prepares a dissertation proposal describing in detail the planned dissertation research. The proposal must be approved by the dissertation committee.
- Following successful completion of the research proposal and candidacy exams, the committee will recommend the student for advancement to doctoral candidacy to the graduate coordinator and the college's associate dean.

Dissertation Research and Defense

After advancing to candidacy, the student will work on a doctoral dissertation while enrolled in CSI 999 Doctoral Dissertation. The dissertation is a written piece of original contribution that demonstrates a doctoral candidate's mastery of the subject matter. A student is expected to produce new and original research worthy of publication in peer-reviewed journals. After the dissertation is completed, the committee will review the dissertation and examine the student in a public oral dissertation defense.

Computational Social Science Graduate Certificate

Banner Code: SC-CERG-CSS

Academic Programs Administrator

227 Research Hall
Fairfax Campus

Phone: 703-993-9298
Email: cds@gmu.edu
Website: science.gmu.edu/academics/departments-units/computational-data-sciences/computational-social-science-graduate

This program is designed for students who seek training in computer simulation and related computational methods for analyzing social systems and processes. The program is open to all students with graduate standing at George Mason University and all students who hold a bachelor's degree from a regionally accredited university. The Computational Social Science (CSS) certificate allows students with social science or computational backgrounds to acquire new knowledge and modeling skills to improve their qualifications and attractiveness to employers in government, academia, or industry. The core courses provide a common foundation; additional elective courses allow for a variety of student interests across diverse social domains.

This graduate certificate may be pursued on a part-time or full-time basis.

Admissions & Policies

Admissions

University-wide admissions policies can be found in the Graduate Admissions Policies section of this catalog.

To apply for this program, please complete the George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now/).

Applicants should have an undergraduate degree from an institution of higher education accredited by a Mason-recognized U.S. institutional accrediting agency or international equivalent with a GPA of at least 3.00. To apply, prospective students should forward a completed George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now/), one copy of official transcripts from each college and graduate institution attended, and a current résumé. TOEFL scores are required of all international applicants. International

applicants should see information regarding the admission of international students.

Students intending to obtain the CSS certificate must apply to the CSS certificate program before beginning any CSS coursework intended to satisfy requirements. They must also have their coursework plan approved by the director.

Policies

For policies governing all graduate degrees, see AP.6 Graduate Policies.

Requirements

Certificate Requirements

Total credits: 15

This certificate may be pursued on a full-or part-time basis.

Students should refer to the Admissions & Policies tab for specific policies related to this program.

Core Courses

Code	Title	Credits
CSS 600	Introduction to Computational Social Science	3
CSS 610	Agent-based Modeling and Simulation	3
Total Credits		6

Electives

Code	Title	Credits
Nine credits of electives, selected from:		9
CSS 605	Object-Oriented Modeling in Social Science	
CSS 620	Origins of Social Complexity	
CSS 692	Social Network Analysis	
Other graduate courses in the fields of computational social science, social science, computer science, statistics, and other quantitative methods such as data visualization, information technology, and geographic information science. [1]		
Total Credits		9

[1] These courses should be selected in conjunction with, and approved by, the student's advisor. Students may include a maximum of 3 credits of programming courses to meet the elective requirements. Procedural, object-oriented languages, or other approved programming approaches may be used with permission of the director. Some courses on computational techniques, modeling, or statistics, such as visualization, graphics, and statistical and database packages may also be used to meet the requirements with prior approval of the director.

Computational Social Science, PhD

Banner Code: SC-PHD-CSS

Academic Programs Administrator

227 Research Hall

Fairfax Campus

Phone: 703-993-9298
Email: cds@gmu.edu
Website: science.gmu.edu/academics/departments-units/computational-data-sciences/computational-social-science-phd

The core objective of the program is to train graduate students to be professional computational social scientists in academia, government, or business. The program offers a unique and innovative interdisciplinary academic environment for systematically exploring, discovering, and developing skills to successfully follow careers in one of the areas of computational social science.

Admissions & Policies

Admissions

University-wide admissions policies can be found in Graduate Admissions Policies.

To apply for this program, please complete the George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now/).

Eligibility

Applicants should have as background a bachelor's degree in one of the social sciences; computer science, engineering, or a relevant discipline; and undergraduate courses in these and related areas. Bachelor's degrees in the physical or biological sciences are also eligible, but applicants may be advised to take additional courses in social science or computer science as prerequisites to admission. Minimal requirements also include one undergraduate course in calculus and knowledge of a computer programming language, preferably object-based.

Application Requirements

Applicants should have an undergraduate degree from an institution of higher education accredited by a Mason-recognized U.S. institutional accrediting agency or international equivalent with a GPA of at least 3.25. To apply, prospective students should complete the George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now/), copies of official transcripts from each college and graduate institution attended, a current résumé, an expanded goals statement not to exceed 2,000 words, and the names of two Mason faculty members who may be suitable advisors. Applicants should also include three letters of recommendation from faculty members or individuals with direct knowledge of the student's academic or professional capabilities. The letters must arrive directly from the senders. Applicants should also submit an official report of scores obtained on the GRE-GEN. TOEFL scores are required for all international applicants.

Policies

For policies governing all graduate degrees, see AP.6 Graduate Policies.

Reduction of Credit

Students entering the doctoral program with a master's degree in a related discipline may request that the required credits for the doctoral degree be reduced by a maximum of 30 credits with approval of the director of graduate studies and the associate dean and in accordance with university policy. More information can be found in AP.6.5.2

Reduction of Credits (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-5-2).

Transfer of Credit

Students who have prior graduate coursework that has not been applied to another degree may request to have a maximum of 24 of these graduate credits transferred, with approval of the director of graduate studies and the associate dean and in accord with university policy. More information can be found in AP.6.5.3 Transfer of Credit (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-5-3).

Academic Advising

During the first year, each student will form a graduate studies committee, called the first-year committee, consisting of the student's advisor plus two or three appropriately qualified individuals. The committee assists the student in designing a specific plan of study and evaluating the student's progress by the end of the first year. During the second year, the student forms a doctoral committee, with membership approved by the CSS program director. The committee will advise the student on preparing for the doctoral candidacy exams and preparing, developing, and defending the doctoral dissertation.

Requirements

Degree Requirements

Total credits: 72

Students should refer to the Admissions & Policies tab for specific policies related to this program.

Core Courses

Code	Title	Credits
CSS 600	Introduction to Computational Social Science	3
CSS 605	Object-Oriented Modeling in Social Science	3
CSS 610	Agent-based Modeling and Simulation	3
CSS 620	Origins of Social Complexity	3
Total Credits		12

Extended Core Courses

Code	Title	Credits
Select 6 credits from the following:		6
CSS 625	Complexity Theory in the Social Sciences	
CSS 645	Spatial Agent-Based Models of Human-Environment Interactions	
CSS 692	Social Network Analysis	
Total Credits		6

Discipline-based Courses

Code	Title	Credits
Select 15 credits of discipline-based social science courses in a specific area such as anthropology, economics, geography, history, linguistics, political science, or sociology, as approved by the student's advisor, to provide domain-specific knowledge.		15
Total Credits		15

Electives

Code	Title	Credits
Select 15 credits of electives or independent research, as approved by the student's advisor, to provide further substantive or methodological specialization as needed.		15
Total Credits		15

Students with a strong background in computing, for example, a prior MS in computer science, but weaker social science training will be required to use all or most of these electives in a substantive social science. Conversely, students with a strong background in social science, for example, a BS in economics, will be required to use most or all of these electives in computing courses.

Candidacy Examination

The candidacy exam is taken after students have completed all core requirements and a majority of additional coursework (18 plus 15 credits), which typically corresponds to the fifth semester in the program. The purpose of the candidacy exam is to assess the student's substantive and methodological knowledge in CSS as a whole and in the chosen focus area, the ability to integrate materials from different courses, and the potential for a successful dissertation. The exam consists of written and oral parts.

Dissertation Proposal

Upon passing the candidacy examination, each student shall prepare and, within a year, defend a dissertation proposal, written in the form of an extramural research grant proposal. The student shall develop the dissertation proposal in consultation with the dissertation committee. With successful defense of the proposal, a student becomes a PhD candidate.

Dissertation Research

Dissertation research credits are required in order to demonstrate doctoral-level originality and research excellence:

Code	Title	Credits
Select 24 credits from the following:		24
CSS 998	Doctoral Dissertation Proposal	
CSS 999	Doctoral Dissertation	
Total Credits		24

Example Dissertation Areas

Areas for dissertation research include, but are not limited to, the following:

- Agent-based computational economics: trade, finance, decision making under risk
- Computational political economy: voting, institutions, norms, inequality

- Computational linguistics: generative grammars, parsing, classifiers, inference
- Social network analysis: connectivity, structure, evolution of the Internet, social media, cyber warfare
- Computational anthropology: emergence of hierarchy, settlement patterns
- Computational political science: systems of government, conflict and war, cooperation
- Computational sociology: segregation, collective action, leadership, trust
- Complexity theory: power laws, potential theory, criticality, bifurcation
- Computational methodology: multiagent systems, evolutionary computation
- Agent-based computational geography: land use change, humanitarian assistance, urban modeling

Doctoral Dissertation Defense

The PhD dissertation is the detailed written report of an original and significant research contribution to computational social science. It is defended before the dissertation committee in a forum open to fellow students and interested faculty and staff. The dissertation committee recommends that the graduate faculty of George Mason University accept the student candidate for the PhD degree upon a successful defense and completion of any final revisions.

Data Science Graduate Certificate

Banner Code: SC-CERG-DSCI

Academic Programs Administrator

227 Research Hall
Fairfax Campus

Phone: 703-993-9298
Email: cds@gmu.edu
Website: science.gmu.edu/academics/departments-units/computational-data-sciences/data-science-graduate-certificate

This certificate program focuses on mastering a variety of basic computational skills to manage and analyze data. The certificate is designed primarily for professionals in technical fields who seek to upgrade their expertise in data science. This program is also available as an option for prospective or currently enrolled master's degree students.

The coursework in this program provides an accelerated introduction to concepts in the modern analysis of data. Topics include computer packages, graphics, databases, data analytics, and their applications.

This certificate may be pursued on a part-time basis or full-time basis.

Admissions & Policies

Admissions

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in the Graduate Admission Policies section of this catalog. Applicants to this certificate should have an academic background in science, engineering, mathematics, or computer science. They should have an undergraduate degree from an institution of higher education accredited by a Mason-recognized U.S. institutional accrediting agency or international equivalent with a GPA of at least 3.00 in their last 60 credits of study. In addition, applicants should have facility in using a high-level computer programming language.

To apply, prospective students should complete the George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now/), supply two copies of official transcripts from each college and graduate institution attended, and a current résumé. TOEFL scores are required for all international applicants.

Policies

For policies governing all graduate degrees, see AP.6 Graduate Policies.

Requirements

Certificate Requirements

Total credits: 15

This certificate may be pursued on a full-or part-time basis.

Students should refer to the Admissions & Policies tab for specific policies related to this program.

Tools Courses

Code	Title	Credits
CSI 500	Computational Science Tools	3
CSI 501	Introduction to Scientific Programming	3
CDS 501	Scientific Information and Data Visualization	3
CDS 502	Introduction to Scientific Data and Databases	3
Total Credits		12

Applications Courses

The applications courses provide content from a specific scientific domain and demonstrate the utilization of techniques within its context.

Code	Title	Credits
Select one from the following:		3
CSI 695	Scientific Databases	
CSI 777	Principles of Knowledge Mining	
CSS 692	Social Network Analysis	
Total Credits		3

Government Analytics Minor (COS)

Banner Code: GVAN

Dr. Robert McGrath

Research Hall, Room 344
Fairfax Campus

Phone: 703-993-4567
Email: rmcgrat2@gmu.edu

Government analytics involves the use of cutting-edge tools of data science and analysis to address political, policy, and governance

problems at federal, state, local, and organizational levels. This minor introduces students to the tools and context that are now commonly employed by government entities and agencies, as well as by the non-profit and private sectors. In particular, students will work with canonical programming languages (R and Python) and apply these tools to substantive issues in political science, public administration, and international relations. The minor integrates a technical curriculum with real-world applicability and gives students the flexibility and independence to develop unique expertise and hone research skills. The curriculum also introduces students to issues of copyright and privacy that are integral to ethical government analytics.

Admissions & Policies

Admissions

This minor is available to all Mason undergraduate students.

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 19-20

Of the total of 19 credits, 9 credits must be unique to minor

Required Courses

Code	Title	Credits
CDS 101	Introduction to Computational and Data Sciences (Mason Core)	3
CDS 102	Introduction to Computational and Data Sciences Lab (Mason Core)	1
CDS 230	Modeling and Simulation I	3
Select one of the following:		**3**
CDS 301	Scientific Information and Data Visualization	
CDS 302	Scientific Data and Databases	
CDS 303	Scientific Data Mining	
STAT 463	Introduction to Exploratory Data Analysis	
Select two of the following: [1]		**6-7**
GOVT 300	Research Methods and Analysis	
GOVT 307	Legislative Behavior	
GOVT 308	The American Presidency	
GOVT 311	Public Opinion and Electoral Behavior	
GOVT 312	Political Parties and Campaigns	
GOVT 313	Political Psychology	
GOVT 318	Interest Groups, Lobbying, and the Political Process	
GOVT 343	International Political Economy	
GOVT 351	Administration in the Political System	
GOVT 354	Nonprofit Sector in Society	
GOVT 355	Public Personnel Administration	
GOVT 356	Public Budgeting and Finance	
GOVT 357	Urban Planning	
GOVT 358	Nonprofit Financial Planning	
GOVT 361	Introduction to Environmental Policy	
GOVT 362	Intermediate Environmental Policy	
GOVT 364	Public Policy Making	
GOVT 365	State and Regional Public Policy	
GOVT 366	Public Policy Analysis	
GOVT 367	Money, Markets and Economic Policy (Mason Core)	
GOVT 368	Tools for Economic Policy Analysis	
GOVT 400	Issues in Political Analysis	
Seminar Requirement		
GOVT 490	Synthesis Seminar (Mason Core) [2]	3
Total Credits		19-20

1 An alternative 300-level GOVT course, especially including GOVT 319, or any 400-level GOVT course, may be substituted for any other GOVT course with the permission of the minor director, depending on the topic.

2 This Government Analytics capstone seminar will be offered annually and covers:
i) Open Government Data, in theory and practice
ii) Supervision of individual capstone projects
Enrollment in the capstone section is limited to Government Analytics minors and requires permission of the instructor.

Department of Environmental Science and Policy

Stephanie Lister

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Graduate- espgrad@gmu.edu

Phone: 703-993-1043
Website: esp.gmu.edu

Administration

- A. Alonso Aguirre, Chair
- Changwoo Ahn, Graduate Program Director
- Younsung Kim, Undergraduate Program Director

The research and development of multiple disciplines have contributed to remarkable gains in human and animal health, conservation and sustainability. However, dense human populations, habitat loss and fragmentation, over-exploitation of wild aquatic and terrestrial animals and plants, human-wildlife conflict, invasive species, biodiversity loss, emerging infectious diseases, environmental contaminants, and climate change have produced interacting challenges that call for broader-based and more integrated teaching, research and intervention. The Department of Environmental Science and Policy (ESP) at George Mason University believes that addressing these challenges requires diverse knowledge and expertise in natural science, social science, and public policy. Our

faculty and programs reflect the need for a transdisciplinary approach to environmental science, conservation, and sustainability.

In addition to faculty who are involved in cutting edge research, ESP has one of the largest graduate programs in the university conducting groundbreaking studies in the environmental field. The department also has increasing number of undergraduates conducting their own individual research projects or gaining experience by helping with established studies.

The proximity of George Mason to Washington, DC, gives ESP the unique opportunity to partner with governmental agencies, environmental and conservation groups and environmental-focused companies. Students can even be involved in practical study and training at the Smithsonian-Mason School of Conservation (http://smconservation.gmu.edu/) (SMSC) and the Potomac Environmental Research Education Center (https://cos.gmu.edu/perec/) (PEREC).

Research conducted in ESP ranges from terrestrial and marine mammal conservation to molecular and microbial ecology; from corporate environmental management and policy to the environmental perceptions and practices of indigenous peoples.

Faculty

Department Faculty

Professors

Aguirre (Chair), Ahn, Crate, Jones, Lovejoy, D. Sklarew

Associate Professors

Kennedy, Kim, Largen, Peters, Smith

Assistant Professors

Akerlof, Fowler, Gallo, Glaberman, Salerno, J. Sklarew, Valderrama

Research Assistant Professor

Ren

Instructors

Perilla

Adjuncts

Bjorkland, Bubbosh, Dee, Groover, Hartl, Howe, Keltner, Prasad, Ransom, Roper, Razafinjatovo, Sample

Emeritus Professors

Bradley, Ernst, Jonas, Kelso, Shaffer, Skog, Talbot, Torzilli

Graduate Program Faculty

Graduate Faculty

Crooks, Foster, Freeman, Gilmore, Houser, Lim, Luther, McBride, Uhen, Van Aken, Van Sant, Weeks, Wood

Other Environmental Program Faculty

Affiliate Faculty

Abidoye, Akob, Allen, Arnold, Bauer, Bleicher, Brown, Buchanan, Buchino, Campana, Comiskey, Cook, Dowsett, Fieldman, Fernandez, Fisher, Groover, Guala, E. Harris, J.B. Harris, Helgen, Jonas, Kolowski, Laurance, Lee, Leimgruber, Lewis, Luksenbeurg, Malcom, Maldonado, Manca, Marra, McShea, Megonigal, Monfort, Montaño, Morales Castilla, Morrison, Munigandondh, Murray, Noe, Ogburn, Seidensticker, Shields, A.K. Smith, C. Smith, Sohmer, Torzilli, Songsasen, Tam-Changh, Tewsbury, Waters, Wright, Zendehdel

Programs

- Conservation Biology Minor
- Conservation Studies Minor (COS)
- Environmental Consulting Minor
- Environmental Policy Minor
- Environmental Science Minor
- Environmental Science and Policy, MS
- Environmental Science and Public Policy, PhD
- Environmental Science, BS
- Environmental and Sustainability Management Graduate Certificate
- Environmental and Sustainability Studies, BA (COS)
- Sustainability Studies Minor
- Sustainable Enterprise Minor

Note:

Department of Environmental Science and Policy also works closely with and provides administrative input to the Biology, BS Environmental and Conservation Biology Concentration (ESCB).

Conservation Biology Minor

Banner Code: CBIO

Younsung Kim, Undergraduate Program Director

Email: espug@gmu.edu
Website: esp.gmu.edu

This minor is intended for non-biology majors with an interest in wildlife and habitat conservation issues. The minor may particularly suit Environmental Science, BS, Environmental and Sustainability Studies, BA, and Geology, BS majors, as well as School of Integrative Studies students wishing to increase their understanding and qualifications in the field of conservation biology. The minor may also be of interest to non-science majors, for example, students taking leisure studies classes with an interest in ecotourism.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and not counted toward the student's major. For policies governing all minors, see AP.5.3.4 Minors.

For policies governing all undergraduate programs, see AP.5 Undergraduate Policies.

Requirements

Minor Requirements

Total credits: 19

Students should refer to the Admissions & Policies tab for specific policies related to this program.

Students must complete the following courses with a minimum GPA of 2.00.

Many courses below have prerequisites that need to be met; see advisor for details.

Core Biology Courses

Code	Title	Credits
BIOL 308	Foundations of Ecology and Evolution	5
BIOL 300	BioDiversity	4
Select one from the following:		3-6
EVPP 318	Conservation Biology	
or BIOL 318	Conservation Biology	
INTS 401	Conservation Biology (Mason Core) [1]	
Total Credits		12-15

[1] 3 of 6 credits count toward the Core Biology requirement. The remaining 3 credits may apply toward minor electives.

Electives

Code	Title	Credits
Select 4-7 credits from the following to meet a total of 19 credits for the minor: [1]		4-7
EVPP 336	Human Dimensions of the Environment	
EVPP 361	Introduction to Environmental Policy	
EVPP 377	Applied Ecology	
EVPP 419	Marine Mammal Biology and Conservation	
EVPP 420	Marine Mammal Biology and Conservation Field Course	
EVPP 421	Marine Conservation	
EVPP 440	Field Environmental Science [2]	
EVPP 490	Special Topics in Environmental Science and Policy [2]	
INTS 401	Conservation Biology (Mason Core) [3]	
Total Credits		4-7

[1] Other conservation-oriented classes may also be applicable as electives for this minor if approved by the faculty coordinator for the minor.

[2] Conservation-oriented topics only.

[3] 3 of 6 credits count toward electives if the course is taken to satisfy Core Biology requirement above.

Conservation Studies Minor (COS)

Banner Code: CNST

Younsung Kim, Undergraduate Program Director

Email: espug@gmu.edu
Website: smconservation.gmu.edu

This minor is designed for undergraduate students who wish to augment their primary academic program with conservation studies taught in an experiential manner. There are three semester-long options by which students can complete the minor including topics such as: "Conservation, Biodiversity and Society", "Wildlife Ecology and Conservation", or "Endangered Species Conservation." These semesters are grounded in natural science and offer a collection of interdisciplinary courses that combine public policy, sociology, conflict resolution, and global awareness with hands-on experience. Students are in residence at the Smithsonian Conservation Biology Institute (https://nationalzoo.si.edu/conservation/) in Front Royal, Virginia, and are taught by Mason faculty, Smithsonian scientists and practitioners.

The minor is available only to students who enroll in any of the Smithsonian Mason Semesters (https://smconservation.gmu.edu/), semester-long residential programs held at the Smithsonian Conservation Biology Institute (https://nationalzoo.si.edu/conservation/) in Front Royal, VA. The semesters are offered jointly by the College of Humanities and Social Sciences and the College of Science under the auspices of the Smithsonian-Mason School of Conservation (http://smconservation.gmu.edu/).

This is a Green Leaf program.

Admissions & Policies

Admissions

The minor is available only to students who enroll in either of the Smithsonian Mason Semesters, semester-long residential programs held at the Smithsonian Conservation Biology Institute in Front Royal, VA.

Policies

Eight credits of coursework must be unique to the minor and students pursuing this minor must complete one of the options with a minimum grade of 2.00 in each course. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 16

This is a Green Leaf program.

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Conservation, Biodiversity and Society Option

Code	Title	Credits
CONS 320	Conservation in Practice	3
CONS 401	Conservation Theory	3
CONS 402	Applied Conservation	4
CONS 410	Human Dimensions in Conservation (Mason Core)	3

CONS 490	RS: Integrated Conservation Strategies (Mason Core)	3
Total Credits		16

Wildlife Ecology and Conservation Option (fall semester only)

Code	Title	Credits
CONS 400	Conservation Seminar	2
CONS 404	Biodiversity Monitoring	4
CONS 405	Landscape and Macrosystems Ecology	4
CONS 496	Research in Conservation (Mason Core)	6
Total Credits		16

Endangered Species and Conservation Option (spring semester only)

Code	Title	Credits
CONS 400	Conservation Seminar	2
CONS 406	Small Population Management	4
CONS 491	RS: Conservation Management Planning (Mason Core)	4
CONS 496	Research in Conservation (Mason Core)	6
Total Credits		16

Environmental and Sustainability Management Graduate Certificate

Banner Code: SC-CERG-ESMG

Younsung Kim

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Website: esp.gmu.edu

The purpose of the Environmental and Sustainability Management Graduate Certificate is to prepare students to develop and manage environmental and sustainability initiatives and practices that will reduce, remove, and redress environmental impacts in various types of organizations. With courses offered by the College of Science (https://catalog.gmu.edu/colleges-schools/science/), the Schar School of Policy and Government (https://catalog.gmu.edu/colleges-schools/policy-government/), the School of Business (https://catalog.gmu.edu/colleges-schools/business/), and the Volgenau School of Engineering (https://catalog.gmu.edu/colleges-schools/engineering/), the proposed certificate provides students with a transdisciplinary perspective on environmental and sustainability challenges. Upon completion of the certificate program, graduates will be able to: 1) Identify environmental and sustainability management challenges in the private and public sector; 2) Recognize the mechanisms of public policy making that influence environmental and sustainability management decisions; and 3) Apply fundamental concepts in management science, environmental science, public administration, and management to craft and execute sustainability solutions.

Admissions & Policies

Admissions

University-wide admissions policies can be found in the Graduate Admissions Policies (https://catalog.gmu.edu/admissions/graduate-policies/) section of this catalog.

To apply for this program, please complete the George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now/).

Applicants should have an undergraduate degree from an institution of higher education accredited by a Mason-recognized U.S. institutional accrediting agency or international equivalent with a minimum GPA of 3.00 (on a 4.00 scale). No specific undergraduate degree is required.

Policies

For policies governing all graduate programs, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/).

Requirements

Certificate Requirements

Total credits: 12-13

This certificate may be pursued on a full-or part-time basis.

Students should refer to the Admissions & Policies tab for specific policies related to this program.

Required Courses

Code	Title	Credits
EVPP 638	Corporate Environmental Management and Policy	3
PUAD 502	Administration in Public and Nonprofit Organizations	3
or PUAD 540	Public Policy Process	
Choose one course from the following:		**3-4**
EVPP 542	Urban Ecosystems Processes	
EVPP 550	Waterscape Ecology and Management	
EVPP 607	Fundamentals of Ecology	
EVPP 646	Wetland Ecology and Management	
Choose one course from the following:		**3**
GBUS 613	Financial Reporting and Decision Making	
GBUS 623	Marketing Management	
GBUS 643	Managerial Finance	
GBUS 653	Organizational Behavior	
SYST 514	Systems Thinking	
SYST 520	System Engineering Design	
Total Credits		12-13

Environmental and Sustainability Studies, BA (COS)

Banner Code: LA-BA-EVSS

Younsung Kim, Undergraduate Program Director

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The BA in Environmental and Sustainability Studies is a joint program between the College of Humanities and Social Sciences and the College of Science.

This degree provides students with theoretical and practical knowledge of three aspects of environmental and sustainability studies: people, prosperity, and planet. In addition to required core courses, students develop more in-depth knowledge in their choice of concentration. This degree prepares students for employment and graduate study in fields related to social justice, business and public policy, and environmental protection as they relate to the environment and sustainability.

This is a Green Leaf program.

Admissions & Policies

Admissions

University-wide admissions policies can be found in the Undergraduate Admissions Policies section of this catalog.

To apply for this program, please complete the George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now/).

Policies

Students pursuing this degree must complete a minimum of 60 credits within the major, with a minimum grade of 2.00 in each course.

For policies governing all undergraduate degrees, see AP.5 Undergraduate Policies.

Requirements

Degree Requirements

Total credits: minimum 120

This is a Green Leaf program.

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Of the credits required for this degree, 14 credits simultaneously fulfill core requirements for the major and Mason Core requirements, and, depending on the concentration and electives chosen, up to 9 credits may simultaneously fulfill Mason Core requirements and college BA requirements.

Core Courses in the Major

Code	Title	Credits
Environmental Science and Society		
EVPP 377	Applied Ecology	3
And completion of one of the following sequences:		11-12
EVPP 108 & EVPP 109 & EVPP 112 & EVPP 113 & EVPP 336	Ecosphere - Introduction to Environmental Science I-Lecture (Mason Core) and Ecosphere- Introduction to Environmental Science I- Lab (Mason Core) and Ecosphere: Introduction to Environmental Science II-Lecture (Mason Core) and Ecosphere: Introduction to Environmental Science II–Lab (Mason Core) and Human Dimensions of the Environment	
or		
EVPP 210 & EVPP 301 & EVPP 302	Environmental Biology: Molecules and Cells and Environmental Science: Biological Diversity and Ecosystems and Environmental Science: Biomes and Human Dimensions	
Individual and Group Behavior		
INTS 334	Environmental Justice (Mason Core)	4
Business and Public Policy		
Select one course from the following:		3
ECON 100	Economics for the Citizen (Mason Core)	
ECON 103	Contemporary Microeconomic Principles (Mason Core)	
ECON 105	Environmental Economics for the Citizen (Mason Core)	
EVPP 322	Business and Sustainability	3
EVPP 361	Introduction to Environmental Policy [1]	3
or GOVT 361	Introduction to Environmental Policy	
Statistics		
Select one course from the following:		3-4
SOCI 313	Statistics for the Behavioral Sciences (Mason Core)	
BIOL 214	Biostatistics for Biology Majors	
STAT 250	Introductory Statistics I (Mason Core)	
Integration, Analysis, Innovation		
INTS 210	Sustainable World (Mason Core)	4
EVPP 480	Sustainability in Action (Mason Core)	4
Select one course from the following:		3
INTS 390	International Internship (Mason Core) (minimum of 3 credits required)	
INTS 398	Experiential Learning (minimum of 3 credits required)	
INTS 498	Experiential Learning (minimum of 3 credits required)	
INTS 490	Internship (minimum of 3 credits required)	
EVPP 395	Undergraduate Research in Environmental Science and Policy (minimum of 3 credits required)	
EVPP 494	Internship (minimum of 3 credits required)	
Total Credits		41-43

[1] Satisfies the college BA requirement for social and behavioral science.

Concentration in the Major

Available Concentrations

- Concentration in Business and Sustainability (BUSU)
- Concentration in Climate Change and Society (CCSO)
- Concentration in Conservation and Sustainability (CSUS)
- Concentration in Environmental Policy and Economics (EVPE)
- Concentration in Equity and Environmental Justice (EQEJ)
- Concentration in Sustainable Food and Agriculture (SFG)

Concentration in Business and Sustainability (BUSU)

The requirements for this concentration, depending on the electives chosen, may satisfy the college BA requirement in philosophy and religious studies (PHIL 243 Global Environmental Ethics (Mason Core), PHIL 305 Business Ethics).

Students who have already taken and received credit for MGMT 303 Principles of Management or OM 303 Operations Management shall substitute MGMT 303 Principles of Management for MBUS 301 Managing People and Organizations in a Global Economy and OM 303 Operations Management for MBUS 306 Managing Projects and Operations. Both courses cannot be taken for credit. Students who have taken and received credit for both ACCT 203 Survey of Accounting and FNAN 303 Financial Management shall substitute the combination for MBUS 300 Accounting in a Global Economy. All three courses cannot be taken for credit.

Core Courses

Code	Title	Credits
Required Courses		
MBUS 300	Accounting in a Global Economy	3
MBUS 301	Managing People and Organizations in a Global Economy	3
MBUS 306	Managing Projects and Operations	3
Additional Course		
Select one course (3 credits) from the following:		3
GOVT 353	Social Entrepreneurship	
EVPP 434	Food-Energy-Water Nexus	
INTS 375	Special Topics (when topic is relevant with approval)	
INTS 450	Social Innovation in Action	
INTS 475	Special Topics (when topic is relevant with approval)	
MBUS 304	Entrepreneurship: Starting and Managing a New Enterprise	
MGMT 451	Introduction to Entrepreneurship	
EVPP 490	Special Topics in Environmental Science and Policy (when topic is relevant with approval)	
EVPP 505	Selected Topics in Environmental Science (when topic is relevant with approval)	
Total Credits		12

Two Courses

Code	Title	Credits
Select two courses (6 credits) from the following:		6
ECON 335	Environmental Economics	
EVPP 338	Economics of Environmental Policy	
EVPP 362	Intermediate Environmental Policy	
GGS 307	Geographic Approaches for Sustainable Development	
INTS 204	Leadership Theory and Practice	
PHIL 243	Global Environmental Ethics (Mason Core)	
PHIL 305	Business Ethics	
Other course work with advisor approval		
Total Credits		6

Concentration in Climate Change and Society (CCSO)

The requirements for this concentration, depending on the electives chosen, may satisfy the college BA requirement in philosophy and religious studies (PHIL 243 Global Environmental Ethics (Mason Core), PHIL 343 Topics in Environmental Philosophy (Mason Core)).

Required Courses

Code	Title	Credits
CLIM 101	Global Warming: Weather, Climate, and Society (Mason Core)	3-4
or GGS 121	Dynamic Atmosphere and Hydrosphere (Mason Core)	
EVPP 432	Energy Policy	3
EVPP 436	The Human Dimensions of Global Climate Change	3
Total Credits		9-10

Three Courses

Code	Title	Credits
Select three courses (9 credits) from the following:		9
CLIM 102	Introduction to Global Climate Change Science (Mason Core)	
CLIM 314	Severe and Extreme Weather	
CLIM 319	Air Pollution	
EVPP 362	Intermediate Environmental Policy	
EVPP 378	RS: Ecological Sustainability (Mason Core)	
EVPP 434	Food-Energy-Water Nexus	
EVPP 442	Urban Ecosystems and Processes	
EVPP 490	Special Topics in Environmental Science and Policy (when topic is relevant with approval)	
EVPP 505	Selected Topics in Environmental Science (when topic is relevant with approval)	
GGS 302	Global Environmental Hazards	
GGS 304	Population Geography (Mason Core)	
GGS 306	Urban Geography	
GGS 309	Introduction to Weather and Climate	
GGS 312	Physical Climatology	
GGS 314	Severe and Extreme Weather	
INTS 375	Special Topics (when topic is relevant with approval)	

INTS 475	Special Topics (when topic is relevant with approval)
PHIL 243	Global Environmental Ethics (Mason Core) [1]
PHIL 343	Topics in Environmental Philosophy (Mason Core) [1]
Other course work with advisor approval	
Total Credits	9

[1] Satisfies the college BA requirement in philosophy and religious studies.

Concentration in Conservation and Sustainability (CSUS)

Smithsonian-Mason Program

Students complete one of the programs offered through the Smithsonian-Mason School of Conservation in cooperation with the Smithsonian Conservation Biology Institute.

Conservation, Biodiversity and Society Option (16 credits)

Code	Title	Credits
CONS 320	Conservation in Practice	3
CONS 401	Conservation Theory	3
CONS 402	Applied Conservation	4
CONS 410	Human Dimensions in Conservation (Mason Core)	3
CONS 490	RS: Integrated Conservation Strategies (Mason Core)	3
Total Credits		16

Wildlife, Ecology, and Conservation Option (16 credits)

Offered only in Fall semesters, students complete four required courses:

Code	Title	Credits
CONS 400	Conservation Seminar	2
CONS 404	Biodiversity Monitoring	4
CONS 405	Landscape and Macrosystems Ecology	4
CONS 496	Research in Conservation (Mason Core)	6
Total Credits		16

Endangered Species and Conservation Option (16 credits)

Offered only in Spring semesters, students complete four required courses:

Code	Title	Credits
CONS 400	Conservation Seminar	2
CONS 406	Small Population Management	4
CONS 491	RS: Conservation Management Planning (Mason Core)	4
CONS 496	Research in Conservation (Mason Core)	6
Total Credits		16

Three Credits

Code	Title	Credits
Select a minimum of three credits from the following:		3
BIOL 332	Insect Biology (when topic is relevant with approval)	
BIOL 472	Introductory Animal Behavior	
EVPP 337	Environmental Policy Making in Developing Countries	
EVPP/BIOL 350	Freshwater Ecosystems	
EVPP 355	Ecological Engineering and Ecosystem Restoration	
EVPP 401	Integrated Environmental Assessment	
EVPP 408	Mushrooms, Molds and Society	
EVPP 419	Marine Mammal Biology and Conservation	
EVPP 421	Marine Conservation	
EVPP 423	Beekeeping and Sustainability	
EVPP/BIOL 427	Conservation Medicine	
EVPP 430	Fundamentals of Environmental Geographic Information Systems	
EVPP 432	Energy Policy	
EVPP 434	Food-Energy-Water Nexus	
EVPP 436	The Human Dimensions of Global Climate Change	
EVPP/BIOL 437	Orinthology	
EVPP/BIOL 438	Mammalogy	
EVPP/BIOL 439	Herpetology	
EVPP/BIOL 449	Marine Ecology	
EVPP 451	Fungi and Ecosystems	
EVPP 460	Infectious Diseases of Wildlife	
EVPP 475	Global Biodiversity Governance	
GGS 303	Geography of Resource Conservation (Mason Core)	
GGS 307	Geographic Approaches for Sustainable Development	
GGS 321/ BIOL 374	Biogeography	
INTS 211	Introduction to Conservation Studies (Mason Core)	
INTS 301	Science in the News (Mason Core)	
INTS 304	Social Movements and Community Activism (Mason Core)	
INTS 311	The Mysteries of Migration: Consequences for Conservation (Mason Core)	
INTS 331	The Nonprofit Sector (Mason Core)	
INTS 370	Sustainable Food Systems	
INTS 371	Food Systems and Policy (Mason Core)	
INTS 401	Conservation Biology (Mason Core)	
INTS 403	Conservation Behavior (Mason Core)	
INTS 375	Special Topics (when topic is relevant with approval)	
INTS 475	Special Topics (when topic is relevant with approval)	
EVPP 490	Special Topics in Environmental Science and Policy (when topic is relevant with approval)	
EVPP 505	Selected Topics in Environmental Science (when topic is relevant with approval)	

Other course work with advisor approval	
Total Credits	3

Concentration in Environmental Policy and Economics (EVPE)

The requirements for this concentration satisfy the Mason Core requirement in social and behavioral science (ECON 104 Contemporary Macroeconomic Principles (Mason Core)) and, depending on the elective chosen, may fulfill the college BA requirement in non-Western culture (ECON 362 African Economic Development (Mason Core)).

Required Courses

Completion of these courses will satisfy the Mason Core social and behavioral science requirement.

Code	Title	Credits
EVPP 338	Economics of Environmental Policy	3
EVPP 362	Intermediate Environmental Policy	3
or GOVT 362	Intermediate Environmental Policy	
GOVT 351	Administration in the Political System	3
Total Credits		9

Nine Credits

Code	Title	Credits
Select a minimum of nine credits from the following:		9
COMM 412	Politics and the Mass Media	
CONF 340	Global Conflict Analysis and Resolution (Mason Core)	
ECON 103	Contemporary Microeconomic Principles (Mason Core) (if not used to meet the Business and Public Policy core requirement)	
ECON 104	Contemporary Macroeconomic Principles (Mason Core)	
ECON 306	Intermediate Microeconomics	
ECON 311	Intermediate Macroeconomics	
ECON 330	Public Finance	
ECON 345	Introduction to Econometrics	
ECON 360	Economics of Developing Areas (Mason Core)	
ECON 412	Game Theory and Economics of Institutions	
EVPP 337	Environmental Policy Making in Developing Countries	
EVPP 396	Directed Topic in Environmental Science and Policy	
EVPP 401	Integrated Environmental Assessment	
EVPP 432	Energy Policy	
GEOL 420	Earth Science and Policy (Mason Core)	
GGS 305	Economic Geography	
GGS 307	Geographic Approaches for Sustainable Development	
GOVT 307	Legislative Behavior	
GOVT 343	International Political Economy	
GOVT 357	Urban Planning	
GOVT 364	Public Policy Making	
GOVT 452	Administrative Law and Procedures	
GOVT 464	Issues in Public Policy and Administration	
INTS 331	The Nonprofit Sector (Mason Core)	
INTS 371	Food Systems and Policy (Mason Core)	
USST 301	Urban Growth in a Shrinking World	
EVPP 490	Special Topics in Environmental Science and Policy (when topic is relevant with approval)	
EVPP 505	Selected Topics in Environmental Science (when topic is relevant with approval)	
INTS 375	Special Topics (when topic is relevant with approval)	
INTS 475	Special Topics (when topic is relevant with approval)	
Other course work with advisor approval		
Total Credits		9

Concentration in Equity and Environmental Justice (EQEJ)

Required Courses

Code	Title	Credits
EVPP 362	Intermediate Environmental Policy	3
EVPP 436	The Human Dimensions of Global Climate Change	3
INTS 336	Poverty, Wealth and Inequality in the US (Mason Core)	3
INTS 337	Social Justice Consciousness and Action	3
Total Credits		12

Six Credits

Code	Title	Credits
Select a minimum of six credits from the following:		6
CONF 394	Human Rights and Inequality	
GGS 304	Population Geography (Mason Core)	
GGS 307	Geographic Approaches for Sustainable Development	
GOVT 445	Human Rights	
INTS 304	Social Movements and Community Activism (Mason Core)	
INTS 331	The Nonprofit Sector (Mason Core)	
INTS 362	Social Justice and Human Rights (Mason Core)	
INTS 402	Plants and People - Sustenance, Ceremony, and Sustainability	
INTS 450	Social Innovation in Action	
SOCI 320	Globalization and Social Change (Mason Core)	
SOCI 355	Social Inequality (Mason Core)	
INTS 375	Special Topics (when topic is relevant with approval)	
INTS 475	Special Topics (when topic is relevant with approval)	
EVPP 490	Special Topics in Environmental Science and Policy (when topic is relevant with approval)	
EVPP 505	Selected Topics in Environmental Science (when topic is relevant with approval)	

Other course work with advisor approval	
Total Credits	6

Concentration in Sustainable Food and Agriculture (SFG)

Required Courses

Code	Title	Credits
INTS 370	Sustainable Food Systems	6
INTS 371	Food Systems and Policy (Mason Core)	3
INTS 470	Professional Pathways in Sustainable Food Systems	1
Total Credits		10

Eight Credits

Code	Title	Credits
Select a minimum of eight credits from the following:		8
ANTH 366	Food and Human Evolution	
ANTH 376	Food and Culture	
BIOL 344	Plant Diversity and Evolution	
BIOL 345	Plant Ecology	
EVPP 423	Beekeeping and Sustainability	
EVPP 434	Food-Energy-Water Nexus	
EVPP 436	The Human Dimensions of Global Climate Change	
GGS 303	Geography of Resource Conservation (Mason Core)	
INTS 331	The Nonprofit Sector (Mason Core)	
INTS 402	Plants and People - Sustenance, Ceremony, and Sustainability	
NUTR 295	Introduction to Nutrition (Mason Core)	
NUTR 318	Global Nutrition and Food Security	
NUTR 383	Taste and Place	
NUTR 408	Food Security	
NUTR 421	Community Nutrition	
NUTR 435	Urban Agriculture	
INTS 375	Special Topics (when topic is relevant with approval)	
INTS 475	Special Topics (when topic is relevant with approval)	
EVPP 490	Special Topics in Environmental Science and Policy (when topic is relevant with approval)	
EVPP 505	Selected Topics in Environmental Science (when topic is relevant with approval)	
Other course work with advisor approval		
Total Credits		8

Writing-Intensive Requirement

The university requires all students to complete at least one course designated as "writing intensive" in their major at the 300 level or above. Students majoring in environmental and sustainability studies should consult an advisor to learn how to fulfill this requirement.

Upper Level Requirement

Students seeking a bachelor's degree must apply at least 45 credits of upper-level courses (numbered 300 or above) toward graduation requirements.

Additional Electives

Any remaining credits may be completed with elective courses to bring the degree total to 120.

Mason Core

Some Mason Core requirements may already be fulfilled by the major requirements listed above. Students are strongly encouraged to consult their advisors to ensure they fulfill all remaining Mason Core requirements.

Code	Title	Credits
Foundation Requirements		
Written Communication (ENGH 101)		3
Oral Communication		3
Quantitative Reasoning		3
Information Technology and Computing		3
Exploration Requirements		
Arts		3
Global Understanding		3
Literature		3
Natural Science		7
Social and Behavioral Sciences		3
Western Civilization/World History		3
Integration Requirements		
Written Communications (ENGH 302)		3
Writing-Intensive [1]		3
Synthesis/Capstone [2]		3
Total Credits		40

1 Most programs include the writing-intensive course designated for the major as part of the major requirements; this course is therefore not counted towards the total required for Mason Core.

2 Minimum 3 credits required.

College Level Requirements for the BA degree

In addition to the Mason Core program, students pursuing a BA degree must complete the coursework below. Except where expressly prohibited, a course used to fulfill a college level requirement may also be used simultaneously to satisfy other requirements (Mason Core requirements or requirements for the major).

Philosophy or Religious Studies

Code	Title	Credits
Select 3 credits from the following:		3
PHIL [1]		
RELI		

[1] Note that the following courses may not be used to fulfill this requirement:

- PHIL 323 Classical Western Political Theory
- PHIL 324 Modern Western Political Theory
- PHIL 327 Contemporary Western Political Theory
- PHIL 393 Humanities College to Career
- PHIL 460 Senior Seminar in Philosophy, Politics, and Economics

Additionally, PHIL 253 Philosophy and Literature (Mason Core), RELI 235 Religion and Literature (Mason Core), and RELI 333 Spiritual Autobiography (Mason Core) cannot be used to fulfill both the philosophy/religious studies requirement and the Mason Core literature requirement.

Social and Behavioral Sciences

Code	Title	Credits
Select 3 credits of social and behavioral sciences from the following (additional to the Mason Core social and behavioral sciences requirement) [1]		3
ANTH		
CRIM		
ECON		
GOVT		
HIST [2]		
LING		
PSYC		
SOCI		
Or choose from the following GGS courses:		
GGS 101	Major World Regions (Mason Core)	
GGS 103	Human Geography (Mason Core)	
GGS 110	Introduction to Geoinformation Technologies	
GGS 301	Political Geography (Mason Core)	
GGS 303	Geography of Resource Conservation (Mason Core)	
GGS 304	Population Geography (Mason Core)	
GGS 305	Economic Geography	
GGS 306	Urban Geography	
GGS 315	Geography of the United States	
GGS 316	Geography of Latin America	
GGS 320	Geography of Europe	
GGS 325	Geography of North Africa and the Middle East	
GGS 330	Geography of the Soviet Succession States	
GGS 357	Urban Planning	
GGS 380	Geography of Virginia	

[1] The two courses used to fulfill the combined college and Mason Core requirements must be from different disciplines in the social and behavioral sciences.

[2] HIST 100 History of Western Civilization (Mason Core) and HIST 125 Introduction to World History (Mason Core) may not be used to fulfill this requirement.

Foreign Language

Code	Title	Credits
Intermediate-level proficiency in one foreign language, fulfilled by: [1]		
Completing 3 credits in a foreign language numbered 202 (or higher level courses taught in the language)		
Or achieving a satisfactory score on an approved proficiency test		
Or completing the following ASL three course sequence:		
EDSE 115	American Sign Language (ASL) I	
EDSE 116	American Sign Language (ASL) II	
EDSE 219	American Sign Language (ASL) III	

[1] Students who are already proficient in a second language may be eligible for a waiver of this requirement. Additional information on waivers can be found at the Office of Undergraduate Academic Affairs (http://chssundergrad.gmu.edu/).

Non-Western Culture

Select 3 credits of an approved course in the study of a non-Western culture (additional to the Mason Core requirement in global understanding)

Code	Title	Credits
Select 3 credits (additional to Mason Core Global Understanding requirement) [1]		
ANTH 114	Introduction to Cultural Anthropology (Mason Core)	3
ANTH 300	Civilizations	3
ANTH 302	Peoples and Cultures of Latin America (Mason Core)	3
ANTH 307	Ancient Mesoamerica (Mason Core)	3
ANTH 308	Peoples and Cultures of the Middle East (Mason Core)	3
ANTH 309	Peoples and Cultures of India (Mason Core)	3
ANTH 313	Myth, Magic, and Mind (Mason Core)	3
ANTH 314	Zombies	3
ANTH 330	Peoples and Cultures of Selected Regions: Non-Western	3
ANTH 332	Cross-Cultural Perspectives on Globalization (Mason Core)	3
ANTH 381	Medical Anthropology	3
ANTH 396	Issues in Anthropology: Social Sciences (Mason Core)	3
ARAB 360	Topics in Arabic Cultural Production	3
ARAB 420	Survey of Arabic Literature	3
ARAB 440	Topics in Arabic Religious Thought and Texts (Mason Core)	3
ARTH 203	Survey of Asian Art (Mason Core)	3
ARTH 204	Survey of Latin American Art (Mason Core)	3
ARTH 206	Survey of African Art (Mason Core)	3
ARTH 318	Art and Archaeology of Ancient Egypt	3
ARTH 319	Art and Archaeology of the Ancient Near East (Mason Core)	3
ARTH 320	Art of the Islamic World (Mason Core)	3

ARTH 382	Arts of India (Mason Core)	3
ARTH 383	Arts of Southeast Asia (Mason Core)	3
ARTH 384	Arts of China (Mason Core)	3
ARTH 385	Arts of Japan (Mason Core)	3
ARTH 386	The Silk Road (Mason Core)	3
ARTH 482	RS: Advanced Studies in Asian Art	3
CHIN 318	Introduction to Classical Chinese (Mason Core)	3
CHIN 320	Contemporary Chinese Film	3
CHIN 325	Major Chinese Writers (Mason Core)	3
CHIN 470	Special Topics in Chinese Studies	3
DANC 118	World Dance (Mason Core)	3
ECON 361	Economic Development of Latin America (Mason Core)	3
ECON 362	African Economic Development (Mason Core)	3
FREN 451	Topics in Sub-Saharan Francophone Literature and Culture	3
FREN 454	Topics in Caribbean Francophone Literature and Culture	3
GGS 101	Major World Regions (Mason Core)	3
GGS 316	Geography of Latin America	3
GGS 317	Geography of China (Mason Core)	3
GGS 325	Geography of North Africa and the Middle East	3
GGS 330	Geography of the Soviet Succession States	3
GGS 399	Select Topics in GGS	3
GOVT 328	Global Political Theory	3
GOVT 332	Government and Politics of the Middle East and North Africa	3
GOVT 333	Government and Politics of Asia	3
GOVT 338	Government and Politics of Russia	3
GOVT 340	Central Asian Politics	3
GOVT 341	Chinese Foreign Policy	3
GOVT 345	Islam and Politics	3
GOVT 433	Political Economy of East Asia	3
HIST 251	Survey of East Asian History (Mason Core)	3
HIST 252	Survey of East Asian History (Mason Core)	3
HIST 261	Survey of African History (Mason Core)	3
HIST 262	Survey of African History (Mason Core)	3
HIST 271	Survey of Latin American History (Mason Core)	3
HIST 272	Survey of Latin American History (Mason Core)	3
HIST 281	Survey of Middle Eastern Civilization (Mason Core)	3
HIST 282	Survey of Middle Eastern Civilization (Mason Core)	3
HIST 326	Stalinism	3
HIST 327	The Soviet Union and Russia Since World War II	3
HIST 328	Rise of Russia (Mason Core)	3
HIST 329	Modern Russia and the Soviet Union (Mason Core)	3
HIST 353	History of Traditional China	3
HIST 354	Modern China (Mason Core)	3
HIST 356	Modern Japan (Mason Core)	3
HIST 357	Postwar Japan (Mason Core)	3
HIST 358	Post-1949 China (Mason Core)	3
HIST 360	History of South Africa (Mason Core)	3
HIST 364	Revolution and Radical Politics in Latin America (Mason Core)	3
HIST 365	Conquest and Colonization in Latin America (Mason Core)	3
HIST 366	Comparative Slavery	3
HIST 367	History, Fiction, and Film in Latin America	3
HIST 387	Topics in Global History (Mason Core)	3-6
HIST 426	The Russian Revolution	3
HIST 460	Modern Iran (Mason Core)	3
HIST 461	Arab-Israeli Conflict	3
HIST 462	Women in Islamic Society (Mason Core)	3
HIST 465	The Middle East in the 20th Century	3
JAPA 310	Japanese Culture in a Global World (Mason Core)	3
JAPA 340	Topics in Japanese Literature (Mason Core)	3
KORE 320	Korean Popular Culture in a Global World	3
MUSI 103	Musics of the World (Mason Core)	3
RELI 211	Religions of the West (Mason Core)	3
RELI 212	Religions of Asia (Mason Core)	3
RELI 240	Death and the Afterlife in World Religions	3
RELI 272	Islam	3
RELI 313	Hinduism (Mason Core)	3
RELI 314	Chinese Philosophies and Religious Traditions	3
RELI 315	Buddhism (Mason Core)	3
RELI 317	Daoism	3
RELI 337	Mysticism: East and West	3
RELI 365	Muhammad: Life and Legacy	3
RELI 374	Islamic Thought (Mason Core)	3
RELI 375	Qur'an and Hadith	3
RELI 379	Islamic Law, Society, and Ethics	3
RELI 387	Islam, Democracy, and Human Rights	3
RELI 490	Comparative Study of Religions (Mason Core)	3
RUSS 353	Russian Civilization (Mason Core)	3
RUSS 354	Contemporary Post-Soviet Life (Mason Core)	3

[1] A course used to fulfill the Mason Core global understanding requirement may not be simultaneously used to satisfy this college-level requirement. A course used to fulfill this requirement may be used simultaneously to fulfill any other requirements (Mason Core requirements, college-level requirements, or requirements for the major). Additional information on waivers can be found at the Office of Undergraduate Academic Affairs (http://chssundergrad.gmu.edu/).

Environmental Consulting Minor

Banner Code: ENCO

Younsung Kim, Undergraduate Program Director

Email: espug@gmu.edu
Website: esp.gmu.edu

Many students who pursue natural or social science majors find their first employment in Environmental Consulting. To be competitive in this field, applicants require an interdisciplinary background (e.g., communication, policy, management) and professional consulting experience. To better prepare Mason's graduates for this career field and to streamline the transition from the classroom into the workforce, the Department of Environmental Science and Policy offers a minor in Environmental Consulting. This minor includes classes in communication, technical writing, applied environmental science, environmental law, and business management and is finalized with a capstone course and an internship with local consulting companies.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00.

For policies governing all minors, see AP.5.3.4 Minors (https://catalog.gmu.edu/policies/academic/undergraduate-policies/#ap-5-3-4).

Requirements

Minor Requirements

Total credits: 19

Required Courses

Code	Title	Credits
EVPP 377	Applied Ecology	3
EVPP 490	Special Topics in Environmental Science and Policy (when the topic is "Principles of Environmental Law")	3
or EVPP 362	Intermediate Environmental Policy	
COMM 320	Business and Professional Communication	3
or COMM 335	Organizational Communication	
ENGH 388	Professional and Technical Writing	3
MBUS 306	Managing Projects and Operations	3
Total Credits		15

Capstone and Internship Requirement

Code	Title	Credits
Capstone		
EVPP 490	Special Topics in Environmental Science and Policy (when the topic is "Environmental Consulting")	1
Internship		
EVPP 494	Internship	3
or COMM 450	Internship in Communication	
Total Credits		4

Environmental Policy Minor

Banner Code: EVP

Younsung Kim, Undergraduate Program Director

Email: espug@gmu.edu
Website: esp.gmu.edu

Students pursuing the Environmental Policy Minor will study aspects of human interactions with the natural world. This minor will provide students with a broad overview of ecology, the environmental consequences of human action, and conceptual and practical sustainability efforts. This includes relationships between social and biological sciences and environmental law. The minor complements majors in natural science but is also suitable for non-science majors.

This is a Green Leaf program.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor. For policies governing all minors, see AP.5.3.4 Minors.

For policies governing all undergraduate programs, see AP.5 Undergraduate Policies.

Requirements

Minor Requirements

Total credits: 21

This is a Green Leaf program.

Students should refer to the Admissions & Policies tab for specific policies related to this program.

Students must successfully complete the following courses with a minimum 2.00 GPA.

Core Courses

Code	Title	Credits
EVPP 336	Human Dimensions of the Environment	3
EVPP 361	Introduction to Environmental Policy	3
EVPP 377	Applied Ecology	3
or BIOL 377	Applied Ecology	

PHIL 343	Topics in Environmental Philosophy (Mason Core)	3
Total Credits		12

Additional Courses

Code	Title	Credits
Select 9 credits from the following: [1]		9
EVPP 318	Conservation Biology	
EVPP 337	Environmental Policy Making in Developing Countries	
EVPP 338	Economics of Environmental Policy	
EVPP 419	Marine Mammal Biology and Conservation	
EVPP 421	Marine Conservation	
EVPP 440	Field Environmental Science [2]	
EVPP 490	Special Topics in Environmental Science and Policy [2]	
EVPP 505	Selected Topics in Environmental Science [2]	
EVPP 543	Tropical Ecosystems	
GEOL 420	Earth Science and Policy (Mason Core)	
ANTH 370	Environment and Culture	
ANTH 399	Issues in Anthropology	
PRLS 300	People with Nature	
PRLS 402	Human Behavior in Natural Environments	
PRLS 526	Environmental Education and Resource Interpretation	
SOCI 320	Globalization and Social Change (Mason Core)	
SOCI 332	The Urban World (Mason Core)	
TOUR 340	Sustainable Tourism	
TOUR 362	Cultural and Environmental Interpretation	
Total Credits		9

[1] Other appropriate courses may be approved by the coordinator of the minor.

[2] Relevant topics only.

Environmental Science and Policy, MS

Banner Code: SC-MS-EVSP

Stephanie Lister, Graduate and Undergraduate Program Coordinator

Email: espgrad@gmu.edu
Website: esp.gmu.edu

This master's program meets the increasing need for trained environmental professionals who can address the problems of land and water management, land use and urbanization, wetland loss, microbial ecology, bioremediation, conservation biology, and ecosystem preservation. These professionals will also contribute to the analysis and resolution of global problems such as deforestation, insufficient world food supplies, population growth, planetary health, and global climate change/warming. Areas of specific departmental focus include ecosystems, conservation, environmental biocomplexity, molecular ecology, sustainability science, environmental policy and management, and human/environmental interactions.

Environmental problems are defined in the real world and do not necessarily conform to traditional academic disciplines. As such, solutions require creative combinations of diverse interests and subjects. Effective training requires rigorous, problem-focused transdisciplinary action in a setting in which research is an essential element supporting instruction.

This has been designated a Green Leaf program.

Admissions & Policies

Admissions

University-wide admissions policies can be found in Graduate Admissions Policies. Additionally, information on the admission of international students can be found in Admission of International Students.

To apply for this program, please complete the George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now/).

Eligibility

Applicants should hold a bachelor's degree from an institution of higher education accredited by a Mason-recognized U.S. institutional accrediting agency or international equivalent with a GPA of 3.00 in natural or Earth sciences, engineering, resource planning, environmental studies, or a field that leads to an environmental focus.

Applicants should have taken at least two semesters of chemistry and three semesters of biology, including a course in ecology. Applicants who lack this coursework should contact the graduate coordinator's office for advice. Successful completion of a two-semester sequence of introductory graduate-level environmental chemistry and biology courses can be used to satisfy the biology and chemistry prerequisites for admission. These introductory courses would be in addition to the requirements for the degree.

Application Requirements

Applicants should submit the following:

- Completed George Mason University George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now/).
- Three letters of recommendation, including at least one from a former professor or, if not available, from someone with a PhD.
- The GRE is required.
- Statement of interest indicating: Desired concentration, potential areas of environmental focus/research interest, interactions with potential faculty advisors, and career goals.
- Contact a potential George Mason faculty advisor (appropriate for research interests). An endorsement letter from the potential advisor must be sent to the Department of Environmental Science and Policy's graduate office; the availability of an advisor in the student's area of interest is a prerequisite for admission.

Policies

For policies governing all graduate programs, see AP.6 Graduate Policies.

Course Selections

Some program requirements may be fulfilled by completing courses from a variety of academic units at Mason. A student's course selections should reflect a coherent individual program focus, which is stated and briefly described in the program of study. Course selections should also support the research component of the student's degree program (if applicable) and should be developed in close consultation with the supervisory committee. The supervisory committee approves a coursework program (the program of study) individually for each student.

In special cases, the graduate program director may permit the substitution of an alternative course in place of a required one.

Supervisory Committee

Students must form a supervisory committee and submit a program of study to the graduate coordinator for approval within the first 9 credits of coursework or by the end of the second semester, whichever comes first.

The supervisory committee consists of the advisor and at least two other members, chosen in consultation with the advisor, and must conform to AP.6.9 Requirements for Master's Degrees.

Requirements

Degree Requirements

Total credits: 33

This is a Green Leaf program.

Students should refer to Admissions & Policies for specific policies related to this program.

Students may select for their degree to culminate in either a research project (3 credits) or a thesis (3-6 credits). The concentration credit amount requirements below are directly related to this selection of either a research project or thesis.

Students in all of the concentrations will complete the concentration's requirements and the research requirement with a minimum of 33 credits.

Core Courses

Code	Title	Credits
Science Courses		
Choose 3 credits from the following:		3
EVPP 518	Conservation Biology	
EVPP 607	Fundamentals of Ecology	
EVPP 648	Population Ecology	
Statistics Courses		
Choose 3 credits from the following:		3
EVPP 632	Qualitative Research Methods for Environmental Scientists	
EVPP 651	Multivariate Data Analysis for Ecology and Environmental Science	
SOCI 620	Methods and Logic of Social Inquiry	
STAT 554	Applied Statistics I	
Policy Courses		
Choose 3 credits from the following:		3
EVPP 524	Introduction to Environmental and Resource Economics	
EVPP 608	Introduction to Environmental Social Science	
EVPP 635	Environment and Society	
EVPP 642	Environmental Policy	
Science and Policy Courses		
Choose 3 credits from the following:		3
EVPP 505	Selected Topics in Environmental Science (When the topic is "Evidence-based Policymaking: Using the Environmental Sciences for Governance")	
EVPP 670	Environmental Law	
Seminar Courses		
EVPP 692	Master's Seminar in Environmental Science and Public Policy	1
EVPP 991	Advanced Seminar in Environmental Science (When the topic is: Experimental Design for Environmental Scientists)	2
Research Requirement		**3-6**
The research requirement may be satisfied in one of two ways: A research project or a formal thesis. The depth and sophistication of the research differs between the two options. The thesis normally involves original research with independent acquisition and interpretation of data, with the goal of peer-reviewed publication. Projects are generally less extensive and can include a broader range of activities. Choose from one of the following:		
Research Project Option		
Students fulfilling the research requirement with the project option register for EVPP 798 Master's Research Project in Environmental Science and Public Policy and are required to take a comprehensive examination covering knowledge mastered throughout the program of study. This examination includes both a written and an oral component and is administered by the student's supervisory committee.		
EVPP 798	Master's Research Project in Environmental Science and Public Policy (3 credits)	
Thesis Option		
Students fulfilling the research requirement with the thesis option register for EVPP 799 Master's Thesis in Environmental Science and Public Policy, present their results in a public seminar, and defend their thesis before their supervisory committee. Students will be graded "Satisfactory/No Credit" on the research requirement.		
EVPP 799	Master's Thesis in Environmental Science and Public Policy (3-6 credits)	
Electives		
If necessary, students must take additional electives or concentration courses to bring the degree total to 33 credits. These courses must be approved by the student's supervisory committee and outlined on the student's program of study.		
Total Credits		18-21

Aquatic Ecology Concentration (AQEC)

This concentration will provide students with a well-grounded master's in the study of aquatic environments such as lakes, streams, watersheds, and estuaries. Emphasis is placed on food webs, biogeochemical cycles, water quality, habitat characteristics, and life histories of aquatic organisms. Students will become proficient with research tools including literature review, field and laboratory methods, and analytical tools as well as applications to management issues.

Aquatic Science

Code	Title	Credits
EVPP 550	Waterscape Ecology and Management	3
EVPP 581	Estuarine and Coastal Ecology	3
Choose 3-6 credits from the following:		3-6
EVPP 519	Marine Mammal Biology and Conservation	
EVPP 521	Marine Conservation	
EVPP 536	The Diversity of Fishes	
EVPP 545	Principles of Environmental Toxicology	
EVPP 549	Marine Ecology	
EVPP 563	Coastal Morphology and Processes	
EVPP 608	Introduction to Environmental Social Science	
EVPP 619	The Challenge of Biodiversity	
EVPP 623	Translating Environmental Policy into Action	
EVPP 635	Environment and Society	
EVPP 641	Environmental Science and Public Policy	
EVPP 642	Environmental Policy	
EVPP 643	Microbial Ecology	
EVPP 646	Wetland Ecology and Management	
EVPP 648	Population Ecology	
CLIM 512	Physical Oceanography	
Choose 3 credits from the following:		3
EVPP 515	Molecular Environmental Biology I	
EVPP 555	Lab in Waterscape Ecology	
EVPP 582	Estuarine and Coastal Ecology Laboratory	
EVPP 615	Molecular Environmental Biology II	
EVPP 647	Wetland Ecology Lab and Field	
EVPP 651	Multivariate Data Analysis for Ecology and Environmental Science	
GGS 653	GIS Analysis and Application	
STAT 554	Applied Statistics I	
Total Credits		12-15

Conservation Science and Policy Concentration (COSP)

This concentration is designed to foster an interdisciplinary, research-oriented degree focusing on the conservation of threatened species and habitats, integrating biological sciences and the human dimensions of conservation practice.

Students may take courses offered by the Department of Environmental Science and Policy and other departments, including CONS courses which are offered through the Smithsonian Mason School of Conservation. This unique partnership with the Smithsonian-Mason School of Conservation (SMSC) in Front Royal, Virginia offers students hands-on education in cutting-edge conservation science and human dimensions through residential, intensive classes. SMSC is renowned for its conservation research and training of conservation practitioners around the world and instructors for these classes are drawn from SMSC's conservation scientists and other experts from around the world.

Code	Title	Credits
EVPP 637	Human Dimensions of Climate Change	3
Choose 3 credits from the following:		3
EVPP 518	Conservation Biology	
EVPP 619	The Challenge of Biodiversity	
EVPP 621	Overview of Biodiversity Conservation	
Choose 3 credits from the following:		3
EVPP 505	Selected Topics in Environmental Science (When the topic is "Evidence-based Policymaking: Using the Environmental Sciences for Governance")	
EVPP 529	Environmental Science Communication	
Choose 3-6 credits from the following:		3-6
EVPP 515	Molecular Environmental Biology I	
EVPP 527	Conservation Medicine	
EVPP 560	Infectious Diseases of Wildlife	
EVPP 607	Fundamentals of Ecology	
EVPP 615	Molecular Environmental Biology II	
EVPP 620	Development of U.S. Environmental Policies	
EVPP 623	Translating Environmental Policy into Action	
EVPP 648	Population Ecology	
GGS 553	Geographic Information Systems	
Total Credits		12-15

Environmental Science and Policy Concentration (EVSP)

The Environmental Science and Policy concentration is the largest within the master's and serves as a home for a broad array of research foci. It encourages an independent and creative approach to the development of curricula that reside in the general field of environmental science and policy.

Code	Title	Credits
Choose at least 3 credits from the following:		3
EVPP 527	Conservation Medicine	
EVPP 532	Animal Behavior	
EVPP 543	Tropical Ecosystems	
EVPP 648	Population Ecology	
Choose at least 3 credits from the following:		3
EVPP 531	Land-use Modeling Techniques and Applications	
EVPP 650	Ecosystem Analysis and Modeling	
STAT 525	Nonparametric Statistics and Categorical Data Analysis	
STAT 535	Analysis of Experimental Data	
Choose 6-9 credits from the following:		6-9
EVPP 521	Marine Conservation	
EVPP 533	Energy Policy	
EVPP 542	Urban Ecosystems Processes	

EVPP 550	Waterscape Ecology and Management	
EVPP 560	Infectious Diseases of Wildlife	
EVPP 619	The Challenge of Biodiversity	
EVPP 622	Management of Wild Living Resources	
EVPP 623	Translating Environmental Policy into Action	
EVPP 641	Environmental Science and Public Policy	
EVPP 677	Applied Ecology and Ecosystem Management	
Total Credits		12-15

Communication for Environmental Science, Policy, and Human Behavior (CESP)

The ability to communicate underlies all successful human cooperation. With the growth of anthropogenic global threats such as biodiversity loss and climate change, communication that supports environmental knowledge formation, policy, and behavior change is needed more than ever. Two courses in the concentration from the department, supplemented by those across the university, will allow students to focus on one of these topics. Other classes aside from the core courses may be substituted as needed.

Code	Title	Credits
EVPP 505	Selected Topics in Environmental Science (When the topic is "Evidence-based Policymaking: Using the Environmental Sciences for Governance")	3
EVPP 529	Environmental Science Communication	3
Choose 3-6 credits from one of the following groupings:		3-6
Policy and Governance Grouping		
EVPP 575	Global Biodiversity Governance	
COMM 637	Risk Communication	
GOVT 510	American Government and Politics	
PUAD 540	Public Policy Process	
Behavior Change Grouping		
COMM 637	Risk Communication	
COMM 660	Climate Change and Sustainability Communication Campaigns	
COMM 670	Social Marketing	
COMM 706	Strategic Communication	
Science in Society Grouping		
COMM 602	Theories and Research of Mass Communication	
COMM 639	Science Communication	
COMM 642	Science and the Public	
COMM 735	Crisis Communication	
Choose at least 3 credits from the following:		3
GGS 553	Geographic Information Systems	
GGS 681	Social Media Analysis	
COMM 650	Research Methodologies in Communication	
COMM 775	Media Content Analysis	
EDRS 811	Quantitative Methods in Educational Research	
EDRS 827	Introduction to Measurement and Survey Development	
POGO 511	Introductory Data Analysis for Policy and Government	
POGO 646	Policy and Program Evaluation	
PSYC 557	Psychometric Methods	
PSYC 611	Advanced Statistics	
PUBP 704	Statistical Methods in Policy Analysis	
SOCI 620	Methods and Logic of Social Inquiry	
SOCI 631	Survey Research	
Total Credits		12-15

Environment and Management Concentration (EVM)

This concentration combines the managerial and administrative skills developed in a traditional master of public administration degree program with the scientific knowledge and understanding normally found in a master of science degree. It is especially meant for individuals working in or aspiring to work as managers in the environmental field in government or private industry.

Code	Title	Credits
EVPP 641	Environmental Science and Public Policy	3
EVPP 677	Applied Ecology and Ecosystem Management	3
Choose 3 credits from the following:		3
EVPP 638	Corporate Environmental Management and Policy	
PUAD 502	Administration in Public and Nonprofit Organizations	
Choose 3-6 credits from the following:		3-6
EVPP 505	Selected Topics in Environmental Science (When the topic is "Evidence-based Policymaking: Using the Environmental Sciences for Governance")	
EVPP 524	Introduction to Environmental and Resource Economics	
EVPP 525	Economics of Human/Environment Interactions	
EVPP 529	Environmental Science Communication	
EVPP 533	Energy Policy	
EVPP 542	Urban Ecosystems Processes	
EVPP 545	Principles of Environmental Toxicology	
EVPP 550	Waterscape Ecology and Management	
EVPP 560	Infectious Diseases of Wildlife	
EVPP 620	Development of U.S. Environmental Policies	
EVPP 646	Wetland Ecology and Management	
GGS 553	Geographic Information Systems	
Total Credits		12-15

Energy and Sustainability Policy and Science (ESPS)

Many mid-level energy and sustainability positions in the public and private sectors require multidisciplinary grounding in science, policy, and methods. To provide such a foundation, this concentration combines the scientific knowledge normally acquired through a Master of Science degree with development of relevant policy and methods skills.

Code	Title	Credits
Required Foundation		
EVPP 533	Energy Policy	3
Choose one from the following:		3
EVPP 534	Food-Energy-Water Nexus	
GGS 507	Geographic Approaches for Sustainable Development	
Science		
Choose one from the following:		3
EVPP 542	Urban Ecosystems Processes	
EVPP 677	Applied Ecology and Ecosystem Management	
GEOL 521	Geology of Energy Resources	
PHYS 581	Topics in Renewable Energy	
CEIE 501	Sustainable Development	
CEIE 550	Environmental Engineering Systems	
CEIE 634	Geoenvironmental Design	
CEIE 690	Topics in Civil Engineering	
Policy and Methods Electives		
Choose 1 or 2 from the following: [1]		3-6
EVPP 505	Selected Topics in Environmental Science (When the topic is "Energy Law & Regulation," or "Fundamentals of Environmental GIS" (EVPP 505 can be taken twice if these two topics are taken separately))	
EVPP 534	Food-Energy-Water Nexus	
EVPP 503	Field Mapping Techniques	
or GEOL 553	Field Mapping Techniques	
EVPP 638	Corporate Environmental Management and Policy	
EVPP 650	Ecosystem Analysis and Modeling	
CSS 645	Spatial Agent-Based Models of Human-Environment Interactions	
GGS 507	Geographic Approaches for Sustainable Development	
ECON 695	Special Topics in Economics	
NUTR 608	Perspectives on Food Security	
NUTR 630	Global Nutrition	
Total Credits		12-15

[1] Choose courses that have not already been taken.

Conservation Medicine & Planetary Health Concentration (CMPH)

Conservation Medicine and Planetary Health (CMPH) are emerging disciplines that address complex health problems that follow disturbances to the Earth's natural systems requiring transdisciplinary collaborations, systems thinking, and adaptive management approaches to health and ecology. Conservation Medicine evolved from the singular key principle that *health connects all species in the planet.* Planetary Health is focused on characterizing the human health impacts of anthropogenic disruptions of Earth's natural systems. The CMPH concentration will provide training in quantitative and qualitative research methods and expand the student's ability to think outside of the box and work beyond traditional disciplinary silos to address complex health issues rooted in ecological principles.

Code	Title	Credits
Students should complete the Required Foundation and choose either the Conservation Medicine or the Planetary Health areas of focus.		
Required Foundation		
EVPP 505	Selected Topics in Environmental Science (When the topic is "Planetary Health")	3
EVPP 527	Conservation Medicine	3
EVPP 677	Applied Ecology and Ecosystem Management	3
Areas of Focus		**3-6**
Conservation Medicine		
Choose 3-6 credits from the following:		
EVPP 545	Principles of Environmental Toxicology	
EVPP 560	Infectious Diseases of Wildlife	
EVPP 651	Multivariate Data Analysis for Ecology and Environmental Science	
EVPP 575	Global Biodiversity Governance	
BIOD 609	Biodefense Strategy	
GGS 540	Health Geography	
GCH 604	Fundamentals of Epidemiology and Biostatistics	
CLIM 690	Scientific Basis of Climate Change	
PUAD 630	Emergency Planning and Preparedness	
Planetary Health		
Choose 3-6 credits from the following:		
EVPP 525	Economics of Human/Environment Interactions	
EVPP 529	Environmental Science Communication	
EVPP 542	Urban Ecosystems Processes	
EVPP 610	Bioremediation: Theory and Applications	
EVPP 637	Human Dimensions of Climate Change	
EVPP 642	Environmental Policy	
COMM 735	Crisis Communication	
GCH 543	Global Health	
NUTR 630	Global Nutrition	
Total Credits		12-15

Accelerated Master's

Bachelor's Degree (selected)/ Environmental Science and Policy, Accelerated MS

Overview

This bachelor's/accelerated master's degree program allows academically strong undergraduates with a commitment to advance their education to obtain a Green Leaf-designated bachelor's degree and the Environmental Science and Policy, MS (https://catalog.gmu.edu/colleges-schools/science/environmental-policy/environmental-science-policy-ms/) degrees within an accelerated timeframe. Upon completion of this 141 credit accelerated program, students will be exceptionally well

prepared for entry into their careers or into a doctoral program in the field or in a related discipline.

Students are eligible to apply for this accelerated program once they have earned at least 60 undergraduate credits and can enroll in up to 18 credits of graduate coursework after successfully completing 75 undergraduate credits. This flexibility makes it possible for students to complete a bachelor's and a master's in five years.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies. For more information on undergraduates enrolling in graduate courses, see AP.1.4.4 Graduate Course Enrollment by Undergraduates (https://catalog.gmu.edu/policies/academic/registration-attendance/#text).

Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in the Graduate Admission Policies section of this catalog.

Important application information and processes for this accelerated master's program can be found here (https://www2.gmu.edu/admissions-aid/how-apply/accelerated-masters/).

The GRE exam is not required for this accelerated master's program.

Students should submit three letters of recommendation (at least one from a former professor or someone with a PhD), a recent resume, a statement of interest/research goals and interests (including information on the candidate's proposed MS research), and a letter from their advisor (see Graduate Advisor section below) stating that the advisor agrees to take on the candidate as an MS student, how the candidate would be a good fit for them and why candidate's research topic would be suitable.

Students with an overall GPA of at least 3.20 who are pursuing any Green Leaf-designated major or minor may apply to this accelerated master's program after completing two semesters of chemistry (including CHEM 211 General Chemistry I (Mason Core) and CHEM 212 General Chemistry II (Mason Core) and three semesters of biology, including a course in ecology, or the equivalent, for example:

Code	Title	Credits
Select one of the following options:		13
Option 1:		
BIOL 213	Cell Structure and Function (Mason Core)	
BIOL 214	Biostatistics for Biology Majors	
BIOL 308	Foundations of Ecology and Evolution	
Option 2:		
EVPP 210	Environmental Biology: Molecules and Cells	
EVPP 301	Environmental Science: Biological Diversity and Ecosystems	
EVPP 302	Environmental Science: Biomes and Human Dimensions	
EVPP 305	Environmental Microbiology Essentials	
EVPP 306	Environmental Microbiology Essentials Laboratory	
Option 3:		
CONS 401	Conservation Theory	
CONS 402	Applied Conservation	
6 credits of BIOL or CONS electives		

Graduate Advisor

By at least the beginning of their senior year, students should seek out a faculty member in the Department of Environmental Science and Policy who is willing to serve as their advisor. This advisor will aid the student in choosing the appropriate graduate courses to take and help to prepare the student for graduate studies. Admission into a research-oriented master's concentration is dependent upon securing the agreement of a faculty advisor. Faculty from a variety of departments and colleges at George Mason University (called "program faculty") can serve as master's advisors. Potential students are encouraged to speak with the graduate program coordinator in the department to obtain guidance on this issue.

Accelerated Option Requirements

After the completion of 75 undergraduate credits, students may complete 3 to 12 credits of graduate coursework that can apply to both the undergraduate and graduate degrees.

In addition to applying to graduate from the undergraduate program, students in the accelerated program must submit a bachelor's/accelerated master's transition form (available from the Office of the University Registrar (https://registrar.gmu.edu/forms/)) to the College of Science's Office of Academic and Student Affairs (https://cos.gmu.edu/about/contact-us/) by the last day to add classes of their final undergraduate semester. Students should enroll for courses in the master's program in the fall or spring semester immediately following conferral of the bachelor's degree, but should contact an advisor if they would like to defer up to one semester.

Students must maintain an overall GPA of 3.00 or higher in all graduate coursework and should consult with their faculty advisor to coordinate their academic goals.

Reserve Graduate Credits

Accelerated master's students may also take up to 6 graduate credits as reserve graduate credits. These credits do not apply to the undergraduate degree, but will reduce the master's degree by up to 6 credits. With 12 graduate credits counted toward the undergraduate degree plus the maximum 6 reserve graduate credits, the credits necessary for the graduate degree can be reduced by up to 18.

Graduate Course Suggestions

The following list of suggested courses is provided for general reference. To ensure an efficient route to graduation and post-graduation readiness, students are strongly encouraged to meet with an advisor before registering for graduate-level courses.

Code	Title	Credits
EVPP 518	Conservation Biology	3
EVPP 529	Environmental Science Communication	3
EVPP 621	Overview of Biodiversity Conservation	3
EVPP 635	Environment and Society	3

Environmental Science and Public Policy, PhD

Banner Code: SC-PHD-EVPP

Stephanie Lister, Graduate and Undergraduate Program Coordinator

Email: espgrad@gmu.edu
Website: esp.gmu.edu

Our graduates contribute to the solution of complex environmental problems, which require the development of knowledge and skills in the collection, analysis, and interpretation of scientific data, as well as in the integration of scientific understanding into the public policy process.

Advisors/Committee Chairs are drawn from faculty in the Department of Environmental Science and Policy as well as other departments in the College of Science and from the School of Integrative Studies.

This has been designated a Green Leaf program.

Admissions & Policies

Admissions

University-wide admissions policies can be found in the Graduate Admissions Policies section of this catalog. Additionally, information on the admission of international students can be found in the Admission of International Students section of this catalog.

To apply for this program, please complete the George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now/).

Eligibility and Application Requirements

Applicants should also have a bachelor's degree with an overall GPA of at least 3.00. They should have taken at least two semesters of chemistry and three semesters of biology, including a course in ecology.

Applicants to the PhD program should have an advanced degree (e.g. MA, MS, veterinary, or law) in a relevant field. For applicants who fulfill this requirement, the GRE is waived.

For applicants who apply with a Bachelor's Degree or Licentiate (i.e. *Licenciatura*), they should possess exceptional undergraduate academic and research accomplishments. For these applicants, the GRE will be required, with a combined verbal and quantitative score of 310 or higher.

Applicants should submit the following:

- Transcripts from previous university coursework including degrees awarded.
- Three letters of recommendation with at least two from individuals with doctorates.
- Current résumé.
- Substantial statement of interest that includes a description of the specific area of proposed dissertation research, the potential focus (environmental science or environmental public policy), contacts that have been made with potential faculty advisors, and an explanation of career and research goals.
- Letter of endorsement from a prospective advisor to include how your research interests coincide with that of your advisor. Information on faculty members eligible to serve as advisors/committee chairs can be found by contacting the department via phone (703-993-3187) or via email (espgrad@gmu.edu).

All students must obtain the consent of a faculty member willing to serve as an advisor prior to being fully admitted to the program. Admission decisions are based on the student's qualifications and the availability of a faculty advisor. An advisor may be changed by mutual consent of student and advisor, or by petition to the graduate program director and the associate dean for student affairs in the College of Science.

Applicants with questions should contact the ESP Graduate Programs Office via phone (703-993-3187) or via email (espgrad@gmu.edu).

Science, Ecology, and Social Science Background

Science Background

Applicants who lack college-level coursework in biology and chemistry (two semesters of each) should complete a two semester sequence of introductory graduate-level environmental chemistry and biology courses as follows:

Code	Title	Credits
EVPP 506	Science of the Environment I	3
EVPP 507	Science of the Environment II	3
Total Credits		6

These introductory courses cannot be added to the graduate program of study, they will be additional credits to the degree's 72 credit total.

Ecology Background

Students without previous coursework in general ecology will be required to take the following introductory graduate course, which may be included in the graduate program of study.

Code	Title	Credits
EVPP 607	Fundamentals of Ecology	3

Social Science Background

Students with little previous coursework in the social sciences will be required to take the following introductory course, which may be included in the graduate program of study.

Code	Title	Credits
EVPP 608	Introduction to Environmental Social Science	3

Policies

For policies governing all graduate programs, see AP.6 Graduate Policies.

Reduction of Credits

For students entering the doctoral program with a master's degree in an academically related field from an institution of higher education accredited by a Mason-recognized U.S. institutional accrediting agency or international equivalent, the number of required credits may be reduced up to 30 credits, subject to approval of the program faculty and the college's associate dean for student affairs. See AP.6.5.2 Reduction of Credits for more information.

Requirements

Degree Requirements

Total credits: 72

This is a Green Leaf program.

Students should refer to the Admissions & Policies tab for specific policies related to this program.

Doctoral Coursework

Students are required to complete a coursework proposal by the end of their second semester. The coursework proposal must be approved by the student's advisor and the graduate program director. In keeping with the general philosophy inherent in a PhD degree, students adopt an individual program that focuses on a specific area of research. The student's coursework must provide the knowledge base from which an original research project in their specific areas of interest can be successfully completed.

Natural Sciences

Code	Title	Credits
Select at least 12 credits in biology, chemistry, environmental science, geology, geography, or environmental engineering		12
Total Credits		12

Public Policy

Code	Title	Credits
Select at least 12 credits in public affairs, economics, sociology, and/or business. A course in environmental law is also required as part of this category		12
Total Credits		12

Research Methods and Technology

Code	Title	Credits
Select at least 6 credits in statistics, remote sensing, geographic information systems, analytical chemistry, molecular biology, modeling, or information technology [1]		6
Total Credits		6

[1] Students should carefully choose coursework to ensure they have the necessary skills to support dissertation research.

Doctoral Seminar

Students must present a total of 4 graduate seminar credits, with EVPP 991 Advanced Seminar in Environmental Science taken at least once.

Code	Title	Credits
Four credits from		4
EVPP 692	Master's Seminar in Environmental Science and Public Policy	
EVPP 991	Advanced Seminar in Environmental Science	
Total Credits		4

Coursework Focus

Code	Title	Credits
Students select a program of study emphasis with one of two focuses.		12
Environmental Science		
Select 12 credits in natural science coursework [1]		
Environmental Public Policy		
Select 12 credits of public policy coursework [1]		
Total Credits		12

[1] Previous thesis research courses may not be applied to fulfill the coursework focus described here. See advisor for further details.

Electives

Code	Title	Credits
If necessary after doctoral coursework and dissertation research, students take additional electives to bring the total number of credits to 72.		2-14
Total Credits		2-14

Dissertation Committee

Before the end of the fourth semester of coursework, in consultation with their advisor, the student forms a dissertation committee of at least four members. Three of the committee members must be from the Mason graduate faculty. The fourth member may be from Mason or may be from outside the university provided that they hold a terminal degree in an appropriate field. The dissertation committee must be approved by the college's associate dean for student affairs.

Program of Study

After reviewing the student's coursework proposal, progress to date, and area of research, the committee makes final recommendations concerning coursework that will be codified in the program of study to be signed by all committee members and the graduate program director. Students are advised to work closely with their advisor and committee to develop the coursework program in order to facilitate the process of course selection. During the duration of graduate study, a student must meet with the full dissertation committee at least once a year.

Qualifying Exams

On completion of all or nearly all coursework, students may request to take the qualifying or candidacy exam. The qualifying exam has both written and oral components. The written portion consists of questions submitted by each member of the dissertation committee. Successful completion of the written exam should be followed by the oral portion within one month. The qualifying exam may be repeated once at the discretion of the student's committee.

Advancement to Candidacy

Upon approval of the program of study, completion of all or nearly all coursework, successful completion of the qualifying exam, and the approval of the dissertation proposal by the dissertation committee, the student is recommended for advancement to candidacy by the graduate program director. Students must advance to candidacy within six years of admission to the program.

Dissertation Research, Dissertation Defense, and Graduation

Students must complete a dissertation. The dissertation is an original written work, demonstrating mastery of subject matter, methodologies, and conceptual foundations on a specific problem in the general field of environmental science and public policy. The dissertation generally involves collection and analysis of original data or the substantially new analysis and reinterpretation of existing data.

Dissertation completion may be accomplished by taking EVPP 999 Doctoral Dissertation Research alone, or in combination with EVPP 998

Doctoral Dissertation Proposal. However, at least six of these credits must be taken as EVPP 999 Doctoral Dissertation Research.

Before students may enroll in EVPP 999 Doctoral Dissertation Research, they must have advanced to candidacy and have a dissertation proposal approved by the dissertation committee, graduate program director, department chairperson, and the dean of the College of Science. Students working on dissertation research must register for a minimum of 3 credits of EVPP 999 Doctoral Dissertation Research per semester (excluding summers) until they have completed the minimum number of dissertation research credits. Then, they must register for 1 credit of EVPP 999 Doctoral Dissertation Research until the dissertation is complete and has been officially submitted to the library.

Students must present the completed dissertation in a public seminar and defend the work before the dissertation committee and others who wish to attend. Awarding of the degree is contingent on approval of the dissertation by the dissertation committee, graduate program director, department chairperson, and the dean of the College of Science. The dissertation and defense must be completed a total of nine years from the date of first enrollment in the doctoral program.

Code	Title	Credits
Select 12-24 credits from the following:		12-24
EVPP 998	Doctoral Dissertation Proposal	
EVPP 999	Doctoral Dissertation Research (at least 6 credits)	
Total Credits		12-24

Environmental Science Minor

Banner Code: EVSC

Younsung Kim, Undergraduate Program Director

Email: espug@gmu.edu
Website: esp.gmu.edu

Students pursuing the Environmental Science Minor will identify and study the interactions between organic and inorganic elements in a wide variety of ecosystems. This insight will provide students with a broad overview of the workings of the natural world and develop an increased awareness of major environmental issues effecting modern society.

The minor complements majors in natural science but is also suitable for non-science majors. This minor is not intended to be taken in conjunction with majors that focus on environmental science, including the Geology, BS (concentration in Environmental Geoscience) or the Environmental Science, BS.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. For policies governing all minors, see AP.5.3.4 Minors.

For policies governing all undergraduate programs, see AP.5 Undergraduate Policies.

Requirements

Minor Requirements

Total credits: 19-23

Students should refer to the Admissions & Policies tab for specific policies related to this program.

EVPP or BIOL Sequence

Code	Title	Credits
Select one of the following sequences:		8-12
EVPP 108 & EVPP 109 & EVPP 112 & EVPP 113	Ecosphere - Introduction to Environmental Science I-Lecture (Mason Core) and Ecosphere- Introduction to Environmental Science I- Lab (Mason Core) and Ecosphere: Introduction to Environmental Science II-Lecture (Mason Core) and Ecosphere: Introduction to Environmental Science II—Lab (Mason Core)	
BIOL 103 & BIOL 106 & BIOL 107 & GEOL 101	Introductory Biology II-Survey of Cell and Molecular Biology (Mason Core) and Introductory Biology II Laboratory (Mason Core) and Intro Biology II Lecture (Mason Core) and Introductory Geology I (Mason Core)	
Total Credits		8-12

Applied Ecology Course

Code	Title	Credits
EVPP 377	Applied Ecology	3
or BIOL 377	Applied Ecology	
Total Credits		3

Electives

Code	Title	Credits
Select a minimum of 8 credits of EVPP electives, of which 4 credits must be upper level courses		8
Total Credits		8

Environmental Science, BS

Banner Code: SC-BS-EVSC

Younsung Kim, Undergraduate Program Director

Email: espug@gmu.edu
Website: esp.gmu.edu

The Environmental Science, BS provides students with rigorous training in the fundamental science of the environment and in the application of key scientific principles to the analysis of environmental processes and problems. Subsequently, the program introduces students to the development of practical responses to those problems. The program covers ecological systems, environmental policy, fundamental techniques

of environmental science and engineering, protection and improvement of environmental quality, and public and private decision-making processes. Graduates of the program are prepared to undertake careers in a variety of environmental science fields, and are also qualified to pursue advanced scientific/professional education.

This is a Green Leaf program.

Concentrations

Students select a concentration in:

- Conservation
- Ecological Science
- Environmental Health
- Human and Ecosystem Response to Climate Change
- Marine, Estuarine and Freshwater Ecology
- Wildlife

Admissions & Policies

Admissions

University-wide admissions policies can be found in the Undergraduate Admissions Policies section of this catalog.

To apply for this program, please complete the George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now/).

Policies

Students must fulfill all Requirements for Bachelor's Degrees, including the Mason Core.

Students can fulfill the writing intensive requirement for this major by taking EVPP 337 Environmental Policy Making in Developing Countries.

For policies governing all undergraduate programs, see AP.5 Undergraduate Policies.

Requirements

Degree Requirements

Total credits: minimum 120

This is a Green Leaf program.

Students should refer to the Admissions & Policies tab for specific policies related to this program.

Please note that all CONS courses are offered through the Smithsonian-Mason Semester.

Core Requirements

All students complete the following core courses:

Environmental Science

Code	Title	Credits
EVPP 210	Environmental Biology: Molecules and Cells	4
EVPP 301	Environmental Science: Biological Diversity and Ecosystems	4
EVPP 302	Environmental Science: Biomes and Human Dimensions	4
EVPP 305	Environmental Microbiology Essentials	3
EVPP 306	Environmental Microbiology Essentials Laboratory	1
EVPP 337	Environmental Policy Making in Developing Countries [1]	3
EVPP 361	Introduction to Environmental Policy	3
EVPP 377	Applied Ecology	3
EVPP 430	Fundamentals of Environmental Geographic Information Systems	3
BIOL 214	Biostatistics for Biology Majors	4
Select one from the following:		3
EVPP 336	Human Dimensions of the Environment	
EVPP 338	Economics of Environmental Policy	
EVPP 362	Intermediate Environmental Policy	
EVPP 475	Global Biodiversity Governance	
Select one from the following:		3-4
EVPP 378	RS: Ecological Sustainability (Mason Core)	
EVPP 401	Integrated Environmental Assessment	
EVPP 480	Sustainability in Action (Mason Core)	
CONS 490	RS: Integrated Conservation Strategies (Mason Core)	
Total Credits		38-39

[1] Fulfills the writing intensive requirement.

Chemistry

Code	Title	Credits
CHEM 211	General Chemistry I (Mason Core)	3
CHEM 213	General Chemistry Laboratory I (Mason Core)	1
CHEM 212	General Chemistry II (Mason Core)	3
CHEM 214	General Chemistry Laboratory II (Mason Core)	1
Total Credits		8

Mathematics

Code	Title	Credits
Select two from the following:		7-8
MATH 111	Linear Mathematical Modeling (Mason Core)	
MATH 113	Analytic Geometry and Calculus I (Mason Core)	
MATH 114	Analytic Geometry and Calculus II	
Total Credits		7-8

Geology

Code	Title	Credits
GEOL 102 & GEOL 104	Historical Geology (Mason Core) and Historical Geology Laboratory (Mason Core)	4
Total Credits		4

Information Technology

Code	Title	Credits
CDS 130	Computing for Scientists	3
Total Credits		3

Experiential Learning

Code	Title	Credits
Select at least one from the following:		1-6
EVPP 395	Undergraduate Research in Environmental Science and Policy	
EVPP 494	Internship	
CONS 496	Research in Conservation (Mason Core)	
CONS 498	Internship	
Total Credits		1-6

Concentration in Conservation (CNSV)

Code	Title	Credits
Select at least 21 credits from the following:		21
EVPP 318	Conservation Biology	
EVPP 378	RS: Ecological Sustainability (Mason Core)	
EVPP 395	Undergraduate Research in Environmental Science and Policy	
EVPP 396	Directed Topic in Environmental Science and Policy [1]	
EVPP 419	Marine Mammal Biology and Conservation	
EVPP 420	Marine Mammal Biology and Conservation Field Course	
EVPP 421	Marine Conservation	
EVPP 427	Conservation Medicine	
EVPP 440	Field Environmental Science [1]	
EVPP 475	Global Biodiversity Governance	
EVPP 490	Special Topics in Environmental Science and Policy [1]	
EVPP 494	Internship	
BIOL 300	BioDiversity	
BIOL 435	Selected Topics in Biology [1]	
GGS 303	Geography of Resource Conservation (Mason Core)	
GGS 307	Geographic Approaches for Sustainable Development	
CONS 320	Conservation in Practice	
CONS 400	Conservation Seminar	
CONS 401	Conservation Theory	
CONS 402	Applied Conservation	
CONS 404	Biodiversity Monitoring	
CONS 405	Landscape and Macrosystems Ecology	
CONS 406	Small Population Management	
CONS 410	Human Dimensions in Conservation (Mason Core)	
CONS 490	RS: Integrated Conservation Strategies (Mason Core) (Synthesis course)	
CONS 491	RS: Conservation Management Planning (Mason Core)	
CONS 497	Special Topics in Conservation	
CONS 499	Independent Study/Research	
INTS 311	The Mysteries of Migration: Consequences for Conservation (Mason Core)	
PRLS 300	People with Nature	
PRLS 402	Human Behavior in Natural Environments	
Alternative courses may be taken as approved by the program coordinator.		
Total Credits		21

[1] In a relevant topic.

Concentration in Ecological Science (ECSI)

Code	Title	Credits
Select at least 21 credits from the following:		21
EVPP 309	Oceanography	
EVPP 350	Freshwater Ecosystems	
EVPP 355	Ecological Engineering and Ecosystem Restoration	
EVPP 378	RS: Ecological Sustainability (Mason Core)	
EVPP 395	Undergraduate Research in Environmental Science and Policy	
EVPP 396	Directed Topic in Environmental Science and Policy [1]	
EVPP 408	Mushrooms, Molds and Society	
EVPP 427	Conservation Medicine	
EVPP 440	Field Environmental Science [1]	
EVPP 449	Marine Ecology	
EVPP 490	Special Topics in Environmental Science and Policy [1]	
EVPP 494	Internship	
BIOL 300	BioDiversity	
BIOL 345	Plant Ecology	
BIOL 435	Selected Topics in Biology [1]	
BIOL 459	Fungi and Ecosystems	
GEOL 305	Environmental Geology	
GEOL 306	Soil Science	
GGS 307	Geographic Approaches for Sustainable Development	
Alternative courses may be taken as approved by the program coordinator.		
Total Credits		21

[1] In a relevant topic.

Concentration in Environmental Health (EVHL)

Code	Title	Credits
Required Courses		
EVPP 427	Conservation Medicine	3
EVPP 445	Principles of Environmental Toxicology	3
Course Options		
Select at least 15 credits from the following		15
EVPP 395	Undergraduate Research in Environmental Science and Policy	
EVPP 396	Directed Topic in Environmental Science and Policy [1]	
EVPP 409	Medical Mycology	
EVPP 440	Field Environmental Science [1]	
EVPP 490	Special Topics in Environmental Science and Policy [1]	
EVPP 494	Internship	
EVPP 515	Molecular Environmental Biology I	
BIOL 305 & BIOL 306	Biology of Microorganisms and Biology of Microorganisms Laboratory	
BIOL 402	Applied and Industrial Microbiology	
BIOL 404	Medical Microbiology	
BIOL 465	Histology	
GGS 302	Global Environmental Hazards	
GGS 304	Population Geography (Mason Core)	
GGS 307	Geographic Approaches for Sustainable Development	
GGS 319	Air Pollution	
GGS 322	Issues in Global Change	
GCH 205	Global Health (Mason Core)	
GCH 360	Health and Environment	
GCH 560	Environmental Health	
Alternative courses may be taken as approved by the program coordinator.		
Total Credits		21

[1] In a relevant topic.

Concentration in Human and Ecosystem Response to Climate Change (HERC)

Code	Title	Credits
Required Course		
EVPP 336	Human Dimensions of the Environment	3
Course Options		
Select at least 18 credits from the following:		18
EVPP 309	Oceanography	
EVPP 355	Ecological Engineering and Ecosystem Restoration	
EVPP 378	RS: Ecological Sustainability (Mason Core)	
EVPP 395	Undergraduate Research in Environmental Science and Policy	
EVPP 396	Directed Topic in Environmental Science and Policy	
EVPP 427	Conservation Medicine	
EVPP 432	Energy Policy	
EVPP 436	The Human Dimensions of Global Climate Change	
EVPP 440	Field Environmental Science	
EVPP 475	Global Biodiversity Governance	
EVPP 490	Special Topics in Environmental Science and Policy	
EVPP 494	Internship	
CLIM 101	Global Warming: Weather, Climate, and Society (Mason Core)	
CLIM 111	Introduction to the Fundamentals of Atmospheric Science (Mason Core)	
CLIM 112	Introduction to the Fundamentals of Atmospheric Science Lab (Mason Core)	
CLIM 312	Physical Climatology	
CLIM 314	Severe and Extreme Weather	
CLIM 319	Air Pollution	
CLIM 412	Physical Oceanography	
CLIM 438	Atmospheric Chemistry	
GEOL 309	Oceanography	
GGS 121	Dynamic Atmosphere and Hydrosphere (Mason Core)	
GGS 302	Global Environmental Hazards	
GGS 304	Population Geography (Mason Core)	
GGS 307	Geographic Approaches for Sustainable Development	
GGS 309	Introduction to Weather and Climate	
GGS 312	Physical Climatology	
GGS 314	Severe and Extreme Weather	
GGS 319	Air Pollution	
GGS 321	Biogeography	
GGS 322	Issues in Global Change	
GGS 354	Data Analysis and Global Change Detection Techniques	
GGS 456	Introduction to Atmospheric Radiation	
Alternative courses may be taken as approved by the program coordinator.		
Total Credits		21

[1] In a relevant topic.

Concentration in Marine, Estuarine and Freshwater Ecology (MEFC)

Code	Title	Credits
Required Courses		
EVPP 309	Oceanography	3
EVPP 350	Freshwater Ecosystems	4
EVPP 421	Marine Conservation	3
EVPP 449	Marine Ecology	3
Course Options		
Select at least 8 credits from the following:		8
EVPP 318	Conservation Biology	
EVPP 363	Coastal Morphology and Processes	

EVPP 395	Undergraduate Research in Environmental Science and Policy	
EVPP 396	Directed Topic in Environmental Science and Policy [1]	
EVPP 419	Marine Mammal Biology and Conservation	
EVPP 420	Marine Mammal Biology and Conservation Field Course	
EVPP 427	Conservation Medicine	
EVPP 440	Field Environmental Science [1]	
EVPP 490	Special Topics in Environmental Science and Policy [1]	
EVPP 494	Internship	
BIOL 331	Invertebrate Zoology	
BIOL 480	The Diversity of Fishes	
GEOL 364	Marine Geology	
GEOL 458	Chemical Oceanography	
GGS 307	Geographic Approaches for Sustainable Development	
CLIM 412	Physical Oceanography	
Alternative courses may be taken as approved by the program coordinator.		
Total Credits		21

[1] In a relevant topic.

Concentration in Wildlife (WILD)

Code	Title	Credits
Wildlife Courses		
EVPP 318	Conservation Biology	3
BIOL 460	Infectious Diseases Wildlife	3
Choose one course from the following:		3-4
EVPP 395	Undergraduate Research in Environmental Science and Policy [1]	
EVPP 396	Directed Topic in Environmental Science and Policy [1]	
EVPP 419	Marine Mammal Biology and Conservation	
EVPP 494	Internship [1]	
BIOL 437	Orinthology	
BIOL 438	Mammalogy	
BIOL 439	Herpetology	
Zoology Courses		
Choose one course from the following:		3-4
EVPP 395	Undergraduate Research in Environmental Science and Policy [2]	
EVPP 396	Directed Topic in Environmental Science and Policy [2]	
EVPP 427	Conservation Medicine	
EVPP 494	Internship [2]	
BIOL 311	General Genetics	
BIOL 331	Invertebrate Zoology	
BIOL 332	Insect Biology	
Botany Courses		
Choose from the following courses:		9
EVPP 395	Undergraduate Research in Environmental Science and Policy [3]	
EVPP 396	Directed Topic in Environmental Science and Policy [3]	
EVPP 494	Internship [3]	
BIOL 140	Plants and People (Mason Core)	
BIOL 304	Plant Biology	
BIOL 344	Plant Diversity and Evolution	
BIOL 345	Plant Ecology	
INTS 402	Plants and People - Sustenance, Ceremony, and Sustainability	
Total Credits		21-23

[1] In a topic relevant to wildlife.

[2] In a topic relevant to zoology.

[3] In a topic relevant to botany.

Mason Core and Elective Credits

In order to meet a minimum of 120 credits, this degree requires additional credits (specific credit counts by concentration are shown below), which may be applied toward any remaining Mason Core requirements (outlined below), Requirements for Bachelor's Degrees, and elective courses. Students are strongly encouraged to consult with their advisors to ensure that they fulfill all requirements.

- CNSV Concentration: 31-38 credits
- ESCI Concentration: 31-38 credits
- EVHL Concentration: 31-38 credits
- HERC Concentration: 31-38 credits
- MEFC Concentration: 31-38 credits
- WILD Concentration: 29-38 credits

Mason Core

Some Mason Core requirements may already be fulfilled by the major requirements listed above. Students are strongly encouraged to consult their advisors to ensure they fulfill all remaining Mason Core requirements.

Code	Title	Credits
Foundation Requirements		
Written Communication (ENGH 101)		3
Oral Communication		3
Quantitative Reasoning		3
Information Technology and Computing		3
Exploration Requirements		
Arts		3
Global Understanding		3
Literature		3
Natural Science		7
Social and Behavioral Sciences		3
Western Civilization/World History		3
Integration Requirements		
Written Communications (ENGH 302)		3
Writing-Intensive [1]		3

Synthesis/Capstone [2]	3
Total Credits	40

1. Most programs include the writing-intensive course designated for the major as part of the major requirements; this course is therefore not counted towards the total required for Mason Core.
2. Minimum 3 credits required.

Accelerated Master's

Bachelor's Degree (selected)/ Environmental Science and Policy, Accelerated MS

Overview

This bachelor's/accelerated master's degree program allows academically strong undergraduates with a commitment to advance their education to obtain a Green Leaf-designated bachelor's degree and the Environmental Science and Policy, MS (https://catalog.gmu.edu/colleges-schools/science/environmental-policy/environmental-science-policy-ms/) degrees within an accelerated timeframe. Upon completion of this 141 credit accelerated program, students will be exceptionally well prepared for entry into their careers or into a doctoral program in the field or in a related discipline.

Students are eligible to apply for this accelerated program once they have earned at least 60 undergraduate credits and can enroll in up to 18 credits of graduate coursework after successfully completing 75 undergraduate credits. This flexibility makes it possible for students to complete a bachelor's and a master's in five years.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies. For more information on undergraduates enrolling in graduate courses, see AP.1.4.4 Graduate Course Enrollment by Undergraduates (https://catalog.gmu.edu/policies/academic/registration-attendance/#text).

Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in the Graduate Admission Policies section of this catalog.

Important application information and processes for this accelerated master's program can be found here (https://www2.gmu.edu/admissions-aid/how-apply/accelerated-masters/).

The GRE exam is not required for this accelerated master's program.

Students should submit three letters of recommendation (at least one from a former professor or someone with a PhD), a recent resume, a statement of interest/research goals and interests (including information on the candidate's proposed MS research), and a letter from their advisor (see Graduate Advisor section below) stating that the advisor agrees to take on the candidate as an MS student, how the candidate would be a good fit for them and why candidate's research topic would be suitable.

Students with an overall GPA of at least 3.20 who are pursuing any Green Leaf-designated major or minor may apply to this accelerated master's program after completing two semesters of chemistry (including CHEM 211 General Chemistry I (Mason Core) and CHEM 212 General Chemistry II (Mason Core) and three semesters of biology, including a course in ecology, or the equivalent, for example:

Code	Title	Credits
Select one of the following options:		13
Option 1:		
BIOL 213	Cell Structure and Function (Mason Core)	
BIOL 214	Biostatistics for Biology Majors	
BIOL 308	Foundations of Ecology and Evolution	
Option 2:		
EVPP 210	Environmental Biology: Molecules and Cells	
EVPP 301	Environmental Science: Biological Diversity and Ecosystems	
EVPP 302	Environmental Science: Biomes and Human Dimensions	
EVPP 305	Environmental Microbiology Essentials	
EVPP 306	Environmental Microbiology Essentials Laboratory	
Option 3:		
CONS 401	Conservation Theory	
CONS 402	Applied Conservation	
6 credits of BIOL or CONS electives		

Graduate Advisor

By at least the beginning of their senior year, students should seek out a faculty member in the Department of Environmental Science and Policy who is willing to serve as their advisor. This advisor will aid the student in choosing the appropriate graduate courses to take and help to prepare the student for graduate studies. Admission into a research-oriented master's concentration is dependent upon securing the agreement of a faculty advisor. Faculty from a variety of departments and colleges at George Mason University (called "program faculty") can serve as master's advisors. Potential students are encouraged to speak with the graduate program coordinator in the department to obtain guidance on this issue.

Accelerated Option Requirements

After the completion of 75 undergraduate credits, students may complete 3 to 12 credits of graduate coursework that can apply to both the undergraduate and graduate degrees.

In addition to applying to graduate from the undergraduate program, students in the accelerated program must submit a bachelor's/accelerated master's transition form (available from the Office of the University Registrar (https://registrar.gmu.edu/forms/)) to the College of Science's Office of Academic and Student Affairs (https://cos.gmu.edu/about/contact-us/) by the last day to add classes of their final undergraduate semester. Students should enroll for courses in the master's program in the fall or spring semester immediately following conferral of the bachelor's degree, but should contact an advisor if they would like to defer up to one semester.

Students must maintain an overall GPA of 3.00 or higher in all graduate coursework and should consult with their faculty advisor to coordinate their academic goals.

Reserve Graduate Credits

Accelerated master's students may also take up to 6 graduate credits as reserve graduate credits. These credits do not apply to the undergraduate degree, but will reduce the master's degree by up to 6 credits. With 12 graduate credits counted toward the undergraduate degree plus the maximum 6 reserve graduate credits, the credits necessary for the graduate degree can be reduced by up to 18.

Graduate Course Suggestions

The following list of suggested courses is provided for general reference. To ensure an efficient route to graduation and post-graduation readiness, students are strongly encouraged to meet with an advisor before registering for graduate-level courses.

Code	Title	Credits
EVPP 518	Conservation Biology	3
EVPP 529	Environmental Science Communication	3
EVPP 621	Overview of Biodiversity Conservation	3
EVPP 635	Environment and Society	3

Sustainability Studies Minor

Banner Code: SSTS

Younsung Kim, Undergraduate Program Director

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Website: esp.gmu.edu

The core principle of sustainability is the desire to meet the basic material needs of the current generation without compromising the ability of future generations to meet their needs. In order to achieve this goal, we must recognize and address the conflicts and trade-offs involved in balancing environmental integrity, social equity, and economic stability. Such complex work necessarily involves contributions from a wide range of disciplines and it also requires a re-examination of the relationship between human value systems, cultural practices, and the associated long-term implications for the ecosystem.

This is a Green Leaf program.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor. For policies governing all minors, see AP.5.3.4 Minors.

For policies governing all undergraduate programs, see AP.5 Undergraduate Policies.

Requirements

Minor Requirements

Total credits: 16

This is a Green Leaf program.

Students should refer to the Admissions & Policies tab for specific policies related to this program.

Candidates for the minor must complete coursework with a minimum GPA of 2.00.

Core Courses

Code	Title	Credits
EVPP 480	Sustainability in Action (Mason Core)	4
INTS 210	Sustainable World (Mason Core)	4
Total Credits		8

Electives

A maximum of two courses from a single department or program can be counted for elective credit. Preapproved courses are listed here and others may be substituted. See the undergraduate coordinator for additional electives.

Code	Title	Credits
Select 8 credits from the following:		8
EVPP 108 & EVPP 109	Ecosphere - Introduction to Environmental Science I-Lecture (Mason Core) and Ecosphere- Introduction to Environmental Science I- Lab (Mason Core)	
EVPP 201	Environment and You: Issues for the Twenty-First Century (Mason Core)	
EVPP 322	Business and Sustainability	
EVPP 336	Human Dimensions of the Environment	
EVPP 337	Environmental Policy Making in Developing Countries	
EVPP 338	Economics of Environmental Policy	
EVPP 355	Ecological Engineering and Ecosystem Restoration	
EVPP 361	Introduction to Environmental Policy	
EVPP 362	Intermediate Environmental Policy	
EVPP 378	RS: Ecological Sustainability (Mason Core)	
EVPP 421	Marine Conservation	
BIOL 379	RS: Ecological Sustainability (Mason Core)	
CHEM 155	Introduction to Environmental Chemistry I (Mason Core)	
CLIM 101	Global Warming: Weather, Climate, and Society (Mason Core)	
GEOL 305	Environmental Geology	
GGS 102	Physical Geography (Mason Core)	
GGS 103	Human Geography (Mason Core)	
GGS 121	Dynamic Atmosphere and Hydrosphere (Mason Core)	
GGS 122	Dynamic Geosphere and Ecosphere	
GGS 302	Global Environmental Hazards	
GGS 303	Geography of Resource Conservation (Mason Core)	
GGS 304	Population Geography (Mason Core)	
GGS 307	Geographic Approaches for Sustainable Development	

GGS 312	Physical Climatology
or CLIM 312	Physical Climatology
GGS 314	Severe and Extreme Weather
or CLIM 314	Severe and Extreme Weather
GGS 319	Air Pollution
or CLIM 319	Air Pollution
PHYS 331	Physics of Renewable Energy
PHYS 385	Materials Science with Applications to Renewable Energy
ANTH 370	Environment and Culture
AVT 385	EcoArt (Mason Core)
CEIE 355	Environmental Engineering and Science
CEIE 401	Sustainable Land Development
CEIE 450	Environmental Engineering Systems
CONS 401	Conservation Theory
CONS 404	Biodiversity Monitoring
CONS 410	Human Dimensions in Conservation (Mason Core)
ECON 105	Environmental Economics for the Citizen (Mason Core)
ECON 335	Environmental Economics
INTS 102	Global Networks and Communities (Mason Core)
INTS 211	Introduction to Conservation Studies (Mason Core)
INTS 311	The Mysteries of Migration: Consequences for Conservation (Mason Core)
INTS 334	Environmental Justice (Mason Core)
INTS 401	Conservation Biology (Mason Core)
INTS 402	Plants and People - Sustenance, Ceremony, and Sustainability
PHIL 343	Topics in Environmental Philosophy (Mason Core)
PRLS 250	Wilderness Travel and Sustainability
PRLS 300	People with Nature
PRLS 402	Human Behavior in Natural Environments
PRLS 501	Introduction to Natural Resources Law
SOCI 320	Globalization and Social Change (Mason Core)
TOUR 340	Sustainable Tourism
USST 301	Urban Growth in a Shrinking World
Total Credits	8

Sustainable Enterprise Minor

Banner Code: SSTE

Younsung Kim, Undergraduate Program Director

Email: espug@gmu.edu
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Sustainable enterprises are businesses that are financially prosperous and seek to benefit the environment and society. They measure success in terms of a "triple bottom line" that focuses on three "P"s:

- Prosperity - Business profitability/value
- Planet - Ecological integrity
- People - Social equity

Sustainable enterprises balance all three P's simultaneously, and view solutions to environmental and social problems as investments and business opportunities. Therefore, developing sustainable business strategies requires innovation and the identification of solutions that frequently "leapfrog" existing products, technologies, and best management practices.

The minor emphasizes the private sector as a critical player in helping to solve pressing environmental and social problems, while capitalizing on market mechanisms and competitive opportunities. Students who obtain the sustainable enterprise minor will obtain a business understanding of sustainability innovation, ethical foundations, and regulatory framework to pursue private sector triple bottom line strategies.

This is a Green Leaf program.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor. For policies governing all minors, see AP.5.3.4 Minors.

For policies governing all undergraduate programs, see AP.5 Undergraduate Policies.

Requirements

Minor Requirements

Total credits: 17-20

This is a Green Leaf program.

Students should refer to the Admissions & Policies tab for specific policies related to this program.

Students must successfully complete the following courses with a minimum GPA of 2.00.

Core Courses

Code	Title	Credits
EVPP 322	Business and Sustainability	3
EVPP 480	Sustainability in Action (Mason Core)	4
Total Credits		7

Electives

Code	Title	Credits
Environmental Policy and Economics		
Select at least 3 credits from the following:		3
EVPP 361	Introduction to Environmental Policy	
EVPP 362	Intermediate Environmental Policy	
EVPP 432	Energy Policy	

EVPP 490	Special Topics in Environmental Science and Policy (if the topic is applicable-consult an advisor for guidance)	
ECON 335	Environmental Economics	
Business and Innovation [1]		
Select at least 3-4 credits from the following:		3-4
MBUS 300	Accounting in a Global Economy	
MBUS 301	Managing People and Organizations in a Global Economy	
MBUS 305	Introduction to International Business (Mason Core)	
MBUS 306	Managing Projects and Operations	
PSYC 335	Psychology of Creativity and Innovation	
Social Responsibility and Ethics		
Select 3 credits from the following:		3
PHIL 305	Business Ethics	
PHIL 343	Topics in Environmental Philosophy (Mason Core) (if the topic is applicable-consult an advisor for guidance)	
Total Credits		9-10

[1] School of Business students should consult with their advisors regarding MBUS coursework.

Internship

The plan of work for this internship must be approved by the undergraduate coordinator.

Students who are currently employed may request that the internship requirement be waived on the basis of their job experience. Instead of the internship, these students will be required to complete a 3-credit independent study with the minor's director or another faculty member. This alternative will entail independent research by applying sustainable enterprise principles and practices in an analysis of the student's work place, and will culminate in a final project.

Code	Title	Credits
EVPP 395	Undergraduate Research in Environmental Science and Policy	1-3
or EVPP 494	Internship	
Total Credits		1-3

Department of Geography and Geoinformation Science

Phone: 703-993-1210
703-993-1212
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Website: ggs.gmu.edu

Administration

- Dieter Pfoser, Chair
- Ruixin Yang, Graduate Program Director
- Nathan R. Burtch, Undergraduate Program Director

Located in the heart of Fairfax, just a few miles from Washington DC, the Department of Geography and Geoinformation Science (GGS) offers an outstanding environment to study and perform cutting-edge research in remote sensing, geography, geoinformatics, Earth systems science, and their various sub-disciplines.

With a variety of educational offerings, ranging from undergraduate programs to graduate certificates and M.S. and Ph.D. programs, a strong and broad research agenda, and superb name recognition within the leading agencies and companies in our field, our department is a premier choice for academic education.

Undergraduate Programs

The Department of Geography and Geoinformation Science offers a Geography, BA and a Geography, BS. The department also offers accelerated master's program opportunities for the Geographic and Cartographic Sciences, MS (https://catalog.gmu.edu/colleges-schools/science/geography-geoinformation-science/geographic-cartographic-sciences-ms/) and the Geoinformatics and Geospatial Intelligence, MS (https://catalog.gmu.edu/colleges-schools/science/geography-geoinformation-science/geoinformatics-geospatial-intelligence-ms/). Additionally, the department offers the GeoManagement Undergraduate Certificate.

Undergraduate Certificates

The GeoManagement Undergraduate Certificate accommodates students who are pursuing a degree in the Department of Geography and Geoinformation Science who also wish to acquire more knowledge on how to manage people and organizations dealing with GIS in a global economy. By understanding marketing terms, financial matters, and also having a good understanding of how to manage people, students will be well prepared to face challenges in multidisciplinary GIS-oriented environments. All courses are available online.

Minors

For students pursuing any major in the university, the department offers a Geography Minor (fully available online), a Geographic Information Systems Minor (research and scholarship intensive), as well as an Urban Informatics Minor.

Graduate Degrees

Graduate programs are distinguished by an emphasis on cutting-edge research and their applications toward solving practical problems in human and environmental realms. Degree options include three master's degrees and one doctoral program.

Graduate Certificates

For students wishing to pursue graduate-level specialization and skill advancement in specific, focused application areas the department offers the following graduate-level certificates: Data Journalism Graduate Certificate, Environmental GIS and Biodiversity Conservation Graduate Certificate, Geographic Information Science Graduate Certificate, Geospatial Intelligence Graduate Certificate, and Remote Sensing and Image Processing Graduate Certificate. Students may take these as stand-alone certificates or, under certain circumstances, pursue them concurrently with another graduate degree program. Certificate coursework may be applicable toward other graduate degree requirements. In order to gain admission into a graduate certificate program, students must hold a bachelor's degree from a regionally

accredited institution and must apply for and be admitted into the corresponding program.

Master's Programs

The Earth Systems Science, MS (offered jointly with the Department of Atmospheric, Oceanic and Earth Sciences) provides a global systems approach to the study of the atmosphere, hydrosphere and lithosphere. The degree's emphasis is on the observation and quantitative analysis of earth systems. The Geographic and Cartographic Sciences, MS focuses on techniques to compile, display and analyze spatial data. The Geoinformatics and Geospatial Intelligence, MS focuses primarily on computational approaches that support the synthesis and analysis of diverse data types in order to identify and monitor complex events and phenomena that manifest themselves over space and time.

Earth Systems and Geoinformation Sciences, PhD

The Earth Systems and Geoinformation Sciences, PhD combines and extends the three scientific avenues mapped by our master's programs to provide a thorough and interdisciplinary approach to doctoral studies.

Distance Education

While all courses and programs listed are offered in traditional face-to-face on campus teaching, the department offers select programs through fully online modules. These online programs include an online version of our Geography Minor, GeoManagement Undergraduate Certificate, and an online version of the Geospatial Intelligence Graduate Certificate.

Courses Available Online

Individual courses which are currently available online (in addition to their traditional delivery modes) are:

Code	Title	Credits
GGS 101	Major World Regions (Mason Core)	3
GGS 102	Physical Geography (Mason Core)	3
GGS 103	Human Geography (Mason Core)	3
GGS 110	Introduction to Geoinformation Technologies	3
GGS 121	Dynamic Atmosphere and Hydrosphere (Mason Core)	4
GGS 122	Dynamic Geosphere and Ecosphere	4
GGS 210	Introduction to Spatial Computing	3
GGS 300	Quantitative Methods for Geographical Analysis	3
GGS 302	Global Environmental Hazards	3
GGS 303	Geography of Resource Conservation (Mason Core)	3
GGS 310	Cartographic Design	3
GGS 311	Geographic Information Systems	3
GGS 312	Physical Climatology	3
GGS 315	Geography of the United States	3
GGS 317	Geography of China (Mason Core)	3
GGS 379	Remote Sensing	3
GGS 380	Geography of Virginia	3
GGS 416	Satellite Image Analysis	3
GGS 462	Web-based Geographic Information Systems	3
GGS 553	Geographic Information Systems	3
GGS 650	Introduction to GIS Algorithms and Programming	3
GGS 680	Earth Image Processing	3
GGS 681	Social Media Analysis	3
GGS 692	Web-based Geographic Information Systems	3

Faculty

Department Faculty

Professors

Di, Houser, Pfoser (chair), Qu, Wong, C. Yang

Associate Professors

Croitoru (online coordinator), Leslie, Rice, D. Sun, R. Yang (graduate coordinator)

Assistant Professors

Anderson, Burtch (undergraduate coordinator), Komwa, Oughton, Rosenfeld, Wessels, Züfle

Adjunct Faculty

Dillon, Grymes, Jackson, McGlone, Resmini, Rockwell, Ward, Weaver

Requirements & Policies

Requirements

Writing-Intensive Requirement

The university requires all students to complete at least one course designated as "writing intensive" in their majors at the 300 level or above. Students majoring in geography fulfill this requirement by successfully completing GGS 415 Seminar in Geographic Thought and Methodology.

Policies

Students are governed by the university's policies.

GGS Lab Use

Access to GGS lab space is contingent upon active student status and registration in GGS courses. Labs are key card accessible and only authorized students may use the labs for academic work.

Non-degree Status

Applicants who have not been admitted to a specific graduate degree or certificate program and still wish to attend courses may apply for non-degree studies. This is intended for students who do not seek a specific degree. These students must apply for non-degree status and be admitted through a process comparable to the one followed by degree-seeking students.

While it may be possible to transfer some of the credits earned in non-degree status to a degree program, such transfers are not automatic. Non-degree students who intend to transfer their credits to a degree program should discuss this in a timely manner with the appropriate department coordinator. Further information can be found in the Non-degree Enrollment section of this catalog.

Programs

- Data Journalism Graduate Certificate
- Earth Systems Science, MS (GGS)
- Earth Systems and Geoinformation Sciences, PhD
- Environmental GIS and Biodiversity Conservation Graduate Certificate
- GeoManagement Undergraduate Certificate
- Geographic Information Science Graduate Certificate
- Geographic Information Systems Minor
- Geographic and Cartographic Sciences, MS
- Geography Minor
- Geography, BA
- Geography, BS
- Geoinformatics and Geospatial Intelligence, MS
- Geospatial Intelligence Graduate Certificate
- Remote Sensing and Image Processing Graduate Certificate
- Urban Informatics Minor

Data Journalism Graduate Certificate

Banner Code: SC-CERG-DJNL

Ruixin Yang, Graduate Coordinator

2409 Exploratory Hall
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This certificate is designed for students and professionals wishing to advance their knowledge and careers in the emerging field of Data Journalism. Data-driven journalism is about obtaining, reporting on, curating, and publishing (storifying) data in the public interest. Maps and data infographics are some of the best ways to publish data in order to inform the public and raise awareness.

Principles of journalism, methods and tools for information visualization, social media analysis, and scientific data communication topics are visited in this program.

This certificate may be pursued on a part-time and full-time basis.

Admissions & Policies

Admissions

University-wide admissions policies can be found in the Graduate Admissions Policies section of this catalog. TOEFL scores are required of all international applicants who do not hold at least a bachelor's degree from an institution of higher education accredited by a Mason-recognized U.S. institutional accrediting agency or international equivalent.

To apply for this program, please complete the George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now/).

Policies

For policies governing all graduate programs, see AP.6 Graduate Policies.

Requirements

Certificate Requirements

Total credits: 15

This certificate may be pursued on a full-or part-time basis.

Students should refer to the Admissions & Policies tab for specific policies related to this program.

Core Courses

Code	Title	Credits
GGS 590	Selected Topics in Geography [1]	3
GGS 692	Web-based Geographic Information Systems	3
COMM 642	Science and the Public	3
Total Credits		9

[1] Only when the subject is GeoSocial Analysis.

Electives

Code	Title	Credits
Select two courses from the following list or others in consultation with an advisor.		6
CDS 501	Scientific Information and Data Visualization	
CSI 672	Statistical Inference	
or STAT 652	Statistical Inference	
COMM 637	Risk Communication	
COMM 640	Controversies in Science Communication	
COMM 641	Advanced Communication Skills for STEM	
COMM 644	Analysis and Criticism of Science Journalism	
COMM 660	Climate Change and Sustainability Communication Campaigns	
COMM 735	Crisis Communication	
STAT 554	Applied Statistics I	
Total Credits		6

Earth Systems and Geoinformation Sciences, PhD

Banner Code: SC-PHD-ESGS

Ruixin Yang, Graduate Coordinator

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The Earth Systems and Geoinformation Sciences (ESGS) doctoral program is based upon the integration of the scientific disciplines in geosystems, geography, geosciences, and geoinformatics. Students receive broad-based training in systematic geosciences and geography, as well as technical courses in computation and geoinformation sciences. The ESGS doctoral program represents a gateway to an academic career for some students; for others, it facilitates career advancement in the public sector or private industry. Graduates are equipped to participate in interdisciplinary research, which is the norm in today's research arena.

Admissions & Policies

Admissions

University-wide admissions policies can be found in Graduate Admissions Policies.

To apply for this program, please complete the George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now/).

Eligibility

This program is intended for graduates who hold a MS or MA degree in atmospheric science, climatology, meteorology, Earth science, geology, environmental science, remote sensing, hydrology, oceanography, geography, or a related field. Highly-qualified students with a BS or BA in applicable fields are also encouraged to apply. Knowledge of mathematics through calculus is preferred. Interested applicants should contact the program degree coordinator or the GGS director of academic programs for more specific advice.

Application Requirements

To apply, prospective students should complete the George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now/). Official transcripts from each college and graduate institution attended, a current résumé, and an expanded goals statement will be required.

Applicants will also need three letters of recommendation and an official report of scores obtained on the GRE-GEN. The GRE requirement for admission to the doctoral program may be waived if the student holds a master's degree from an institution of higher education accredited by a Mason-recognized U.S. institutional accrediting agency or international equivalent. TOEFL scores are required of all international applicants. GRE-GEN scores are required of students wishing to be considered for the Office of the Provost's Presidential Scholarship. A minimum combined math and verbal GRE score of 270/340 are needed to qualify for the Presidential Scholarship.

Policies

For policies governing all graduate programs, see AP.6 Graduate Policies.

Reduction of Credits

For students entering the doctoral program with a master's degree in a related field from an institution of higher education accredited by a Mason-recognized U.S. institutional accrediting agency or international equivalent, the number of required credits may be reduced up to 30 credits, subject to approval of the program faculty and the associate dean for student affairs. See AP.6.5.2 Reduction of Credits for more information.

Secondary Program Options

Students enrolled in this doctoral program have the option of adding a secondary graduate certificate or master's program. Depending upon the secondary program chosen, many courses may be applicable to both programs. Before adding a secondary program, students are advised to carefully review AP.6.8 Requirements for Graduate Certificates or AP.6.9 Requirements for Master's Degrees and AP.6.10 Requirements for Doctoral Degrees. Faculty advisors should be contacted for further guidance and for secondary program suggestions.

Requirements

Degree Requirements

Total credits: 72

Students should refer to the Admissions & Policies tab for specific policies related to this program.

Core Courses

Students are required to choose from the following courses in the core areas below. Of the cores, students must complete at least one course in five of the cores and two courses in at least three of those five cores.

Code	Title	Credits
The core areas from which to choose these credits are:		24
Quantitative Core:		
GGS 560	Spatial Quantitative Methods	
GGS 754	Earth Science Data and Advanced Data Analysis	
GGS 791	Advanced Spatial Statistics	
Geoinformatics Core:		
GGS 650	Introduction to GIS Algorithms and Programming	
GGS 664	Spatial Data Structures	
GGS 675	Location Science	
GGS 692	Web-based Geographic Information Systems	
GGS 787	Scientific Data Mining for Geoinformatics	
Geosciences and Physical Geography Core:		
GGS 656	The Hydrosphere	
GGS 657	The Lithosphere	
GGS 670	Introduction to Atmosphere and Weather	
GGS 721	Biogeography	
PHYS 575	Atmospheric Physics I	
Human Geography Core:		
GGS 505	Transportation Geography	
GGS 533	Issues in Regional Geography	
GGS 540	Health Geography	
GGS 704	Spatial Demography	
Geographic Information Science Core:		
GGS 553	Geographic Information Systems	
GGS 563	Advanced Geographic Information Systems	

GGS 671	Algorithms and Modeling in GIS	
Remote Sensing Core:		
GGS 579	Remote Sensing	
GGS 680	Earth Image Processing	
GGS 756	Physical Principles of Remote Sensing	
GGS 760	Advanced Topics in Remote Sensing	
GGS 777	Remote Sensing Natural Hazards	
Total Credits		24

Research Synthesis and Colloquium

Code	Title	Credits
Research Synthesis		
Select one from the following:		3
GGS 684	Selected Topics in Geospatial Intelligence	
GGS 689	Seminar in Geographic Thought and Methodology	
GGS 795	Seminar in Regional Analysis	
Colloquium		**2**
GGS 900	Geography and Geoinformation Science Colloquium (complete twice)	
Total Credits		5

Electives

Code	Title	Credits
In consultation with the advisor, students select credits necessary to reach 72 total credits [1]		19-31

[1] At least half of the elective credits taken at Mason must be from GGS courses.

Dissertation Research

Students take 12-24 credits, with at least 6 credits in GGS 999 Dissertation. After reaching candidacy, students must stay continuously enrolled GGS 999 Dissertation until defending their dissertation.

Code	Title	Credits
Select 12-24 credits from the following:		12-24
GGS 998	Dissertation Proposal	
GGS 999	Dissertation	
Total Credits		12-24

Dissertation Committee

All students will be assigned a temporary academic advisor when they first enroll in the program. No later than the end of the second year, each student should identify a dissertation advisor and form a doctoral committee. The committee will be chaired by a GGS tenure or tenure-track professor and be composed of at least four members. GGS tenure or tenure-track faculty should be at least 50% and have larger committee membership than any other Mason department/academic unit or external organization. At least one member should be a tenure or tenure-track faculty member from another Mason department or program outside of GGS. All members of the committee must be Mason Graduate Faculty and approved by the department's chair.

Candidacy Examination

After completing all required courses, each student must take a candidacy exam administered by the dissertation committee. The exam will have written and oral components. Its purpose is to determine whether the student has acquired adequate general knowledge in the selected subject area, as well as much more detailed knowledge of the specific research topic planned for the dissertation.

Dissertation Proposal and Advancement to Candidacy

After students have completed all required courses and passed the candidacy exam, they should prepare an acceptable dissertation proposal. After the dissertation proposal is approved and the appropriate paperwork is completed, the student will be advanced to candidacy.

Doctoral Dissertation

The degree will be awarded upon completion of the required coursework and successful defense of a PhD dissertation that makes an original and significant contribution to the field.

Earth Systems Science, MS (GGS)

Banner Code: SC-MS-ESSC

Ruixin Yang, Graduate Coordinator

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This is a shared program between the Department of Atmospheric, Oceanic, and Earth Sciences and the Department of Geography and Geoinformation Science.

The program addresses the growing demand for trained professionals in the Earth sciences. The degree emphasizes a research-oriented, global systems approach to studying the Earth and its systems- the atmosphere, the hydrosphere, and the lithosphere, including their interrelationships and interactions with the biosphere. Emphasis is on the observation, measurement, and analysis of Earth's systems.

Most student research projects and theses will relate to geologic and geographic topics, however studies of related topics in Earth science are welcome. Students completing the program are qualified to pursue careers that require knowledge of the basics of Earth systems science and the requisite tools, specifically pertaining to the area of Earth science that they choose to investigate. Students are encouraged to undertake a master's thesis but may choose a research project. In the latter case, students must pass a comprehensive exam.

Admissions & Policies

Admissions

University-wide admissions policies can be found in Graduate Admissions Policies.

To apply for this program, please complete the George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now/).

Eligibility

Applicants should have earned a BS degree in atmospheric, Earth, environmental, geological, geographical, ocean, or physical science. Previous coursework should include two semesters each of calculus, chemistry, and physics, and one semester of statistics. Applicants should have a minimum GPA of 3.00 in their undergraduate degree.

Application Requirements

Official transcripts from each college and graduate institution attended, a current résumé, and a goals statement are required. Applicants also need three letters of recommendation and an official report of scores obtained on the GRE-GEN. The GRE requirement for admission may be waived if the student holds a master's degree from an institution of higher education accredited by a Mason-recognized U.S. institutional accrediting agency or international equivalent. TOEFL scores are required of all international applicants.

Policies

For policies governing all graduate programs, see AP.6 Graduate Policies.

Requirements

Total credits: 30

Students should refer to the Admissions & Policies tab for specific policies related to this program.

Candidates must complete 10 credits of GGS courses and 10 credits of GEOL/CLIM courses toward their requirements. ("Culminating Experience" credits do not count towards this requirement).

Earth Science Core

Code	Title	Credits
Select one course from each of the following groups:		9
Atmosphere:		
CLIM 610	Introduction to the Physical Climate System	
CLIM 614	Land-Climate Interactions	
GEOL 532	Paleoclimatology	
GGS 670	Introduction to Atmosphere and Weather	
PHYS 575	Atmospheric Physics I	
Hydrosphere:		
CLIM 512	Physical Oceanography	
CLIM 712	Physical and Dynamical Oceanography	
GEOL 513	Hydrogeology	
GGS 656	The Hydrosphere	
Lithosphere:		
GEOL 506	Soil Science	
GGS 657	The Lithosphere	
or GEOL 601	The Lithosphere	
Total Credits		9

Techniques [1]

Code	Title	Credits
Select two courses from the following:		6
GGS 553	Geographic Information Systems	
GGS 560	Spatial Quantitative Methods	
GGS 579	Remote Sensing	
GGS 680	Earth Image Processing	
GGS 754	Earth Science Data and Advanced Data Analysis	
Total Credits		6

[1] Other courses can be substituted with advisor approval.

Colloquium

Code	Title	Credits
GGS 900	Geography and Geoinformation Science Colloquium	1
Select one from the following:		1
GEOL 536	Paleontology Seminar	
GEOL 792	Seminar in Earth Systems Science, Geology, Earth Science	
CLIM 991	Climate Dynamics Seminar	
Total Credits		2

Electives

Code	Title	Credits
Select 10 credits from courses at the 500 to 900-level (excluding 700, 798, and 799 courses)		10
CLIM Courses		
GEOL Courses		
GGS Courses		
EVPP Courses		
Total Credits		10

Culminating Experience

Choose the culminating experience of either a thesis or a project (either must total 3 credits):

Thesis

Code	Title	Credits
Select 3 credits from the following:		3
GGS 799	Thesis	
GEOL 799	Master's Thesis in Earth Systems Science	
CLIM 799	Master's Thesis in Climate	
Total Credits		3

Project

Code	Title	Credits
Select one from the following:		1
GGS 700	Comprehensive Exam	
GEOL 700	Comprehensive Exam	
CLIM 700	Climate Comprehensive Exam	
Select one from the following:		2
GGS 798	Master's Research Project	
GEOL 798	Master's Research Project in Earth Systems Science	
CLIM 798	Master's Climate Research Project	
Total Credits		3

Accelerated Master's

Geology, BS/Earth Systems Science, Accelerated MS

Overview

Geology, and Earth sciences more broadly, are extremely important to society and our economy as they deal with our planet, our oceans, and our climate. Degrees in Earth science are broadly useful in industry, government, conservation, and many other areas of our economy. While there are many positions in the field that only require a bachelor's degree, many employers either prefer a Master's degree, or a Master's degree can be the key to further promotion within a particular organization. This Accelerated Master's degree is designed to give students the skills and the degrees that they need to be both initially successful, and to ensure long-term advancement in their chosen professions.

Application Requirements

Applicants should be enrolled in the Geology, BS degree at Mason and have earned at least 60 credits. Previous coursework should include two semesters each of calculus, chemistry, and physics, and one semester of statistics. Applicants should have a minimum GPA of 3.00.

Applicants to all graduate programs at Mason must meet the admission standards and application requirements for graduate study as specified in the Graduate Admission Policies (https://catalog.gmu.edu/admissions/graduate-policies/) section of this catalog, excluding the GRE exam requirement (which is not required for those enrolled in the accelerated program). This includes three letters of recommendation (at least one from a former professor or someone with a PhD), a recent resume, a statement of interest/research goals (including information on the applicant's proposed MS research), and a letter from their advisor. This letter should state that the advisor agrees to take on the candidate as an MS student, addresses how the candidate would be a good fit for them, and indicate why the applicant's research topic would be suitable for study.

Accelerated Option Requirements

Students admitted to this program may take graduate courses after completing 75 undergraduate credits, and up to 12 credits of appropriate graduate coursework may be used in partial satisfaction of the requirements for the undergraduate degree. If students earn at least a 3.00 GPA in these classes, they are granted advanced standing in the master's program and must then complete an additional 24 credits to receive the master's degree. All other requirements for the Earth Systems Science, MS, must be met.

To apply these credits to the master's degree, students must request that the credits be moved from the undergraduate degree to the graduate degree using the Bachelor's/Accelerated Master's Transition form found on the Office of the University Registrar's website (https://registrar.gmu.edu/forms/).

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7). For policies governing all graduate programs, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/).

Reserve Graduate Credit

Undergraduate students may also take up to 6 additional and appropriate graduate credits as reserve graduate credit. These credits do not apply to the undergraduate degree, but will reduce the subsequent master's degree credits accordingly (e.g., with 12 credits counted toward the undergraduate and graduate degrees plus the maximum 6 reserve credits for the master's, an MS could be completed with 12 post-bachelor's credits). The ability to take courses for reserve graduate credit is available to all high achieving undergraduates with the permission of the department.

Graduate Course Suggestions

Students should consult with an advisor before registering for graduate credits.

Code	Title	Credits
GEOL 504	Sedimentary Geology	4
GEOL 506	Soil Science	3
GEOL 513	Hydrogeology	3
GEOL 521	Geology of Energy Resources	3
GEOL 532	Paleoclimatology	3
GEOL 534	Vertebrate Paleontology	4
GEOL 536	Paleontology Seminar	1-2
GEOL 553	Field Mapping Techniques	3

Environmental GIS and Biodiversity Conservation Graduate Certificate

Banner Code: SC-CERG-EGBC

Ruixin Yang, Graduate Coordinator

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As biodiversity is the life support system of our planet, it is important to prepare students for careers that require knowledge of both ecology and public policy. This certificate focuses in the fields of conservation biology, land use policy, conservation planning, and modern tools and approaches used in GIS to prepare students to tackle complex environmental challenges in a changing world.

This certificate is suitable for traditional students as well as for student-professionals (such as environmental scientists, managers, practitioners in government, and experts in non-governmental organizations) who wish to acquire further knowledge to advance their careers.

This certificate may be pursued on a part-time or full-time basis.

Admissions & Policies

Admissions

University-wide admissions policies can be found in the Graduate Admissions Policies section of this catalog.

To apply for this program, please complete the George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now/).

Applicants for this certificate should hold a BA or BS in a related discipline from an institution of higher education accredited by a Mason-recognized U.S. institutional accrediting agency or international equivalent.

Policies

For policies governing all graduate programs, see AP.6 Graduate Policies.

Requirements

Certificate Requirements

Total credits: 18

This certificate may be pursued on a full-or part-time basis.

Refer to the Admissions & Policies for policies specific to this program.

Core Courses

Code	Title	Credits
Geospatial Requirements		
GGS 553	Geographic Information Systems	3
or GGS 692	Web-based Geographic Information Systems	
Remote Sensing Requirements		
GGS 579	Remote Sensing	3
or GGS 680	Earth Image Processing	
Conservation Requirements		
EVPP 518	Conservation Biology [1]	3
Statistics Requirements		
GGS 560	Spatial Quantitative Methods	3
or CONS 625	Statistics for Ecology and Conservation Biology	
Total Credits		12

[1] This course may be substituted with advisor approval.

Practice-oriented Conservation Coursework

Code	Title	Credits
Select 6 credits from the following:		6
CONS 630	Species Monitoring Conservation	
CONS 645	Estimating Animal Abundance and Occupancy	
CONS 697	Special Topics in Conservation	
Total Credits		6

Geographic and Cartographic Sciences, MS

Banner Code: SC-MS-GECA

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The Geographic and Cartographic Sciences, MS (GECA) focuses on the growing demand for scientists and professionals in the field of geographic information science, who use geographical approaches and tools such as geographic information systems (GIS), remote sensing, cartography, and geovisualization to address and solve geographic problems. This expertise is useful to a wide variety of employers in the federal, state, and local government sectors, as well as in business, industry, and non-profit organizations. The degree's coursework concentrates on the collection, analysis, and display of geographic data, in concert with the use of emerging geospatial technologies to address problems in the human and environmental geographic domains. Students in this program benefit from a large and diverse local employment market, as well as a network of more than 700 program alumni (1978-present) who live and work in the local area.

Research Facilities

The Department of Geography and Geoinformation Science has extensive research and teaching facilities, including several labs equipped with GIS, remote sensing, cartographic, and analytical software from leading industry vendors and open source groups. Specialized instructional space for geographic information science is housed in newly renovated labs in Exploratory Hall on the Fairfax Campus.

Admissions & Policies

Admissions

University-wide admissions policies can be found in Graduate Admissions Policies.

To apply for this program, please complete the George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now/).

Eligibility and Application Requirements

Applicants for this master's should have a bachelor's degree in geography, cartography, or a closely related field. Applicants without an undergraduate degree in geography may be required to take one course in each of the following: physical geography, human geography, and cartography. All applicants must have a course in statistics. The program also requires GRE test scores, three letters of recommendation, transcripts of all college coursework, and a statement of interest in the degree. The GRE requirement will be waived if the student holds a master's degree from an institution of higher education accredited by a Mason-recognized U.S. institutional accrediting agency or international equivalent. TOEFL scores are required for all foreign applicants. Credit

from courses taken at other departments and other universities may be applied to the program with prior approval.

Policies

For policies governing all graduate programs, see AP.6 Graduate Policies

Secondary Program Options

Students enrolled in this master's program have the option of adding a secondary graduate certificate program. Depending upon the secondary program chosen, many courses may be applicable to both the certificate and the master's. Before adding a secondary program, students are advised to carefully review the Requirements for Graduate Certificates and the Requirements for Master's Degrees in AP.6 Graduate Policies. Faculty advisors should be contacted for further guidance and for graduate certificate program suggestions.

Requirements

Degree Requirements

Total credits: 30 or 37

Students should refer to the Admissions & Policies tab for specific policies related to this program.

Students must complete either 30 graduate credits (with a thesis) or 37 graduate credits (without a thesis). If the non-thesis option is selected, students are required to pass a comprehensive exam.

Core Courses

Code	Title	Credits
GGS 551	Cartographic Design	3
GGS 553	Geographic Information Systems	3
GGS 560	Spatial Quantitative Methods	3
GGS 579	Remote Sensing	3
GGS 689	Seminar in Geographic Thought and Methodology	3
Total Credits		15

Thesis or Non-thesis Options

Thesis Option

Students selecting the thesis option must complete:

Code	Title	Credits
Three credits of		3
GGS 799	Thesis	
Select 12 credits of electives in 500 to 798-level GGS courses. [1]		12
Total Credits		15

[1] Electives should be selected in consultation with an advisor. With departmental approval, up to 9 credits from closely related disciplines may be applied to the degree.

Non-thesis Option

Students selecting the non-thesis option must complete the following:

Code	Title	Credits
Choose one Systematic course		3
GGS 505	Transportation Geography	
GGS 507	Geographic Approaches for Sustainable Development	
GGS 540	Health Geography	
GGS 544	Military Geography	
GGS 581	World Food and Population	
GGS 615	Economic Geography	
GGS 656	The Hydrosphere	
GGS 657	The Lithosphere	
GGS 670	Introduction to Atmosphere and Weather	
GGS 704	Spatial Demography	
Choose one Regional course		3
GGS 516	Geography of Latin America	
GGS 517	Geography of China	
GGS 518	Geography of North Africa and the Middle East	
GGS 526	Geography of Eastern Europe and Russia	
GGS 533	Issues in Regional Geography	
GGS 700	Comprehensive Exam	1
Select an additional 15 credits of electives in 500 to 798-level GGS courses. [1]		15
Total Credits		22

[1] Electives should be selected in consultation with an advisor. With departmental approval, up to 9 credits from closely related disciplines may be applied to the degree.

Accelerated Master's

Bachelor's Degree (any)/Geographic and Cartographic Sciences, Accelerated MS

Overview

Offered by the Department of Geography and Geoinformation Sciences (GGS) in the College of Science, this bachelor's/accelerated master's degree program enables highly qualified undergraduates to obtain any Mason bachelor's degree and the Geographic and Cartographic Sciences, MS degrees within an accelerated timeframe. The program strategy enables students to undertake graduate coursework during their final year in the bachelor's degree. In the case of a 120 credit bachelor's program, this accelerated master's option can be completed as a 138 credit program (thesis option) or 145 credit program (comprehensive exam option). This accelerated pathway prepares students for professional careers where geoinformation management, geographic analysis, and geospatial visualization are of importance.

Students in this accelerated degree program must fulfill all university requirements for the bachelor's program and the Geographic and Cartographic Sciences, MS. While the information below is largely comprehensive, students are strongly encouraged to also review AP.6.7 Bachelor's/Accelerated Master's Degrees.

Application Requirements

Students with an overall GPA of at least 3.0 may apply for provisional acceptance into this accelerated master's program after completing

at least 60 undergraduate credits. Additionally, students they must have completed the following courses with a combined GPA of 3.0 or better: GGS 300 Spatial Quantitative Methods, GGS 311 Geographic Information Systems, and any one upper level GGS-prefixed course.

Applicants to all graduate programs at Mason must meet the admission standards and application requirements for graduate study as specified in the Admissions section of this catalog. However, this accelerated master's does not require GRE test scores, letters of recommendation, or a statement of interest.

While being undergraduate students, accelerated master's students must complete the graduate courses indicated on their Accelerated Master's Program Application (obtained from the Office of Academic and Student Affairs) with a minimum grade of B in each course. They must maintain a minimum GPA of 3.0 in all coursework and in coursework applied to their major.

At the beginning of their final undergraduate semester, they must submit the Bachelor's/Accelerated Master's Transition Form (found on the Office of the University Registrar website). Students must begin their master's program in the semester immediately following the term of undergraduate degree conferral. Students should consult with their faculty advisor in the Department of Geography and Geoinformation Science and the Office of Academic and Student Affairs to obtain further guidance.

Accelerated Option Requirements

Students admitted to this program may start taking graduate courses after completing 75 undergraduate credits. It is recommended that students register for one of the following courses in their first semester of accelerated coursework:

Code	Title	Credits
GGS 551	Cartographic Design	3
GGS 553	Geographic Information Systems	3
GGS 560	Spatial Quantitative Methods	3
GGS 579	Remote Sensing	3

Including the course chosen above, up to 12 credits of graduate coursework may be applied to both undergraduate degree and the master's degree. If students earn at least a B in these classes, they are granted advanced standing in the master's program and must then complete 18 (thesis option) or 25 (comprehensive exam option) additional credits to receive the master's degree. All other master's degree requirements must be met.

Reserve Graduate Credit

During the bachelor's degree status, students may take up to 6 graduate credits as reserve graduate credit. These credits do not apply to the undergraduate degree, but will reduce the subsequent master's degree credits accordingly. With 12 credits counted toward the undergraduate degree plus the maximum 6 reserve credits, the credits necessary for the graduate degree can be reduced by up to 18. The ability to take courses for reserve graduate credit is available to all high achieving undergraduates with the permission of the department. To apply the reserved credits to the master's degree, students must request their transfer from the undergraduate degree to the graduate degree via the Bachelor's/Accelerated Master's Transition Form found on the Office of the University Registrar website.

Geographic Information Science Graduate Certificate

Banner Code: SC-CERG-GISC

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This graduate certificate prepares students for employment in federal, state, and local government positions that require GIS skills. The certificate has been found suitable for the needs of business and industry, including those corporations that serve as contractors to governments in the United States and overseas.

The Geographic Information Science Graduate Certificate may be pursued on a part-time or full-time basis.

Admissions & Policies

Admissions

University-wide admissions policies can be found in the Graduate Admissions Policies section of this catalog.

To apply for this program, please complete the George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now/).

Applicants to this certificate program must submit a current résumé. GRE scores and letters of recommendation are not required but will strengthen an application, if available. TOEFL scores are required of all international applicants.

All applicants should have a working knowledge of, or prior education or training in, computer technology. Knowledge of GIS, remote sensing technology, and cartography are preferred. Students from any discipline are welcome to apply.

Policies

For policies governing all graduate certificates, see AP.6.8 Requirements for Graduate Certificates

Premium Tuition Rate

This professional certificate program charges students at a differential (premium) tuition rate. This rate applies to all students who enroll in this certificate program, regardless of in-state or out-of-state status. The differential tuition will be used to fund continuing improvements in the departmental computational facilities used to support the certificate program.

Requirements

Certificate Requirements

Total credits: 15

This certificate may be pursued on a full-or part-time basis.

Students should refer to the Admissions & Policies tab for specific policies related to this program.

Core Courses

Code	Title	Credits
GGS 550	Geospatial Science Fundamentals	3
GGS 553	Geographic Information Systems	3
Select 3 credits from the following:		3
GGS 563	Advanced Geographic Information Systems	
GGS 650	Introduction to GIS Algorithms and Programming	
GGS 653	GIS Analysis and Application	
GGS 692	Web-based Geographic Information Systems	
Total Credits		9

Electives

Code	Title	Credits
Select an additional 6 credits from the following:		6
GGS 505	Transportation Geography	
GGS 531	Land-Use Modeling Techniques and Applications	
GGS 551	Cartographic Design	
GGS 560	Spatial Quantitative Methods	
GGS 563	Advanced Geographic Information Systems	
GGS 579	Remote Sensing	
GGS 605	Systematic Applications of GIS	
GGS 631	Spatial Agent-Based Models of Human-Environment Interactions	
GGS 650	Introduction to GIS Algorithms and Programming	
GGS 653	GIS Analysis and Application	
GGS 655	Geovisualization	
GGS 658	Terrain Mapping	
GGS 664	Spatial Data Structures	
GGS 671	Algorithms and Modeling in GIS	
GGS 675	Location Science	
GGS 692	Web-based Geographic Information Systems	
GGS 772	Cloud Geographic Information Systems	
GGS 773	Interoperability of Geographic Information Systems	
GGS 787	Scientific Data Mining for Geoinformatics	
Total Credits		6

Geographic Information Systems Minor

Banner Code: GIS

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The Geographic Information Systems Minor is designed to prepare students with the basic training necessary to enter the rapidly expanding field of geographic information science. The curriculum in the minor is multidisciplinary in content and interdisciplinary in approach, drawing on a variety of geographic and computational science components. A Geographic Information System (GIS) is an integrative approach to help solving complex spatial problems in most professional fields and at different scales. GIS has irrevocably altered the way we capture, store, analyze, and visualize spatial information. Although it has its roots in cartography and the graphical display of information, its breadth spans from geographic data acquisition, geospatial database construction and management, spatial analysis, and geovisualization. Public and private sector organizations work with an overwhelming amount of spatial data in their day-to-day operations. With so much spatial information, GIS has become essential to the effective operation of both public and private organizations.

Employment opportunities are limitless for students who are proficient in this interdisciplinary field. GIS professionals work in places like government agencies, utility companies, marketing firms, non-profit organizations, and publishing companies. Federal government agencies such as NGA, FEMA, USGS, DOD, EPA, and NASA routinely recruit individuals with strong GIS backgrounds.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 18-20

Students should refer to the Admissions & Policies tab for specific policies related to this program.

All coursework must be completed with a minimum GPA of 2.00.

Required Courses

Code	Title	Credits
GGS 110	Introduction to Geoinformation Technologies	3

GGS 300	Spatial Quantitative Methods	3
GGS 311	Geographic Information Systems	3
GGS 463	RS: GIS Analysis and Application	3
Total Credits		12

Electives

Code	Title	Credits
Select 6-8 credits from the following: [1]		6-8
GGS 210	Introduction to Spatial Computing	
GGS 308	Field Mapping Techniques	
GGS 310	Cartographic Design	
GGS 354	Data Analysis and Global Change Detection Techniques	
GGS 379	Remote Sensing	
GGS 410	Introduction to Hyperspectral Imaging	
GGS 411	Geovisualization	
GGS 412	Air Photography Interpretation	
GGS 416	Satellite Image Analysis	
GGS 422	Drone Remote Sensing	
GGS 462	Web-based Geographic Information Systems	
GGS 470	Special Topics in Geographic Techniques	
GGS 480	GGS Internship	
CS 112	Introduction to Computer Programming	
CDS 130	Computing for Scientists	
Total Credits		6-8

[1] With departmental permission, one course with significant geographic information systems (GIS) content may be used as an elective.

Geography Minor

Banner Code: GEOG

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A minor in geography is a natural complement to an array of careers, including engineering, government and international politics, environmental science, transportation, business, marketing, and public health. Any Mason undergraduate student is eligible to earn a minor in geography by completing 18-20 credits as outlined in the Requirements tab above; many qualifying courses also fulfill Mason Core requirements.

If desired, this minor can be pursued fully online; details can be found with Mason Online (http://masononline.gmu.edu/).

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor. For policies governing all minors, see AP.5.3.4 Minors.

Students must complete all coursework with a minimum GPA of 2.00.

For policies governing all undergraduate programs, see AP.5 Undergraduate Policies.

Requirements

Minor Requirements

Total credits: 18-20

Students should refer to the Admissions & Policies tab for specific policies related to this program.

Core Courses

Code	Title	Credits
GGS 102	Physical Geography (Mason Core)	3-4
or GGS 121	Dynamic Atmosphere and Hydrosphere (Mason Core)	
GGS 101	Major World Regions (Mason Core)	3
or GGS 103	Human Geography (Mason Core)	
Total Credits		6-7

Systematic and Regional Requirement

Code	Title	Credits
Select one course in systematic geography and one course in regional geography:		6
Systematic Geography:		
GGS 301	Political Geography (Mason Core)	
GGS 302	Global Environmental Hazards	
GGS 303	Geography of Resource Conservation (Mason Core)	
GGS 304	Population Geography (Mason Core)	
GGS 305	Economic Geography	
GGS 306	Urban Geography	
GGS 307	Geographic Approaches for Sustainable Development	
GGS 309	Introduction to Weather and Climate	
GGS 312	Physical Climatology	
GGS 314	Severe and Extreme Weather	
GGS 319	Air Pollution	
GGS 321	Biogeography	
GGS 322	Issues in Global Change	
GGS 357	Urban Planning	
GGS 398	Selected Topics in Global Change	
GGS 399	Select Topics in GGS	
GGS 456	Introduction to Atmospheric Radiation	
Regional Geography:		
GGS 315	Geography of the United States	
GGS 316	Geography of Latin America	

GGS 320	Geography of Europe
GGS 325	Geography of North Africa and the Middle East
GGS 330	Geography of the Soviet Succession States
GGS 333	Issues in Regional Geography
GGS 380	Geography of Virginia
Total Credits	6

Upper-level Electives

Code	Title	Credits
Students must take two upper-level GGS electives chosen in consultation with the minor coordinator		6-7
Total Credits		6-7

Geography, BA

Banner Code: SC-BA-GEOG

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The Geography, BA is designed to offer students the opportunity to study the integrated social and environmental processes that continuously shape and reshape the world we live in. This major provides students with broad training across the core subdisciplines of geography (human, physical, and GIScience), while also offering the requisite flexibility for those students seeking a multidisciplinary educational experience. Students will find numerous opportunities for employment in both the private and public sectors, as well as in academia. Given their interdisciplinary approach and uniquely spatial perspective, geographers are well suited to address important local, regional, and global challenges in today's world.

The Department of Geography and Geoinformation Science fosters a supportive, active learning environment in which students are encouraged to work closely with both faculty and peers. The curriculum in this major provides students with the synthesis skills and broad base of knowledge that prepares them to be successful in an ever-evolving job market. For students who wish to pursue their interest in geography with a more technical curriculum, the department also offers a Geography, BS.

Admissions & Policies

Admissions

University-wide admissions policies can be found in the Undergraduate Admissions Policies section of this catalog.

To apply for this program, please complete the George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now/).

Policies

Students must fulfill all Requirements for Bachelor's Degrees including the Mason Core. As outlined in the Requirements tab, students in this bachelor's program must also complete the additional College Requirements for the BA Degree.

GGS 415 Seminar in Geographic Thought and Methodology fulfills the writing intensive requirement.

For policies governing all undergraduate programs, see AP.5 Undergraduate Policies.

Requirements

Degree Requirements

Total credits: minimum 120

Students should refer to the Admissions & Policies tab for specific policies related to this program.

Candidates for a degree in geography must complete the approved GGS geography courses with a minimum GPA of 2.00.

Students must complete the Core, Systematic and Regional Geography, and GGS electives, then select one concentration or an additional program, and lastly complete the College Requirements for the BA Degree and the Mason Core and Elective Credits.

Core Courses

Code	Title	Credits
GGS 102	Physical Geography (Mason Core)	3-4
or GGS 121	Dynamic Atmosphere and Hydrosphere (Mason Core)	
or GGS 122	Dynamic Geosphere and Ecosphere	
GGS 103	Human Geography (Mason Core)	3
GGS 110	Introduction to Geoinformation Technologies	3
or GGS 210	Introduction to Spatial Computing	
GGS 300	Spatial Quantitative Methods	3
GGS 310	Cartographic Design	3
GGS 311	Geographic Information Systems	3
GGS 415	Seminar in Geographic Thought and Methodology [1]	3
Total Credits		21-22

[1] Fulfills writing intensive requirement.

Systematic and Regional Geography

Students must take one systematic course and one regional course from the list below:

Code	Title	Credits
Systematic Courses		
Select one from the following:		3
GGS 301	Political Geography (Mason Core)	
GGS 302	Global Environmental Hazards	
GGS 303	Geography of Resource Conservation (Mason Core)	
GGS 304	Population Geography (Mason Core)	

GGS 305	Economic Geography	
GGS 306	Urban Geography	
GGS 307	Geographic Approaches for Sustainable Development	
GGS 309	Introduction to Weather and Climate	
GGS 312	Physical Climatology	
GGS 314	Severe and Extreme Weather	
GGS 319	Air Pollution	
GGS 321	Biogeography	
GGS 322	Issues in Global Change	
GGS 340	Health Geography	
GGS 344	Military Geography	
GGS 357	Urban Planning	
GGS 398	Selected Topics in Global Change	
GGS 399	Select Topics in GGS	
GGS 456	Introduction to Atmospheric Radiation	
Regional Courses		
Select one from the following:		3
GGS 315	Geography of the United States	
GGS 316	Geography of Latin America	
GGS 317	Geography of China (Mason Core)	
GGS 320	Geography of Europe	
GGS 325	Geography of North Africa and the Middle East	
GGS 326	Geography of Eastern Europe and Russia	
GGS 330	Geography of the Soviet Succession States	
GGS 333	Issues in Regional Geography	
GGS 380	Geography of Virginia	
Total Credits		6

GGS Electives

Code	Title	Credits
Select 9-10 credits of electives. [1]		9-10
Total Credits		9-10

[1] Two of the three courses must be upper-level GGS courses.

Environmental Geography Concentration (EGEO)

The Environmental Geography concentration for the BA in Geography provides a unique opportunity for majors to take a broader, integrative science approach to studies of the environment. In collaboration with the Department of Environmental Science and Policy, BA in Geography majors have the opportunity to focus their studies on geographic approaches to climatology and global changes, environmental issues, policy matters, and sustainability topics.

Some courses may have prerequisite requirements:

Code	Title	Credits
Core Courses		
GGS 303	Geography of Resource Conservation (Mason Core)	3
EVPP 336	Human Dimensions of the Environment	3
or EVPP 337	Environmental Policy Making in Developing Countries	
or EVPP 377	Applied Ecology	
Methods Course		
GGS 354	Data Analysis and Global Change Detection Techniques	3
or GGS 412	Air Photography Interpretation	
Electives		**6-7**
Select two courses from the following:		
GGS 302	Global Environmental Hazards	
GGS 307	Geographic Approaches for Sustainable Development	
GGS 309	Introduction to Weather and Climate	
GGS 312	Physical Climatology	
GGS 314	Severe and Extreme Weather	
GGS 319	Air Pollution	
GGS 322	Issues in Global Change	
GGS 354	Data Analysis and Global Change Detection Techniques [1]	
GGS 412	Air Photography Interpretation [1]	
EVPP 336	Human Dimensions of the Environment [1]	
EVPP 337	Environmental Policy Making in Developing Countries [1]	
EVPP 361	Introduction to Environmental Policy	
EVPP 362	Intermediate Environmental Policy	
EVPP 377	Applied Ecology [1]	
EVPP 421	Marine Conservation	
EVPP 440	Field Environmental Science	
EVPP 480	Sustainability in Action (Mason Core)	
GEOL 305	Environmental Geology	
Total Credits		15-16

[1] Course cannot be selected if previously selected as a core or methods course.

Health Geography Concentration (HGEO)

The field of Health Geography addresses the role of place, location dynamics and geography in health, well-being, and disease. Public health patterns can vary significantly by physical and social characteristics of places both within and between regions, states, or countries. In collaboration with the Department of Global and Community Health, BA in Geography majors get introduced to local and global health issues and develop their skill set in spatial and statistical analysis of diverse health outcomes in populations.

Some courses may have prerequisite requirements:

Code	Title	Credits
Core Courses		
GGS 340	Health Geography	3
GCH 300	Introduction to Public Health	3
Electives		
Select 9 credits from the following courses. Choose at least one GGS elective and at least one GCH elective:		9
GGS 302	Global Environmental Hazards	
GGS 303	Geography of Resource Conservation (Mason Core)	
GGS 304	Population Geography (Mason Core)	

GGS 306	Urban Geography
GGS 319	Air Pollution
GGS 321	Biogeography
GGS 322	Issues in Global Change
GGS 354	Data Analysis and Global Change Detection Techniques
GGS 463	RS: GIS Analysis and Application
GCH 205	Global Health (Mason Core)
GCH 332	Health and Disease
GCH 360	Health and Environment
GCH 412	Fundamentals of Epidemiology
GCH 445	Social Determinants of Health
GCH 450	Culture, Sexuality and the Global AIDS Epidemic
Total Credits	15

Geoanthropology Concentration (GEA)

Anthropology, a social science, focuses on human activities—past, present, and future. Geography, positioned in the social science and STEM field, studies the physical features of the Earth and its atmosphere, and human activities as they affect and are affected by these, including the distribution of populations and resources, land use, urbanization and other topics. Just as anthropologists use insights from other disciplines to understand humans, geographers cross disciplinary boundaries to collect, store, analyze, model and visualize data. Such broad and inclusive disciplines and definitions yield a large number of possible themes in Geoanthropology. This concentration enables BA in Geography majors, versed in systematic techniques and regional geography, to become better versed in the theoretical constructs of anthropology that situate the environment as part of a global cultural system.

Code	Title	Credits
Core Courses		
GGS 304	Population Geography (Mason Core)	3
Select one core track:		**3**
Cultural Track		
ANTH 114	Introduction to Cultural Anthropology (Mason Core)	
Archaeology Track		
ANTH 120	Unearthing the Past: Prehistory, Culture and Evolution (Mason Core)	
Biological Track		
ANTH 135	Introduction to Biological Anthropology (Mason Core)	
Electives		
Select 9 credits from the following courses. Choose at least one GGS elective and at least one ANTH elective: [1]		9
GGS 301	Political Geography (Mason Core)	
GGS 305	Economic Geography	
GGS 306	Urban Geography	
GGS 307	Geographic Approaches for Sustainable Development	
GGS 309	Introduction to Weather and Climate	
GGS 319	Air Pollution	
GGS 321	Biogeography	
GGS 322	Issues in Global Change	
GGS 357	Urban Planning	
GGS 315	Geography of the United States	
GGS 316	Geography of Latin America	
GGS 320	Geography of Europe	
GGS 325	Geography of North Africa and the Middle East	
GGS 330	Geography of the Soviet Succession States	
GGS 333	Issues in Regional Geography	
GGS 380	Geography of Virginia	
Cultural Track		
ANTH 302	Peoples and Cultures of Latin America (Mason Core)	
ANTH 308	Peoples and Cultures of the Middle East (Mason Core)	
ANTH 309	Peoples and Cultures of India (Mason Core)	
ANTH 376	Food and Culture	
ANTH 381	Medical Anthropology	
ANTH 382	Urban Anthropology (Mason Core)	
ANTH 396	Issues in Anthropology: Social Sciences (Mason Core) (Cultural Topic)	
ANTH 499	Independent Research (Cultural Topic)	
Archaeology Track		
ANTH 307	Ancient Mesoamerica (Mason Core)	
ANTH 325	Field Techniques in Archaeology	
ANTH 357	Bioarchaeology	
ANTH 370	Environment and Culture	
ANTH 377	Mortuary Archaeology	
ANTH 379	Andean Archaeology	
ANTH 396	Issues in Anthropology: Social Sciences (Mason Core) (Archaeological Topic)	
ANTH 499	Independent Research (Archaeological Topic)	
Biological Track		
ANTH 355	Human Origins	
ANTH 357	Bioarchaeology	
ANTH 366	Food and Human Evolution	
ANTH 396	Issues in Anthropology: Social Sciences (Mason Core) (Biological Topic)	
ANTH 499	Independent Research (Biological Topic)	
Total Credits		15

[1] Students must select ANTH electives that are associated with the chosen core course track (Cultural, Archaeology, or Biology).

Additional Program

Students who are not selecting a concentration may choose 15 or more credits consisting of an established minor, concentration, second major, or other coherent selection of courses approved by the advisor and the department chair.

Code	Title	Credits
Select 15 or more credits as outlined above.		15
Total Credits		15

Mason Core and Elective Credits

In order to meet a minimum of 120 credits, this degree requires an additional credits (specific credit counts by concentration are shown below), which may be applied toward any remaining Mason Core requirements (outlined below), Requirements for Bachelor's Degrees, College Requirements for the BA Degree (outlined below), and electives. Students are strongly encouraged to consult with their advisors to ensure that they fulfill all requirements.

- EGEO Concentration: 66-69 credits
- HGEO Concentration: 66-67 credits
- GEA Concentration: 66-67 credits

Mason Core

Some Mason Core requirements may already be fulfilled by the major requirements listed above. Students are strongly encouraged to consult their advisors to ensure they fulfill all remaining Mason Core requirements.

Code	Title	Credits
Foundation Requirements		
Written Communication (ENGH 101)		3
Oral Communication		3
Quantitative Reasoning		3
Information Technology and Computing		3
Exploration Requirements		
Arts		3
Global Understanding		3
Literature		3
Natural Science		7
Social and Behavioral Sciences		3
Western Civilization/World History		3
Integration Requirements		
Written Communications (ENGH 302)		3
Writing-Intensive [1]		3
Synthesis/Capstone [2]		3
Total Credits		40

1. Most programs include the writing-intensive course designated for the major as part of the major requirements; this course is therefore not counted towards the total required for Mason Core.
2. Minimum 3 credits required.

College Requirements for the BA Degree

In addition to the program requirements and the Mason Core requirements, students pursuing a BA degree must complete the coursework below. Except where expressly prohibited, a course used to fulfill this college-level requirement may also be used simultaneously to satisfy other requirements such as Mason Core requirements, other college-level requirements, or requirements for the major. In some cases, the requirements listed below may be superseded by requirements of the degree program and the Mason Core.

Philosophy or Religious Studies

Code	Title	Credits
Select 3 credits from the following:		3
PHIL [1]		
RELI		

1. PHIL 323 Classical Western Political Theory and PHIL 324 Modern Western Political Theory may not be used to fulfill this requirement.

Social and Behavioral Sciences

Choose one approved Mason Core: Social and Behavioral Sciences course in addition to the Mason Core-required course for a total of 6 credits. The two courses used to fulfill the combined college-level and university requirements must be from different disciplines.

This requirement may be fulfilled by completing any course in ANTH, CRIM, ECON, GOVT, HIST[1], LING, PSYC, or SOCI, and the following GGS courses:

Code	Title	Credits
Select any course from the disciplines above or select from the following GGS courses:		3
GGS 101	Major World Regions (Mason Core)	
GGS 103	Human Geography (Mason Core)	
GGS 110	Introduction to Geoinformation Technologies	
GGS 301	Political Geography (Mason Core)	
GGS 303	Geography of Resource Conservation (Mason Core)	
GGS 304	Population Geography (Mason Core)	
GGS 305	Economic Geography	
GGS 306	Urban Geography	
GGS 315	Geography of the United States	
GGS 316	Geography of Latin America	
GGS 320	Geography of Europe	
GGS 325	Geography of North Africa and the Middle East	
GGS 330	Geography of the Soviet Succession States	
GGS 357	Urban Planning	
GGS 380	Geography of Virginia	
Total Credits		3

1. HIST 100 History of Western Civilization (Mason Core) and HIST 125 Introduction to World History (Mason Core)may not be used to fulfill this requirement.

Natural Science

Choose one credit in addition to the Mason Core: Natural Science requirement for a total of 8 credits[1]. This combined college-level and university requirement must be fulfilled by completing two of any approved Mason Core: Natural Science courses that include a laboratory experience[2].

Code	Title	Credits
Select an additional Mason Core Natural Science course		1

[1] For Geography, BA majors, this extra credit is not required.

[2] BIOL 124 Human Anatomy and Physiology and BIOL 125 Human Anatomy and Physiology may not be used to fulfill this requirement.

Foreign Language

Intermediate-level proficiency in one foreign language is required. This requirement may be fulfilled by completing a course in a foreign language numbered 202 (https://catalog.gmu.edu/colleges-schools/humanities-social-sciences/modern-classical-languages/) (or higher level courses taught in the language) or achieving a satisfactory score on an approved proficiency test. A three course sequence in American Sign Language (EDSE 115 (https://catalog.gmu.edu/search/?P=EDSE%20115) American Sign Language (ASL) I, EDSE 116 (https://catalog.gmu.edu/search/?P=EDSE%20116) American Sign Language (ASL) II, and EDSE 219 (https://catalog.gmu.edu/search/?P=EDSE%20219) American Sign Language (ASL) III) will also meet the foreign language requirement. Students who are already proficient in a second language may be eligible for a waiver of this requirement. Additional information on waivers can be found at the Office of Academic and Student Affairs (http://cosundergrad.gmu.edu/).

Non-Western Culture

Choose one approved Non-Western Culture Requirement[1] course in addition to the course used to fulfill the Mason Core: Global Understanding requirement. A course used to fulfill the Mason Core: Global Understanding requirement may not be simultaneously used to satisfy this college-level requirement. However, a course used to fulfill this requirement may be used simultaneously to fulfill any *other* requirements (Mason Core requirements, college-level requirements, or requirements for the major).

Code	Title	Credits
Select 3 credits from approved Non-Western Culture courses if a waiver isn't applicable:		0-3
ANTH 114	Introduction to Cultural Anthropology (Mason Core)	3
ANTH 300	Civilizations	3
ANTH 302	Peoples and Cultures of Latin America (Mason Core)	3
ANTH 307	Ancient Mesoamerica (Mason Core)	3
ANTH 308	Peoples and Cultures of the Middle East (Mason Core)	3
ANTH 309	Peoples and Cultures of India (Mason Core)	3
ANTH 313	Myth, Magic, and Mind (Mason Core)	3
ANTH 314	Zombies	3
ANTH 330	Peoples and Cultures of Selected Regions: Non-Western	3
ANTH 332	Cross-Cultural Perspectives on Globalization (Mason Core)	3
ANTH 381	Medical Anthropology	3
ANTH 396	Issues in Anthropology: Social Sciences (Mason Core)	3
ARAB 360	Topics in Arabic Cultural Production	3
ARAB 420	Survey of Arabic Literature	3
ARAB 440	Topics in Arabic Religious Thought and Texts (Mason Core)	3
ARTH 203	Survey of Asian Art (Mason Core)	3
ARTH 204	Survey of Latin American Art (Mason Core)	3
ARTH 206	Survey of African Art (Mason Core)	3
ARTH 318	Art and Archaeology of Ancient Egypt	3
ARTH 319	Art and Archaeology of the Ancient Near East (Mason Core)	3
ARTH 320	Art of the Islamic World (Mason Core)	3
ARTH 382	Arts of India (Mason Core)	3
ARTH 383	Arts of Southeast Asia (Mason Core)	3
ARTH 384	Arts of China (Mason Core)	3
ARTH 385	Arts of Japan (Mason Core)	3
ARTH 386	The Silk Road (Mason Core)	3
ARTH 482	RS: Advanced Studies in Asian Art	3
CHIN 318	Introduction to Classical Chinese (Mason Core)	3
CHIN 320	Contemporary Chinese Film	3
CHIN 325	Major Chinese Writers (Mason Core)	3
CHIN 470	Special Topics in Chinese Studies	3
DANC 118	World Dance (Mason Core)	3
ECON 361	Economic Development of Latin America (Mason Core)	3
ECON 362	African Economic Development (Mason Core)	3
FREN 451	Topics in Sub-Saharan Francophone Literature and Culture	3
FREN 454	Topics in Caribbean Francophone Literature and Culture	3
GGS 101	Major World Regions (Mason Core)	3
GGS 316	Geography of Latin America	3
GGS 317	Geography of China (Mason Core)	3
GGS 325	Geography of North Africa and the Middle East	3
GGS 330	Geography of the Soviet Succession States	3
GGS 399	Select Topics in GGS	3
GOVT 328	Global Political Theory	3
GOVT 332	Government and Politics of the Middle East and North Africa	3
GOVT 333	Government and Politics of Asia	3
GOVT 338	Government and Politics of Russia	3
GOVT 340	Central Asian Politics	3
GOVT 341	Chinese Foreign Policy	3
GOVT 345	Islam and Politics	3
GOVT 433	Political Economy of East Asia	3
HIST 251	Survey of East Asian History (Mason Core)	3
HIST 252	Survey of East Asian History (Mason Core)	3
HIST 261	Survey of African History (Mason Core)	3
HIST 262	Survey of African History (Mason Core)	3
HIST 271	Survey of Latin American History (Mason Core)	3
HIST 272	Survey of Latin American History (Mason Core)	3

HIST 281	Survey of Middle Eastern Civilization (Mason Core)	3
HIST 282	Survey of Middle Eastern Civilization (Mason Core)	3
HIST 326	Stalinism	3
HIST 327	The Soviet Union and Russia Since World War II	3
HIST 328	Rise of Russia (Mason Core)	3
HIST 329	Modern Russia and the Soviet Union (Mason Core)	3
HIST 353	History of Traditional China	3
HIST 354	Modern China (Mason Core)	3
HIST 356	Modern Japan (Mason Core)	3
HIST 357	Postwar Japan (Mason Core)	3
HIST 358	Post-1949 China (Mason Core)	3
HIST 360	History of South Africa (Mason Core)	3
HIST 364	Revolution and Radical Politics in Latin America (Mason Core)	3
HIST 365	Conquest and Colonization in Latin America (Mason Core)	3
HIST 366	Comparative Slavery	3
HIST 367	History, Fiction, and Film in Latin America	3
HIST 387	Topics in Global History (Mason Core)	3-6
HIST 426	The Russian Revolution	3
HIST 460	Modern Iran (Mason Core)	3
HIST 461	Arab-Israeli Conflict	3
HIST 462	Women in Islamic Society (Mason Core)	3
HIST 465	The Middle East in the 20th Century	3
JAPA 310	Japanese Culture in a Global World (Mason Core)	3
JAPA 340	Topics in Japanese Literature (Mason Core)	3
KORE 320	Korean Popular Culture in a Global World	3
MUSI 103	Musics of the World (Mason Core)	3
RELI 211	Religions of the West (Mason Core)	3
RELI 212	Religions of Asia (Mason Core)	3
RELI 240	Death and the Afterlife in World Religions	3
RELI 272	Islam	3
RELI 313	Hinduism (Mason Core)	3
RELI 314	Chinese Philosophies and Religious Traditions	3
RELI 315	Buddhism (Mason Core)	3
RELI 317	Daoism	3
RELI 337	Mysticism: East and West	3
RELI 365	Muhammad: Life and Legacy	3
RELI 374	Islamic Thought (Mason Core)	3
RELI 375	Qur'an and Hadith	3
RELI 379	Islamic Law, Society, and Ethics	3
RELI 387	Islam, Democracy, and Human Rights	3
RELI 490	Comparative Study of Religions (Mason Core)	3
RUSS 353	Russian Civilization (Mason Core)	3
RUSS 354	Contemporary Post-Soviet Life (Mason Core)	3

[1] Students who can document attendance at a native school in a non-western country for at least four years may request a waiver from this requirement through the CHSS Undergraduate Academic Affairs Office (http://chssundergrad.gmu.edu/).

Accelerated Master's

Bachelor's Degree (any)/Geographic and Cartographic Sciences, Accelerated MS

Overview

Offered by the Department of Geography and Geoinformation Sciences (GGS) in the College of Science, this bachelor's/accelerated master's degree program enables highly qualified undergraduates to obtain any Mason bachelor's degree and the Geographic and Cartographic Sciences, MS degrees within an accelerated timeframe. The program strategy enables students to undertake graduate coursework during their final year in the bachelor's degree. In the case of a 120 credit bachelor's program, this accelerated master's option can be completed as a 138 credit program (thesis option) or 145 credit program (comprehensive exam option). This accelerated pathway prepares students for professional careers where geoinformation management, geographic analysis, and geospatial visualization are of importance.

Students in this accelerated degree program must fulfill all university requirements for the bachelor's program and the Geographic and Cartographic Sciences, MS. While the information below is largely comprehensive, students are strongly encouraged to also review AP.6.7 Bachelor's/Accelerated Master's Degrees.

Application Requirements

Students with an overall GPA of at least 3.0 may apply for provisional acceptance into this accelerated master's program after completing at least 60 undergraduate credits. Additionally, students they must have completed the following courses with a combined GPA of 3.0 or better: GGS 300 Spatial Quantitative Methods, GGS 311 Geographic Information Systems, and any one upper level GGS-prefixed course.

Applicants to all graduate programs at Mason must meet the admission standards and application requirements for graduate study as specified in the Admissions section of this catalog. However, this accelerated master's does not require GRE test scores, letters of recommendation, or a statement of interest.

While being undergraduate students, accelerated master's students must complete the graduate courses indicated on their Accelerated Master's Program Application (obtained from the Office of Academic and Student Affairs) with a minimum grade of B in each course. They must maintain a minimum GPA of 3.0 in all coursework and in coursework applied to their major.

At the beginning of their final undergraduate semester, they must submit the Bachelor's/Accelerated Master's Transition Form (found on the Office of the University Registrar website). Students must begin their master's program in the semester immediately following the term of undergraduate degree conferral. Students should consult with their faculty advisor in the Department of Geography and Geoinformation

Science and the Office of Academic and Student Affairs to obtain further guidance.

Accelerated Option Requirements

Students admitted to this program may start taking graduate courses after completing 75 undergraduate credits. It is recommended that students register for one of the following courses in their first semester of accelerated coursework:

Code	Title	Credits
GGS 551	Cartographic Design	3
GGS 553	Geographic Information Systems	3
GGS 560	Spatial Quantitative Methods	3
GGS 579	Remote Sensing	3

Including the course chosen above, up to 12 credits of graduate coursework may be applied to both undergraduate degree and the master's degree. If students earn at least a B in these classes, they are granted advanced standing in the master's program and must then complete 18 (thesis option) or 25 (comprehensive exam option) additional credits to receive the master's degree. All other master's degree requirements must be met.

Reserve Graduate Credit

During the bachelor's degree status, students may take up to 6 graduate credits as reserve graduate credit. These credits do not apply to the undergraduate degree, but will reduce the subsequent master's degree credits accordingly. With 12 credits counted toward the undergraduate degree plus the maximum 6 reserve credits, the credits necessary for the graduate degree can be reduced by up to 18. The ability to take courses for reserve graduate credit is available to all high achieving undergraduates with the permission of the department. To apply the reserved credits to the master's degree, students must request their transfer from the undergraduate degree to the graduate degree via the Bachelor's/Accelerated Master's Transition Form found on the Office of the University Registrar website.

Bachelor's Degree (any)/Geoinformatics and Geospatial Intelligence, Accelerated MS

Overview

Offered by the Department of Geography and Geoinformation Sciences (GGS) in the College of Science, this bachelor's/accelerated master's degree program enables highly qualified undergraduates to obtain any Mason bachelor's degree and the Geoinformatics and Geospatial Intelligence, MS degrees within an accelerated timeframe. The program strategy enables students to undertake graduate coursework during their final year in the bachelor's degree. In the case of a 120 credit bachelor's program, this accelerated master's option can be completed as a 141 credit program. This accelerated pathway prepares students for professional careers where geoinformation management, geographic analysis, and geointelligence and geovisualization are of importance.

Students in this accelerated degree program must fulfill all university requirements for the bachelor's program and the Geoinformatics and Geospatial Intelligence, MS. While the information below is largely comprehensive, students are strongly encouraged to also review AP.6.7 Bachelor's/Accelerated Master's Degrees.

Application Requirements

Students with an overall GPA of at least 3.0 may apply for provisional acceptance into this accelerated master's program after completing at least 60 undergraduate credits. Additionally, students must have completed the following courses with a combined GPA of 3.0 or better: GGS 300 Spatial Quantitative Methods, GGS 311 Geographic Information Systems, and any one upper level GGS-prefixed course.

Applicants to all graduate programs at Mason must meet the admission standards and application requirements for graduate study as specified in the Admissions section of this catalog. However, this accelerated master's does not require GRE test scores, letters of recommendation, or a statement of interest.

While being undergraduate students, accelerated master's students must complete the graduate courses indicated on their Accelerated Master's Program Application (obtained from the Office of Academic and Student Affairs) with a minimum grade of B in each course. They must maintain a minimum GPA of 3.0 in all coursework and in coursework applied to their major.

At the beginning of their final undergraduate semester, they must submit the Bachelor's/Accelerated Master's Transition Form (found on the Office of the University Registrar website). Students must begin their master's program in the semester immediately following the term of undergraduate degree conferral. Students should consult with their faculty advisor in the Department of Geography and Geoinformation Science and the Office of Academic and Student Affairs to obtain further guidance.

Accelerated Option Requirements

Students admitted to this program may start taking graduate courses after completing 75 undergraduate credits. It is recommended that students register for one of the following courses in their first semester of accelerated coursework:

Code	Title	Credits
GGS 550	Geospatial Science Fundamentals	3
GGS 553	Geographic Information Systems	3
GGS 579	Remote Sensing	3
GGS 684	Selected Topics in Geospatial Intelligence	3

Including the course chosen above, up to 12 credits of graduate coursework may be applied to both undergraduate degree and the master's degree. If students earn at least a B in these classes, they are granted advanced standing in the master's program and must then complete 21 additional credits to receive the master's degree. All other master's degree requirements must be met.

Reserve Graduate Credit

During the bachelor's degree status, students may take up to 6 graduate credits as reserve graduate credit. These credits do not apply to the undergraduate degree, but will reduce the subsequent master's degree credits accordingly. With 12 credits counted toward the undergraduate degree plus the maximum 6 reserve credits, the credits necessary for the graduate degree can be reduced by up to 18. The ability to take courses for reserve graduate credit is available to all high achieving undergraduates with the permission of the department. To apply the reserved credits to the master's degree, students must request their transfer from the undergraduate degree to the graduate degree via the

Bachelor's/Accelerated Master's Transition Form found on the Office of the University Registrar website.

Geography, BS

Banner Code: SC-BS-GEOG

Nathan R. Burtch, Undergraduate Coordinator

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The Geography, BS is designed to offer students the opportunity to study the integrated social and environmental processes that continuously shape and reshape the world we live in. This major provides students with broad training across the core subdisciplines of geography (human, physical, and GIScience), emphasizing application and technique-driven coursework, in addition to a rigorous science and mathematics curriculum. Students will find numerous opportunities for employment in both the private and public sectors, as well as in academia. Given their interdisciplinary approach and uniquely spatial perspective, geographers are well suited to address important local, regional, and global challenges in today's world.

The Department of Geography and Geoinformation Science fosters a supportive, active learning environment in which students are encouraged to work closely with both faculty and peers. The curriculum in this major provides students with the analytical, technical, and practical training that prepares them to be successful in an ever-evolving job market. For students who wish to pursue their interest in geography via a more flexible degree program, the department also offers a Geography, BA.

Admissions & Policies

Admissions

University-wide admissions policies can be found in the Undergraduate Admissions Policies section of this catalog.

To apply for this program, please complete the George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now/).

Policies

Students must fulfill all Requirements for Bachelor's Degrees including the Mason Core.

GGS 415 Seminar in Geographic Thought and Methodology fulfills the writing intensive requirement.

For policies governing all undergraduate programs, see AP.5 Undergraduate Policies.

Requirements

Degree Requirements

Total credits: minimum 120

Students should refer to the Admissions & Policies tab for specific policies related to this program.

Geography

Candidates for the Geography, BS degree must complete the following Core, Breadth and Experience, and Geography Elective courses with a minimum GPA of 2.00:

Core Courses

Code	Title	Credits
GGS 102	Physical Geography (Mason Core)	3-4
or GGS 121	Dynamic Atmosphere and Hydrosphere (Mason Core)	
GGS 103	Human Geography (Mason Core)	3
GGS 110	Introduction to Geoinformation Technologies	3
or GGS 210	Introduction to Spatial Computing	
GGS 300	Spatial Quantitative Methods	3
GGS 310	Cartographic Design	3
GGS 311	Geographic Information Systems	3
GGS 379	Remote Sensing	3
GGS 400	Colloquium in Geoinformation Science	1
GGS 415	Seminar in Geographic Thought and Methodology [1]	3
Total Credits		25-26

[1] Fulfills the writing intensive requirement.

Breadth and Experience Courses

Code	Title	Credits
Advanced Technique Courses		
Select three from the following:		9
GGS 308	Field Mapping Techniques	
GGS 354	Data Analysis and Global Change Detection Techniques	
GGS 410	Introduction to Hyperspectral Imaging	
GGS 411	Geovisualization	
GGS 412	Air Photography Interpretation	
GGS 416	Satellite Image Analysis	
GGS 422	Drone Remote Sensing	
GGS 462	Web-based Geographic Information Systems	
GGS 463	RS: GIS Analysis and Application	
GGS 470	Special Topics in Geographic Techniques	
Systematic Courses		
Select one from the following:		3
GGS 301	Political Geography (Mason Core)	
GGS 302	Global Environmental Hazards	
GGS 303	Geography of Resource Conservation (Mason Core)	
GGS 304	Population Geography (Mason Core)	

GGS 305	Economic Geography	
GGS 306	Urban Geography	
GGS 307	Geographic Approaches for Sustainable Development	
GGS 309	Introduction to Weather and Climate	
GGS 312	Physical Climatology	
GGS 314	Severe and Extreme Weather	
GGS 319	Air Pollution	
GGS 321	Biogeography	
GGS 322	Issues in Global Change	
GGS 340	Health Geography	
GGS 344	Military Geography	
GGS 357	Urban Planning	
GGS 398	Selected Topics in Global Change	
GGS 399	Select Topics in GGS	
GGS 456	Introduction to Atmospheric Radiation	
Regional Courses		
Select one from the following:		3
GGS 315	Geography of the United States	
GGS 316	Geography of Latin America	
GGS 317	Geography of China (Mason Core)	
GGS 320	Geography of Europe	
GGS 325	Geography of North Africa and the Middle East	
GGS 326	Geography of Eastern Europe and Russia	
GGS 330	Geography of the Soviet Succession States	
GGS 333	Issues in Regional Geography	
GGS 380	Geography of Virginia	
Total Credits		15

Geography Electives

Code	Title	Credits
Select 3 credits of undergraduate-level GGS courses		3
Select 6 credits of 300 or 400-level GGS courses		6
Total Credits		9

Outside Requirements

Candidates for the Geography, BS degree must complete the following courses from outside of Geography and Geoinformation Science:

Code	Title	Credits
CDS 130	Computing for Scientists	3
MATH 113	Analytic Geometry and Calculus I (Mason Core)	4
MATH 114	Analytic Geometry and Calculus II	3-4
or IT 207	Applied IT Programming	
or STAT 250	Introductory Statistics I (Mason Core)	
Total Credits		10-11

Mason Core and Elective Credits

In order to meet a minimum of 120 credits, this degree requires an additional 59-61 credits, which may be applied toward any remaining Mason Core requirements, Requirements for Bachelor's Degrees, and elective courses. Students are strongly encouraged to consult with their advisors to ensure that they fulfill all requirements.

Mason Core

Some Mason Core requirements may already be fulfilled by the major requirements listed above. Students are strongly encouraged to consult their advisors to ensure they fulfill all remaining Mason Core requirements.

Code	Title	Credits
Foundation Requirements		
Written Communication (ENGH 101)		3
Oral Communication		3
Quantitative Reasoning		3
Information Technology and Computing		3
Exploration Requirements		
Arts		3
Global Understanding		3
Literature		3
Natural Science		7
Social and Behavioral Sciences		3
Western Civilization/World History		3
Integration Requirements		
Written Communications (ENGH 302)		3
Writing-Intensive [1]		3
Synthesis/Capstone [2]		3
Total Credits		40

1 Most programs include the writing-intensive course designated for the major as part of the major requirements; this course is therefore not counted towards the total required for Mason Core.

2 Minimum 3 credits required.

Geology, BS

Banner Code: SC-BS-GEOL

Dr. Stacey Verardo, Undergraduate Coordinator and Professor

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Fairfax Campus

Phone: 703-993-1045
Email: sverardo@gmu.edu
Website: science.gmu.edu/academics/departments-units/atmospheric-oceanic-earth-sciences/majors-minors

This degree is intended for students interested in studying the Earth and its processes. Students receive a broad background in the Earth sciences and select one of five specialty concentrations. The concentrations in Earth Surface Processes, Environmental Geoscience, Geology, and Paleontology are solely offered by the Department of Atmospheric, Oceanic and Earth Sciences. The concentration in Oceanography and Estuarine science is offered jointly with the Department of Environmental Science and Policy, where specific advising is also available.

This is a Green Leaf program.

Teacher Licensure

Students who wish to become teachers and plan to seek teacher licensure should consider the following options:

- Secondary Education - Earth Science (6-12) Undergraduate Certificate
- Geology, BS/Curriculum and Instruction, Accelerated MEd (Secondary Education Earth Science Concentration)

Interested students should attend an information session early in their undergraduate career. For more information, visit the School of Education's website (https://education.gmu.edu/).

Admissions & Policies

Admissions

University-wide admissions policies can be found in the Undergraduate Admissions Policies section of this catalog.

To apply for this program, please complete the George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now/).

Policies

Students must fulfill all Requirements for Bachelor's Degrees, including the Mason Core.

For policies governing all undergraduate degrees, see AP.5 Undergraduate Policies.

Writing Intensive Requirement

GEOL 317 Geomorphology fulfills the writing intensive requirement for this major, with the exception of:

- The Environmental Geoscience Concentration, whereby GEOL 305 Environmental Geology fulfills the writing intensive requirement.
- The Paleontology Concentration, whereby GEOL 334 Vertebrate Paleontology fulfills the writing intensive requirement.

Requirements

formerly (SC-BS-ESCI)

Degree Requirements

Total credits: minimum 120

This is a Green Leaf program.

Students should refer to the Admissions & Policies tab for specific policies related to this program.

Students must complete all coursework with a minimum GPA of 2.00.

Core Science and Mathematics

Code	Title	Credits
GEOL 101	Introductory Geology I (Mason Core)	4
GEOL 309	Oceanography	3
or BIOL 309	Oceanography	
GEOL 420	Earth Science and Policy (Mason Core)	3
CHEM 211 & CHEM 213	General Chemistry I (Mason Core) and General Chemistry Laboratory I (Mason Core)	4
CHEM 212 & CHEM 214	General Chemistry II (Mason Core) and General Chemistry Laboratory II (Mason Core)	4
MATH 113	Analytic Geometry and Calculus I (Mason Core)	4
MATH 114	Analytic Geometry and Calculus II	4
STAT 250	Introductory Statistics I (Mason Core)	3
Select one of the following options:		3-4
Option A:		
CLIM 111	Introduction to the Fundamentals of Atmospheric Science (Mason Core)	
CLIM 112	Introduction to the Fundamentals of Atmospheric Science Lab (Mason Core)	
Option B:		
PHYS 111	Introduction to the Fundamentals of Atmospheric Science (Mason Core)	
PHYS 112	Introduction to the Fundamentals of Atmospheric Science Lab (Mason Core)	
Option C:		
GGS 309	Introduction to Weather and Climate	
Total Credits		32-33

Physics

Code	Title	Credits
Select one 8-credit sequence from the following:		8
PHYS 160 & PHYS 161 & PHYS 260 & PHYS 261	University Physics I (Mason Core) and University Physics I Laboratory (Mason Core) and University Physics II (Mason Core) and University Physics II Laboratory (Mason Core)	
PHYS 243 & PHYS 244 & PHYS 245 & PHYS 246	College Physics I (Mason Core) and College Physics I Lab (Mason Core) and College Physics II (Mason Core) and College Physics II Lab (Mason Core)	
Total Credits		8

Concentration in Earth Surface Processes (EP)

This concentration focuses on a broad understanding of the physical processes and natural materials found at or near the Earth's surface that have produced the primary landforms and landscapes observed today. Fundamental concepts, methods and techniques of landscape analysis are also examined. Students choosing this concentration must complete the following coursework:

Code	Title	Credits
GEOL 102 & GEOL 104	Historical Geology (Mason Core) and Historical Geology Laboratory (Mason Core)	4
or EVPP 108 & EVPP 109	Ecosphere - Introduction to Environmental Science I-Lecture (Mason Core) and Ecosphere- Introduction to Environmental Science I- Lab (Mason Core)	
GEOL 302	Mineralogy	4

GEOL 303	Field Mapping Techniques	3
GEOL 306	Soil Science	3
GEOL 317	Geomorphology [1]	4
GGS 311	Geographic Information Systems	3
Select 10-15 credits from the following:		10-15
GEOL 304	Sedimentary Geology	
GEOL 305	Environmental Geology	
GEOL 313	Hydrogeology	
GEOL 315	Topics in Geology II	
GEOL 363	Coastal Morphology and Processes	
GEOL 401	Structural Geology	
GEOL 403	Geochemistry	
GEOL 417	Geophysics	
Total Credits		31-36

[1] Fulfills writing intensive requirement.

Concentration in Environmental Geoscience (EVGS)

This concentration provides the tools for applying geologic information (on soils, rocks, water, weather, and landscapes) to contemporary environmental problems (including: pollution, waste management, resource extraction, natural hazards, land-use, habitat restoration, species preservation, and human health). Environmental geoscience studies the physical environment in which biological interactions take place, whereby aiding the understanding of ecology. Students choosing this concentration must complete the following coursework:

Code	Title	Credits
GEOL 102 & GEOL 104	Historical Geology (Mason Core) and Historical Geology Laboratory (Mason Core)	4
GEOL 302	Mineralogy	4
GEOL 305	Environmental Geology [1]	3
GEOL 306	Soil Science	3
GEOL 313	Hydrogeology	3
GEOL 320	Geology of Earth Resources	3
GEOL 321	Geology of Energy Resources	3
GEOL 403	Geochemistry	3
or CHEM 427	Aquatic Environmental Chemistry	
EVPP 336	Human Dimensions of the Environment	3
or EVPP 361	Introduction to Environmental Policy	
Select 6-12 credits from the following:		6-12
CLIM 101	Global Warming: Weather, Climate, and Society (Mason Core)	
CLIM 412	Physical Oceanography	
GEOL 304	Sedimentary Geology	
EVPP 201	Environment and You: Issues for the Twenty-First Century (Mason Core)	
EVPP 336	Human Dimensions of the Environment	
EVPP 361	Introduction to Environmental Policy	
EVPP 432	Energy Policy	
EVPP 436	The Human Dimensions of Global Climate Change	
GGS 302	Global Environmental Hazards	
GGS 311	Geographic Information Systems	
GGS 322	Issues in Global Change	
PHYS 331	Physics of Renewable Energy	
CONF 101	Conflict and Our World (Mason Core)	
INTS 211	Introduction to Conservation Studies (Mason Core)	
PRLS 300	People with Nature	
PRLS 402	Human Behavior in Natural Environments	
Total Credits		35-41

[1] Fulfills writing intensive requirement for this concentration only.

Concentration in Geology (GEOL)

This concentration is fashioned after traditional geology bachelor's degrees. It allows graduates to be employed as geologists in the field or to pursue graduate studies in geology. Students choosing this concentration must complete the following coursework:

Code	Title	Credits
GEOL 102 & GEOL 104	Historical Geology (Mason Core) and Historical Geology Laboratory (Mason Core)	4
GEOL 302	Mineralogy	4
GEOL 304	Sedimentary Geology	4
GEOL 308	Igneous and Metamorphic Petrology	4
GEOL 312	Invertebrate Paleontology	4
GEOL 317	Geomorphology [1]	4
GEOL 401	Structural Geology	4
Six credits of		6
GEOL 404	Geological Field Techniques [2]	
Total Credits		34

[1] Fulfills writing intensive requirement.

[2] A 6-credit geology field camp may be substituted for this requirement, see advisor for details.

Concentration in Oceanography and Estuarine Science (OEST)

This concentration provides students with a comprehensive knowledge of oceanography. Additional coursework in physical and chemical oceanography give insight into the aquatic environment and its link to both ecosystems and climate. Within the concentration, students can choose an Open Ocean or Coastal Ocean option. The curriculum will emphasize local and regional case studies, in particular the Chesapeake Bay. The program will provide students with the basic training required to allow them to obtain entry level positions in oceanographic and estuarine career tracks or an appropriate graduate degree program. Students choosing this concentration must complete the following coursework:

Code	Title	Credits
CLIM 412	Physical Oceanography	3
or GEOL 412	Physical Oceanography	
GEOL 102 & GEOL 104	Historical Geology (Mason Core) and Historical Geology Laboratory (Mason Core)	4
GEOL 458	Chemical Oceanography	3
or CHEM 458	Chemical Oceanography	
Select one of the following 8-credit sequences:		8

BIOL 103 & BIOL 107 & BIOL 106	Introductory Biology II-Survey of Cell and Molecular Biology (Mason Core) and Intro Biology II Lecture (Mason Core) and Introductory Biology II Laboratory (Mason Core)	
BIOL 213 & BIOL 300	Cell Structure and Function (Mason Core) and BioDiversity	
EVPP 108 & EVPP 109 & EVPP 112 & EVPP 113	Ecosphere - Introduction to Environmental Science I-Lecture (Mason Core) and Ecosphere- Introduction to Environmental Science I- Lab (Mason Core) and Ecosphere: Introduction to Environmental Science II-Lecture (Mason Core) and Ecosphere: Introduction to Environmental Science II–Lab (Mason Core)	
Select one of the following options:		15-16
Open Ocean Option:		
GEOL 364	Marine Geology	
BIOL 449	Marine Ecology	
Three additional courses from the electives list below (minimum of 9 credits)		
Coastal Ocean Option		
GEOL 363	Coastal Morphology and Processes	
EVPP 581	Estuarine and Coastal Ecology	
Three additional courses from the electives list below (minimum of 9 credits)		
Total Credits		33-34

Electives

Code	Title	Credits
GEOL 302	Mineralogy	4
GEOL 304	Sedimentary Geology	4
GEOL 308	Igneous and Metamorphic Petrology	4
GEOL 312	Invertebrate Paleontology	4
GEOL 363	Coastal Morphology and Processes	4
GEOL 364	Marine Geology	3
GEOL 565	Paleoceanography	3
BIOL 440	Field Biology [1]	4
BIOL 449	Marine Ecology	3
EVPP 350	Freshwater Ecosystems	4
EVPP 377	Applied Ecology	3
EVPP 419	Marine Mammal Biology and Conservation	3
EVPP 581	Estuarine and Coastal Ecology	3
EVPP 582	Estuarine and Coastal Ecology Laboratory	1
INTS 395	Field-Based Work [2]	1-18
Additional recommended course:		
RECR 161	Scuba Diving: Basic	2

1 When topic is Coral Reef Ecology

2 When topic is Exploring Underwater Ecology

Concentration in Paleontology (PLEO)

This concentration focuses on a broad understanding of Earth's history and the evolution of life on Earth as revealed through the fossil record. Fundamental concepts, methods and techniques of historical geology and paleontological data and analysis are also examined. This concentration may not be taken in conjunction with the Paleontology Minor. Students choosing this concentration must complete the following coursework:

Code	Title	Credits
GEOL 102 & GEOL 104	Historical Geology (Mason Core) and Historical Geology Laboratory (Mason Core)	4
GEOL 302	Mineralogy	4
GEOL 304	Sedimentary Geology	4
GEOL 312	Invertebrate Paleontology	4
GEOL 334	Vertebrate Paleontology [1]	4
BIOL 103	Introductory Biology II-Survey of Cell and Molecular Biology (Mason Core)	4
or BIOL 213	Cell Structure and Function (Mason Core)	
Select 9-10 credits from the following additional courses:		9-10
GEOL 306	Soil Science	
GEOL 317	Geomorphology	
GEOL 332	Paleoclimatology	
GEOL 364	Marine Geology	
GEOL 403	Geochemistry	
GEOL 412	Physical Oceanography	
GEOL 458	Chemical Oceanography	
GEOL 565	Paleoceanography	
Select 3-4 credits from the following:		3-4
BIOL 300	BioDiversity	
BIOL 320	Comparative Chordate Anatomy	
BIOL 331	Invertebrate Zoology	
BIOL 374	Biogeography: Space, Time, and Life	
or GGS 321	Biogeography	
BIOL 468	Vertebrate Natural History	
BIOL 470	Dinosaur Biology	
BIOL 471	Evolution	
Total Credits		36-38

1 Fulfills writing intensive requirement for this concentration only.

Mason Core and Elective Credits

In order to meet a minimum of 120 credits, this degree requires additional credits (specific credit counts by concentration are shown below), which may be applied toward any remaining Mason Core (https://catalog.gmu.edu/mason-core/) requirements, Requirements for Bachelor's Degrees (https://catalog.gmu.edu/policies/academic/undergraduate-policies/#ap-5-3-2), and elective courses. Students are strongly encouraged to consult with their advisors to ensure that they fulfill all requirements.

- EP concentration: 43-49 credits
- EVGS concentration: 38-45 credits
- GEOL concentration: 45-46 credits

- OEST concentration: 45-47 credits
- PLEO concentration: 41-44 credits

Mason Core

Some Mason Core requirements may already be fulfilled by the major requirements listed above. Students are strongly encouraged to consult their advisors to ensure they fulfill all remaining Mason Core requirements.

Code	Title	Credits
Foundation Requirements		
Written Communication (ENGH 101)		3
Oral Communication		3
Quantitative Reasoning		3
Information Technology and Computing		3
Exploration Requirements		
Arts		3
Global Understanding		3
Literature		3
Natural Science		7
Social and Behavioral Sciences		3
Western Civilization/World History		3
Integration Requirements		
Written Communications (ENGH 302)		3
Writing-Intensive [1]		3
Synthesis/Capstone [2]		3
Total Credits		40

[1] Most programs include the writing-intensive course designated for the major as part of the major requirements; this course is therefore not counted towards the total required for Mason Core.

[2] Minimum 3 credits required.

Honors

Honors in the Major

Geology majors who have completed 16 credits of math and science, including GEOL 302 Mineralogy, with a GPA of 3.00 or higher are eligible to enter the departmental honors program. Transfer students who have an incoming GPA of 3.10 or higher in math and science and a grade of 'B' or better in GEOL 302 Mineralogy are also eligible. To graduate with honors in Geology, students are required to maintain a minimum GPA of 3.00 in math and science courses and complete one of the two following sets of courses with an average GPA of 3.50 or better:

Code	Title	Credits
First Set of Courses		
GEOL 410	Research Proposal Preparation	1
GEOL 411	Geological Research	3
GEOL 420	Earth Science and Policy (Mason Core)	3
Second Set of Courses		
CLIM 408	Senior Research	3
CLIM 409	Research Internship	3
GEOL 420	Earth Science and Policy (Mason Core)	3

Accelerated Master's

Bachelor's Degree (selected)/ Environmental Science and Policy, Accelerated MS

Overview

This bachelor's/accelerated master's degree program allows academically strong undergraduates with a commitment to advance their education to obtain a Green Leaf-designated bachelor's degree and the Environmental Science and Policy, MS (https://catalog.gmu.edu/colleges-schools/science/environmental-policy/environmental-science-policy-ms/) degrees within an accelerated timeframe. Upon completion of this 141 credit accelerated program, students will be exceptionally well prepared for entry into their careers or into a doctoral program in the field or in a related discipline.

Students are eligible to apply for this accelerated program once they have earned at least 60 undergraduate credits and can enroll in up to 18 credits of graduate coursework after successfully completing 75 undergraduate credits. This flexibility makes it possible for students to complete a bachelor's and a master's in five years.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies. For more information on undergraduates enrolling in graduate courses, see AP.1.4.4 Graduate Course Enrollment by Undergraduates (https://catalog.gmu.edu/policies/academic/registration-attendance/#text).

Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in the Graduate Admission Policies section of this catalog.

Important application information and processes for this accelerated master's program can be found here (https://www2.gmu.edu/admissions-aid/how-apply/accelerated-masters/).

The GRE exam is not required for this accelerated master's program.

Students should submit three letters of recommendation (at least one from a former professor or someone with a PhD), a recent resume, a statement of interest/research goals and interests (including information on the candidate's proposed MS research), and a letter from their advisor (see Graduate Advisor section below) stating that the advisor agrees to take on the candidate as an MS student, how the candidate would be a good fit for them and why candidate's research topic would be suitable.

Students with an overall GPA of at least 3.20 who are pursuing any Green Leaf-designated major or minor may apply to this accelerated master's program after completing two semesters of chemistry (including CHEM 211 General Chemistry I (Mason Core) and CHEM 212 General Chemistry II (Mason Core) and three semesters of biology, including a course in ecology, or the equivalent, for example:

Code	Title	Credits
Select one of the following options:		13
Option 1:		
BIOL 213	Cell Structure and Function (Mason Core)	

BIOL 214	Biostatistics for Biology Majors
BIOL 308	Foundations of Ecology and Evolution
Option 2:	
EVPP 210	Environmental Biology: Molecules and Cells
EVPP 301	Environmental Science: Biological Diversity and Ecosystems
EVPP 302	Environmental Science: Biomes and Human Dimensions
EVPP 305	Environmental Microbiology Essentials
EVPP 306	Environmental Microbiology Essentials Laboratory
Option 3:	
CONS 401	Conservation Theory
CONS 402	Applied Conservation
6 credits of BIOL or CONS electives	

Graduate Advisor

By at least the beginning of their senior year, students should seek out a faculty member in the Department of Environmental Science and Policy who is willing to serve as their advisor. This advisor will aid the student in choosing the appropriate graduate courses to take and help to prepare the student for graduate studies. Admission into a research-oriented master's concentration is dependent upon securing the agreement of a faculty advisor. Faculty from a variety of departments and colleges at George Mason University (called "program faculty") can serve as master's advisors. Potential students are encouraged to speak with the graduate program coordinator in the department to obtain guidance on this issue.

Accelerated Option Requirements

After the completion of 75 undergraduate credits, students may complete 3 to 12 credits of graduate coursework that can apply to both the undergraduate and graduate degrees.

In addition to applying to graduate from the undergraduate program, students in the accelerated program must submit a bachelor's/accelerated master's transition form (available from the Office of the University Registrar (https://registrar.gmu.edu/forms/)) to the College of Science's Office of Academic and Student Affairs (https://cos.gmu.edu/about/contact-us/) by the last day to add classes of their final undergraduate semester. Students should enroll for courses in the master's program in the fall or spring semester immediately following conferral of the bachelor's degree, but should contact an advisor if they would like to defer up to one semester.

Students must maintain an overall GPA of 3.00 or higher in all graduate coursework and should consult with their faculty advisor to coordinate their academic goals.

Reserve Graduate Credits

Accelerated master's students may also take up to 6 graduate credits as reserve graduate credits. These credits do not apply to the undergraduate degree, but will reduce the master's degree by up to 6 credits. With 12 graduate credits counted toward the undergraduate degree plus the maximum 6 reserve graduate credits, the credits necessary for the graduate degree can be reduced by up to 18.

Graduate Course Suggestions

The following list of suggested courses is provided for general reference. To ensure an efficient route to graduation and post-graduation readiness, students are strongly encouraged to meet with an advisor before registering for graduate-level courses.

Code	Title	Credits
EVPP 518	Conservation Biology	3
EVPP 529	Environmental Science Communication	3
EVPP 621	Overview of Biodiversity Conservation	3
EVPP 635	Environment and Society	3

Geology, BS/Curriculum and Instruction, Accelerated MEd (Secondary Education Earth Science Concentration)

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BS in Geology (https://catalog.gmu.edu/colleges-schools/science/physics-astronomy/physics-bs/) and an MEd in Curriculum and Instruction (Secondary Education Earth Science concentration) (https://catalog.gmu.edu/colleges-schools/education-human-development/school-education/curriculum-instruction-med/)in an accelerated time-frame after satisfactory completion of a minimum of 143 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/colleges-schools/education-human-development/school-education/) for policies related to this program.

This accelerated option is offered jointly by the Department of Atmospheric, Oceanic, and Earth Sciences (https://catalog.gmu.edu/colleges-schools/science/atmospheric-oceanic-earth-sciences/) and the School of Education (https://catalog.gmu.edu/colleges-schools/education-human-development/school-education/).

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/#text).

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies (https://catalog.gmu.edu/admissions/graduate-policies/) and Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies. For information specific to this accelerated master's program, see Application Requirements and Deadlines (https://cehd.gmu.edu/bachelors-accelerated-masters-program/).

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits, and additional unit-specific criteria.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MEd program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- 3.0 overall GPA
- Completion of specific undergraduate coursework
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following which can be taken as Advanced Standing or Reserve Graduate credit (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) (to be determined by the student and their advisor):

Code	Title	Credits
EDRD 619	Literacy in the Content Areas	3
EDUC 547	Scientific Inquiry and the Nature of Science	3
SEED 522	Foundations of Secondary Education	3
SEED 540	Human Development and Learning: Secondary Education	3
SEED 573	Teaching Science in the Secondary School	3
SEED 673	Advanced Methods of Teaching Science in the Secondary School	3
SEED approved elective		

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies.

Geology, BS/Earth Systems Science, Accelerated MS

Overview

Geology, and Earth sciences more broadly, are extremely important to society and our economy as they deal with our planet, our oceans, and our climate. Degrees in Earth science are broadly useful in industry, government, conservation, and many other areas of our economy. While there are many positions in the field that only require a bachelor's degree, many employers either prefer a Master's degree, or a Master's degree can be the key to further promotion within a particular organization. This Accelerated Master's degree is designed to give students the skills and the degrees that they need to be both initially successful, and to ensure long-term advancement in their chosen professions.

Application Requirements

Applicants should be enrolled in the Geology, BS degree at Mason and have earned at least 60 credits. Previous coursework should include two semesters each of calculus, chemistry, and physics, and one semester of statistics. Applicants should have a minimum GPA of 3.00.

Applicants to all graduate programs at Mason must meet the admission standards and application requirements for graduate study as specified in the Graduate Admission Policies (https://catalog.gmu.edu/admissions/graduate-policies/) section of this catalog, excluding the GRE exam requirement (which is not required for those enrolled in the accelerated program). This includes three letters of recommendation (at least one from a former professor or someone with a PhD), a recent resume, a statement of interest/research goals (including information on the applicant's proposed MS research), and a letter from their advisor. This letter should state that the advisor agrees to take on the candidate as an MS student, addresses how the candidate would be a good fit for them, and indicate why the applicant's research topic would be suitable for study.

Accelerated Option Requirements

Students admitted to this program may take graduate courses after completing 75 undergraduate credits, and up to 12 credits of appropriate graduate coursework may be used in partial satisfaction of the requirements for the undergraduate degree. If students earn at least a 3.00 GPA in these classes, they are granted advanced standing in the master's program and must then complete an additional 24 credits to receive the master's degree. All other requirements for the Earth Systems Science, MS, must be met.

To apply these credits to the master's degree, students must request that the credits be moved from the undergraduate degree to the graduate degree using the Bachelor's/Accelerated Master's Transition form found on the Office of the University Registrar's website (https://registrar.gmu.edu/forms/).

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7). For policies governing all graduate programs, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/).

Reserve Graduate Credit

Undergraduate students may also take up to 6 additional and appropriate graduate credits as reserve graduate credit. These credits do not apply to the undergraduate degree, but will reduce the subsequent master's degree credits accordingly (e.g., with 12 credits counted toward the undergraduate and graduate degrees plus the maximum 6 reserve credits for the master's, an MS could be completed with 12 post-bachelor's credits). The ability to take courses for reserve graduate credit is available to all high achieving undergraduates with the permission of the department.

Graduate Course Suggestions

Students should consult with an advisor before registering for graduate credits.

Code	Title	Credits
GEOL 504	Sedimentary Geology	4
GEOL 506	Soil Science	3
GEOL 513	Hydrogeology	3
GEOL 521	Geology of Energy Resources	3
GEOL 532	Paleoclimatology	3
GEOL 534	Vertebrate Paleontology	4
GEOL 536	Paleontology Seminar	1-2
GEOL 553	Field Mapping Techniques	3

Geoinformatics and Geospatial Intelligence, MS

Banner Code: SC-MS-GEOI

Ruixin Yang, Graduate Coordinator

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The program addresses the emerging demand for scientists trained in the collection, organization, analysis, and dissemination of information about physical features, man-made structures, moving objects, people, and events that are geo-referenced or geo-located. This program focuses primarily on the computational approaches that support the synthesis and analysis of diverse types of data in order to identify and monitor complex events and phenomena that manifest over space and time. While geospatial intelligence has a strong Department of Defense connotation, the principles behind it have a significant dual use potential, addressing the needs of a broader audience, ranging for example from intelligent navigation in urban spaces to emergency response systems for natural and man-made disasters.

The MS is designed to expose students to fundamental theoretical principles and practical applications involving:

- Geographic Information Science
- Digital image analysis as it applies to geoinformatics and geospatial intelligence
- Computational principles for geoinformatics and intelligence

Admissions & Policies

Admissions

University-wide admissions policies can be found in Graduate Admissions Policies.

To apply for this program, please complete the George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now/).

Eligibility and Application Requirements

Applicants for this master's should hold a BA or BS degree in a discipline related to the program's theme from an institution of higher education accredited by a Mason-recognized U.S. institutional accrediting agency or international equivalent with a minimum GPA of 3.00, including courses in differential and integral calculus. A working knowledge of a computer programming language is a plus. When the background of an individual student does not meet the program's requirements, remedial or preparatory courses tailored to student's needs may be recommended. To apply, prospective students should complete the George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now/). Official transcripts from each college and graduate institution attended, a current résumé, and a goals statement will be required.

Applicants will also need three letters of recommendation and an official report of scores obtained on the GRE-GEN. The GRE requirement for admission may be waived if the student holds a master's degree from an institution of higher education accredited by a Mason-recognized U.S. institutional accrediting agency or international equivalent. TOEFL scores are required of all international applicants.

Policies

For policies governing all graduate programs, see AP.6 Graduate Policies.

Secondary Program Options

Students enrolled in this master's program have the option of adding a secondary graduate certificate program. Depending upon the secondary program chosen, many courses may be applicable to both the certificate and the master's. Before adding a secondary program, students are advised to carefully review AP.6.8 Requirements for Graduate Certificates and AP.6.9 Requirements for Master's Degrees. Faculty advisors should be contacted for further guidance and for graduate certificate program suggestions.

Requirements

Degree Requirements

Total credits: 33

Students should refer to the Admissions & Policies tab for specific policies related to this program.

Core Courses

Code	Title	Credits
GGS 550	Geospatial Science Fundamentals	3
GGS 553	Geographic Information Systems	3
GGS 579	Remote Sensing	3
GGS 664	Spatial Data Structures	3
GGS 684	Selected Topics in Geospatial Intelligence	3
GGS 685	Capstone Course in Geoinformatics	3
GGS 787	Scientific Data Mining for Geoinformatics	3
Total Credits		21

Thesis or Non-thesis Option

Code	Title	Credits
Students choose the culminating experience of either a thesis or a project and a comprehensive exam (either must total 3 credits). The same graduate-level quality will be expected from either option:		3
Thesis Option		
GGS 799	Thesis (3 credits)	
Non-thesis Option		
GGS 700	Comprehensive Exam (1 credit)	
GGS 798	Master's Research Project (2 credits)	
Total Credits		3

Electives

Code	Title	Credits
Select three courses from the groupings below, with no more than two courses from a single group (courses must be taken from at least two groups): [1]		9
Image Analysis:		
GGS 562	Photogrammetry	
GGS 622	Drone Remote Sensing	
GGS 626	Physical Fundamentals of Remote Sensing	
GGS 629	Remote Sensing of the Environment and Earth System	
GGS 680	Earth Image Processing	
GGS 740	Hyperspectral Imaging Systems	
GGS 760	Advanced Topics in Remote Sensing	
GGS 840	Hyperspectral Imaging Applications	
Geographic Information Science:		
GGS 550	Geospatial Science Fundamentals	
GGS 563	Advanced Geographic Information Systems	
GGS 653	GIS Analysis and Application	
GGS 675	Location Science	
GGS 772	Cloud Geographic Information Systems	
GGS 791	Advanced Spatial Statistics	
Computational Geoinformatics:		
GGS 650	Introduction to GIS Algorithms and Programming	
GGS 671	Algorithms and Modeling in GIS	
GGS 681	Social Media Analysis	
GGS 692	Web-based Geographic Information Systems	
GGS 754	Earth Science Data and Advanced Data Analysis	
GGS 773	Interoperability of Geographic Information Systems	
Total Credits		9

[1] Course selections must be approved by the program coordinator.

Accelerated Master's

Bachelor's Degree (any)/Geoinformatics and Geospatial Intelligence, Accelerated MS

Overview

Offered by the Department of Geography and Geoinformation Sciences (GGS) in the College of Science, this bachelor's/accelerated master's degree program enables highly qualified undergraduates to obtain any Mason bachelor's degree and the Geoinformatics and Geospatial Intelligence, MS degrees within an accelerated timeframe. The program strategy enables students to undertake graduate coursework during their final year in the bachelor's degree. In the case of a 120 credit bachelor's program, this accelerated master's option can be completed as a 141 credit program. This accelerated pathway prepares students for professional careers where geoinformation management, geographic analysis, and geointelligence and geovisualization are of importance.

Students in this accelerated degree program must fulfill all university requirements for the bachelor's program and the Geoinformatics and Geospatial Intelligence, MS. While the information below is largely comprehensive, students are strongly encouraged to also review AP.6.7 Bachelor's/Accelerated Master's Degrees.

Application Requirements

Students with an overall GPA of at least 3.0 may apply for provisional acceptance into this accelerated master's program after completing at least 60 undergraduate credits. Additionally, students must have completed the following courses with a combined GPA of 3.0 or better: GGS 300 Spatial Quantitative Methods, GGS 311 Geographic Information Systems, and any one upper level GGS-prefixed course.

Applicants to all graduate programs at Mason must meet the admission standards and application requirements for graduate study as specified in the Admissions section of this catalog. However, this accelerated master's does not require GRE test scores, letters of recommendation, or a statement of interest.

While being undergraduate students, accelerated master's students must complete the graduate courses indicated on their Accelerated Master's Program Application (obtained from the Office of Academic and Student Affairs) with a minimum grade of B in each course. They must maintain a minimum GPA of 3.0 in all coursework and in coursework applied to their major.

At the beginning of their final undergraduate semester, they must submit the Bachelor's/Accelerated Master's Transition Form (found on the Office of the University Registrar website). Students must begin their master's program in the semester immediately following the term of undergraduate degree conferral. Students should consult with their faculty advisor in the Department of Geography and Geoinformation Science and the Office of Academic and Student Affairs to obtain further guidance.

Accelerated Option Requirements

Students admitted to this program may start taking graduate courses after completing 75 undergraduate credits. It is recommended that students register for one of the following courses in their first semester of accelerated coursework:

Code	Title	Credits
GGS 550	Geospatial Science Fundamentals	3
GGS 553	Geographic Information Systems	3
GGS 579	Remote Sensing	3
GGS 684	Selected Topics in Geospatial Intelligence	3

Including the course chosen above, up to 12 credits of graduate coursework may be applied to both undergraduate degree and the master's degree. If students earn at least a B in these classes, they are granted advanced standing in the master's program and must then complete 21 additional credits to receive the master's degree. All other master's degree requirements must be met.

Reserve Graduate Credit

During the bachelor's degree status, students may take up to 6 graduate credits as reserve graduate credit. These credits do not apply to the undergraduate degree, but will reduce the subsequent master's degree

credits accordingly. With 12 credits counted toward the undergraduate degree plus the maximum 6 reserve credits, the credits necessary for the graduate degree can be reduced by up to 18. The ability to take courses for reserve graduate credit is available to all high achieving undergraduates with the permission of the department. To apply the reserved credits to the master's degree, students must request their transfer from the undergraduate degree to the graduate degree via the Bachelor's/Accelerated Master's Transition Form found on the Office of the University Registrar website.

GeoManagement Undergraduate Certificate

Banner Code: SC-CERB-GEOM

Nathan R. Burtch, Undergraduate Coordinator

2413 Exploratory Hall
Fairfax Campus

Phone: 703-993-1207
Email: ggs@gmu.edu
Website: science.gmu.edu/academics/departments-units/geography-geoinformation-science/geomanagement-undergraduate

Considering our global environment, professionals working on large-scale GIS projects often find it only natural to couple management and marketing topics with geography. This certificate accommodates students who are pursuing a degree in the Department of Geography and Geoinformation Science who also wish to acquire more knowledge on how to manage people and organizations dealing with GIS in a global economy. By understanding marketing terms, financial matters, and also having a good understanding of how to manage people, students will be well prepared to face challenges in multidisciplinary GIS-oriented environments.

All courses are available online; further information can be found with Mason Online (http://masononline.gmu.edu/).

This certificate may be pursued on a full-time or part-time basis.

Admissions & Policies

Admissions

University-wide admissions policies can be found in Undergraduate Admissions Policies.

To apply for this program, please complete the George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now/).

Policies

For policies governing all undergraduate programs, see AP.5 Undergraduate Policies.

Requirements

Certificate Requirements

Total credits: 24-25

This certificate may be pursued on a full-or part-time basis.

Students should refer to the Admissions & Policies tab for specific policies related to this program.

Management

Students in this certificate can take the following MBUS courses for certificate credit without sophomore standing (listed as a course prerequisite):

Code	Title	Credits
Select two courses from the following:		6
MBUS 300	Accounting in a Global Economy	
MBUS 301	Managing People and Organizations in a Global Economy	
MBUS 303	Marketing in a Global Economy	
Total Credits		6

Geoinformation Science

Code	Title	Credits
GGS 101	Major World Regions (Mason Core)	3
or GGS 103	Human Geography (Mason Core)	
GGS 102	Physical Geography (Mason Core)	3-4
or GGS 121	Dynamic Atmosphere and Hydrosphere (Mason Core)	
GGS 311	Geographic Information Systems	3
GGS 312	Physical Climatology	3
GGS 315	Geography of the United States	3
GGS 380	Geography of Virginia	3
Total Credits		18-19

Geospatial Intelligence Graduate Certificate

Banner Code: SC-CERG-GI

Ruixin Yang, Graduate Coordinator

2409 Exploratory Hall
Fairfax Campus

Phone: 703-993-3615
Email: ggs@gmu.edu
Website: science.gmu.edu/academics/departments-units/geography-geoinformation-science/geospatial-intelligence-graduate

This graduate certificate is for persons employed in geospatial intelligence applications (i.e., federal agency and/ or corporate or association personnel) or those interested in entering this field. Our program offers fundamental knowledge on geospatial intelligence and the ability to apply this knowledge to a diverse range of constantly

evolving geospatial intelligence situations. This graduate certificate has been accredited by the United States Geospatial Intelligence Foundation.

The majority of courses required for this certificate are also available online. For more information visit Mason Online (http://masononline.gmu.edu/).

The graduate certificate in geospatial intelligence may be pursued on a part-time or full-time basis, and qualifies for Title IV Federal Financial Aid.

Admissions & Policies

Admissions

University-wide admissions policies can be found in the Graduate Admissions Policies section of this catalog.

Applicants to this graduate certificate program should hold a BA or BS degree in a discipline related to the certificate's theme from an institution of higher education accredited by a Mason-recognized U.S. institutional accrediting agency or international equivalent with a minimum GPA of 3.00. To apply, prospective students should complete the George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now/). In addition, applicants to this certificate program must submit a current résumé, and GRE scores. Letters of recommendation are not required but will considerably strengthen an application, if available. TOEFL scores are required of all international applicants.

Applicants should have undergraduate backgrounds that include courses in differential and integral calculus, and they should possess working knowledge of a computer programming language. Depending on the background of the individual student, the coordinator may recommend remedial or preparatory courses tailored to the student's needs.

Policies

For policies governing all graduate programs, see AP.6 Graduate Policies.

Premium Tuition Rate

This professional certificate program charges students at a differential (premium) tuition rate. This rate applies to all students who enroll in this certificate program, regardless of in-state or out-of-state status. The differential tuition will be used to fund continuing improvements in the departmental computational facilities used to support the certificate program.

Transfer of Credit

Students may transfer no more than 3 credits into the certificate program with the approval of the academic director.

Requirements

Certificate Requirements

Total credits: 18

This certificate may be pursued on a full-or part-time basis.

Students should refer to the Admissions & Policies tab for specific policies related to this program.

Core Courses

The mandatory core courses reflect the three key science emphases of this program: geospatial image analysis, spatial analysis, and information technology:

Code	Title	Credits
GGS 553	Geographic Information Systems	3
GGS 680	Earth Image Processing	3
GGS 684	Selected Topics in Geospatial Intelligence	3
GGS 685	Capstone Course in Geoinformatics	3
Select one from the following:		3
GGS 650	Introduction to GIS Algorithms and Programming	
GGS 664	Spatial Data Structures	
GGS 692	Web-based Geographic Information Systems	
Total Credits		15

Elective

Code	Title	Credits
Select one additional elective course from the following:		3
GGS 563	Advanced Geographic Information Systems	
GGS 579	Remote Sensing	
GGS 631	Spatial Agent-Based Models of Human-Environment Interactions	
GGS 650	Introduction to GIS Algorithms and Programming	
GGS 658	Terrain Mapping	
GGS 664	Spatial Data Structures	
GGS 671	Algorithms and Modeling in GIS	
GGS 675	Location Science	
GGS 681	Social Media Analysis	
GGS 692	Web-based Geographic Information Systems	
GGS 740	Hyperspectral Imaging Systems	
GGS 772	Cloud Geographic Information Systems	
GGS 787	Scientific Data Mining for Geoinformatics	
Total Credits		3

Remote Sensing and Image Processing Graduate Certificate

Banner Code: SC-CERG-RSIP

Ruixin Yang, Graduate Coordinator

2409 Exploratory Hall
Fairfax Campus

Phone: 703-993-3615
Email: ggs@gmu.edu
Website: science.gmu.edu/academics/departments-units/geography-geoinformation-science

This certificate program focuses on the skills needed to take advantage of the enormous increase in the availability and use of remotely sensed data related to the Earth. Ideal candidates for this certificate are those who have a background in Earth and environmental sciences and are working in or planning to enter into the field of remote sensing, Earth observing, or image processing.

The Remote Sensing and Image Processing Graduate Certificate may be pursued on a part-time or full-time basis.

Admissions & Policies

Admissions

University-wide admissions policies can be found in the Graduate Admissions Policies section of this catalog.

To apply for this program, please complete the George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now/).

Applicants to this certificate program must submit a current résumé. TOEFL scores are required of all international applicants who do not hold at least a bachelor's degree from an institution of higher education accredited by a Mason-recognized U.S. institutional accrediting agency or international equivalent.

Applicants should hold a BA or BS degree in a discipline related to the science and applications of remote sensing from an institution of higher education accredited by a Mason-recognized U.S. institutional accrediting agency or international equivalent with a minimum GPA of 3.00. Applicants should have some prior education or training in remote sensing or image processing. Students with a background in one of the physical sciences (physics, chemistry, atmospheric science, hydrology, or geology), geography, or environmental science will be particularly well-suited to undertake this program. Applicants should have an undergraduate background that includes courses in differential and integral calculus, and they should possess working knowledge of a computer programming language.

Policies

For policies governing all graduate programs, see AP.6 Graduate Policies.

Premium Tuition Rate

This professional certificate program charges students at a differential (premium) tuition rate. This rate applies to all students who enroll in this certificate program, regardless of in-state or out-of-state status. The differential tuition will be used to fund continuing improvements in the departmental computational facilities used to support the certificate program.

Requirements

Certificate Requirements

Total credits: 15

This certificate may be pursued on a full-or part-time basis.

Students should refer to the Admissions & Policies tab for specific policies related to this program.

Core Courses

Code	Title	Credits
GGS 579	Remote Sensing	3
GGS 680	Earth Image Processing	3
GGS 740	Hyperspectral Imaging Systems	3
Total Credits		9

Electives

Code	Title	Credits
Select two electives from the following:		6
GGS 562	Photogrammetry	
GGS 754	Earth Science Data and Advanced Data Analysis	
GGS 756	Physical Principles of Remote Sensing	
GGS 760	Advanced Topics in Remote Sensing	
GGS 840	Hyperspectral Imaging Applications	
Total Credits		6

Urban Informatics Minor

Banner Code: UINF

Nathan R. Burtch, Undergraduate Coordinator

2413 Exploratory Hall
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Website: ggs.gmu.edu

With urban spaces becoming data-rich environments, the goal of this minor is to provide students with the ability to use large-scale data from a variety of sources to understand and address real-world challenges in the urban context. In combining courses that address spatial analysis and mapping, data science, and social sciences, this minor provides the background necessary to investigate data-driven problems in relation to urban scenarios. A capstone project will provide students with the opportunity to address a real-world issue through focused study and applied research under the direction of a faculty member and in collaboration with stakeholders.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor. For policies governing all minors, see AP.5.3.4 Minors.

Students must complete all coursework with a minimum GPA of 2.00.

For policies governing all undergraduate programs, see AP.5 Undergraduate Policies.

Requirements

Minor Requirements

Total credits: 18

Students should refer to the Admissions & Policies tab for specific policies related to this program.

Core Courses

Code	Title	Credits
CDS 303	Scientific Data Mining	3
GGS 306	Urban Geography	3
Total Credits		6

Electives

Code	Title	Credits
Select one course from each of the three groups below:		9
Spatial Analysis and Mapping Group		
GGS 300	Spatial Quantitative Methods	
GGS 311	Geographic Information Systems	
GGS 357	Urban Planning	
GGS 462	Web-based Geographic Information Systems	
GGS 463	RS: GIS Analysis and Application	
Data Science Group		
CDS 201	Introduction to Computational Social Science	
CDS 292	Introduction to Social Network Analysis (Mason Core)	
CDS 302	Scientific Data and Databases	
Social Science and Policy Group		
ANTH 382	Urban Anthropology (Mason Core)	
GOVT 464	Issues in Public Policy and Administration (With specific title "Urban Economic Development in the Smart Growth Era")	
SOCI 332	The Urban World (Mason Core)	
Total Credits		9

Capstone

Code	Title	Credits
A capstone project will provide students with the opportunity to address a real-world issue through focused study and applied research under the direction of a faculty member and in collaboration with stakeholders.		
Select one capstone course:		3
GGS 415	Seminar in Geographic Thought and Methodology	
GGS 480	GGS Internship	
CDS 490	Directed Study and Research	
CDS 491	Internship	
Total Credits		3

Department of Mathematical Sciences

Phone: 703-993-1460
Website: math.gmu.edu

Administration

- David Walnut, Chair
- Joanna Jauchen, Associate Chair for Teaching and Equity
- Maria Emelianenko, Director of Graduate Studies
- Catherine Sausville, Director of Undergraduate Studies

The Department of Mathematical Sciences offers undergraduate and graduate degree programs in mathematics for students with various interests and career goals. Students may pursue the standard program or a program focused on actuarial mathematics, applied mathematics, mathematics education, or mathematical statistics. Students may complement other interests by taking a double major in mathematics and a related field, such as chemistry, economics, physics, computer science, or engineering.

Math Tutorial

The department offers a Tutorial Program (http://math.gmu.edu/tutorial-registration.php) for students who do not place into the math course they need. Successful completion of the relevant program enables students to enroll in MATH 105 Precalculus Mathematics, MATH 108 Introductory Calculus with Business Applications (Mason Core), or MATH 125 Discrete Mathematics I (Mason Core).

Math Tutoring Center

The department manages the Math Tutoring Center (http://math.gmu.edu/tutor-center.php?_ga=1.265621830.873783809.1452007880), which offers free tutoring for first- and second-year math courses. Tutoring is given by advanced mathematics students and is available on a drop-in basis with daytime and evening hours throughout the semester.

Certificate in College Teaching

A student enrolled in the Mathematics, MS or Mathematics, PhD who is primarily interested in pursuing a career in undergraduate education at the college level is encouraged to consider enrolling in the College Teaching Graduate Certificate offered through the College of Humanities and Social Sciences.

Credit can be earned for HE 685 Practicum by working one semester as a graduate teaching assistant in the Department of Mathematical Sciences.

Faculty

Department Faculty

Professors

Anderson, Colonna, Emelianenko, Goldin, Lawrence, Morris, Nelson, Sachs, Sander, Sauer (COS distinguished scholar), Seshaiyer, Soltan, Walnut, Wanner, Warma

Associate Professors

Antil, Agnarsson, Bulancea, Epstein, Griva, Holzer, Lamba, Lawton

Assistant Professors

Berry, Bray, Carchedi, De la Pena, Eckley, Khankan, Lukyanenko, Macrina, Rautenberg, Rebhuhn-Glanz (R-G)

Instructors

Andreani, Coleson, Crossin, Jauchen, O'Brien, Sausville

Affiliates

Nash

Emeriti

Alligood, Cabell, Levy, Lin, Polyak, Saperstone, Shapiro, Singman

Requirements & Policies

Policies

Writing-Intensive Requirement

Mason policy requires all students to complete at least one course designated as "writing intensive" in their major. Students majoring in mathematics fulfill this requirement by successfully completing MATH 300 Introduction to Advanced Mathematics.

Teacher Licensure

Students who wish to become teachers should consult the College of Education and Human Development section of this catalog and attend an information session early in their studies. For more information, visit the Graduate School of Education (http://gse.gmu.edu/).

Information on Undergraduate MATH Courses

Admissions & Policies

- For Mathematics Majors
- For Non-mathematics Majors
- For Both Mathematics and Non-mathematics Majors

For Mathematics Majors

The following cannot be used as substitutes for any requirements of the major in mathematics:

Code	Title	Credits
MATH 104	Trigonometry and Transcendental Functions	2
MATH 105	Precalculus Mathematics	4
MATH 106	Quantitative Reasoning (Mason Core)	3
MATH 108	Introductory Calculus with Business Applications (Mason Core)	3
MATH 110	Introductory Probability (Mason Core)	3
MATH 111	Linear Mathematical Modeling (Mason Core)	3
MATH 112	Discrete Mathematics for IT	3
MATH 271	Mathematics for the Elementary School Teachers I	3
MATH 272	Mathematics for the Elementary School Teachers II (Mason Core)	3

For Non-mathematics Majors

- MATH 108 Introductory Calculus with Business Applications (Mason Core), MATH 110 Introductory Probability (Mason Core), and MATH 111 Linear Mathematical Modeling (Mason Core) are designed for students in the social and behavioral sciences.
- Liberal arts majors are advised to take MATH 106 Quantitative Reasoning (Mason Core), MATH 110 Introductory Probability (Mason Core), or MATH 111 Linear Mathematical Modeling (Mason Core).
- Students in the natural sciences who plan to do graduate work are advised to add courses from:

Code	Title	Credits
MATH 313	Introduction to Applied Analysis	3
MATH 314	Introduction to Applied Mathematics	3
MATH 351	Probability	3
MATH 352	Statistics	3
MATH 441	Deterministic Operations Research	3
MATH 442	Stochastic Operations Research	3
MATH 446	Numerical Analysis I	3
MATH 447	Numerical Analysis II	3

For Both Mathematics and Non-mathematics Majors

- MATH 105 Precalculus Mathematics, MATH 108 Introductory Calculus with Business Applications (Mason Core), MATH 113 Analytic Geometry and Calculus I (Mason Core), MATH 123 Calculus with Algebra/Trigonometry, Part A, MATH 125 Discrete Mathematics I (Mason Core) have a qualifying score on the Math Placement Test (http://math.gmu.edu/placement_test.php) as a prerequisite. The Math Placement Test (http://math.gmu.edu/placement_test.php) is given frequently; for the schedule, check the Department of Mathematical Sciences website (http://math.gmu.edu/).
- The sequence MATH 123 Calculus with Algebra/Trigonometry, Part A and MATH 124 Calculus with Algebra/Trigonometry, Part B (Mason Core) is an option for students who need MATH 113 Analytic Geometry and Calculus I (Mason Core) but believe they are not prepared for that course. In these two 3-credit courses, students will learn fundamental algebra and calculus so that upon completion of the sequence, students will be prepared for MATH 114 Analytic Geometry and Calculus II.
- Students who do not achieve the necessary test score needed to take a math course may enroll in the Tutorial Program (http://math.gmu.edu/tutorial-registration.php), or they may study and retake the test on their own. A student who does not complete the Tutorial Program (http://math.gmu.edu/tutorial-registration.php) or does not achieve the necessary score on the Math Placement Test (http://math.gmu.edu/placement_test.php) will not be able to enroll in the class. Depending on their test scores, students who do not place into MATH 113 Analytic Geometry and Calculus I (Mason Core) will be advised to take MATH 105 Precalculus Mathematics or MATH 123 Calculus with Algebra/Trigonometry, Part A , or enroll in the Tutorial Program to prepare for MATH 105.
- MATH 104 Trigonometry and Transcendental Functions and MATH 105 Precalculus Mathematics do not fulfill the Mason Core 'Quantitative Reasoning' requirement.
- Students may not receive credit for both MATH 214 Elementary Differential Equations and MATH 216 Theory of Differential Equations; both MATH 213 Analytic Geometry and Calculus III and MATH 215 Analytic Geometry and Calculus III (Honors); both MATH 351 Probability and STAT 344 Probability

and Statistics for Engineers and Scientists I; and
both MATH 352 Statistics and STAT 354 Probability and Statistics for Engineers and Scientists II.

- After receiving a grade of 'C' or better in one of the courses listed below on the left, students may not receive credit for the corresponding course on the right:

Course	May Not Receive Credit for
MATH 113 or MATH 123	MATH 105 or MATH 108
MATH 351 or STAT 344	MATH 110
MATH 441	MATH 111
MATH 125	MATH 112

Programs

- Actuarial Sciences Graduate Certificate
- Mathematics Minor
- Mathematics for School of Business Students Minor
- Mathematics, BA
- Mathematics, BS
- Mathematics, MS
- Mathematics, PhD

Actuarial Sciences Graduate Certificate

Banner Code: SC-CERG-ACTS

Douglas Eckley

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Website: science.gmu.edu/academics/departments-units/mathematical-sciences/actuarial-sciences-graduate-certificate

The Actuarial Sciences Graduate Certificate is designed to serve students and professionals who are interested in pursuing careers as actuaries. The course content provides students with specific training related to the following exams administered by the Society of Actuaries (SOA):

• Financial Mathematics Exam
• Long-Term Actuarial Mathematics Exam
• Short-Term Actuarial Mathematics Exam
• Statistics for Risk Modeling Exam
• Investment and Financial Markets Exam

The courses also provide a solid foundation for the corresponding Casualty Actuary Society (CAS) exams. Passing the first professional exam, i.e. the SOA Probability Exam, is equivalent to meeting the prerequisites for the certificate courses in the area of probability and statistics.

The Actuarial Sciences Graduate Certificate may only be pursued on a part-time basis.

Admissions & Policies

Admissions

University-wide admissions policies can be found in the Graduate Admissions Policies section of this catalog.

To apply for this program, please complete the George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now/).

Interested applicants must submit three letters of recommendation. GRE scores are not required.

Students intending to pursue the Actuarial Sciences Graduate Certificate must have three semesters of calculus, a course in linear algebra (equivalent to MATH 203 Linear Algebra), a calculus-based course in probability (equivalent to MATH 351 Probability), and statistics (equivalent to MATH 352 Statistics). Passing the first professional exam, i.e. the SOA Probability Exam, is also sufficient preparation for the certificate program.

Policies

For policies governing all graduate programs, see AP.6 Graduate Policies.

Requirements

Certificate Requirements

Total credits: 18

This certificate may be pursued on a part-time basis only.

Core Courses

Code	Title	Credits
MATH 551	Regression and Time Series	3
MATH 553	Advanced Mathematical Statistics in Actuarial Sciences	3
MATH 554	Financial Mathematics	3
MATH 555	Actuarial Modeling I	3
MATH 557	Financial Derivatives	3
MATH 653	Construction and Evaluation of Actuarial Models I	3
Total Credits		18

Preparation for the SOA Exams

The graduate certificate coursework provides preparation for the SOA exams as follows:

MATH 551 Regression and Time Series and MATH 553 Advanced Mathematical Statistics in Actuarial Sciences combined: Statistics for Risk Modeling Exam

MATH 554 Financial Mathematics: Financial Mathematics Exam

MATH 555 Actuarial Modeling I: Long-Term Actuarial Mathematics Exam

MATH 557 Financial Derivatives: Investment and Financial Markets Exam

MATH 653 Construction and Evaluation of Actuarial Models I: Short-Term Actuarial Mathematics Exam

The SOA exams overlap significantly with the Casualty Actuarial Society ("CAS") exams.

Counting Actuarial Courses for Other Mathematics Degrees

A student enrolled in the Actuarial Sciences Graduate Certificate and another graduate degree program in mathematics can count actuarial mathematics courses toward the master's or doctoral degree according to the following rules:

- None of the core actuarial mathematics courses can count toward the Mathematics, PhD (https://catalog.gmu.edu/colleges-schools/science/mathematical-sciences/mathematics-phd/)
- None of the actuarial mathematics courses MATH 551 Regression and Time Series, MATH 554 Financial Mathematics and MATH 655 Pension Valuation can count toward the Mathematics, MS (https://catalog.gmu.edu/colleges-schools/science/mathematical-sciences/mathematics-ms/)
- The two actuarial mathematics courses MATH 555 Actuarial Modeling I and MATH 653 Construction and Evaluation of Actuarial Models I, can count toward the Mathematics, MS (https://catalog.gmu.edu/colleges-schools/science/mathematical-sciences/mathematics-ms/) provided that all other courses counted toward that degree are MATH courses. An exception can be made if the student wishes to count only one of these two courses toward the Mathematics, MS (https://catalog.gmu.edu/colleges-schools/science/mathematical-sciences/mathematics-ms/). In this case, at most one other non-MATH course can be counted toward the degree with approval of the graduate coordinator. An additional exception is made if the student has completed the actuarial sciences certificate before being admitted to the MS degree program: in this case, any 4 of the 6 core courses can count toward the MS degree.

Counting Actuarial Courses toward the Statistical Science, MS Degree

A student enrolled in this certificate and in the Statistical Science, MS (https://catalog.gmu.edu/colleges-schools/engineering/statistics/statistical-science-ms/) can count MATH 555 Actuarial Modeling I as an approved non-STAT elective course and can count MATH 653 Construction and Evaluation of Actuarial Models I as a STAT elective when designing a curriculum for this degree. The full curriculum should be designed in consultation with the student's Statistics Department advisor.

Mathematics for School of Business Students Minor

Banner Code: MBUS

Academic Advising

Website: science.gmu.edu/academics/departments-units/mathematical-sciences/advising-and-student-support

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor. For policies governing all minors, see AP.5.3.4 Minors.

Students must complete all coursework with a minimum GPA of 2.00.

Requirements

Minor Requirements

Total credits: 20

Students should refer to the Admissions & Policies tab for specific policies related to this program.

Coursework

Code	Title	Credits
MATH 113	Analytic Geometry and Calculus I (Mason Core)	4
MATH 114	Analytic Geometry and Calculus II	4
MATH 203	Linear Algebra	3
MATH 213	Analytic Geometry and Calculus III	3
MATH 351	Probability	3
Total Credits		17

Additional Mathematics Course

Code	Title	Credits
Select one from the following:		3
MATH 352	Statistics	
MATH 441	Deterministic Operations Research	
MATH 554	Financial Mathematics	
Total Credits		3

Mathematics Minor

Banner Code: MATH

Academic Advising

Website: science.gmu.edu/academics/departments-units/mathematical-sciences/advising-and-student-support

This minor allows academically strong students to supplement their major degree program with advanced knowledge of mathematics.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor. For policies governing all minors, see AP.5.3.4 Minors.

Students must earn a minimum 2.00 GPA in courses applied to the minor.

Requirements

Minor Requirements

Total credits: 21

Students should refer to the Admissions & Policies tab for specific policies related to this program.

Required Courses

Code	Title	Credits
MATH 125	Discrete Mathematics I (Mason Core)	3
MATH 203	Linear Algebra	3
MATH 213	Analytic Geometry and Calculus III	3
or MATH 215	Analytic Geometry and Calculus III (Honors)	
MATH 214	Elementary Differential Equations	3
or MATH 216	Theory of Differential Equations	
MATH 300	Introduction to Advanced Mathematics	3
Total Credits		15

[1] Students must earn a 2.00 or higher in either MATH 290 or MATH 300 Introduction to Advanced Mathematics.

Mathematics Elective

Code	Title	Credits
Select 3 credits from the following: [1]		3
MATH 315	Advanced Calculus I	
MATH 321	Abstract Algebra	
MATH 322	Advanced Linear Algebra	
Total Credits		3

[1] Students must earn a 2.00 or higher

General Elective

Code	Title	Credits
Select 3 credits from the following:		3
One 3-credit math course at the 300 or 400 level [1]		
STAT 344	Probability and Statistics for Engineers and Scientists I	
Total Credits		3

[1] Excluding MATH 400 History of Math (Topic Varies) (Mason Core)

Mathematics, BA

Banner Code: SC-BA-MATH

Academic Advising

Website: science.gmu.edu/academics/departments-units/mathematical-sciences/advising-and-student-support

This bachelor's program provides exciting opportunities for students interested in mathematics.

Teacher Licensure

Interested students should attend an information session early in their studies. For more information, visit the Graduate School of Education's website (http://gse.gmu.edu/).

Students majoring in biology who wish to pursue a career teaching secondary school may consider applying for the Secondary Education - Mathematics (6-12) Undergraduate Certificate offered by the College of Education and Human Development as an option in seeking an initial Virginia teaching license.

Other routes to licensure include the Mathematics, BA or BS/Curriculum and Instruction, Accelerated MEd (Secondary Education Mathematics concentration) or select traditional Master's programs. Please contact the undergraduate advisor in the College of Education and Human Development for more information.

Admissions & Policies

Admissions

University-wide admissions policies can be found in the Undergraduate Admissions Policies section of this catalog.

To apply for this program, please complete the George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now/).

Policies

Students must fulfill all Requirements for Bachelor's Degrees, including the Mason Core. As outlined in the Requirements tab, students in this bachelor's program must also complete the additional College Requirements for the BA Degree.

MATH 300 Introduction to Advanced Mathematics meets the writing intensive requirement for this major.

For policies governing all undergraduate programs, see AP.5 Undergraduate Policies.

Graduating seniors are required to have an exit interview.

Course Recommendations and Policies

Students intending to enter graduate school in mathematics are strongly advised to take MATH 315 Advanced Calculus I and MATH 321 Abstract Algebra.

Students may not receive credit for both MATH 214 Elementary Differential Equations and MATH 216 Theory of Differential Equations; both MATH 213 Analytic Geometry and Calculus III and MATH 215 Analytic Geometry and Calculus III (Honors); both MATH 351 Probability and STAT 344 Probability and Statistics for Engineers and Scientists I; and both MATH 352 Statistics and STAT 354 Probability and Statistics for Engineers and Scientists II.

After receiving a grade of 'C' or better in one of the courses listed below on the left, students may not receive credit for the corresponding course on the right:

Course	May Not Receive Credit for
MATH 113 or MATH 123	MATH 105 or MATH 108
MATH 351 or STAT 344	MATH 110

MATH 441	MATH 111
MATH 125	MATH 112

Requirements

Degree Requirements

Total credits: minimum 120

Students should refer to the Admissions & Policies tab for specific policies related to this program.

A maximum of 6 credits of grades below 2.00 in coursework designated MATH or STAT may be applied toward the major.

Required Courses

Code	Title	Credits
Core Courses		
MATH 113	Analytic Geometry and Calculus I (Mason Core)	4
MATH 114	Analytic Geometry and Calculus II	4
MATH 125	Discrete Mathematics I (Mason Core)	3
MATH 203	Linear Algebra	3
MATH 213	Analytic Geometry and Calculus III	3
or MATH 215	Analytic Geometry and Calculus III (Honors)	
MATH 214	Elementary Differential Equations	3
or MATH 216	Theory of Differential Equations	
MATH 300	Introduction to Advanced Mathematics [1]	3
MATH 322	Advanced Linear Algebra	3
Total Credits		26

[1] Fulfills the writing intensive requirement.

In addition to completing the core courses above, students must complete 12 additional traditional mathematics credits in MATH courses numbered above 300.

Code	Title	Credits
Select 12 credits in MATH 300-level or higher [1]		12
Total Credits		12

[1] Excluding MATH 400 History of Math (Topic Varies) (Mason Core)

Mason Core and Elective Credits

In order to meet a minimum of 120 credits, this degree requires an additional 82 credits which may be applied toward any remaining Mason Core requirements (outlined below), Requirements for Bachelor's Degrees, College Requirements for the BA Degree (outlined below), and elective courses. Students are strongly encouraged to consult with their advisors to ensure that they fulfill all requirements.

Mason Core

Some Mason Core requirements may already be fulfilled by the major requirements listed above. Students are strongly encouraged to consult their advisors to ensure they fulfill all remaining Mason Core requirements.

Code	Title	Credits
Foundation Requirements		
Written Communication (ENGH 101)		3
Oral Communication		3
Quantitative Reasoning		3
Information Technology and Computing		3
Exploration Requirements		
Arts		3
Global Understanding		3
Literature		3
Natural Science		7
Social and Behavioral Sciences		3
Western Civilization/World History		3
Integration Requirements		
Written Communications (ENGH 302)		3
Writing-Intensive [1]		3
Synthesis/Capstone [2]		3
Total Credits		40

[1] Most programs include the writing-intensive course designated for the major as part of the major requirements; this course is therefore not counted towards the total required for Mason Core.

[2] Minimum 3 credits required.

College Requirements for the BA Degree

In addition to the program requirements and the Mason Core requirements, students pursuing a BA degree must complete the coursework below. Except where expressly prohibited, a course used to fulfill this college-level requirement may also be used simultaneously to satisfy other requirements such as Mason Core requirements, other college-level requirements, or requirements for the major. In some cases, the requirements listed below may be superseded by requirements of the degree program and the Mason Core.

Philosophy or Religious Studies

Code	Title	Credits
Select 3 credits from the following:		3
PHIL [1]		
RELI		

[1] PHIL 323 Classical Western Political Theory and PHIL 324 Modern Western Political Theory may not be used to fulfill this requirement.

Social and Behavioral Sciences

Choose one approved Mason Core: Social and Behavioral Sciences course in addition to the Mason Core-required course for a total of 6 credits. The two courses used to fulfill the combined college-level and university requirements must be from different disciplines.

This requirement may be fulfilled by completing any course in ANTH, CRIM, ECON, GOVT, HIST[1], LING, PSYC, or SOCI, and the following GGS courses:

Code	Title	Credits
Select any course from the disciplines above or select from the following GGS courses:		3
GGS 101	Major World Regions (Mason Core)	
GGS 103	Human Geography (Mason Core)	

GGS 110	Introduction to Geoinformation Technologies
GGS 301	Political Geography (Mason Core)
GGS 303	Geography of Resource Conservation (Mason Core)
GGS 304	Population Geography (Mason Core)
GGS 305	Economic Geography
GGS 306	Urban Geography
GGS 315	Geography of the United States
GGS 316	Geography of Latin America
GGS 320	Geography of Europe
GGS 325	Geography of North Africa and the Middle East
GGS 330	Geography of the Soviet Succession States
GGS 357	Urban Planning
GGS 380	Geography of Virginia
Total Credits	3

[1] HIST 100 History of Western Civilization (Mason Core) and HIST 125 Introduction to World History (Mason Core)may not be used to fulfill this requirement.

Natural Science

Choose one credit in addition to the Mason Core: Natural Science requirement for a total of 8 credits[1]. This combined college-level and university requirement must be fulfilled by completing two of any approved Mason Core: Natural Science courses that include a laboratory experience[2].

Code	Title	Credits
Select an additional Mason Core Natural Science course		1

[1] For Geography, BA majors, this extra credit is not required.

[2] BIOL 124 Human Anatomy and Physiology and BIOL 125 Human Anatomy and Physiology may not be used to fulfill this requirement.

Foreign Language

Intermediate-level proficiency in one foreign language is required. This requirement may be fulfilled by completing a course in a foreign language numbered 202 (https://catalog.gmu.edu/colleges-schools/humanities-social-sciences/modern-classical-languages/) (or higher level courses taught in the language) or achieving a satisfactory score on an approved proficiency test. A three course sequence in American Sign Language (EDSE 115 (https://catalog.gmu.edu/search/?P=EDSE%20115) American Sign Language (ASL) I, EDSE 116 (https://catalog.gmu.edu/search/?P=EDSE%20116) American Sign Language (ASL) II, and EDSE 219 (https://catalog.gmu.edu/search/?P=EDSE%20219) American Sign Language (ASL) III) will also meet the foreign language requirement. Students who are already proficient in a second language may be eligible for a waiver of this requirement. Additional information on waivers can be found at the Office of Academic and Student Affairs (http://cosundergrad.gmu.edu/).

Non-Western Culture

Choose one approved Non-Western Culture Requirement[1] course in addition to the course used to fulfill the Mason Core: Global Understanding requirement. A course used to fulfill the Mason Core: Global Understanding requirement may not be simultaneously used to satisfy this college-level requirement. However, a course used to fulfill this requirement may be used simultaneously to fulfill any *other* requirements (Mason Core requirements, college-level requirements, or requirements for the major).

Code	Title	Credits
Select 3 credits from approved Non-Western Culture courses if a waiver isn't applicable:		0-3
ANTH 114	Introduction to Cultural Anthropology (Mason Core)	3
ANTH 300	Civilizations	3
ANTH 302	Peoples and Cultures of Latin America (Mason Core)	3
ANTH 307	Ancient Mesoamerica (Mason Core)	3
ANTH 308	Peoples and Cultures of the Middle East (Mason Core)	3
ANTH 309	Peoples and Cultures of India (Mason Core)	3
ANTH 313	Myth, Magic, and Mind (Mason Core)	3
ANTH 314	Zombies	3
ANTH 330	Peoples and Cultures of Selected Regions: Non-Western	3
ANTH 332	Cross-Cultural Perspectives on Globalization (Mason Core)	3
ANTH 381	Medical Anthropology	3
ANTH 396	Issues in Anthropology: Social Sciences (Mason Core)	3
ARAB 360	Topics in Arabic Cultural Production	3
ARAB 420	Survey of Arabic Literature	3
ARAB 440	Topics in Arabic Religious Thought and Texts (Mason Core)	3
ARTH 203	Survey of Asian Art (Mason Core)	3
ARTH 204	Survey of Latin American Art (Mason Core)	3
ARTH 206	Survey of African Art (Mason Core)	3
ARTH 318	Art and Archaeology of Ancient Egypt	3
ARTH 319	Art and Archaeology of the Ancient Near East (Mason Core)	3
ARTH 320	Art of the Islamic World (Mason Core)	3
ARTH 382	Arts of India (Mason Core)	3
ARTH 383	Arts of Southeast Asia (Mason Core)	3
ARTH 384	Arts of China (Mason Core)	3
ARTH 385	Arts of Japan (Mason Core)	3
ARTH 386	The Silk Road (Mason Core)	3
ARTH 482	RS: Advanced Studies in Asian Art	3
CHIN 318	Introduction to Classical Chinese (Mason Core)	3
CHIN 320	Contemporary Chinese Film	3
CHIN 325	Major Chinese Writers (Mason Core)	3
CHIN 470	Special Topics in Chinese Studies	3
DANC 118	World Dance (Mason Core)	3
ECON 361	Economic Development of Latin America (Mason Core)	3
ECON 362	African Economic Development (Mason Core)	3

FREN 451	Topics in Sub-Saharan Francophone Literature and Culture	3
FREN 454	Topics in Caribbean Francophone Literature and Culture	3
GGS 101	Major World Regions (Mason Core)	3
GGS 316	Geography of Latin America	3
GGS 317	Geography of China (Mason Core)	3
GGS 325	Geography of North Africa and the Middle East	3
GGS 330	Geography of the Soviet Succession States	3
GGS 399	Select Topics in GGS	3
GOVT 328	Global Political Theory	3
GOVT 332	Government and Politics of the Middle East and North Africa	3
GOVT 333	Government and Politics of Asia	3
GOVT 338	Government and Politics of Russia	3
GOVT 340	Central Asian Politics	3
GOVT 341	Chinese Foreign Policy	3
GOVT 345	Islam and Politics	3
GOVT 433	Political Economy of East Asia	3
HIST 251	Survey of East Asian History (Mason Core)	3
HIST 252	Survey of East Asian History (Mason Core)	3
HIST 261	Survey of African History (Mason Core)	3
HIST 262	Survey of African History (Mason Core)	3
HIST 271	Survey of Latin American History (Mason Core)	3
HIST 272	Survey of Latin American History (Mason Core)	3
HIST 281	Survey of Middle Eastern Civilization (Mason Core)	3
HIST 282	Survey of Middle Eastern Civilization (Mason Core)	3
HIST 326	Stalinism	3
HIST 327	The Soviet Union and Russia Since World War II	3
HIST 328	Rise of Russia (Mason Core)	3
HIST 329	Modern Russia and the Soviet Union (Mason Core)	3
HIST 353	History of Traditional China	3
HIST 354	Modern China (Mason Core)	3
HIST 356	Modern Japan (Mason Core)	3
HIST 357	Postwar Japan (Mason Core)	3
HIST 358	Post-1949 China (Mason Core)	3
HIST 360	History of South Africa (Mason Core)	3
HIST 364	Revolution and Radical Politics in Latin America (Mason Core)	3
HIST 365	Conquest and Colonization in Latin America (Mason Core)	3
HIST 366	Comparative Slavery	3
HIST 367	History, Fiction, and Film in Latin America	3
HIST 387	Topics in Global History (Mason Core)	3-6
HIST 426	The Russian Revolution	3
HIST 460	Modern Iran (Mason Core)	3
HIST 461	Arab-Israeli Conflict	3
HIST 462	Women in Islamic Society (Mason Core)	3
HIST 465	The Middle East in the 20th Century	3
JAPA 310	Japanese Culture in a Global World (Mason Core)	3
JAPA 340	Topics in Japanese Literature (Mason Core)	3
KORE 320	Korean Popular Culture in a Global World	3
MUSI 103	Musics of the World (Mason Core)	3
RELI 211	Religions of the West (Mason Core)	3
RELI 212	Religions of Asia (Mason Core)	3
RELI 240	Death and the Afterlife in World Religions	3
RELI 272	Islam	3
RELI 313	Hinduism (Mason Core)	3
RELI 314	Chinese Philosophies and Religious Traditions	3
RELI 315	Buddhism (Mason Core)	3
RELI 317	Daoism	3
RELI 337	Mysticism: East and West	3
RELI 365	Muhammad: Life and Legacy	3
RELI 374	Islamic Thought (Mason Core)	3
RELI 375	Qur'an and Hadith	3
RELI 379	Islamic Law, Society, and Ethics	3
RELI 387	Islam, Democracy, and Human Rights	3
RELI 490	Comparative Study of Religions (Mason Core)	3
RUSS 353	Russian Civilization (Mason Core)	3
RUSS 354	Contemporary Post-Soviet Life (Mason Core)	3

[1] Students who can document attendance at a native school in a non-western country for at least four years may request a waiver from this requirement through the CHSS Undergraduate Academic Affairs Office (http://chssundergrad.gmu.edu/).

Honors

Honors in the Major

Eligibility

Mathematics majors who have maintained a GPA of at least 3.50 in mathematics courses and a GPA of 3.50 in all courses taken at George Mason University may apply to the departmental honors program upon completion of two MATH courses at the 300+ level (excluding MATH 400 History of Math (Topic Varies) (Mason Core)), at least one of which has MATH 300 Introduction to Advanced Mathematics as a prerequisite. Admission to the program will be monitored by the undergraduate committee.

Honors Requirements

To graduate with honors in mathematics, a student is required to maintain a minimum GPA of 3.50 in mathematics courses and successfully complete MATH 405 Honors Thesis in Mathematics

I and MATH 406 RS: Honors Thesis in Mathematics II with an average GPA of at least 3.50 in these two courses.

Accelerated Master's

Mathematics, BA or BS/Mathematics, Accelerated MS

Overview

This bachelor's/accelerated master's degree program allows academically strong undergraduates with a commitment to advance their education to obtain both the Mathematics, BA and Mathematics, BS and the Mathematics, MS degrees within an accelerated timeframe. Upon completion of this 138 credit accelerated program, students will be exceptionally well prepared for entry into their careers or into a doctoral program in the field or in a related discipline.

Students are eligible to apply for this accelerated program once they have earned at least 60 undergraduate credits and can enroll in up to 18 credits of graduate coursework after successfully completing 75 undergraduate credits. This flexibility makes it possible for students to complete a bachelor's and a master's in five years.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies. For more information on undergraduates enrolling in graduate courses, see AP.1.4.4 Graduate Course Enrollment by Undergraduates (https://catalog.gmu.edu/policies/academic/registration-attendance/#text).

Application Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in the Graduate Admission Policies section of this catalog.

Important application information and processes for this accelerated master's program can be found here (https://www2.gmu.edu/admissions-aid/how-apply/accelerated-masters/).

Students should seek out the graduate program's advisor who will aid in choosing the appropriate graduate courses and help prepare the student for graduate studies.

Successful applicants will have an overall undergraduate GPA of at least 3.00. Additionally, they will have completed the following courses with a GPA of 3.00 or higher:

Code	Title	Credits
MATH 315	Advanced Calculus I	3
MATH 321	Abstract Algebra	3
MATH 322	Advanced Linear Algebra	3

Accelerated Option Requirements

After the completion of 75 undergraduate credits, students may complete 3 to 12 credits of graduate coursework that can apply to both the undergraduate and graduate degrees.

In addition to applying to graduate from the undergraduate program, students in the accelerated program must submit a bachelor's/accelerated master's transition form (available from the Office of the University Registrar (https://registrar.gmu.edu/forms/)) to the College of Science's Office of Academic and Student Affairs (https://cos.gmu.edu/about/contact-us/) by the last day to add classes of their final undergraduate semester. Students should enroll for courses in the master's program in the fall or spring semester immediately following conferral of the bachelor's degree, but should contact an advisor if they would like to defer up to one semester.

Students must maintain an overall GPA of 3.00 or higher in all graduate coursework and should consult with their faculty advisor to coordinate their academic goals.

Reserve Graduate Credit

Accelerated master's students may also take up to 6 graduate credits as reserve graduate credits. These credits do not apply to the undergraduate degree, but will reduce the master's degree by up to 6 credits. With 12 graduate credits counted toward the undergraduate degree plus the maximum 6 reserve graduate credits, the credits necessary for the graduate degree can be reduced by up to 18.

Graduate Course Suggestions

The following list of suggested courses is provided for general reference. To ensure an efficient route to graduation and post-graduation readiness, students are strongly encouraged to meet with an advisor before registering for graduate-level courses.

Code	Title	Credits
MATH 621	Algebra I	3
MATH 631	Topology I: Topology of Metric Spaces	3
MATH 675	Linear Analysis	3
MATH 677	Ordinary Differential Equations	3
MATH 685	Numerical Analysis	3

Mathematics, BA or BS/Curriculum and Instruction, Accelerated MEd, (Secondary Education Mathematics Concentration)

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BA or BS in Mathematics and an MEd in Curriculum and Instruction (Secondary Education Mathematics concentration) (https://catalog.gmu.edu/colleges-schools/education-human-development/school-education/curriculum-instruction-med/)in an accelerated time-frame after satisfactory completion of a minimum of 143 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degree for policies related to this program.

This accelerated option is offered jointly by the Department of Mathematical Sciences and the School of Education.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies (https://catalog.gmu.edu/admissions/graduate-policies/) and Bachelor's/

Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies. For information specific to this accelerated master's program, see Application Requirements and Deadlines (https://cehd.gmu.edu/bachelors-accelerated-masters-program/).

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits, and additional unit-specific criteria.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MEd program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- 3.0 overall GPA
- Completion of specific undergraduate coursework
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following which can be taken as Advanced Standing or Reserve Graduate credit (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) (to be determined by the student and their advisor):

Code	Title	Credits
EDRD 619	Literacy in the Content Areas	3
SEED 522	Foundations of Secondary Education	3
SEED 540	Human Development and Learning: Secondary Education	3
SEED 572	Teaching Mathematics in the Secondary School	3
SEED 672	Advanced Methods of Teaching Mathematics in the Secondary School	3
SEED approved elective		

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies.

Mathematics, BS

Banner Code: SC-BS-MATH

Academic Advising

Website: science.gmu.edu/academics/departments-units/mathematical-sciences/advising-and-student-support

This program provides exciting opportunities for students interested in mathematics. Students are encouraged to select an optional concentration in Actuarial Mathematics (ACTM), Applied Mathematics (AMT), or Mathematical Statistics (MTHS). Students who do not select a concentration study traditional mathematics.

Teacher Licensure

Interested students should attend an information session early in their studies. For more information, visit the Graduate School of Education's website (http://gse.gmu.edu/).

Students majoring in biology who wish to pursue a career teaching secondary school may consider applying for the Secondary Education - Mathematics (6-12) Undergraduate Certificate offered by the College of Education and Human Development as an option in seeking an initial Virginia teaching license.

Other routes to licensure include the Mathematics, BA or BS/Curriculum and Instruction, Accelerated MEd (Secondary Education Mathematics concentration) or select traditional Master's programs. Please contact the undergraduate advisor in the College of Education and Human Development for more information.

Admissions & Policies

Admissions

University-wide admissions policies can be found in the Undergraduate Admissions Policies section of this catalog.

To apply for this program, please complete the George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now/).

Policies

Students must fulfill all Requirements for Bachelor's Degrees, including the Mason Core.

MATH 300 Introduction to Advanced Mathematics meets the writing intensive requirement for this major.

For policies governing all undergraduate programs, see AP.5 Undergraduate Policies.

Graduating seniors are required to have an exit interview.

Language Proficiency Recommendation

The department recommends proficiency in French, German, or Russian.

Course Recommendations and Policies

A maximum of 6 credits of grades below 2.00 in coursework designated MATH or STAT may be applied toward the major.

Students intending to enter graduate school in mathematics are strongly advised to take MATH 315 Advanced Calculus I and MATH 321 Abstract Algebra.

Students may not receive credit for both MATH 214 Elementary Differential Equations and MATH 216 Theory of Differential Equations; both MATH 213 Analytic Geometry and Calculus III and MATH 215 Analytic Geometry and Calculus III (Honors); both MATH 351 Probability and STAT 344 Probability and Statistics for Engineers and Scientists I; and both MATH 352 Statistics and STAT 354 Probability and Statistics for Engineers and Scientists II.

After receiving a grade of 'C' or better in one of the courses listed below on the left, students may not receive credit for the corresponding course on the right:

Course	May Not Receive Credit for
MATH 113 or MATH 123	MATH 105 or MATH 108
MATH 351 or STAT 344	MATH 110
MATH 441	MATH 111
MATH 125	MATH 112

Requirements

Degree Requirements

Total credits: minimum 120

Students should refer to the Admissions & Policies tab for specific policies related to this program.

In addition to the mathematics core, science, and computational skills requirements, students may select an optional concentration in Actuarial Mathematics (ACTM), Applied Mathematics (AMT) or Mathematical Statistics (MTHS).

Mathematics Core

Code	Title	Credits
MATH 113	Analytic Geometry and Calculus I (Mason Core)	4
MATH 114	Analytic Geometry and Calculus II	4
MATH 125	Discrete Mathematics I (Mason Core)	3
MATH 203	Linear Algebra	3
MATH 213	Analytic Geometry and Calculus III	3
or MATH 215	Analytic Geometry and Calculus III (Honors)	
MATH 214	Elementary Differential Equations	3
or MATH 216	Theory of Differential Equations	
MATH 300	Introduction to Advanced Mathematics [1]	3
MATH 322	Advanced Linear Algebra	3
Total Credits		26

[1] Fulfills the writing intensive requirement.

Science

Code	Title	Credits
Select a one-year sequence of a laboratory science from the following courses:		8-9
Biology Sequence:		
BIOL 213	Cell Structure and Function (Mason Core)	
Choose one from the following:		
BIOL 300	BioDiversity	
BIOL 308	Foundations of Ecology and Evolution	
BIOL 311	General Genetics	
Chemistry Sequence:		
CHEM 211 & CHEM 213	General Chemistry I (Mason Core) and General Chemistry Laboratory I (Mason Core)	
CHEM 212 & CHEM 214	General Chemistry II (Mason Core) and General Chemistry Laboratory II (Mason Core)	
Geology Sequence:		
GEOL 101	Introductory Geology I (Mason Core)	
GEOL 102	Historical Geology (Mason Core)	
Physics Sequence:		
PHYS 160 & PHYS 161	University Physics I (Mason Core) and University Physics I Laboratory (Mason Core)	
PHYS 260 & PHYS 261	University Physics II (Mason Core) and University Physics II Laboratory (Mason Core)	
Total Credits		8-9

Computational Skills

Code	Title	Credits
CS 112	Introduction to Computer Programming	4
Total Credits		4

BS without Concentration

In addition to the mathematics core, science, and computational skills requirements listed above, students who are not choosing a concentration must complete the following coursework:

Code	Title	Credits
Traditional Mathematics		
MATH 315	Advanced Calculus I	3
MATH 316	Advanced Calculus II	3
MATH 321	Abstract Algebra	3
or MATH 431	Topology	
Select 12 additional credits of MATH courses numbered above 300 [1]		12
Additional Science		
Select additional science credits from one of the following three options:		4-9
A second sequence from the choices under "Science" above		
6 credits from more advanced courses in biology, chemistry, geology, or physics [2]		
The 4-credit option of PHYS 262 and PHYS 263		
Total Credits		25-30

[1] Excluding MATH 400 History of Math (Topic Varies) (Mason Core).

[2] Only refers to courses acceptable for credit toward a natural science major. Suggested courses include: CHEM 313 Organic Chemistry I through CHEM 332 Physical Chemistry II; CHEM 463 General Biochemistry I; GEOL 302 Mineralogy through GEOL 364 Marine Geology; and PHYS 266 Introduction to Thermodynamics.

Concentration in Actuarial Mathematics (ACTM)

This concentration provides exciting opportunities for students interested in studying actuarial mathematics. Expertise in this field leads directly into a career as a practicing actuary with an insurance company, consulting firm, or in government employment.

Code	Title	Credits
ACTM Courses		
MATH 351	Probability	3
MATH 352	Statistics	3
MATH 551	Regression and Time Series	3
MATH 554	Financial Mathematics	3
MATH 555	Actuarial Modeling I	3
MATH 557	Financial Derivatives	3
ACCT 203	Survey of Accounting	3
ECON 103	Contemporary Microeconomic Principles (Mason Core)	3
ECON 306	Intermediate Microeconomics [1]	3
or ECON 310	Money and Banking	
or FNAN 321	Financial Institutions	
STAT 362	Introduction to Computer Statistical Packages	3
Select two from the following:		6
MATH 441	Deterministic Operations Research	
MATH 442	Stochastic Operations Research	
MATH 446	Numerical Analysis I	
MATH 453	Advanced Mathematical Statistics	
Total Credits		36

1 For mathematics majors, the Department of Economics has agreed to waive the ECON 104 Contemporary Macroeconomic Principles (Mason Core) prerequisite.

Concentration in Applied Mathematics (AMT)

This concentration provides exciting opportunities for students interested in taking additional classes on applied mathematics. The concentration prepares numerical analysts able to deal with real world applications in science and engineering.

Code	Title	Credits
AMT Courses		
MATH 315	Advanced Calculus I	3
MATH 351	Probability	3
MATH 413	Modern Applied Mathematics I	3
MATH 414	Modern Applied Mathematics II	3
MATH 446	Numerical Analysis I	3
Select 6 credits of MATH courses numbered above 300 [1]		6
Additional Science Courses		
Select additional science credits from one of the following three options:		4-9
A second sequence from the choices under "Science" above		
6 credits from more advanced courses in biology, chemistry, geology, or physics [2]		
The 4-credit option of PHYS 262 and PHYS 263		
Total Credits		25-30

1 Excluding MATH 400 History of Math (Topic Varies) (Mason Core).

2 Only refers to courses acceptable for credit toward a natural science major). Suggested courses include: CHEM 313 Organic Chemistry I through CHEM 332 Physical Chemistry II; CHEM 463 General Biochemistry I; GEOL 302 Mineralogy through GEOL 364 Marine Geology; and PHYS 266 Introduction to Thermodynamics.

Concentration in Mathematical Statistics (MTHS)

This concentration provides exciting opportunities for students interested in taking additional classes on statistics and data analysis. The concentration prepares data analysts able to deal with real world applications in science and engineering.

Code	Title	Credits
MTHS Courses		
MATH 315	Advanced Calculus I	3
MATH 351	Probability	3
MATH 352	Statistics	3
MATH 453	Advanced Mathematical Statistics	3
MATH 551	Regression and Time Series	3
STAT 362	Introduction to Computer Statistical Packages	3
Select one from:		3
STAT 260	Introduction to Statistical Practice I	
STAT 350	Introductory Statistics II	
STAT 360	Introduction to Statistical Practice II	
Select two from the following:		6
STAT 455	Experimental Design	
STAT 460	Introduction to Biostatistics	
STAT 462	Applied Multivariate Statistics	
STAT 463	Introduction to Exploratory Data Analysis	
STAT 465	Nonparametric Statistics and Categorical Data Analysis	
STAT 472	Introduction to Statistical Learning	
STAT 474	Introduction to Survey Sampling	
Additional Science Courses		
Select additional science credits from one of the following options:		3-4
Choose 3 credits from more advanced courses in biology, chemistry, geology, or physics [1]		
Choose the 4 credit option of PHYS 262 and PHYS 263		
Total Credits		30-31

1 Only refers to courses acceptable for credit toward a natural science major. Suggested courses include: CHEM 313 Organic Chemistry I through CHEM 332 Physical Chemistry II; GEOL 302 Mineralogy through GEOL 364 Marine Geology; and PHYS 266 Introduction to Thermodynamics.

Mason Core and Elective Credits

In order to meet a minimum of 120 credits, this degree requires additional credits (specific credit counts by concentration are shown below), which may be applied toward any remaining Mason Core requirements (outlined below), Requirements for Bachelor's Degrees, and elective courses. Students are strongly encouraged to consult with their advisors to ensure that they fulfill all requirements.

- Without concentration: 51-57 credits
- ACTM concentration: 45-46 credits
- AMT concentration: 51-57 credits
- MTHS concentration: 50-52 credits

Mason Core

Some Mason Core requirements may already be fulfilled by the major requirements listed above. Students are strongly encouraged to consult their advisors to ensure they fulfill all remaining Mason Core requirements.

Code	Title	Credits
Foundation Requirements		
Written Communication (ENGH 101)		3
Oral Communication		3
Quantitative Reasoning		3
Information Technology and Computing		3
Exploration Requirements		
Arts		3
Global Understanding		3
Literature		3
Natural Science		7
Social and Behavioral Sciences		3
Western Civilization/World History		3
Integration Requirements		
Written Communications (ENGH 302)		3
Writing-Intensive [1]		3
Synthesis/Capstone [2]		3
Total Credits		40

1 Most programs include the writing-intensive course designated for the major as part of the major requirements; this course is therefore not counted towards the total required for Mason Core.

2 Minimum 3 credits required.

Honors

Honors in the Major

Eligibility

Mathematics majors who have maintained a GPA of at least 3.50 in mathematics courses and a GPA of 3.50 in all courses taken at George Mason University may apply to the departmental honors program upon completion of two MATH courses at the 300+ level (excluding MATH 400 History of Math (Topic Varies) (Mason Core)), at least one of which has MATH 300 Introduction to Advanced Mathematics as a prerequisite. Admission to the program will be monitored by the undergraduate committee.

Honors Requirements

To graduate with honors in mathematics, a student is required to maintain a minimum GPA of 3.50 in mathematics courses and successfully complete MATH 405 Honors Thesis in Mathematics I and MATH 406 RS: Honors Thesis in Mathematics II with an average GPA of at least 3.50 in these two courses.

Accelerated Master's

Mathematics, BA or BS/Curriculum and Instruction, Accelerated MEd, (Secondary Education Mathematics Concentration)

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BA or BS in Mathematics and an MEd in Curriculum and Instruction (Secondary Education Mathematics concentration) (https://catalog.gmu.edu/colleges-schools/education-human-development/school-education/curriculum-instruction-med/)in an accelerated time-frame after satisfactory completion of a minimum of 143 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degree for policies related to this program.

This accelerated option is offered jointly by the Department of Mathematical Sciences and the School of Education.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies (https://catalog.gmu.edu/admissions/graduate-policies/) and Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies. For information specific to this accelerated master's program, see Application Requirements and Deadlines (https://cehd.gmu.edu/bachelors-accelerated-masters-program/).

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits, and additional unit-specific criteria.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MEd program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- 3.0 overall GPA
- Completion of specific undergraduate coursework
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following which can be taken as Advanced Standing or Reserve Graduate credit (https://

catalog.gmu.edu/policies/academic/graduate-policies/#text) (to be determined by the student and their advisor):

Code	Title	Credits
EDRD 619	Literacy in the Content Areas	3
SEED 522	Foundations of Secondary Education	3
SEED 540	Human Development and Learning: Secondary Education	3
SEED 572	Teaching Mathematics in the Secondary School	3
SEED 672	Advanced Methods of Teaching Mathematics in the Secondary School	3
SEED approved elective		

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies.

Mathematics, BA or BS/Mathematics, Accelerated MS

Overview

This bachelor's/accelerated master's degree program allows academically strong undergraduates with a commitment to advance their education to obtain both the Mathematics, BA and Mathematics, BS and the Mathematics, MS degrees within an accelerated timeframe. Upon completion of this 138 credit accelerated program, students will be exceptionally well prepared for entry into their careers or into a doctoral program in the field or in a related discipline.

Students are eligible to apply for this accelerated program once they have earned at least 60 undergraduate credits and can enroll in up to 18 credits of graduate coursework after successfully completing 75 undergraduate credits. This flexibility makes it possible for students to complete a bachelor's and a master's in five years.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies. For more information on undergraduates enrolling in graduate courses, see AP.1.4.4 Graduate Course Enrollment by Undergraduates (https://catalog.gmu.edu/policies/academic/registration-attendance/#text).

Application Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in the Graduate Admission Policies section of this catalog.

Important application information and processes for this accelerated master's program can be found here (https://www2.gmu.edu/admissions-aid/how-apply/accelerated-masters/).

Students should seek out the graduate program's advisor who will aid in choosing the appropriate graduate courses and help prepare the student for graduate studies.

Successful applicants will have an overall undergraduate GPA of at least 3.00. Additionally, they will have completed the following courses with a GPA of 3.00 or higher:

Code	Title	Credits
MATH 315	Advanced Calculus I	3
MATH 321	Abstract Algebra	3
MATH 322	Advanced Linear Algebra	3

Accelerated Option Requirements

After the completion of 75 undergraduate credits, students may complete 3 to 12 credits of graduate coursework that can apply to both the undergraduate and graduate degrees.

In addition to applying to graduate from the undergraduate program, students in the accelerated program must submit a bachelor's/accelerated master's transition form (available from the Office of the University Registrar (https://registrar.gmu.edu/forms/)) to the College of Science's Office of Academic and Student Affairs (https://cos.gmu.edu/about/contact-us/) by the last day to add classes of their final undergraduate semester. Students should enroll for courses in the master's program in the fall or spring semester immediately following conferral of the bachelor's degree, but should contact an advisor if they would like to defer up to one semester.

Students must maintain an overall GPA of 3.00 or higher in all graduate coursework and should consult with their faculty advisor to coordinate their academic goals.

Reserve Graduate Credit

Accelerated master's students may also take up to 6 graduate credits as reserve graduate credits. These credits do not apply to the undergraduate degree, but will reduce the master's degree by up to 6 credits. With 12 graduate credits counted toward the undergraduate degree plus the maximum 6 reserve graduate credits, the credits necessary for the graduate degree can be reduced by up to 18.

Graduate Course Suggestions

The following list of suggested courses is provided for general reference. To ensure an efficient route to graduation and post-graduation readiness, students are strongly encouraged to meet with an advisor before registering for graduate-level courses.

Code	Title	Credits
MATH 621	Algebra I	3
MATH 631	Topology I: Topology of Metric Spaces	3
MATH 675	Linear Analysis	3
MATH 677	Ordinary Differential Equations	3
MATH 685	Numerical Analysis	3

BS (selected)/Statistical Science, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program (BAM) and obtain an undergraduate BS degree and the Statistical Science, MS in an accelerated time-frame after satisfactory completion of a minimum of 138 credits.

Admitted students are able to use up to 12 graduate credits in partial satisfaction of requirements for the undergraduate degree. Upon completion and conferral of the bachelor's degree and with satisfactory performance (grade of 'B' or better) in each of the graduate courses, students are given advanced standing in the master's program.

See AP.6.7 Bachelor's/Accelerated Master's Degrees for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements

No specific undergraduate BS degree is required. Students enrolled in any BS degree may apply to the accelerated Statistical Science, MS program **if such an accelerated** Statistical Science, MS **pathway is allowable from the student's BS program, which will be determined by the academic advisors of both the BS and MS programs.**

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits with an overall GPA of 3.0.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific prerequisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the Statistical Science, MS program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- Completion of Mason's requirements for undergraduate degree conferral (graduation) and completion of application for graduation.
- An overall GPA of 3.00.
- Completion of the following Mason courses each with a grade of C or better.

Code	Title	Credits
MATH 213	Analytic Geometry and Calculus III	3
MATH 203	Linear Algebra	3
or MATH 321	Abstract Algebra	
STAT 250	Introductory Statistics I (Mason Core)	3
or STAT 344	Probability and Statistics for Engineers and Scientists I	
STAT 346	Probability for Engineers	3
or MATH 351	Probability	
STAT 362	Introduction to Computer Statistical Packages	3

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, students complete all credits satisfying degree requirements for the BS and MS programs, with up to twelve credits overlap chosen from the following graduate courses:

Code	Title	Credits
STAT 544	Applied Probability	3
STAT 554	Applied Statistics I	3
STAT 560	Biostatistical Methods	3
STAT 574	Survey Sampling I	3
STAT 663	Statistical Graphics and Data Exploration I	3

All graduate course prerequisites must be completed prior to enrollment. Each graduate course must be completed with a grade of B or better to apply toward the MS degree.

While still in undergraduate status, a maximum of 6 additional graduate credits may be taken as reserve graduate credit and applied to the master's program. Reserve graduate credits do not apply to the undergraduate degree.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees policies.

Degree Conferral

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and Graduate Recruitment and Enrollment Services. At the completion of MS requirements, a master's degree is conferred.

Mathematics, MS

Banner Code: SC-MS-MATH

Academic Advising

Email: gradmath@gmu.edu
Website: science.gmu.edu/academics/departments-units/mathematical-sciences/mathematics-ms

This program provides exciting opportunities for students interested in studying advanced mathematics.

Assistantships

A limited number of merit-based teaching assistantships are available for students taking at least 6 graduate credits each semester. Other sources of support, such as research assistantships, are available as funding permits. Graduate students also have the opportunity to work in the Math Tutoring Center (http://math.gmu.edu/tutor-center.php).

Admissions & Policies

Admissions

University-wide admissions policies can be found in Graduate Admissions Policies.

To apply for this program, please complete the George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now/).

Applicants interested in this program must submit three letters of recommendation. GRE scores are not required.

Students must have taken an upper-division course in advanced calculus (equivalent to MATH 315 Advanced Calculus I), an abstract algebra course (equivalent to MATH 321 Abstract Algebra) and an upper-division

course in linear algebra (equivalent to MATH 322 Advanced Linear Algebra). Students should have some computer knowledge.

Policies

For policies governing all graduate programs, see AP.6 Graduate Policies.

MATH 500 through MATH 614 cannot be used for credit, with the exception of MATH 555 Actuarial Modeling I and MATH 556 Actuarial Modeling II.

Requirements

Degree Requirements

Total credits: 30

Students should refer to the Admissions & Policies tab for specific policies related to this program.

Coursework

Code	Title	Credits
Required Courses		
MATH 675	Linear Analysis	3
Coursework Options		
Select three from the following:		9
MATH 621	Algebra I	
MATH 631	Topology I: Topology of Metric Spaces	
MATH 677	Ordinary Differential Equations	
MATH 685	Numerical Analysis	
Additional Approved Coursework		
Select four approved graduate courses, at least two of which are MATH courses. [1]		12
Total Credits		24

[1] All four courses must be approved by the student's advisor. Courses not listed as MATH courses must be approved by the graduate committee.
Different rules apply if the student wishes to count graduate actuarial courses toward his or her degree (consult the graduate coordinator).

Research and Creative Component

A student may fulfill the research and creative component in one of three ways: Thesis Option, Paper Presentation Option, or Preliminary Exams for the PhD.

Code	Title	Credits
Select one of the Research and Creative Component options outlined below		6
Total Credits		6

Thesis Option

In preparation for this option, the student must form a committee comprising a chair and two other faculty members. The chair and at least one other member must be from the Department of Mathematical Sciences, one member may be from a related field.

The student completes a thesis under the direction of the committee chair. The thesis work is typically completed while students are registered for 6 credits of MATH 799 MS Thesis. A thesis proposal and thesis are submitted in accordance with AP.6 Graduate Policies. The student must give an oral defense of the thesis to the committee and the George Mason University community at large. Students are expected to respond to questions on the thesis and related material. The committee determines whether the defense is satisfactory.

Code	Title	Credits
Thesis Option		6
MATH 799	MS Thesis	
Total Credits		6

Paper Presentation Option

In preparation for this option, the student must form a committee comprising a chair and two other faculty members. The chair and at least one other member must be from the Department of Mathematical Sciences, one member may be from a related field. The student gives an oral presentation of a paper (or series of papers or book chapter) chosen in consultation with the chair of the committee and approved by the full committee. The chosen material must be distinct from work completed in fulfillment of course requirements. The oral presentation is given to the committee and the Mason community at large. Students are expected to respond to questions on the paper and related material. The committee determines whether the defense is satisfactory.

Code	Title	Credits
Select 6 additional credits of electives		6
Total Credits		6

Preliminary Exams for the PhD

The research and creative component can also be fulfilled by passing three preliminary written examinations, as required for the Mathematics, PhD degree.

Dual Degree Options

Mathematics and Statistical Science Dual-Degree MS

This program allows students to earn an MS in Mathematics and an MS in Statistical Science by completing 48 credits of coursework in both areas instead of the 60 that would be required if the degrees were sought independently.

Admission Requirements

Applicants must satisfy admission requirements for both the MS in Mathematics and the MS in Statistical Science programs. A joint faculty committee from the Department of Mathematical Sciences and the Department of Statistics make final admission decisions into the dual-degree program.

MS-MATH/STAT Dual-Degree Requirements

Total credits: 48

Code	Title	Credits
MATH 621	Algebra I	3
MATH 675	Linear Analysis	3
MATH 677	Ordinary Differential Equations	3
or MATH 678	Partial Differential Equations	
MATH 685	Numerical Analysis	3

STAT 544	Applied Probability	3
STAT 554	Applied Statistics I	3
STAT 634	Case Studies in Data Analysis	3
STAT 652	Statistical Inference	3
STAT 654	Applied Statistics II	3
Total Credits		27

Electives

Code	Title	Credits
Select 12 elective credits in MATH courses numbered 615 or higher [1]		12
Select any STAT courses numbered 540-775		9
Total Credits		21

[1] Excluding MATH 653 Construction and Evaluation of Actuarial Models I, MATH 654 Construction and Evaluation of Actuarial Models II, MATH 655 Pension Valuation, and MATH 799 MS Thesis

Notes:

- Students in either the BS/Accelerated MS in Mathematics program or the BS(selected)/Accelerated MS in Statistical Science program cannot get a reduction of 6 credits toward this dual degree. Students who want to proceed to a PhD degree will only be able to waive the number of credits specified in the associated PhD degree requirements, even though they will have 48 credits at the MS level.
- If a student decides not to complete the required 48 credits, a single MS degree will not be granted unless the student fulfills the requirements for either the MS in Mathematics or the MS in Statistical Science.
- Once a student receives one of the MS degrees from either department, the student will no longer be eligible for the reduction in credit (i.e., will need to complete 30 credits) if the student later decides to earn the other MS degree.

Accelerated Master's

Mathematics, BA or BS/Mathematics, Accelerated MS

Overview

This bachelor's/accelerated master's degree program allows academically strong undergraduates with a commitment to advance their education to obtain both the Mathematics, BA and Mathematics, BS and the Mathematics, MS degrees within an accelerated timeframe. Upon completion of this 138 credit accelerated program, students will be exceptionally well prepared for entry into their careers or into a doctoral program in the field or in a related discipline.

Students are eligible to apply for this accelerated program once they have earned at least 60 undergraduate credits and can enroll in up to 18 credits of graduate coursework after successfully completing 75 undergraduate credits. This flexibility makes it possible for students to complete a bachelor's and a master's in five years.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies. For more information on undergraduates enrolling in graduate courses, see AP.1.4.4 Graduate Course Enrollment by Undergraduates (https://catalog.gmu.edu/policies/academic/registration-attendance/#text).

Application Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in the Graduate Admission Policies section of this catalog.

Important application information and processes for this accelerated master's program can be found here (https://www2.gmu.edu/admissions-aid/how-apply/accelerated-masters/).

Students should seek out the graduate program's advisor who will aid in choosing the appropriate graduate courses and help prepare the student for graduate studies.

Successful applicants will have an overall undergraduate GPA of at least 3.00. Additionally, they will have completed the following courses with a GPA of 3.00 or higher:

Code	Title	Credits
MATH 315	Advanced Calculus I	3
MATH 321	Abstract Algebra	3
MATH 322	Advanced Linear Algebra	3

Accelerated Option Requirements

After the completion of 75 undergraduate credits, students may complete 3 to 12 credits of graduate coursework that can apply to both the undergraduate and graduate degrees.

In addition to applying to graduate from the undergraduate program, students in the accelerated program must submit a bachelor's/accelerated master's transition form (available from the Office of the University Registrar (https://registrar.gmu.edu/forms/)) to the College of Science's Office of Academic and Student Affairs (https://cos.gmu.edu/about/contact-us/) by the last day to add classes of their final undergraduate semester. Students should enroll for courses in the master's program in the fall or spring semester immediately following conferral of the bachelor's degree, but should contact an advisor if they would like to defer up to one semester.

Students must maintain an overall GPA of 3.00 or higher in all graduate coursework and should consult with their faculty advisor to coordinate their academic goals.

Reserve Graduate Credit

Accelerated master's students may also take up to 6 graduate credits as reserve graduate credits. These credits do not apply to the undergraduate degree, but will reduce the master's degree by up to 6 credits. With 12 graduate credits counted toward the undergraduate degree plus the maximum 6 reserve graduate credits, the credits necessary for the graduate degree can be reduced by up to 18.

Graduate Course Suggestions

The following list of suggested courses is provided for general reference. To ensure an efficient route to graduation and post-graduation readiness, students are strongly encouraged to meet with an advisor before registering for graduate-level courses.

Code	Title	Credits
MATH 621	Algebra I	3
MATH 631	Topology I: Topology of Metric Spaces	3
MATH 675	Linear Analysis	3
MATH 677	Ordinary Differential Equations	3
MATH 685	Numerical Analysis	3

Mathematics, PhD

Banner Code: SC-PHD-MATH

Email: gradmath@gmu.edu
Website: science.gmu.edu/academics/departments-units/mathematical-sciences/mathematics-phd

The doctoral program provides exciting opportunities for students interested in studying advanced mathematics and conducting independent research.

This program begins with graduate coursework and advanced seminars and culminates in a dissertation consisting of original research in mathematics. The PhD is designed to train students as research mathematicians for careers in academia, government, and private industry.

Fellowships and Assistantships

The Department of Mathematical Sciences offers a limited number of merit-based teaching assistantships. Other sources of support, such as research fellowships and assistantships, are available as funding permits. Graduate students also have the opportunity to work in the Math Tutoring Center (http://math.gmu.edu/tutor-center.php).

Admissions & Policies

Admissions

University-wide admissions policies can be found in the Graduate Admissions Policies section of this catalog.

To apply for this program, please complete the George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now/).

Eligibility

It is expected that all applicants have a recent bachelor's degree in mathematics or an equivalent amount of undergraduate mathematics preparation, with a GPA of at least 3.00 in their last 60 credits of study. Students without this background who have had an upper-division course in linear algebra (equivalent to MATH 322 Advanced Linear Algebra), an upper-division course in advanced calculus (equivalent to MATH 315 Advanced Calculus I), and an upper-division course in group theory (equivalent to MATH 321 Abstract Algebra) are encouraged to apply to the Mathematics, MS. Such students may subsequently apply to the PhD when all background issues have been addressed. It is recommended that all applicants have some familiarity with mathematical software.

Application Requirements

To apply, prospective students should provide the completed George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now/), two copies of official transcripts from each college and graduate institution attended, three letters of recommendation, and a goals statement. GRE scores are recommended but not required.

TOEFL scores are required for all international applicants; find additional information in the Admission of International Students section of this catalog.

Policies

For policies governing all graduate programs, see AP.6 Graduate Policies.

Reduction of Credits

For students entering the doctoral program with a master's degree in a related field from an institution of higher education accredited by a Mason-recognized U.S. institutional accrediting agency or international equivalent, the number of required credits may be reduced up to 30 credits, subject to approval of the program faculty and the college's associate dean for student affairs. See AP.6.5.2 Reduction of Credits for more information.

Transfer of Credit

Graduate mathematics courses taken elsewhere without being applied to degree conferral may be counted toward the degree as transfer credit. See AP 6.5.3 Transfer of Credit for additional information.

Requirements

Degree Requirements

Total credits: 72

Students should refer to the Admissions & Policies tab for specific policies related to this program.

Core Courses

Students must earn a grade of 'B' or better in each core course that counts toward the core requirement.

Code	Title	Credits
MATH 675	Linear Analysis	3
Select any three of the following:		9
MATH 621	Algebra I	
MATH 631	Topology I: Topology of Metric Spaces	
MATH 677	Ordinary Differential Equations	
MATH 685	Numerical Analysis	
Total Credits		12

Preliminary Written Exam

Students are required to pass three preliminary written exams and complete four core courses by the end of their second year. Preliminary exams are offered twice a year and students may take each exam up to three times.

Dissertation Advisor and Examination Committee

After passing the preliminary written exams, the student chooses a dissertation advisor and a three person examination committee. In consultation with the advisor and committee, the student chooses a major and a minor area of study (the major and minor areas are presumed to be in two different branches of mathematics).

Seminar

Code	Title	Credits
Students must register for a 1 credit seminar each semester until they advance to candidacy or have acquired at least 6 credits [1]		6
MATH 795	Graduate Seminar	
Total Credits		9

[1] A student entering without a master's degree in mathematics should expect to take a total of 6 to 9 credits of MATH 795 Graduate Seminar.

Electives

Code	Title	Credits
Students complete 27-42 credits of approved MATH electives [1]		27-42
Total Credits		27-42

[1] Courses not designated as MATH courses must be approved by the graduate committee.
Classes at the 500 level, MATH 600 Special Topics in Mathematics - MATH 614 Rational Numbers and Proportional Reasoning for K-8 Teachers, and actuarial classes MATH 653 Construction and Evaluation of Actuarial Models I, MATH 654 Construction and Evaluation of Actuarial Models II and MATH 655 Pension Valuation cannot be used for credit.

Qualifying Examinations

Students are required to take a qualifying exam after passing the preliminary written exams. The qualifying exam may have oral and written components. In consultation with the advisor and committee, the student chooses a major and a minor area of study (the major and minor areas are presumed to be in two different branches of mathematics). The qualifying exam typically covers the equivalent of approximately four courses of material from the major area and three courses from the minor area.

Dissertation Proposal and Advancement to Candidacy

After passing the qualifying exam, each doctoral student prepares a written dissertation proposal while taking MATH 998 Doctoral Dissertation Proposal. The proposal must be approved by the dissertation committee, which consists of the three qualifying exam committee members, plus a fourth member from outside the Department of Mathematical Sciences. After successfully completing this requirement, the student advances to doctoral candidacy.

Dissertation Research

Code	Title	Credits
Select 12-24 credits from the following:		12-24
MATH 998	Doctoral Dissertation Proposal	
MATH 999	Doctoral Dissertation	
Total Credits		12-24

Doctoral Dissertation

After advancing to candidacy, the student will work on a doctoral dissertation while enrolled in MATH 999 Doctoral Dissertation. The dissertation is a written piece of original mathematics that demonstrates a doctoral candidate's mastery of the subject matter. A student is expected to produce new and original research worthy of publication in a peer-reviewed journal. After the dissertation is completed, the committee will review the dissertation and examine the student in a public oral thesis defense.

Department of Physics and Astronomy

Phone: 703-993-1280
Email: physics@gmu.edu
Website: physics.gmu.edu

Administration

- Paul So, Chair
- Jie Zhang, Associate Chair for Research
- John Cressman, Associate Chair for Laboratory Instruction
- Ernest Barreto, Graduate Advisor (Physics)
- Chi Yang, Graduate Advisor (Engineering Physics)
- Joseph Weingartner, Undergraduate Advisor (Physics, Astronomy & Astrophysics)
- Fernando Camelli, Undergraduate Advisor (Computational & Engineering Physics)
- Erhai Zhao, Undergraduate Advisor (Physics)
- Phil Rubin, Undergraduate Advisor (Incoming, First-years, and Transfers)

The Department of Physics and Astronomy is dedicated to the dissemination and advancement of physics and astronomy through instruction, research, and outreach.

The department provides rigorous training for physics and astronomy students and prepares them to be successful, confident, and versatile in their ability to apply physics and astronomy principles within any chosen field. The department also aims to deliver and instill a broad-based understanding of general physics and astronomy principles and practices to the wider university community through our Mason Core (general education) courses. Our student-centric curriculum and instruction use a mixture of traditional and current pedagogical techniques informed by on-going educational research. It is our goal to help students to develop versatility and creativity through repeated analytical practices and problem-solving training in their coursework and faculty-led research projects.

Research in the department focuses on pushing the frontiers of physics and astronomy in a broad range of topics using theoretical, experimental, observational, and computational approaches. The department maintains many active collaborations with scientists across different disciplines within the university community and with other national and international institutions. The department believes strongly in incorporating both graduate as well as undergraduate students in our research programs. It is our goal to see students arriving with an enthusiasm and curiosity for physics and astronomy and leaving as true scientists ready to conduct their own scientific investigations.

Undergraduate Programs

The department offers the Physics, BS and the Astronomy, BS. Also available are the Physics Minor, the Astronomy Minor, and the Renewable Energy Interdisciplinary Minor.

Undergraduate Research Opportunities

The department offers many opportunities for undergraduate students to become involved with research. Students should consult with faculty working on research topics of interest to them, based on their exploration of the department's website (http://physics.gmu.edu/).

Bachelor's/Accelerated Master's Degree

Information regarding this program can be found in the Physics, BS/Accelerated Masters section of this catalog.

Graduate Programs

This department offers the Applied and Engineering Physics, MS. The department also supports the Energy and Sustainability concentration in the Interdisciplinary Studies, MAIS. Additionally, the department offers a Physics, PhD. These graduate programs are strongly supported by the extensive research activities of the faculty, including many collaborations with scientists and engineers at regional government laboratories.

Faculty

Department Faculty

Professors

Barreto, Becker, Kan, Lohner, Mishin, Rubin, Satija, Satyapal, Sauer, So, Summers, Trefil, Yang, Zhang

Associate Professors

Camelli, Cressman, Djordjevic, Dreyfus, Gliozzi, Marzougui, Nikolic, Oerter, Plavchan, Rosenberg, Sheng, Tian, Vora, Weigel, Weingartner, Wyczalkowski, Yigit, Zhao

Assistant Professors

Belle, Ericson, Ghahari, Ghirmire, Parks

Emeriti

Ceperley, Dworzecka, Ehrlich, Ellsworth, Lieb

Research Faculty

Attie, Balmacdea, Bilitza, Braga, Deneva, Dhadly, Duxbury, Fischer, Johnson, Mariska, Mazin, Meier, Mut, Odstrcil, Prescott, Poland, Purja Pun

Requirements & Policies

Requirements

Writing Intensive Requirement

George Mason requires all undergraduate students to complete at least one course designated as "writing intensive" in their majors at the 300-level or above. Students majoring in physics fulfill this requirement by successfully completing PHYS 407 Senior Laboratory in Modern Physics (Mason Core), PHYS 410 Computational Physics Capstone (Mason Core), or ASTR 402 RS: Methods of Observational Astronomy (Mason Core) depending upon their concentration (see program requirements (https://catalog.gmu.edu/colleges-schools/science/physics-astronomy/physics-bs/)). Astronomy majors fulfill the requirement by completing ASTR 402 RS: Methods of Observational Astronomy (Mason Core).

Teacher Licensure

Students who wish to become teachers should consult the College of Education and Human Development section of this catalog and attend an information session early in their undergraduate career. For more information, visit the Graduate School of Education's website (https://gse.gmu.edu/).

Physics for Non-majors

Recommended for biology, geology, and premedical students, and mathematics students who seek a BA degree:

Code	Title	Credits
PHYS 243	College Physics I (Mason Core)	3
PHYS 244	College Physics I Lab (Mason Core)	1
PHYS 245	College Physics II (Mason Core)	3
PHYS 246	College Physics II Lab (Mason Core)	1

Recommended for non-science majors:

Code	Title	Credits
PHYS 106	The Quantum World: A Continuous Revolution in What We Know and How We Live (Mason Core)	3
PHYS 111	Introduction to the Fundamentals of Atmospheric Science (Mason Core)	3
PHYS 112	Introduction to the Fundamentals of Atmospheric Science Lab (Mason Core)	1
PHYS 103	Physics and Everyday Phenomena I (Mason Core)	4
PHYS 104	Physics and Everyday Phenomena II (Mason Core)	4

The following courses constitute a calculus-based sequence in general physics to be taken by physics and engineering majors, chemistry, computer science, and mathematics students who are pursuing a BS degree:

Code	Title	Credits
PHYS 160 & PHYS 161 & PHYS 260 & PHYS 261	University Physics I (Mason Core) and University Physics I Laboratory (Mason Core) and University Physics II (Mason Core) and University Physics II Laboratory (Mason Core)	
or		
PHYS 325 & PHYS 262 & PHYS 263	Intermediate Methods of Experimental Physics and University Physics III (Mason Core) and University Physics III Laboratory (Mason Core)	

Students may receive credit for only one of the following three sequences:

Code	Title	Credits
PHYS 103 & PHYS 104	Physics and Everyday Phenomena I (Mason Core) and Physics and Everyday Phenomena II (Mason Core)	8
PHYS 243 & PHYS 244 & PHYS 245 & PHYS 246	College Physics I (Mason Core) and College Physics I Lab (Mason Core) and College Physics II (Mason Core) and College Physics II Lab (Mason Core)	8
PHYS 160 & PHYS 161 & PHYS 260 & PHYS 262 & PHYS 263	University Physics I (Mason Core) and University Physics I Laboratory (Mason Core) and University Physics II (Mason Core) and University Physics III (Mason Core) and University Physics III Laboratory (Mason Core)	11

Programs

- Applied and Engineering Physics, MS
- Astronomy Minor
- Astronomy, BS
- Astrophysics Minor
- Physics Minor
- Physics, BS
- Physics, PhD
- Renewable Energy Interdisciplinary Minor

Applied and Engineering Physics, MS

Banner Code: SC-MS-PHAE

Graduate Advisor

203 Planetary Hall
Fairfax Campus

Phone: 703-993-5356
Email: gadvphys@gmu.edu
Website: physics.gmu.edu

This degree contains elements of traditional physics programs and the application of physics to a diversity of critical societal problems. The program is divided into concentrations; see the Requirements tab for details.

Many courses are offered during late afternoon or evening hours to allow students with full-time employment to easily attend. Students employed at area high-technology organizations may take up to 6 credits (out of 30) for work done on the job under the guidance of a faculty member. This employment-related research may be conducted under an optional 3-credit research project or an optional 6-credit master's thesis. Master's students who are not employed full time may apply for financial aid or a limited number of research assistantships.

Admissions & Policies

Admissions

University-wide admissions policies can be found in the Graduate Admissions Policies section of this catalog.

To apply for this program, please complete the George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now/).

Individuals holding a baccalaureate degree in physics or a related field from an institution of higher education accredited by a Mason-recognized U.S. institutional accrediting agency or international equivalent and who have earned a GPA of 3.00 (out of 4.00) in their last 60 credits are invited to apply for admission. Applicants may be required to make up one or two course deficiencies, based on a graduate physics advisor's assessment, and be provisionally admitted into the program. Three letters of recommendation must be submitted, preferably from former professors. The general GRE and the GRE subject test in physics are recommended for applicants who received their baccalaureate degrees within the past five years.

Policies

For policies governing all graduate programs, see AP.6 Graduate Policies.

Requirements

Degree Requirements

Total credits: 30

Students should refer to the Admissions & Policies tab for specific policies related to this program.

Students should complete the core courses and select one concentration, completing all of the requirements therein.

Plan of Study

Before the beginning of their first semester, students are advised to meet with their academic advisor and develop a preliminary plan of study for the concentration they are interested in pursuing. A final plan of study must be approved by the graduate coordinator at the start of the semester in which the student graduates.

Core Courses

Students should choose their core courses in consultation with an advisor.

Choose one course from each grouping:

Code	Title	Credits
Group One: Computational Physics/Astrophysics		**3**
ASTR 601	Computer Simulation in Astronomy	
PHYS 510	Computational Physics I	
PHYS 534	Introduction to Quantum Computation and Quantum Information	
Group Two: Mechanics		**3**
PHYS 502	Introduction to Quantum Mechanics and Atomic Physics	

PHYS 620	Continuum Mechanics	
PHYS 684	Quantum Mechanics I	
Group Three: Electricity and Magnetism		**3**
PHYS 513	Applied Electromagnetic Theory	
PHYS 685	Classical Electrodynamics I	
Group Four: Statistical and Thermal Mechanics		**3**
PHYS 690	Engineering Thermodynamics	
PHYS 711	Statistical Mechanics	
Group Five: Methods in Physics		**3**
PHYS 591	Systems for Quantum Scientists	
PHYS 613	Computational Physics II	
PHYS 683	Mathematical Methods in Physics	
Total Credits		15

Standard Physics Concentration (STDP)

This concentration is intended for students who may wish to pursue further graduate study in physics or astrophysics or pursue graduate study following the Standard Physics concentration of the Physics PhD.

Code	Title	Credits
Core Course		**3**
PHYS 705	Classical Mechanics	
Concentration Electives		**3**
In consultation with an advisor, select 3 credits of graduate-level courses from the following course prefixes: [1]		
ASTR		
PHYS		
General Electives		**9**
In consultation with an advisor, select 9 credits of graduate-level science courses. [2]		
Total Credits		15

1
- Courses must be approved by an advisor.
- Courses cannot be directed reading, research, or thesis credits.

2
- Courses must be approved by an advisor.
- Students may take PHYS 796 Directed Reading and Research and up to 6 credits of PHYS 798 Research Project as general electives. PHYS 798 Research Project is conducted under the supervision of a faculty research advisor and may be based on work done as an intern. Up to 6 credits of PHYS 799 Master's Thesis may be taken as general electives by students pursuing the thesis option and may also be based on work completed as an intern.

Engineering Physics Concentration (ENGP)

This concentration is intended for students who may wish to pursue employment in an engineering-related field or pursue graduate study following the Engineering Physics concentration of the Physics PhD.

Code	Title	Credits
Core Course		**3**
PHYS 640	Finite Element Analysis of Solids and Fluids	
Concentration Electives		**3**
In consultation with an advisor, select 3 credits of graduate-level courses from the following course prefixes: [1]		
PHYS		
MATH		
BENG		
CEIE		
ECE		
ME		
General Electives		**9**
In consultation with an advisor, select 9 credits of graduate-level science and engineering courses. [2]		
Total Credits		15

1
- Courses must be approved by an advisor.
- These must be regular courses and not directed reading, research, or thesis credits.

2
- Courses must be approved by an advisor.
- Students may take PHYS 796 Directed Reading and Research and up to 6 credits of PHYS 798 Research Project as general electives. PHYS 798 Research Project is conducted under the supervision of a faculty research advisor and may be based on work done as an intern. Up to 6 credits of PHYS 799 Master's Thesis may be taken as general electives by students pursuing the thesis option and may also be based on work done as an intern.

Applied Physics Concentration (APLP)

This concentration is intended for students who wish to pursue employment in an applied physics or engineering-related field.

Code	Title	Credits
Core Course		**3**
PHYS 533	Modern Instrumentation	
Concentration Electives		**3**
In consultation with an advisor, select 3 credits of graduate-level courses from the following course prefixes: [1]		
PHYS		
BINF		
CHEM		
CLIM		
MATH		
CSI		
STAT		
General Electives		**9**
In consultation with an advisor, select 9 credits of graduate-level science and engineering courses. [2]		
Total Credits		15

1
- Courses must be approved by an advisor.
- These must be regular courses and not directed reading, research, or thesis credits.

2
- Courses must be approved by an advisor.
- Students may take PHYS 796 Directed Reading and Research and up to 6 credits of PHYS 798 Research Project as general electives. PHYS 798 Research Project is conducted under the supervision of a faculty research advisor and may be based on work done as an intern. Up to 6 credits of PHYS 799 Master's Thesis may be taken as general electives by students pursuing the thesis option and may also be based on work done as an intern.

Quantum Information Science and Engineering Concentration (QISE)

This concentration prepares students for the quantum information workforce through study of physics and courses across mathematics, computer science, electrical engineering, and mechanical engineering as appropriate for their career plans in this multidisciplinary field.

Code	Title	Credits
Core Course		**3**
Select a focus area and choose one course therein:		
Focus Area: Software		
PHYS 736	Computational Quantum Mechanics	
MATH 621	Algebra I	
MATH 641	Combinatorics and Graph Theory	
MATH 674	Stochastic Differential Equations	
CS 583	Analysis of Algorithms	
CS 587	Introduction to Cryptography	
CS 600	Theory of Computation	
CS 630	Advanced Algorithms	
CS 747	Deep Learning	
ECE 508	Internet of Things	
ECE 646	Applied Cryptography	
ECE 699	Advanced Topics in Electrical and Computer Engineering	
ECE 746	Advanced Applied Cryptography	
ECE 747	Cryptographic Engineering	
Focus Area: Hardware		
PHYS 512	Solid State Physics and Applications	
PHYS 533	Modern Instrumentation	
PHYS 611	Electro-optics	
PHYS 784	Quantum Mechanics II	
CHEM 579	Special Topics	
CHEM 736	Computational Quantum Mechanics	
ECE 685	Nanoelectronics	
ME 754	Introduction to Nano-Materials	
Research Project		**3**
Students in the QISE concentration are expected to gain hands-on experience either through an industry internship, externship research experience in a collaborating research laboratory, or research experience in a Mason research laboratory.		
PHYS 798	Research Project	
General Electives		**9**
Select 9 credits of graduate-level science and engineering courses approved by an academic advisor. [1]		
Total Credits		15

[1]
- Courses must be approved by an advisor.
- Students may take PHYS 796 (https://catalog.gmu.edu/search/?P=PHYS%20796) Directed Reading as a general elective. Up to 6 credits of PHYS 799 (https://catalog.gmu.edu/search/?P=PHYS%20799) Master's Thesis may be taken as general electives by students who would like a thesis option in addition to the research project.

Thesis Option

In preparation for this option, the student must form a committee comprising a chair and two other faculty members.

The student completes a thesis under the direction of the committee chair. The thesis work is typically completed while students are registered for 6 credits of PHYS 799 Master's Thesis. A thesis proposal and thesis are submitted in accordance with AP.6 Graduate Policies. The student must give an oral defense of the thesis to the committee and the George Mason University community at large. Students are expected to respond to questions on the thesis and related material. The committee determines whether the defense is satisfactory.

Accelerated Master's

Physics, BS/Applied and Engineering Physics, Accelerated MS

Overview

This bachelor's/accelerated master's degree program allows academically strong undergraduates with a commitment to research to obtain both the Physics, BS (https://catalog.gmu.edu/colleges-schools/science/physics-astronomy/physics-bs/) and the Applied and Engineering Physics, MS (https://catalog.gmu.edu/colleges-schools/science/physics-astronomy/applied-engineering-physics-ms/) degrees within an accelerated timeframe. Upon completion of this 138 credit accelerated program, students will be exceptionally well prepared for entry into a professional school, or a physics doctoral program, or a related discipline's doctoral program.

Students are eligible to apply for this accelerated program once they have earned at least 60 undergraduate credits and can enroll in up to 18 credits of graduate coursework after successfully completing 75 undergraduate credits. This flexibility makes it possible for students to complete a bachelor's and a master's in five years.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies. For more information on undergraduates enrolling in graduate courses, see AP.1.4.4 Graduate Course Enrollment by Undergraduates (https://catalog.gmu.edu/policies/academic/registration-attendance/#text).

Application Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in the Graduate Admission Policies section of this catalog.

Important application information and processes for this accelerated master's program can be found here (https://www2.gmu.edu/admissions-aid/how-apply/accelerated-masters/).

Additionally, interested applicants should submit a letter to the undergraduate physics coordinator requesting admission along with the aforementioned recommendation letter(s). Contact the physics undergraduate or graduate coordinator for further details.

Successful applicants will have earned 60 undergraduate credits and have an overall GPA of at least 3.00. Additionally, they will have

completed 45 credits in physics-major coursework. The physics major GPA must be at least 3.50.

One or more recommendation letters from one or more research supervisors are also required.

Interested applicants should submit a letter to the undergraduate physics coordinator requesting admission along with the aforementioned recommendation letter(s). Contact the physics undergraduate or graduate coordinator for further details.

Accelerated Option Requirements

After the completion of 75 undergraduate credits, students may complete 3 to 12 credits of graduate coursework that can apply to both the undergraduate and graduate degrees.

In addition to applying to graduate from the undergraduate program, students in the accelerated program must submit a bachelor's/accelerated master's transition form (available from the Office of the University Registrar (https://registrar.gmu.edu/forms/)) to the College of Science's Office of Academic and Student Affairs (https://cos.gmu.edu/about/contact-us/) by the last day to add classes of their final undergraduate semester. Students should enroll for courses in the master's program in the fall or spring semester immediately following conferral of the bachelor's degree, but should contact an advisor if they would like to defer up to one semester.

Students must maintain an overall GPA of 3.00 or higher in all graduate coursework and should consult with their faculty advisor to coordinate their academic goals.

Reserve Graduate Credit

Accelerated master's students may also take up to 6 graduate credits as reserve graduate credits. These credits do not apply to the undergraduate degree, but will reduce the master's degree by up to 6 credits. With 12 graduate credits counted toward the undergraduate degree plus the maximum 6 reserve graduate credits, the credits necessary for the graduate degree can be reduced by up to 18.

Graduate Course Suggestions

The following list of suggested courses is provided for general reference. To ensure an efficient route to graduation and post-graduation readiness, students are strongly encouraged to meet with an advisor before registering for graduate-level courses.

Code	Title	Credits
PHYS 684	Quantum Mechanics I	3
PHYS 685	Classical Electrodynamics I	3
PHYS 705	Classical Mechanics	3
PHYS 711	Statistical Mechanics	3

Mechanical Engineering, BS/Applied and Engineering Physics, Accelerated MS

Overview

This program allows academically strong undergraduates with a demonstrable commitment to research to obtain the Mechanical Engineering, BS (https://catalog.gmu.edu/colleges-schools/engineering/mechanical/mechanical-engineering-bs/) and Applied and Engineering Physics, MS degrees by successfully completing 139 credits. Upon completion, students are well-prepared for entering into the professional workforce, or a PhD program in physics or a related engineering discipline.

Admitted students take selected graduate courses during their senior year and are able to use up to 12 graduate credits in partial satisfaction of requirements for the undergraduate degree. Upon completion and conferral of the bachelor's degree and with satisfactory performance (grade of 'B' or better) in each of the graduate courses, students are given advanced standing in the master's program and complete an additional 18 credits to receive the master's degree.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies.

Application Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in the Graduate Admission Policies section of this catalog.

Successful applicants majoring in Mechanical Engineering will have completed at least 60 credits toward their undergraduate degree with an overall GPA of at least 3.00, and the following courses with a GPA of 3.00 or better.

Code	Title	Credits
CS 112	Introduction to Computer Programming	4
ME 212	Solid Mechanics	3
ME 231	Dynamics	3
ME 313	Material Science	3
ME 322	Fluid Mechanics	3
ME 323	Heat Transfer	3
ME 351	Analytical Methods in Engineering	3

One or more recommendation letters from one or more research supervisors are also required. Interested applicants majoring in Mechanical Engineering, BS (https://catalog.gmu.edu/colleges-schools/engineering/mechanical/mechanical-engineering-bs/) should submit a letter to the undergraduate Mechanical Engineering coordinator and the Physics Graduate Coordinator, respectively, requesting admission along with the aforementioned recommendation letter(s). Contact the Mechanical Engineering undergraduate and the Physics graduate coordinator for further details.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites

Accelerated Option Requirements

At the beginning of the student's final undergraduate semester, students must submit a bachelor's/accelerated master's transition form (http://registrar.gmu.edu/forms/) to the College of Science's Office of Academic and Student Affairs (https://cos.gmu.edu/about/contact-us/). Students must begin their master's program in the semester immediately following conferral of the bachelor's degree.

Students must maintain an overall GPA of 3.00 or higher in graduate coursework.

Reserve Graduate Credit

While still in undergraduate status, a maximum of 6 additional graduate credits may be taken as reserve graduate credit and applied to the master's program. Reserve graduate credits do not apply to the undergraduate degree.

Graduate Course Suggestions

The following list of suggested courses is provided for general reference. To ensure an efficient route to graduation and career-readiness, students are strongly encouraged to meet with an advisor before registering for graduate-level courses.

Code	Title	Credits
PHYS 510	Computational Physics I	3
PHYS 620	Continuum Mechanics	3
PHYS 690	Engineering Thermodynamics	3

Astronomy Minor

Banner Code: ASTR

Undergraduate Astronomy Advisor

203 Planetary Hall
Fairfax Campus

Phone: 703-993-5356
Email: uadvstr@gmu.edu
Website: physics.gmu.edu

This minor expands upon a student's understanding of both astronomy beyond the introductory level and of fundamental principles, and further develops analytical skills.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 16

Students should refer to the Admissions & Policies tab for specific policies related to this program.

The minor requires completion of all coursework with a minimum GPA of 2.00.

Code	Title	Credits
Select 16 credits of astronomy courses as follows:		**16**
Select one or more courses from the following:		
ASTR 103	Astronomy (Mason Core)	
ASTR 111	The Solar System (Mason Core)	
ASTR 113	Stars, Galaxies, and the Universe (Mason Core)	
ASTR 210	Introduction to Astrophysics	
Select one or more courses from the following:		
ASTR 112	The Solar System Lab (Mason Core)	
ASTR 114	Stars, Galaxies, and the Universe Lab (Mason Core)	
ASTR 115	Finding New Worlds (Mason Core)	
ASTR 124	Introduction to Observational Astronomy	
Select two or more courses from the following:		
ASTR 301	Astrobiology	
ASTR 302	Foundations of Cosmological Thought (Mason Core)	
ASTR 328	Stars	
ASTR 401	Computer Simulation in Astronomy	
ASTR 402	RS: Methods of Observational Astronomy (Mason Core)	
ASTR 403	Planetary Science	
ASTR 404	Galaxies and Cosmology	
ASTR 420	Exoplanets	
ASTR 480	The Interstellar Medium	
Total Credits		16

Astronomy, BS

Banner Code: SC-BS-ASTR

Undergraduate Astronomy Advisor

203 Planetary Hall
Fairfax Campus

Phone: 703-993-5356
Email: uadvstr@gmu.edu
Website: physics.gmu.edu

This program prepares students for graduate school, a career in research or teaching, or employment in industry, business, or education fields where analytical skills and a scientific background are advantageous. Students who are considering a double major should talk to the undergraduate coordinator.

Admissions & Policies

Admissions

University-wide admissions policies can be found in Undergraduate Admissions Policies.

To apply for this program, please complete the George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now/).

Policies

Students must fulfill all Requirements for Bachelor's Degrees including the Mason Core.

At least 18 credits used to fulfill an Astronomy, BS cannot be used to fulfill another major or minor. Some course substitutions are allowed for double majors, subject to approval from the Department of Physics and Astronomy.

By taking ASTR 402 RS: Methods of Observational Astronomy (Mason Core), astronomy majors satisfy the university's writing-intensive requirement.

For policies governing all undergraduate programs, see AP.5 Undergraduate Policies.

Requirements

Degree Requirements

Total credits: minimum 120

Students should refer to the Admissions & Policies tab for specific policies related to this program.

Students must complete a total of 59 credits in physics and astronomy and 14 credits in mathematics with a minimum GPA of 2.00.

Required Astronomy Courses

Code	Title	Credits
ASTR 124	Introduction to Observational Astronomy	1
ASTR 210	Introduction to Astrophysics	3
ASTR 328	Stars	3
ASTR 401	Computer Simulation in Astronomy	3
ASTR 402	RS: Methods of Observational Astronomy (Mason Core) [1]	4
Total Credits		14

[1] Fulfills the writing intensive requirement.

Required Physics Courses

Code	Title	Credits
PHYS 160	University Physics I (Mason Core)	3
PHYS 161	University Physics I Laboratory (Mason Core)	1
PHYS 260	University Physics II (Mason Core)	3
PHYS 261	University Physics II Laboratory (Mason Core)	1
PHYS 251	Introduction to Computer Techniques in Physics	3
PHYS 301	Analytical Methods of Physics	3
PHYS 303	Classical Mechanics	3
PHYS 305	Electromagnetic Theory	3
PHYS 308	Modern Physics	3
PHYS 416	Undergraduate Physics Review	1
Total Credits		24

Required Math Courses

Code	Title	Credits
MATH 113	Analytic Geometry and Calculus I (Mason Core)	4
MATH 114	Analytic Geometry and Calculus II	4
MATH 213	Analytic Geometry and Calculus III	3
MATH 214	Elementary Differential Equations	3
Total Credits		14

Additional Coursework

Code	Title	Credits
Select 21 credits from the following:		21
ASTR 301	Astrobiology	
ASTR 403	Planetary Science	
ASTR 404	Galaxies and Cosmology	
ASTR 408	Senior Research	
or ASTR 409	Astronomy Internship	
ASTR 420	Exoplanets	
ASTR 480	The Interstellar Medium	
PHYS 306	Wave Motion and Electromagnetic Radiation	
PHYS 307	Thermal Physics	
PHYS 311	Instrumentation	
PHYS 312	Waves and Optics	
PHYS 325	Intermediate Methods of Experimental Physics	
PHYS 402	Introduction to Quantum Mechanics and Atomic Physics	
PHYS 403	Quantum Mechanics II	
PHYS 428	Relativity	
PHYS 440	Nuclear and Particle Physics	
PHYS 465	Planetary Atmospheres and Ionospheres	
PHYS 475	Atmospheric Physics	
Total Credits		21

Mason Core and Elective Credits

In order to meet a minimum of 120 credits, this degree requires an additional 47 credits, which may be applied toward any remaining Mason Core requirements (outlined below), Requirements for Bachelor's Degrees, and electives. Students are strongly encouraged to consult with their advisors to ensure that they fulfill all requirements.

Mason Core

Some Mason Core requirements may already be fulfilled by the major requirements listed above. Students are strongly encouraged to consult their advisors to ensure they fulfill all remaining Mason Core requirements.

Code	Title	Credits
Foundation Requirements		
Written Communication (ENGH 101)		3
Oral Communication		3
Quantitative Reasoning		3
Information Technology and Computing		3
Exploration Requirements		
Arts		3
Global Understanding		3
Literature		3
Natural Science		7
Social and Behavioral Sciences		3

Western Civilization/World History	3
Integration Requirements	
Written Communications (ENGH 302)	3
Writing-Intensive [1]	3
Synthesis/Capstone [2]	3
Total Credits	40

[1] Most programs include the writing-intensive course designated for the major as part of the major requirements; this course is therefore not counted towards the total required for Mason Core.

[2] Minimum 3 credits required.

Honors

Honors in the Major

Eligibility

Astronomy majors who have completed the prerequisites for ASTR 405 Honors Thesis in Astronomy I, have a GPA of at least 3.50 in ASTR and PHYS courses taken at Mason, and have a GPA of at least 3.50 in all courses taken at Mason may apply for admission to the astronomy honors program. Please visit the department for details.

Honors Requirements

To graduate with honors in astronomy, a student must maintain a GPA of at least 3.50 in their ASTR/PHYS courses. Students accepted into the honors program must complete ASTR 405 Honors Thesis in Astronomy I and ASTR 406 Honors Thesis in Astronomy II with a GPA of at least 3.50 and a grade of 'A-' or better in ASTR 406 Honors Thesis in Astronomy II. Students in ASTR 405 Honors Thesis in Astronomy I/ASTR 406 Honors Thesis in Astronomy II will complete a research project and write a thesis working under the supervision of a faculty member. At the end of ASTR 406 Honors Thesis in Astronomy II, the student will write a substantial thesis paper and make a presentation of results to their honors committee.

Astrophysics Minor

Banner Code: PHAP

Undergraduate Astronomy Advisor

203 Planetary Hall
Fairfax Campus

Phone: 703-993-5356
Email: uadvstr@gmu.edu
Website: physics.gmu.edu

This minor expands upon a student's understanding of both astronomy beyond the introductory level and of fundamental principles, and further develops analytical skills. The minor is an attractive option for students majoring in science, technology, engineering, or mathematics (STEM).

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 16-17

Students should refer to the Admissions & Policies tab for specific policies related to this program.

The minor requires completion of all coursework with a minimum GPA of 2.00.

Core Courses

Code	Title	Credits
Select one introductory physics sequence:		6
Sequence One		
PHYS 160	University Physics I (Mason Core)	
PHYS 260	University Physics II (Mason Core)	
Sequence Two		
PHYS 170	Introductory and Modern Physics I (Mason Core)	
PHYS 270	Introductory and Modern Physics II (Mason Core)	
ASTR 124	Introduction to Observational Astronomy	1
ASTR 210	Introduction to Astrophysics	3
Total Credits		10

Astronomy Electives

Code	Title	Credits
Select two courses from the following:		6-7
ASTR 301	Astrobiology	
ASTR 328	Stars	
ASTR 401	Computer Simulation in Astronomy	
ASTR 402	RS: Methods of Observational Astronomy (Mason Core)	
ASTR 403	Planetary Science	
ASTR 404	Galaxies and Cosmology	
ASTR 420	Exoplanets	
ASTR 480	The Interstellar Medium	
Total Credits		6-7

Physics Minor

Banner Code: PHYS

Undergraduate Physics Advisor

203 Planetary Hall
Fairfax Campus

Phone: 703-993-5356
Email: uadvastr@gmu.edu
Website: physics.gmu.edu

The physics minor will expand your understanding of physics beyond the introductory level and help to deepen your understanding of fundamental principles and further develop your analytical skills. The minor will be an attractive option for students majoring in science, technology, engineering, or mathematics (STEM).

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor with a minimum GPA of 2.00. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 17

Students should refer to the Admissions & Policies tab for specific policies related to this program.

Coursework

Code	Title	Credits
PHYS 160	University Physics I (Mason Core)	3
PHYS 161	University Physics I Laboratory (Mason Core)	1
PHYS 260	University Physics II (Mason Core)	3
PHYS 261	University Physics II Laboratory (Mason Core)	1
PHYS 308	Modern Physics	3
Total Credits		11

Additional Coursework

Code	Title	Credits
Select two from the following:		6
PHYS 303	Classical Mechanics	
PHYS 305	Electromagnetic Theory	
PHYS 306	Wave Motion and Electromagnetic Radiation	
PHYS 307	Thermal Physics	
PHYS 402	Introduction to Quantum Mechanics and Atomic Physics	
PHYS 428	Relativity	
Total Credits		6

Physics, BS

Banner Code: SC-BS-PHYS

Undergraduate Physics Advisor

203 Planetary Hall
Fairfax Campus

Phone: 703-993-5356
Email: uadvstr@gmu.edu
Website: physics.gmu.edu

The Physics, BS program prepares students for graduate school and careers in education, business, or industry.

Teacher Licensure

Students who wish to become teachers and plan to seek teacher licensure should consider the following options:

- Secondary Education - Physics (6-12) Undergraduate Certificate
- Physics, BS/Curriculum and Instruction, Accelerated MEd (Secondary Education Physics concentration)

Interested students should attend an information session early in their undergraduate career. For more information, visit the Graduate School of Education's website (http://gse.gmu.edu/).

Admissions & Policies

Admissions

University-wide admissions policies can be found in the Undergraduate Admissions Policies section of this catalog.

To apply for this program, please complete the George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now/).

Policies

Students must fulfill all Requirements for Bachelor's Degrees including the Mason Core.

The intensive writing requirement is fulfilled by taking PHYS 407 Senior Laboratory in Modern Physics (Mason Core), PHYS 410 Computational Physics Capstone (Mason Core), or ASTR 402 RS: Methods of Observational Astronomy (Mason Core), which are also capstone courses for the major.

For policies governing all undergraduate programs, see AP.5 Undergraduate Policies.

Double Majors

Students considering a double major with physics should discuss this option with the respective undergraduate coordinators.

Note that at least 18 credits used to fulfill the Physics, BS cannot be used to fulfill another major or minor. Some course substitutions are allowed for double majors, but these should be discussed with a physics advisor in advance.

Alternative Introductory Sequence

Normally, students who intend to major in physics should take the physics introductory sequence:

Code	Title	Credits
PHYS 160	University Physics I (Mason Core)	3
PHYS 161	University Physics I Laboratory (Mason Core)	1

PHYS 260	University Physics II (Mason Core)	3
PHYS 261	University Physics II Laboratory (Mason Core)	1

Students who decide to major in physics after completing PHYS 243 College Physics I (Mason Core), PHYS 244 College Physics I Lab (Mason Core), PHYS 245 College Physics II (Mason Core) and PHYS 246 College Physics II Lab (Mason Core) are welcome, but are required to obtain written permission from the Department of Physics and Astronomy before a change of major can be approved.

Requirements

Degree Requirements

Total credits: minimum 120

Students should refer to the Admissions & Policies tab for specific policies related to this program.

Students must complete a total of 75 credits in the major (69 credits if completing a second major), including at least 11 credits in mathematics, with a minimum GPA of 2.00.

Students must complete the coursework described below and either select a concentration or select the "BS without Concentration" option:

Physics Core Courses

Code	Title	Credits
PHYS 160	University Physics I (Mason Core)	3
PHYS 161	University Physics I Laboratory (Mason Core)	1
PHYS 251	Introduction to Computer Techniques in Physics	3
PHYS 260	University Physics II (Mason Core)	3
PHYS 261	University Physics II Laboratory (Mason Core)	1
PHYS 301	Analytical Methods of Physics	3
PHYS 303	Classical Mechanics	3
PHYS 305	Electromagnetic Theory [1]	3
PHYS 307	Thermal Physics	3
PHYS 308	Modern Physics	3
PHYS 402	Introduction to Quantum Mechanics and Atomic Physics	3
PHYS 416	Undergraduate Physics Review	1
Total Credits		30

[1] Students double majoring in engineering and physics may substitute ECE 305 Electromagnetic Theory for PHYS 305 Electromagnetic Theory.

Mathematics

Code	Title	Credits
MATH 113	Analytic Geometry and Calculus I (Mason Core)	4
MATH 114	Analytic Geometry and Calculus II	4
MATH 213	Analytic Geometry and Calculus III	3
Total Credits		11

BS without Concentration

Code	Title	Credits
Mathematics/Computational Physics		**6**
Select 6 credits from the following:		
MATH 203	Linear Algebra	
MATH 214	Elementary Differential Equations	
PHYS 325	Intermediate Methods of Experimental Physics	
Intermediate Laboratory		**6**
PHYS 311	Instrumentation	
PHYS 312	Waves and Optics	
Research, Internship, or Independent Study		**3**
Select 3 credits from the following:		
PHYS 326	Problems in Physics II	
PHYS 405	Honors Thesis in Physics I	
PHYS 406	Honors Thesis in Physics II	
PHYS 408	Senior Research	
PHYS 409	Physics Internship	
Capstone		**4**
PHYS 407	Senior Laboratory in Modern Physics (Mason Core) [1]	
PHYS 410	Computational Physics Capstone (Mason Core) [1]	
Physics Theory		**9-15**
All students complete the following 9 credits:		
PHYS 306	Wave Motion and Electromagnetic Radiation	
PHYS 403	Quantum Mechanics II	
PHYS 428	Relativity	
Only students who are not completing a second major must select 6 additional credits from the following:		
ASTR 210	Introduction to Astrophysics	
ASTR 328	Stars	
ASTR 403	Planetary Science	
ASTR 404	Galaxies and Cosmology	
PHYS 331	Physics of Renewable Energy	
PHYS 370	Molecular Biophysics	
PHYS 412	Solid State Physics and Applications	
PHYS 440	Nuclear and Particle Physics	
PHYS 465	Planetary Atmospheres and Ionospheres	
PHYS 475	Atmospheric Physics	
Total Credits		28-34

[1] Fulfills the writing intensive requirement.

Applied and Engineering Physics Concentration (PHAE)

Code	Title	Credits
Mathematics/Computational Physics		**3**
PHYS 325	Intermediate Methods of Experimental Physics	
Intermediate Laboratory		**6**

PHYS 311	Instrumentation	
PHYS 312	Waves and Optics	
Physics Theory		**9**
PHYS 306	Wave Motion and Electromagnetic Radiation	
Select 6 credits from the following:		
PHYS 331	Physics of Renewable Energy	
PHYS 370	Molecular Biophysics	
PHYS 403	Quantum Mechanics II	
PHYS 412	Solid State Physics and Applications	
Capstone		**4**
Select 4 credits from the following:		
PHYS 407	Senior Laboratory in Modern Physics (Mason Core) [1]	
PHYS 410	Computational Physics Capstone (Mason Core) [1]	
Practical Work		**6-12**
Students who are not completing a second major should select 12 credits from the following. Students who are completing a second major should select 6 credits:		
PHYS 405	Honors Thesis in Physics I	
PHYS 406	Honors Thesis in Physics II	
PHYS 408	Senior Research	
PHYS 409	Physics Internship	
BENG 320	Bioengineering Signals and Systems	
ECE 415	Power System Analysis	
ECE 416	Electric Machinery and Modern Applications	
Or other approved 300 or 400-level Volgenau School of Engineering courses		
Total Credits		28-34

[1] Fulfills the writing intensive requirement.

Astrophysics Concentration (PHAP)

Code	Title	Credits
Mathematics/Computational Physics		**6**
ASTR 401	Computer Simulation in Astronomy	
MATH 214	Elementary Differential Equations	
Intermediate Laboratory		**6**
PHYS 311	Instrumentation	
PHYS 312	Waves and Optics	
Research, Internship, or Independent Study		**3**
Select 3 credits from the following:		
ASTR 405	Honors Thesis in Astronomy I	
ASTR 406	Honors Thesis in Astronomy II	
ASTR 408	Senior Research	
ASTR 409	Astronomy Internship	
PHYS 326	Problems in Physics II	
PHYS 405	Honors Thesis in Physics I	
PHYS 406	Honors Thesis in Physics II	
PHYS 408	Senior Research	
PHYS 409	Physics Internship	
Capstone		**4**
Select 4 credits from the following:		
ASTR 402	RS: Methods of Observational Astronomy (Mason Core) [1]	
PHYS 407	Senior Laboratory in Modern Physics (Mason Core) [1]	
PHYS 410	Computational Physics Capstone (Mason Core) [1]	
Physics and Astronomy Theory		**12-18**
Students who are not completing a second major must complete the following:		
ASTR 210	Introduction to Astrophysics	
ASTR 328	Stars	
PHYS 306	Wave Motion and Electromagnetic Radiation	
PHYS 428	Relativity	
Select two courses from the following:		
ASTR 403	Planetary Science	
ASTR 404	Galaxies and Cosmology	
ASTR 420	Exoplanets	
ASTR 480	The Interstellar Medium	
Students who are completing a second major must complete the following:		
ASTR 210	Introduction to Astrophysics	
ASTR 328	Stars	
Select 3 credits from the following:		
PHYS 306	Wave Motion and Electromagnetic Radiation	
PHYS 428	Relativity	
Select 3 credits from the following:		
ASTR 403	Planetary Science	
ASTR 404	Galaxies and Cosmology	
ASTR 420	Exoplanets	
ASTR 480	The Interstellar Medium	
Total Credits		31-37

[1] Fulfills the writing intensive requirement.

Computational Physics Concentration (PHCP)

Code	Title	Credits
Mathematics/Computational Physics		**15**
PHYS 325	Intermediate Methods of Experimental Physics	
MATH 203	Linear Algebra	
MATH 214	Elementary Differential Equations	
Select 6 credits from the following:		
ASTR 401	Computer Simulation in Astronomy	
CDS 302	Scientific Data and Databases	
CDS 303	Scientific Data Mining	
MATH 446	Numerical Analysis I	
MATH 447	Numerical Analysis II	
Intermediate Laboratory		**3**
PHYS 311	Instrumentation	
Research, Internship, or Independent Study		**3**
Select 3 credits from the following:		

PHYS 326	Problems in Physics II	
PHYS 405	Honors Thesis in Physics I	
PHYS 406	Honors Thesis in Physics II	
PHYS 408	Senior Research	
PHYS 409	Physics Internship	
Capstone		**4**
PHYS 410	Computational Physics Capstone (Mason Core) [1]	
Physics and Astronomy Theory		**3-9**
Students who are not completing a second major must select 9 credits of the following. Students who are completing a second major must select 3 credits from the following:		
ASTR 210	Introduction to Astrophysics	
ASTR 328	Stars	
ASTR 403	Planetary Science	
PHYS 306	Wave Motion and Electromagnetic Radiation	
PHYS 412	Solid State Physics and Applications	
Total Credits		28-34

[1] Fulfills the writing intensive requirement.

Mason Core and Elective Credits

In order to meet a minimum of 120 credits, this degree requires additional credits (specific credit counts by concentration are shown below), which may be applied toward any remaining Mason Core (https://catalog.gmu.edu/mason-core/) requirements (outlined below), Requirements for Bachelor's Degrees (https://catalog.gmu.edu/policies/academic/undergraduate-policies/#ap-5-3-2), and electives. Students are strongly encouraged to consult with their advisors to ensure that they fulfill all requirements.

- Without concentration: 45 (or 51 if completing a second major)
- PHAE concentration: 45 (or 51 if completing a second major)
- PHAP concentration: 42 (or 48 if completing a second major)
- PHCP concentration: 45 (or 51 if completing a second major)

Mason Core

Some Mason Core requirements may already be fulfilled by the major requirements listed above. Students are strongly encouraged to consult their advisors to ensure they fulfill all remaining Mason Core requirements.

Code	Title	Credits
Foundation Requirements		
Written Communication (ENGH 101)		3
Oral Communication		3
Quantitative Reasoning		3
Information Technology and Computing		3
Exploration Requirements		
Arts		3
Global Understanding		3
Literature		3
Natural Science		7
Social and Behavioral Sciences		3
Western Civilization/World History		3
Integration Requirements		
Written Communications (ENGH 302)		3
Writing-Intensive [1]		3
Synthesis/Capstone [2]		3
Total Credits		40

[1] Most programs include the writing-intensive course designated for the major as part of the major requirements; this course is therefore not counted towards the total required for Mason Core.

[2] Minimum 3 credits required.

Honors

Honors in the Major

Physics majors who have maintained an overall GPA of at least 3.50 in physics courses and a GPA of 3.50 in all courses taken at George Mason University may apply to the physics honors program when they complete the first semester of their junior year.

To graduate with honors in physics, a student is required to maintain a minimum GPA of 3.00 in physics courses and successfully complete PHYS 405 Honors Thesis in Physics I and PHYS 406 Honors Thesis in Physics II with a GPA of at least 3.50 and a grade of at least 'A-' in PHYS 406 Honors Thesis in Physics II. Please visit the department for details.

Accelerated Master's

Physics, BS/Curriculum and Instruction, Accelerated MEd (Secondary Education Physics Concentration)

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BS in Physics and an MEd in Curriculum and Instruction (Secondary Education Physics concentration) (https://catalog.gmu.edu/colleges-schools/education-human-development/school-education/curriculum-instruction-med/)in an accelerated time-frame after satisfactory completion of a minimum of 143 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degrees for policies related to this program.

This accelerated option is offered jointly by the department of Physics and Astronomy and the School of Education.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies (https://catalog.gmu.edu/admissions/graduate-policies/) and Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies. For information specific to this accelerated master's program, see Application Requirements

and Deadlines (https://cehd.gmu.edu/bachelors-accelerated-masters-program/).

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits, and additional unit-specific criteria.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MEd program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- 3.0 overall GPA
- Completion of specific undergraduate coursework
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following which can be taken as Advanced Standing or Reserve Graduate credit (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) (to be determined by the student and their advisor):

Code	Title	Credits
EDRD 619	Literacy in the Content Areas	3
EDUC 547	Scientific Inquiry and the Nature of Science	3
SEED 522	Foundations of Secondary Education	3
SEED 540	Human Development and Learning: Secondary Education	3
SEED 573	Teaching Science in the Secondary School	3
SEED 673	Advanced Methods of Teaching Science in the Secondary School	3
SEED approved elective		

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies.

Physics, BS/Applied and Engineering Physics, Accelerated MS

Overview

This bachelor's/accelerated master's degree program allows academically strong undergraduates with a commitment to research to obtain both the Physics, BS (https://catalog.gmu.edu/colleges-schools/science/physics-astronomy/physics-bs/) and the Applied and Engineering Physics, MS (https://catalog.gmu.edu/colleges-schools/science/physics-astronomy/applied-engineering-physics-ms/) degrees within an accelerated timeframe. Upon completion of this 138 credit accelerated program, students will be exceptionally well prepared for entry into a professional school, or a physics doctoral program, or a related discipline's doctoral program.

Students are eligible to apply for this accelerated program once they have earned at least 60 undergraduate credits and can enroll in up to 18 credits of graduate coursework after successfully completing 75 undergraduate credits. This flexibility makes it possible for students to complete a bachelor's and a master's in five years.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies. For more information on undergraduates enrolling in graduate courses, see AP.1.4.4 Graduate Course Enrollment by Undergraduates (https://catalog.gmu.edu/policies/academic/registration-attendance/#text).

Application Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in the Graduate Admission Policies section of this catalog.

Important application information and processes for this accelerated master's program can be found here (https://www2.gmu.edu/admissions-aid/how-apply/accelerated-masters/).

Additionally, interested applicants should submit a letter to the undergraduate physics coordinator requesting admission along with the aforementioned recommendation letter(s). Contact the physics undergraduate or graduate coordinator for further details.

Successful applicants will have earned 60 undergraduate credits and have an overall GPA of at least 3.00. Additionally, they will have completed 45 credits in physics-major coursework. The physics major GPA must be at least 3.50.

One or more recommendation letters from one or more research supervisors are also required.

Interested applicants should submit a letter to the undergraduate physics coordinator requesting admission along with the aforementioned recommendation letter(s). Contact the physics undergraduate or graduate coordinator for further details.

Accelerated Option Requirements

After the completion of 75 undergraduate credits, students may complete 3 to 12 credits of graduate coursework that can apply to both the undergraduate and graduate degrees.

In addition to applying to graduate from the undergraduate program, students in the accelerated program must submit a bachelor's/accelerated master's transition form (available from the Office of the University Registrar (https://registrar.gmu.edu/forms/)) to the College of Science's Office of Academic and Student Affairs (https://cos.gmu.edu/about/contact-us/) by the last day to add classes of their final undergraduate semester. Students should enroll for courses in the master's program in the fall or spring semester immediately following conferral of the bachelor's degree, but should contact an advisor if they would like to defer up to one semester.

Students must maintain an overall GPA of 3.00 or higher in all graduate coursework and should consult with their faculty advisor to coordinate their academic goals.

Reserve Graduate Credit

Accelerated master's students may also take up to 6 graduate credits as reserve graduate credits. These credits do not apply to the undergraduate degree, but will reduce the master's degree by up to 6 credits. With 12 graduate credits counted toward the undergraduate degree plus the maximum 6 reserve graduate credits, the credits necessary for the graduate degree can be reduced by up to 18.

Graduate Course Suggestions

The following list of suggested courses is provided for general reference. To ensure an efficient route to graduation and post-graduation readiness, students are strongly encouraged to meet with an advisor before registering for graduate-level courses.

Code	Title	Credits
PHYS 684	Quantum Mechanics I	3
PHYS 685	Classical Electrodynamics I	3
PHYS 705	Classical Mechanics	3
PHYS 711	Statistical Mechanics	3

Bachelor's Degree (selected), Bioinformatics Management, Accelerated PSM

Overview

This bachelor's/accelerated master's degree program allows academically strong undergraduates with a commitment to advance their education to obtain both the Biology, BS (https://catalog.gmu.edu/colleges-schools/science/biology/biology-bs/), or the Chemistry, BS, or the Computational and Data Sciences, BS (https://catalog.gmu.edu/colleges-schools/science/computational-data-sciences/computational-data-sciences-bs/), or the Physics, BS (https://catalog.gmu.edu/colleges-schools/science/physics-astronomy/physics-bs/), or the Neuroscience, BS (https://catalog.gmu.edu/colleges-schools/science/neuroscience-program/neuroscience-bs/) and the Bioinformatics Management, PSM (https://catalog.gmu.edu/colleges-schools/science/systems-biology/bioinformatics-management-professional-science-masters/) degrees within an accelerated timeframe. Upon completion of this 138 credit accelerated program, students will be exceptionally well prepared for entry into their careers or into a doctoral program in the field or in a related discipline.

Students are eligible to apply for this accelerated program once they have earned at least 60 undergraduate credits and can enroll in up to 18 credits of graduate coursework after successfully completing 75 undergraduate credits. This flexibility makes it possible for students to complete a bachelor's and a master's in five years.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies. For more information on undergraduates enrolling in graduate courses, see AP.1.4.4 Graduate Course Enrollment by Undergraduates (https://catalog.gmu.edu/policies/academic/registration-attendance/#text).

Application Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in the Graduate Admission Policies section of this catalog.

Important application information and processes for this accelerated master's program can be found here (https://www2.gmu.edu/admissions-aid/how-apply/accelerated-masters/).

Students in the Biology, BS (https://catalog.gmu.edu/colleges-schools/science/biology/biology-bs/); Chemistry, BS (https://catalog.gmu.edu/colleges-schools/science/chemistry-biochemistry/chemistry-bs/); Computational and Data Sciences, BS (https://catalog.gmu.edu/colleges-schools/science/computational-data-sciences/computational-data-sciences-bs/); Neuroscience, BS (https://catalog.gmu.edu/colleges-schools/science/neuroscience-program/neuroscience-bs/); or Physics, BS (https://catalog.gmu.edu/colleges-schools/science/physics-astronomy/physics-bs/) with an overall GPA of at least 3.00 in their last 60 credits are welcome to apply to the Bioinformatics Management, PSM accelerated master's program. Applicants to this accelerated master's should have previously taken courses in molecular biology, computer science, calculus, physical chemistry, and statistics. Students with deficiencies in one or more of these areas may be required to take additional courses from the undergraduate curriculum.

The GRE requirement is waived for students accepted into this accelerated program.

Students should seek out the graduate program's advisor who will aid in choosing the appropriate graduate courses and help prepare the student for graduate studies.

Accelerated Option Requirements

After the completion of 75 undergraduate credits, students may complete 3 to 12 credits of graduate coursework that can apply to both the undergraduate and graduate degrees.

In addition to applying to graduate from the undergraduate program, students in the accelerated program must submit a bachelor's/accelerated master's transition form (available from the Office of the University Registrar (https://registrar.gmu.edu/forms/)) to the College of Science's Office of Academic and Student Affairs (https://cos.gmu.edu/about/contact-us/) by the last day to add classes of their final undergraduate semester. Students should enroll for courses in the master's program in the fall or spring semester immediately following conferral of the bachelor's degree, but should contact an advisor if they would like to defer up to one semester.

Students must maintain an overall GPA of 3.00 or higher in all graduate coursework and should consult with their faculty advisor to coordinate their academic goals.

Reserve Graduate Credits

Accelerated master's students may also take up to 6 graduate credits as reserve graduate credits. These credits do not apply to the undergraduate degree, but will reduce the master's degree by up to 6 credits. With 12 graduate credits counted toward the undergraduate degree plus the maximum 6 reserve graduate credits, the credits necessary for the graduate degree can be reduced by up to 18.

Graduate Course Suggestions

The following list of suggested courses is provided for general reference. To ensure an efficient route to graduation and post-graduation readiness,

students are strongly encouraged to meet with an advisor before registering for graduate-level courses.

Code	Title	Credits
BINF 630	Bioinformatics Methods	3
BINF 631	Molecular Cell Biology for Bioinformatics	3
BINF 702	Biological Data Analysis	3
GBUS 738	Data Mining for Business Analytics	3
or MBA 738	Data Mining for Business Analytics	

Physics, PhD

Banner Code: SC-PHD-PHYS

Graduate Advisor

203 Planetary Hall
Fairfax Campus

Phone: 703-993-5356
Email: gadvphys@gmu.edu
Website: physics.gmu.edu

The degree program contains a Standard concentration for traditional physics programs that focus on Astrophysics, Condensed Matter Theory, Dynamical Systems/Biological Physics, High Energy Physics, Materials Physics, Space Sciences, and an Engineering Physics concentration that combines the disciplines of physics, mathematics, and engineering. The doctoral students accepted into each concentration of the Physics PhD program take a required set of core courses for the given concentration (see Requirements tab).

By working with the dissertation committee, a student in the Standard concentration may choose to specialize in an emphasis area such as Astrophysics, Atomic Molecular and Optical Physics, Condensed Matter Experiment, Condensed Matter Theory, Dynamical Systems/Biological Physics, High Energy Physics, Materials Physics, Space Sciences, or others according to his or her particular interests. A student in the Engineering Physics concentration may choose to specialize in Applied Mechanics (Fluids and Solids), or other applied and engineering physics areas. By the end of their first year, all students should pair with a faculty advisor who will guide them toward doctoral candidacy.

Admissions & Policies

Admissions

University-wide admissions policies can be found in the Graduate Admissions Policies section of this catalog.

To apply for this program, please complete the George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now/).

Those holding a baccalaureate degree in physics, astronomy, or engineering from an institution of higher education accredited by a Mason-recognized U.S. institutional accrediting agency or international equivalent who earned a GPA of 3.00 (out of 4.00) or higher in their last 60 credits and have received acceptable scores on the GRE-GEN are invited to apply for admission. Three letters of recommendation must be submitted, preferably from former professors. The GRE subject test in physics is highly recommended for all interested applicants in the standard concentration who received their baccalaureate degrees within the past five years. The GRE requirement can be waived if the student has received a master's degree from a regionally accredited U.S. institution.

A degree-seeking graduate applicant with a baccalaureate degree who has not met all admission requirements may be offered provisional admission if sufficient evidence is presented to suggest that the applicant has the ability to pursue graduate work. For more details concerning admission requirements to George Mason University please refer to Graduate Admission Policies.

Policies

For policies governing all graduate programs, see AP.6 Graduate Policies.

Reduction of Credits

For students entering the doctoral program with a master's degree in a related field from an institution of higher education accredited by a Mason-recognized U.S. institutional accrediting agency or international equivalent, the number of required credits may be reduced up to 30 credits, subject to approval of the program faculty and the college's associate dean. See AP.6.5.2 Reduction of Credits for more information.

Requirements

Degree Requirements

Total credits: 72

Students should refer to the Admissions & Policies tab for specific policies related to this program.

Students must first choose one concentration, then continue with the additional sections:

Standard Concentration (STND)

Code	Title	Credits
Core Courses		**12**
PHYS 684	Quantum Mechanics I	
PHYS 685	Classical Electrodynamics I	
PHYS 705	Classical Mechanics	
PHYS 711	Statistical Mechanics	
Specialty Science Courses [1]		**6**
Select two of the following courses:		
ASTR 680	Physics of Interstellar Media	
ASTR 730	Stellar Astrophysics	
PHYS 784	Quantum Mechanics II	
PHYS 785	Classical Electrodynamics II	
Seminar Course		**3**
PHYS 703	Seminar in Physics (must be taken three times)	
Total Credits		21

Engineering Physics Concentration (ENGP)

Code	Title	Credits
Core Courses		**12**
PHYS 510	Computational Physics I	
PHYS 613	Computational Physics II	
PHYS 620	Continuum Mechanics	

PHYS 690	Engineering Thermodynamics	
Specialty Science Courses [1]		**6**
Select two of the following courses:		
PHYS 640	Finite Element Analysis of Solids and Fluids	
PHYS 694	Applied Mechanics of Solids	
PHYS 695	Applied Fluid Mechanics	
PHYS 684	Quantum Mechanics I	
PHYS 685	Classical Electrodynamics I	
Seminar Courses		**3**
PHYS 703	Seminar in Physics (at least one credit required)	
And any other graduate-level PHYS/CEIE/MECH/MATH/CSI seminar		
Total Credits		21

[1] These electives must be approved by the student's advisor or the graduate coordinator.

General Science Electives

Code	Title	Credits
Students in both the Standard Concentration and Engineering Physics Concentration must complete 27 credits of approved general electives and preliminary research credits: [2]		27
ASTR 796	Directed Reading and Research	
ASTR 798	Research Project	
PHYS 796	Directed Reading and Research	
PHYS 798	Research Project	
Any graduate-level course chosen from PHYS/ASTR courses [3]		
Total Credits		27

[2] PHYS 796 Directed Reading and Research/ASTR 796 Directed Reading and Research may be repeated as needed.

[3] General elective courses may be chosen from PHYS/ASTR courses, and/or other related disciplines as approved by the student's advisor or dissertation committee.

Qualifying Examination

All students must successfully pass the four individual sections required for each concentration of a qualifying examination. For the Standard Concentration, the four topics on the qualifying exam are covered in the four core courses (PHYS 684 Quantum Mechanics I, PHYS 685 Classical Electrodynamics I, PHYS 705 Classical Mechanics, and PHYS 711 Statistical Mechanics). For the Engineering Physics Concentration, the four topics on the qualifying exam are covered in the four core courses (PHYS 690 Engineering Thermodynamics or PHYS 711 Statistical Mechanics, PHYS 620 Continuum Mechanics or PHYS 705 Classical Mechanics, PHYS 510 Computational Physics I and PHYS 613 Computational Physics II) and in one of the specialty science courses (PHYS 694 Applied Mechanics of Solids or PHYS 695 Applied Fluid Mechanics).

All four sections of the qualifying exam will be offered twice a year, typically in the week before the start of the fall and spring semesters. A student can choose to take a particular section or a combination of sections at one sitting. Grades of "pass" or "unsatisfactory" will be given individually for each of the four sections of the exam. If a student receives a grade of "unsatisfactory" in a given section of the exam, he/she is allowed to retake that section in the next cycle, but a student must satisfactorily pass all sections of the exam by the end of the third year from the date of enrollment in the PhD program. Students entering the program with equivalent courses taken at another institution can satisfy a core course requirement by taking the associated qualifying exam without taking the course.

At the beginning of each academic year, the program director will appoint members to the qualifying examination committee. This committee is responsible for creating, administering, and grading the qualifying exams offered that year. Additional information and previous qualifying exams can be found on the departmental web page.

Dissertation Committee and Program of Study

Upon successful completion of the qualifying examinations, a dissertation committee should be formed by the student as soon as possible. The chair of this committee must be a graduate faculty member from the Department of Physics and Astronomy. The committee must include at least two additional members from the graduate faculty, one of whom must be from outside the Department of Physics and Astronomy. The composition of the committee must be approved by the program director. The dissertation committee is responsible for directing the student in their chosen field of research. The student should work closely with their committee to select specialty courses and electives that form a cohesive program of study. The student's program of study must be approved by the dean before advancement to candidacy.

Advancement to Candidacy

Before a student may be advanced to doctoral candidacy, he/she needs to complete all required coursework, pass the qualifying examination, have the program of study and dissertation proposal approved by the dean, and be recommended by the dissertation committee. Advancement to doctoral candidacy implies that the student has demonstrated adequate breadth and depth of knowledge in the field of study and is capable of conducting research on the boundaries of knowledge.

Dissertation Research

Note: No more than 24 combined credits from PHYS 998 Doctoral Dissertation Proposal/ASTR 998 Doctoral Dissertation Proposal and PHYS 999 Doctoral Dissertation/ASTR 999 Doctoral Dissertation may be applied toward satisfying the doctoral degree requirements, with no more than 21 credits of PHYS 998 Doctoral Dissertation Proposal/ASTR 998 Doctoral Dissertation Proposal.

Code	Title	Credits
Select 24 credits from the following:		24
ASTR 998	Doctoral Dissertation Proposal	
ASTR 999	Doctoral Dissertation	
PHYS 998	Doctoral Dissertation Proposal	
PHYS 999	Doctoral Dissertation	
Total Credits		24

Doctoral Dissertation

After advancing to doctoral candidacy, the student works with their dissertation committee to develop their preliminary research into a doctoral dissertation. The dissertation research should represent a significant contribution to its scientific field and should be deemed publishable in a refereed scientific journal. The dissertation must be

defended in a public forum before the dissertation committee and other interested faculty.

Renewable Energy Interdisciplinary Minor

Banner Code: RNRG

Undergraduate Physics Advisor

203 Planetary Hall
Fairfax Campus

Phone: 703-993-5356
Email: uadvphys@gmu.edu
Website: physics.gmu.edu

This college-wide interdisciplinary minor is designed for students considering a career in the field of renewable energy, or as preparation for graduate work in a wide range of academic disciplines.

Renewable energy, as normally understood, includes a variety of methods of energy generation, such as solar, wind, hydro, tidal, and geothermal, as well as energy storage methods and energy conservation. Jobs related to renewable energy lie in a wide range of areas including engineering, business, marketing, finance, installation, software, legal affairs, and research. Projections suggest that employment opportunities in the renewable energy field will increase dramatically in the near future. The renewable energy interdisciplinary minor is therefore ideally suited for students with majors in engineering, business, policy, and science.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 15-17

Students should refer to the Admissions & Policies tab for specific policies related to this program.

Core Courses

Code	Title	Credits
Complete the following core courses:		
PHYS 131	Introduction to Renewable Energy	3
PHYS 411	Renewable Energy Internship	3
Total Credits		6

Minor Options

Code	Title	Credits
Choose three courses, including:		9 - 11
One (1) course (3 credits) from Category A		
One (1) course (3-4 credits) from Category B		
One (1) course (3-4 credits) from Category C or one (1) 300-400 level course (3-4 credits) from Category A or Category B		
Category A: Economics and Policy		
ECON 100	Economics for the Citizen (Mason Core)	
or ECON 103	Contemporary Microeconomic Principles (Mason Core)	
or ECON 104	Contemporary Macroeconomic Principles (Mason Core)	
or ECON 105	Environmental Economics for the Citizen (Mason Core)	
ECON 309	Economic Problems and Public Policies	
ECON 335	Environmental Economics	
ECON 435	Economics of Energy	
EVPP 338	Economics of Environmental Policy	
EVPP/GOVT 361	Introduction to Environmental Policy	
EVPP 432	Energy Policy	
GGS 303	Geography of Resource Conservation (Mason Core)	
GGS 307	Geographic Approaches for Sustainable Development	
GOVT 304	American State and Local Government	
GOVT 364	Public Policy Making	
Category B: Science and Technology		
CEIE 100	Environmental Engineering around the World (Mason Core)	
CHEM 101	Introduction to Modern Chemistry (Mason Core)	
or CHEM 102	Chemistry for Changing Times (Mason Core)	
or CHEM 103	Chemical Science in a Modern Society (Mason Core)	
or CHEM 104	Chemistry for Changing Times (Mason Core)	
or CHEM 155	Introduction to Environmental Chemistry I (Mason Core)	
or CHEM 211	General Chemistry I (Mason Core)	
or CHEM 271	General Chemistry for Engineers Lecture (Mason Core)	
CHEM 156	Introduction to Environmental Chemistry II (Mason Core)	
or CHEM 212	General Chemistry II (Mason Core)	
CHEM 331	Physical Chemistry I	
CHEM 332	Physical Chemistry II	
CLIM 101	Global Warming: Weather, Climate, and Society (Mason Core)	
or CLIM 102	Introduction to Global Climate Change Science (Mason Core)	
GGS 102	Physical Geography (Mason Core)	
GGS 121	Dynamic Atmosphere and Hydrosphere (Mason Core)	
GGS 122	Dynamic Geosphere and Ecosphere	
GEOL 321	Geology of Energy Resources	
PHYS 331	Physics of Renewable Energy	
PHYS 332	Solar Cells	
PHYS 385	Materials Science with Applications to Renewable Energy	

STAT 250	Introductory Statistics I (Mason Core)
or STAT 344	Probability and Statistics for Engineers and Scientists I
or STAT 346	Probability for Engineers
Category C: Business and Communication	
ACCT 203	Survey of Accounting
or ACCT 204	Honors Survey of Accounting
BULE 303	Legal Environment of Business
BUS 200	Global Environment of Business (Mason Core)
BUS 210	Business Analytics I
BUS 310	Business Analytics II
COMM 303	Writing across the Media
COMM 330	Principles of Public Relations
EVPP 322	Business and Sustainability
EVPP 401	Integrated Environmental Assessment
EVPP 472	Tools and Techniques for International Development
GOVT 358	Nonprofit Financial Planning
MBUS 300	Accounting in a Global Economy
MBUS 306	Managing Projects and Operations
MGMT 303	Principles of Management
Total Credits	9-11

Forensic Science Program

Phone: 703-993-5071
Email: fscience@gmu.edu
Website: forensicscience.gmu.edu

Administration

- Mary Ellen O'Toole, Director

George Mason University is home to one of the premiere forensic science programs in the country. Forensic science is the application of scientific principles and techniques to the legal process. It is a blanket term for many fields and disciples, all related to the application of science to the law. The mission of the Forensic Science Program (FSP) is to provide outstanding scholarship to graduate and undergraduate students, seeking a career in forensic science, with both an in-depth theoretical as well as operational foundation.

As the field of forensic science is growing rapidly and new technology is being developed on a regular basis, our FSP specializes in providing the most current, accepted practices and methodologies in the application of forensic science techniques. The program also provides specialized learning experiences through select internship possibilities and research opportunities.

Our two-pronged theoretical-operational programs, prepare both undergraduate and graduate students with the skills and scientific knowledge to work in entry level and advanced positions. Depending on their degree and areas of interest, students are prepared to work in a wide range of forensic settings: from the laboratory to a homicide scene to the battle field as an intelligence analyst/officer, tasked with using biometrics to identify the next lone wolf or terrorist cell.

The FSP is an interdisciplinary academic program with its own dedicated teaching faculty who all have operational experience in forensic science. The program is administered by the Forensic Science Program Director, and is governed by the Forensic Science Program Committee.

Faculty

Program Faculty

Director

O'Toole

Associate Professors

DiZinno, Falsetti, Knight, Rancourt, Rule

Assistant Professors

Burmeister, Williams, Wilson

Adjunct Faculty

Eckenrode, Harrold, Hutchinson, Krakowiak, Mullins, O'Neal, Prugh, Rodway, Scott, Simpson, Smith, Spaun, Strohmeyer, Rodway, Weldon

Programs

- Forensic Science Minor
- Forensic Science, BS
- Forensic Science, MS
- Forensics Graduate Certificate

Forensic Science Minor

Banner Code: FRSC

Academic Advising

3400 Exploratory Hall
Fairfax Campus

Phone: 703-993-5071
Email: fscience@gmu.edu
Website: science.gmu.edu/academics/departments-units/forensic-science

This minor addresses the growing national and regional interest in forensic science by introducing students to the technical, scientific, and legal aspects of the field. The minor provides an attractive option for students with majors in the natural sciences, criminology, psychology, or computer science, and the curriculum structure makes it particularly suitable for students with majors in biology and chemistry.

Admissions & Policies

Policies

At least 8 credits must be applied only to this minor and may not be used to fulfill requirements of the student's major, concentration, or another minor or undergraduate certificate.

For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 20-21

Students should refer to the Admissions & Policies tab for specific policies related to this program.

Students must complete at least 6 credits in their minor at George Mason University and achieve a minimum GPA of 2.00 in courses applied to the minor.

Please pay attention to the prerequisites for each course in the curriculum below.

Foundation Science Courses

Code	Title	Credits
Select two courses or course/lab pairings from the courses below:		8
BIOL 213	Cell Structure and Function (Mason Core)	
BIOL 305 & BIOL 306	Biology of Microorganisms and Biology of Microorganisms Laboratory	
BIOL 311	General Genetics	
CHEM 211 & CHEM 213	General Chemistry I (Mason Core) and General Chemistry Laboratory I (Mason Core)	
CHEM 212 & CHEM 214	General Chemistry II (Mason Core) and General Chemistry Laboratory II (Mason Core)	
PHYS 160 & PHYS 161	University Physics I (Mason Core) and University Physics I Laboratory (Mason Core)	
PHYS 243 & PHYS 244	College Physics I (Mason Core) and College Physics I Lab (Mason Core)	
PHYS 245 & PHYS 246	College Physics II (Mason Core) and College Physics II Lab (Mason Core)	
PHYS 260 & PHYS 261	University Physics II (Mason Core) and University Physics II Laboratory (Mason Core)	
Total Credits		8

Forensic Science Core Courses

Code	Title	Credits
FRSC 200	Survey of Forensic Science	3
FRSC 201	Introduction to Criminalistics	3
Total Credits		6

Forensic Science Electives

Code	Title	Credits
Select one course from the following:		3
FRSC 302	Forensic Trace Analysis	
FRSC 303	Forensic Evidence and Ethics	
FRSC 304	Forensic Chemistry	
FRSC 460	Forensic DNA Analysis	
Total Credits		3

Supporting Courses

Code	Title	Credits
Select one course from the following;		3-4
FRSC 302	Forensic Trace Analysis [1]	
or FRSC 303	Forensic Evidence and Ethics	
or FRSC 304	Forensic Chemistry	
or FRSC 460	Forensic DNA Analysis	
GEOL 302	Mineralogy	
GEOL 306	Soil Science	
CRIM 400	Applied Criminal Psychology	
CRIM 410	Criminal Investigations	
PSYC 380	Introduction to Forensic Psychology	
PSYC 441	Criminal Behavior: Psychological and Neurological Aspects	
Total Credits		3-4

[1] If a FRSC course is chosen, select a different course than the one chosen to fulfill the Forensic Science Electives section.

Forensic Science, BS

Banner Code: SC-BS-FRSC

Academic Advising

3400 Exploratory Hall
Fairfax Campus

Phone: 703-993-5071
Email: fscience@gmu.edu
Website: science.gmu.edu/academics/departments-units/forensic-science

The Bachelor of Science in Forensic Science is a general forensic science degree that covers various fields within forensic science including field and laboratory applications. These topics include areas such as crime scene investigation, forensic DNA, forensic chemistry, trace evidence, firearms examination, questioned document, fingerprints, arson, and drug analysis.

This degree is intended to provide students with a well-rounded, hands-on forensic science education in order to prepare students for entrance into a graduate-level educational program, and/or entry-level professional careers in public and private forensic laboratories, federal, state, or local government/law enforcement, defense, homeland security and intelligence agencies.

The Forensic Science undergraduate program provides a strong scientific foundation while simultaneously enabling students to individualize their educational experience toward specific career goals or post-graduate degrees by taking specialized forensic science and natural science courses. This degree offers concentrations in Forensic Biology and Forensic Chemistry to prepare students who desire a career within these specialties.

Unique features of this program include an innovative curriculum that offers hands-on training with crime scene techniques and crime

laboratory methodologies, an outdoor forensic excavation research and training facility, and courses taught by professional and distinguished faculty from various forensic agencies and laboratories.

Admissions & Policies

Admissions

University-wide admissions policies can be found in the Undergraduate Admissions Policies section of this catalog.

To apply for this program, please complete the George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now/).

Policies

Students must fulfill all Requirements for Bachelor's Degrees, including the Mason Core.

FRSC 302 Forensic Trace Analysis **and** FRSC 304 Forensic Chemistry will satisfy the writing intensive requirement.

For policies governing all undergraduate programs, see AP.5 Undergraduate Policies.

Requirements

Degree Requirements

Total credits: minimum 120

Students should refer to the Admissions & Policies tab for specific policies related to this program.

Students majoring in forensic science must complete the core courses and choose one concentration. Students cannot declare the concentration upon admission; it can be declared once the student has earned a minimum of 60 credits.

All coursework must be completed with a minimum GPA of 2.30. No more than three courses with a grade of 'D' (1.00) may be applied to the major.

Students are advised to be aware of any prerequisites that may be required for each course in the curriculum.

Students are only permitted three attempts for all major courses; following a third unsuccessful attempt the student will no longer be able to pursue the major.

Forensic Science Core Courses

Students in each concentration should complete the following courses:

Code	Title	Credits
Forensic Science Courses		
FRSC 200	Survey of Forensic Science	3
FRSC 201	Introduction to Criminalistics	3
FRSC 302	Forensic Trace Analysis [1]	3
FRSC 303	Forensic Evidence and Ethics	3
FRSC 304 & FRSC 305	Forensic Chemistry and Forensic Chemistry Laboratory [1]	4
FRSC 401	Crime Scene Investigations	3
FRSC 405 or FRSC 406	Independent Research Methods Forensic Internship	3
FRSC 460 & FRSC 461	Forensic DNA Analysis and Forensic DNA Analysis Laboratory	4
FRSC 499	Comprehensive Examination	0
CRIM 100	Introduction to Criminal Justice (Mason Core)	3
Natural Science Core Courses		
BIOL 213	Cell Structure and Function (Mason Core)	4
BIOL 214 or STAT 250	Biostatistics for Biology Majors Introductory Statistics I (Mason Core)	3-4
BIOL 311	General Genetics	4
CHEM 211 & CHEM 213	General Chemistry I (Mason Core) and General Chemistry Laboratory I (Mason Core)	4
CHEM 212 & CHEM 214	General Chemistry II (Mason Core) and General Chemistry Laboratory II (Mason Core)	4
CHEM 313 & CHEM 315	Organic Chemistry I and Organic Chemistry Lab I	5
CHEM 314 & CHEM 318	Organic Chemistry II and Organic Chemistry Lab II	5
MATH 113 or MATH 123 & MATH 124	Analytic Geometry and Calculus I (Mason Core) Calculus with Algebra/Trigonometry, Part A and Calculus with Algebra/Trigonometry, Part B (Mason Core)	4-6
PHYS 243 & PHYS 244	College Physics I (Mason Core) and College Physics I Lab (Mason Core) [2]	4
PHYS 245 & PHYS 246	College Physics II (Mason Core) and College Physics II Lab (Mason Core) [2]	4
Total Credits		70-73

1 FRSC 302 Forensic Trace Analysis **and** FRSC 304 Forensic Chemistry will satisfy this major's writing-intensive requirement.

2 Students in the Forensic Chemistry Concentration may instead choose the following physics sequence:
PHYS 160 University Physics I (Mason Core) (3 credits) **&** PHYS 161 University Physics I Laboratory (Mason Core) (1 credits) **&** PHYS 260 University Physics II (Mason Core) (3 credits) **&** PHYS 261 University Physics II Laboratory (Mason Core) (1 credits)

- Please note that PHYS 260/261 requires a prerequisite of MATH 213 Analytic Geometry and Calculus III.

Standard Concentration

Code	Title	Credits
Required Course		
BIOL 430	Advanced Human Anatomy and Physiology I	4
Supporting Science Courses		
Select a minimum of 8 credits from the following courses:		8
FRSC 450	Practical Forensic Skeletal Biology	
BINF 401	Bioinformatics and Computational Biology I	
BINF 402	Bioinformatics and Computational Biology II	

BIOL 305 & BIOL 306	Biology of Microorganisms and Biology of Microorganisms Laboratory
BIOL 404	Medical Microbiology
BIOL 405	Microbial Genetics
BIOL 412	Phage Genomics
BIOL 417	Selected Topics in Molecular and Cellular Biology (When the topic is "Illumina Sequencing")
BIOL 431	Advanced Human Anatomy and Physiology II
BIOL 452 & BIOL 453	Immunology and Immunology Laboratory
BIOL 482	Introduction to Molecular Genetics
BIOL 484	Cell Signaling and Disease
CHEM 331 & CHEM 336	Physical Chemistry I and Physical Chemistry Lab I
CHEM 427	Aquatic Environmental Chemistry
CHEM 446	Bioinorganic Chemistry
CHEM 463 & CHEM 465	General Biochemistry I and Biochemistry Lab
CHEM 464	General Biochemistry II
Total Credits	12

Forensic Biology Concentration

Code	Title	Credits
Required Courses		
FRSC 325 & FRSC 326	Molecular Biology and Molecular Biology Laboratory	4
FRSC 470	Forensic Genomics	4
BIOL 483	General Biochemistry	4
Supporting Science Courses		
Select a minimum of 3 credits from the following courses:		3
FRSC 450	Practical Forensic Skeletal Biology	
BINF 401	Bioinformatics and Computational Biology I	
BINF 402	Bioinformatics and Computational Biology II	
BIOL 305 & BIOL 306	Biology of Microorganisms and Biology of Microorganisms Laboratory	
BIOL 404	Medical Microbiology	
BIOL 405	Microbial Genetics	
BIOL 412	Phage Genomics	
BIOL 417	Selected Topics in Molecular and Cellular Biology (When the topic is "Illumina Sequencing")	
BIOL 430	Advanced Human Anatomy and Physiology I	
BIOL 431	Advanced Human Anatomy and Physiology II	
BIOL 452 & BIOL 453	Immunology and Immunology Laboratory	
BIOL 482	Introduction to Molecular Genetics	
BIOL 484	Cell Signaling and Disease	
Total Credits		15

Forensic Chemistry Concentration

Code	Title	Credits
Required Courses		
FRSC 404	Advanced Instrumentation in Forensic Chemistry	4
CHEM 321	Quantitative Chemical Analysis	4
MATH 114	Analytic Geometry and Calculus II	4
Supporting Science Courses		
Select a minimum of 7 credits from the following courses:		7
CHEM 331 & CHEM 336	Physical Chemistry I and Physical Chemistry Lab I	
CHEM 332 & CHEM 337	Physical Chemistry II and Physical Chemistry Lab II [1]	
CHEM 422 & CHEM 423	Instrumental Methods of Chemical Analysis and Instrumental Methods of Chemical Analysis Laboratory [1]	
CHEM 427	Aquatic Environmental Chemistry	
CHEM 441	Properties and Bonding of Inorganic Compounds [1]	
CHEM 446	Bioinorganic Chemistry	
CHEM 463 & CHEM 465	General Biochemistry I and Biochemistry Lab	
CHEM 464	General Biochemistry II	
Total Credits		19

[1] These course selections recommend the University Physics sequence.

Mason Core and Electives

In order to meet a minimum of 120 credits, this degree requires additional credits (specific credit counts by concentration are shown below), which may be applied toward any remaining Mason Core (https://catalog.gmu.edu/mason-core/) requirements (outlined below), Requirements for Bachelor's Degrees (https://catalog.gmu.edu/policies/academic/undergraduate-policies/#ap-5-3-2), and electives. Students are strongly encouraged to consult with their advisors to ensure that they fulfill all requirements.

- Standard concentration: 35-38 credits
- Forensic Biology concentration: 32-35 credits
- Forensic Chemistry concentration: 28-31 credits

Mason Core

Some Mason Core requirements may already be fulfilled by the major requirements listed above. Students are strongly encouraged to consult their advisors to ensure they fulfill all remaining Mason Core requirements.

Code	Title	Credits
Foundation Requirements		
Written Communication (ENGH 101)		3
Oral Communication		3
Quantitative Reasoning		3

Information Technology and Computing	3
Exploration Requirements	
Arts	3
Global Understanding	3
Literature	3
Natural Science	7
Social and Behavioral Sciences	3
Western Civilization/World History	3
Integration Requirements	
Written Communications (ENGH 302)	3
Writing-Intensive [1]	3
Synthesis/Capstone [2]	3
Total Credits	40

1 Most programs include the writing-intensive course designated for the major as part of the major requirements; this course is therefore not counted towards the total required for Mason Core.

2 Minimum 3 credits required.

Accelerated Master's

Forensic Science, BS/Forensic Science, Accelerated MS Overview

This bachelor's/accelerated master's degree program allows academically strong undergraduates with a commitment to advance their education to obtain both the Forensic (https://catalog.gmu.edu/colleges-schools/science/chemistry-biochemistry/chemistry-bs/) Science, BS (https://catalog.gmu.edu/colleges-schools/science/forensic-program/forensic-science-bs/) and the Forensic Science, MS (https://catalog.gmu.edu/colleges-schools/science/forensic-program/forensic-science-ms/) degrees within an accelerated timeframe. Upon completion of this 144 credit accelerated program, students will be exceptionally well prepared for entry into their careers or into a doctoral program in the field or in a related discipline.

Students are eligible to apply for this accelerated program once they have earned at least 60 undergraduate credits and can enroll in up to 18 credits of graduate coursework after successfully completing 75 undergraduate credits. This flexibility makes it possible for students to complete a bachelor's and a master's in an accelerated timeframe.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies. For more information on undergraduates enrolling in graduate courses, see AP.1.4.4 Graduate Course Enrollment by Undergraduates (https://catalog.gmu.edu/policies/academic/registration-attendance/#text)

Concentration Declaration

Students must declare their intended concentration upon application. In the event that a student wishes to change their concentration, students may request to change their concentration by submitting a letter to the Forensic Science Program Director detailing the request and providing justification. These requests and possible substitutions/waivers will be considered on a case-by-case basis and only when the appropriate admissions requirements are met.

Application Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in the Graduate Admission Policies section of this catalog.

Important application information and processes for this accelerated master's program can be found here (https://www2.gmu.edu/admissions-aid/how-apply/accelerated-masters/).

Students should seek out the graduate program's advisor who will aid in choosing the appropriate graduate courses and help prepare the student for graduate studies.

Application requirements for this accelerated master's program include one letter of recommendation from a Forensic Science Program faculty member or advisor. Additionally, a detailed goal statement is required to include why you are interested in the MS in forensic science degree, career goals and professional aspirations, and proposed area of interest of your final Research Project.

The GRE and a resume are not required for admission into this program.

Successful applicants will have an overall GPA of at least 3.00. Additionally, they will have completed each of the following courses or equivalent with a GPA of 3.00 or higher.

Code	Title	Credits
FRSC 200	Survey of Forensic Science	3
FRSC 201	Introduction to Criminalistics	3
FRSC 302	Forensic Trace Analysis	3
FRSC 303	Forensic Evidence and Ethics	3
BIOL 213	Cell Structure and Function (Mason Core)	4
CHEM 211 & CHEM 213	General Chemistry I (Mason Core) and General Chemistry Laboratory I (Mason Core)	4
CHEM 212 & CHEM 214	General Chemistry II (Mason Core) and General Chemistry Laboratory II (Mason Core)	4

Forensic Biology Analysis Concentration Applicants:

In order to obtain a career as a DNA Analyst, the student should have undergraduate coursework in Statistics, Molecular Biology, Genetics, and Biochemistry.

Accelerated Option Requirements

After the completion of 75 undergraduate credits, students may complete 3 to 12 credits of graduate coursework that can apply to both the undergraduate and graduate degrees.

In addition to applying to graduate from the undergraduate program, students in the accelerated program must submit a bachelor's/accelerated master's transition form (available from the Office of the University Registrar (https://registrar.gmu.edu/forms/)) to the College of Science's Office of Academic and Student Affairs (https://cos.gmu.edu/about/contact-us/) by the last day to add classes of their final undergraduate semester. Students shall enroll for courses in the master's program in the fall or spring semester immediately following conferral of the bachelor's degree.

Students must maintain an overall GPA of 3.00 or higher in all graduate coursework and should consult with their faculty advisor to coordinate their academic goals.

Reserve Graduate Credit

Accelerated master's students may also take up to 6 graduate credits as reserve graduate credits. These credits do not apply to the undergraduate degree, but will reduce the master's degree by up to 6 credits. With 12 graduate credits counted toward the undergraduate degree plus the maximum 6 reserve graduate credits, the credits necessary for the graduate degree can be reduced by up to 18.

Premium Tuition

Students enrolled in this professional MS program are charged at a differential (premium) tuition rate after the bachelor's degree has been conferred. Therefore, any courses or secondary programs that they may enroll in are subject to the differential tuition rate. The Forensics Graduate Certificate (https://catalog.gmu.edu/colleges-schools/science/forensic-program/forensics-graduate-certificate/) has the same premium tuition rate, making it the ideal program for concurrent enrollment (if desired).

Criminal Background Check

The successful passing of a Virginia Department of Forensic Sciences background check is required prior to gaining access to FRSC 540 Advanced Forensic Chemistry, FRSC 541 Forensic Chemistry Laboratory, FRSC 560 Advanced Forensic DNA Sciences, and FRSC 561 Forensic DNA Laboratory.

Course Notes

- FRSC 560 Advanced Forensic DNA Sciences **and** FRSC 561 Forensic DNA Laboratory

Students shall have completed undergraduate coursework in molecular and/or cell biology, as well as genetics, or students must obtain permission of the instructor prior to taking FRSC 560 Advanced Forensic DNA Sciences and FRSC 561 Forensic DNA Laboratory.

- FRSC 540 Advanced Forensic Chemistry **and** FRSC 541 Forensic Chemistry Laboratory.

Students shall have completed undergraduate coursework in general chemistry including polarity and acid/base chemistry. Students shall also have completed Organic Chemistry and be able to identify functional groups and other chemistry structures that make up a molecule. Exposure to instrumental techniques such as gas chromatography, mass spectrometry and infrared spectroscopy is recommended or permission of instructor.

Graduate Course Suggestions

Upon acceptance, students must meet with a master's accelerated program advisor to complete a Plan of Study form in order to approve eligible graduate coursework prior to registering for any graduate courses. Failure to do so may result in the removal of the course(s). Approval does not guarantee availability in a course. The following are suggested graduate courses:

Code	Title	Credits
FRSC 500	Introduction to Forensic Science	3
FRSC 510	Basic Crime Analysis [1]	3
FRSC 514	Survey of Forensic Chemistry, Biology, and DNA Analysis [2]	3
FRSC 530	Law and Forensic Science	3
FRSC 570	Trace and Physical Evidence Concepts [3]	3

1. Can only be selected if FRSC 401 has been completed.
2. Can only be selected if FRSC 304 Forensic Chemistry and FRSC 460 Forensic DNA Analysis have been completed. This course is suggested for the Forensic Biology Analysis, the Forensic Chemistry Analysis, or the Forensic/Biometric Identity Analysis concentrations.
3. Suggested for the Crime Scene Investigation, the Forensic Biology Analysis, or the Forensic Chemistry Analysis concentrations.

Forensic Science, MS

Banner Code: SC-MS-FRSC

Academic Advising

3400 Exploratory Hall
Fairfax Campus

Phone: 703-993-5071
Email: fscience@gmu.edu
Website: science.gmu.edu/academics/departments-units/forensic-science

The Forensic Science Program offers a master's degree in Forensic Science with four concentrations to best suit the student's future career goals- Crime Scene Investigation, Forensic Biology Analysis, Forensic Chemistry Analysis, and Forensic/Biometric Identity Analysis. This graduate degree will prepare students for a rewarding career in federal, state and local laboratories, investigative or intelligence agencies, private companies, or allow professionals currently working in the field an opportunity to improve their education and optimize career advancement.

Located in Northern Virginia within the Washington DC Metro area, our students are afforded the opportunity to study in close proximity to a plethora of federal, state and local crime laboratories, investigative and intelligence agencies. These facilities provide unique access to forensic science experts and offer students competitive internships and job opportunities.

Available concentrations include:

- Crime Scene Investigation
- Forensic Biology Analysis
- Forensic Chemistry Analysis
- Forensic/Biometric Identity Analysis

Admissions & Policies

Admissions

Application Requirements

University-wide admissions policies can be found in Graduate Admissions Policies.

To apply for this program, please complete the George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now/).

In addition to fulfilling Mason's admission requirements for graduate study, applicants must provide:

- Three letters of recommendation from academic references or references in the industry or government who are familiar with the applicant's academic and/or professional accomplishments.
- Resume
- Detailed goal statement to include why you are interested in coming into Mason's Forensic Science Master's program, career goals, and professional aspirations, and proposed area of interest for your final research project.
- Two copies of official transcripts from each institution of higher education attended.
- A Virginia Domicile Classification Form.

TOEFL scores are required of all international applicants who do not hold at least a bachelor's degree from an institution of higher education accredited by a Mason-recognized U.S. institutional accrediting agency or international equivalent. The TOEFL score has to at least be a total of 88, with a minimum of 20 in each section.

The GRE is not required for admission into this program. Additional requirements for each specific concentration are listed below.

Concentration-Specific Requirements

Forensic Biology Analysis and Forensic Chemistry Analysis Concentrations

A bachelor's degree in a forensic or natural science.

Forensic/Biometric Identity Analysis Concentration

A bachelor of science or bachelor of arts degree in a forensic or natural science, computer science, computer electronic or electrical engineering, information systems or information technology (or its equivalent coursework in a relevant field).

Crime Scene Investigation Concentration

A bachelor of science or bachelor of arts degree in a related field.

Policies

For policies governing all graduate programs, see AP.6 Graduate Policies.

Premium Tuition

Students enrolled in this professional MS program are charged at a differential (premium) tuition rate. Therefore, any courses or secondary programs that they may enroll in are subject to the differential tuition rate. The Forensics Graduate Certificate has the same premium tuition rate, making it the ideal program for concurrent enrollment (if desired).

Concentration Declaration

Students must declare their intended concentration upon application. In the event that a student wishes to change their concentration, students may request to change their concentration by submitting a letter to the Forensic Science Program Director detailing the request and providing justification. These requests and possible substitutions/waivers will be considered on a case-by-case basis and only when the appropriate admissions requirements are met.

Criminal Background Check

The successful passing of a Virginia Department of Forensic Sciences (http://www.dfs.virginia.gov/) background check is required prior to gaining access to FRSC 540 Advanced Forensic Chemistry, FRSC 541 Forensic Chemistry Laboratory, FRSC 560 Advanced Forensic DNA Sciences, and FRSC 561 Forensic DNA Laboratory.

Course Notes

FRSC 560 Advanced Forensic DNA Sciences and **FRSC 561 Forensic DNA Laboratory**

Students shall have completed undergraduate coursework in molecular and/or cell biology, as well as genetics, or students must obtain permission of the instructor prior to taking FRSC 560 Advanced Forensic DNA Sciences and FRSC 561 Forensic DNA Laboratory.

FRSC 540 Advanced Forensic Chemistry and FRSC 541 Forensic Chemistry Laboratory

Students shall have completed undergraduate coursework in general chemistry including polarity and acid/base chemistry. Students shall also have completed Organic Chemistry and be able to identify functional groups and other chemistry structures that make up a molecule. Exposure to instrumental techniques such as gas chromatography, mass spectrometry and infrared spectroscopy is recommended or permission of instructor.

Requirements

Degree Requirements

Total credits: 36

Students should refer to the Admissions & Policies tab for specific policies related to this program.

Select one concentration from the following:

Concentration in Crime Scene Investigation (CSIN)

This concentration educates students for a career as a crime scene investigator.

Code	Title	Credits
Core Courses		
FRSC 500	Introduction to Forensic Science	3
FRSC 510	Basic Crime Analysis	3
FRSC 511	Advanced Crime Scene Analysis	3
FRSC 530	Law and Forensic Science	3
FRSC 570	Trace and Physical Evidence Concepts	3
Research Project or Non-Research Project		**5**
Research Project Option		

The Research Project Option is designed for students planning to pursue a doctoral degree or a career involving research in the field of forensic science or other related disciplines. The research project is based on laboratory research that must be preapproved by the advisory committee, which is appointed during the first semester of registration in FRSC 610 (1 credit) Forensic Research Project. Students are responsible for selecting research advisors who can commit as an advisor during the semesters that the student indicates that they will be conducting their research and enrolled in FRSC 610. Students must then complete their written research project and present their research during an oral defense during the semester of registration in FRSC 610 (3 credit) Forensic Research Project.

FRSC 600	Forensics Seminar
FRSC 610	Forensic Research Project

Non-Research Project Option

Students selecting this option are not required to complete a laboratory-based research project. Instead, they must successfully pass FRSC 699 (0 credits) Forensic Comprehensive Examination to demonstrate thorough comprehension of the curriculum and must select 5 credits of additional elective coursework.

FRSC 699	Comprehensive Examination

Select 5 credits of additional FRSC elective courses

Electives

Select 16 credits from the following courses: 16

FRSC 512	Physical Evidence Laboratory
FRSC 513	Forensic Photography
FRSC 514	Survey of Forensic Chemistry, Biology, and DNA Analysis
FRSC 515	Selected Topics in Forensic Science
FRSC 516	Forensic Drone Photography
FRSC 517	Questioned Document Examination
FRSC 518	Analytical Thinking Violent Crime Profiling
FRSC 520	Toxicology
FRSC 550	Issues in Forensic Anthropology
FRSC 580	Facial Reconstruction
FRSC 590	Medicolegal Death Investigation and Pathology
FRSC 600	Forensics Seminar
FRSC 620	Face and Biometric Pattern Analysis
FRSC 630	Fingerprint Identification
FRSC 640	Legal, Privacy and Ethical Issues in Identity Analysis
FRSC 650	Identity Analysis Applications
FRSC 690	Capstone - Moot Court Expert Testimony
FRSC 790	Internship in Forensic Science (Credits: 1-6)

Total Credits 36

Concentration in Forensic Biology Analysis (FRSB)

This concentration educates students for a career as a forensic biology laboratory analyst.

The successful passing of a Virginia Department of Forensic Sciences background check is required prior to gaining access to FRSC 560 Advanced Forensic DNA Sciences and FRSC 561 Forensic DNA Laboratory. In order to obtain a career as a DNA Analyst, the student should have undergraduate coursework in Statistics, Molecular Biology, Genetics, and Biochemistry.

Code	Title	Credits
Core Courses		
FRSC 500	Introduction to Forensic Science	3
FRSC 510	Basic Crime Analysis	3
FRSC 512	Physical Evidence Laboratory	3
or FRSC 630	Fingerprint Identification	
FRSC 514	Survey of Forensic Chemistry, Biology, and DNA Analysis	3
FRSC 530	Law and Forensic Science	3
FRSC 560 & FRSC 561	Advanced Forensic DNA Sciences and Forensic DNA Laboratory	4
FRSC 570	Trace and Physical Evidence Concepts	3
FRSC 600	Forensics Seminar	1
FRSC 610	Forensic Research Project	4
Electives		
Select 9 credits from the following courses:		9
FRSC 511	Advanced Crime Scene Analysis	
FRSC 512	Physical Evidence Laboratory	
FRSC 513	Forensic Photography	
FRSC 515	Selected Topics in Forensic Science	
FRSC 516	Forensic Drone Photography	
FRSC 517	Questioned Document Examination	
FRSC 518	Analytical Thinking Violent Crime Profiling	
FRSC 520	Toxicology	
FRSC 550	Issues in Forensic Anthropology	
FRSC 580	Facial Reconstruction	
FRSC 590	Medicolegal Death Investigation and Pathology	
FRSC 600	Forensics Seminar	
FRSC 620	Face and Biometric Pattern Analysis	
FRSC 630	Fingerprint Identification	
FRSC 640	Legal, Privacy and Ethical Issues in Identity Analysis	
FRSC 650	Identity Analysis Applications	
FRSC 690	Capstone - Moot Court Expert Testimony	
FRSC 790	Internship in Forensic Science (Credits: 1-6)	
Total Credits		36

Concentration in Forensic Chemistry Analysis (FRCA)

This concentration educates students for a career as a forensic chemistry laboratory analyst.

The successful passing of a Virginia Department of Forensic Sciences background check is required prior to gaining access to FRSC 540 Advanced Forensic Chemistry and FRSC 541 Forensic Chemistry Laboratory.

Code	Title	Credits
Core Courses		
FRSC 500	Introduction to Forensic Science	3
FRSC 510	Basic Crime Analysis	3
FRSC 512	Physical Evidence Laboratory	3
or FRSC 630	Fingerprint Identification	
FRSC 514	Survey of Forensic Chemistry, Biology, and DNA Analysis	3
FRSC 520	Toxicology	3
FRSC 530	Law and Forensic Science	3
FRSC 540 & FRSC 541	Advanced Forensic Chemistry and Forensic Chemistry Laboratory	4
FRSC 570	Trace and Physical Evidence Concepts	3
FRSC 600	Forensics Seminar	1
FRSC 610	Forensic Research Project	4
Electives		
Select 6 credits from the following courses:		6
FRSC 511	Advanced Crime Scene Analysis	
FRSC 512	Physical Evidence Laboratory	
FRSC 513	Forensic Photography	
FRSC 515	Selected Topics in Forensic Science	
FRSC 516	Forensic Drone Photography	
FRSC 517	Questioned Document Examination	
FRSC 518	Analytical Thinking Violent Crime Profiling	
FRSC 550	Issues in Forensic Anthropology	
FRSC 580	Facial Reconstruction	
FRSC 590	Medicolegal Death Investigation and Pathology	
FRSC 600	Forensics Seminar	
FRSC 620	Face and Biometric Pattern Analysis	
FRSC 630	Fingerprint Identification	
FRSC 640	Legal, Privacy and Ethical Issues in Identity Analysis	
FRSC 650	Identity Analysis Applications	
FRSC 690	Capstone - Moot Court Expert Testimony	
FRSC 790	Internship in Forensic Science (Credits: 1-6)	
Total Credits		36

Concentration in Forensic/Biometric Identity Analysis (FRBI)

This concentration educates students for a career as an identity intelligence analyst.

Code	Title	Credits
Core Courses		
FRSC 500	Introduction to Forensic Science	3
FRSC 510	Basic Crime Analysis	3
FRSC 514	Survey of Forensic Chemistry, Biology, and DNA Analysis	3
FRSC 530	Law and Forensic Science	3
FRSC 620	Face and Biometric Pattern Analysis	3
FRSC 630	Fingerprint Identification	3
FRSC 640	Legal, Privacy and Ethical Issues in Identity Analysis	3
FRSC 650	Identity Analysis Applications	3
AIT 678	National Security Challenges	3
Research Project or Non-Research Project		**5**
Research Project Option		
The Research Project Option is designed for students planning to pursue a doctoral degree or a career involving research in the field of forensic science or other related disciplines. The research project is based on laboratory research that must be preapproved by the advisory committee, which is appointed during the first semester of registration in FRSC 610 (1 credit) Forensic Research Project. Students are responsible for selecting research advisors who can commit as an advisor during the semesters that the student indicates that they will be conducting their research and enrolled in FRSC 610. Students must then complete their written research project and present their research during an oral defense during the semester of registration in FRSC 610 (3 credit) Forensic Research Project.		
FRSC 600	Forensics Seminar	
FRSC 610	Forensic Research Project	
Non-Research Project Option		
Students selecting this option are not required to complete a laboratory-based research project. Instead, they must successfully pass FRSC 699 (0 credits) Forensic Comprehensive Examination to demonstrate thorough comprehension of the curriculum and must select 5 credits of additional elective coursework.		
FRSC 699	Comprehensive Examination	
Select 5 credits of additional FRSC elective courses		
Electives		
Select 4 credits from the following courses:		4
FRSC 511	Advanced Crime Scene Analysis	
FRSC 512	Physical Evidence Laboratory	
FRSC 513	Forensic Photography	
FRSC 515	Selected Topics in Forensic Science	
FRSC 516	Forensic Drone Photography	
FRSC 517	Questioned Document Examination	
FRSC 518	Analytical Thinking Violent Crime Profiling	
FRSC 520	Toxicology	
FRSC 550	Issues in Forensic Anthropology	
FRSC 570	Trace and Physical Evidence Concepts	
FRSC 580	Facial Reconstruction	
FRSC 590	Medicolegal Death Investigation and Pathology	
FRSC 600	Forensics Seminar	
FRSC 690	Capstone - Moot Court Expert Testimony	
FRSC 790	Internship in Forensic Science (Credits: 1-6)	
Total Credits		36

Accelerated Master's

Forensic Science, BS/Forensic Science, Accelerated MS Overview

This bachelor's/accelerated master's degree program allows academically strong undergraduates with a commitment to advance their education to obtain both the Forensic (https://catalog.gmu.edu/colleges-schools/science/chemistry-biochemistry/chemistry-bs/) Science, BS (https://catalog.gmu.edu/colleges-schools/science/forensic-program/forensic-science-bs/) and the Forensic Science, MS (https://catalog.gmu.edu/colleges-schools/science/forensic-program/forensic-science-ms/) degrees within an accelerated timeframe. Upon completion of this 144 credit accelerated program, students will be exceptionally well prepared for entry into their careers or into a doctoral program in the field or in a related discipline.

Students are eligible to apply for this accelerated program once they have earned at least 60 undergraduate credits and can enroll in up to 18 credits of graduate coursework after successfully completing 75 undergraduate credits. This flexibility makes it possible for students to complete a bachelor's and a master's in an accelerated timeframe.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies. For more information on undergraduates enrolling in graduate courses, see AP.1.4.4 Graduate Course Enrollment by Undergraduates (https://catalog.gmu.edu/policies/academic/registration-attendance/#text)

Concentration Declaration

Students must declare their intended concentration upon application. In the event that a student wishes to change their concentration, students may request to change their concentration by submitting a letter to the Forensic Science Program Director detailing the request and providing justification. These requests and possible substitutions/waivers will be considered on a case-by-case basis and only when the appropriate admissions requirements are met.

Application Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in the Graduate Admission Policies section of this catalog.

Important application information and processes for this accelerated master's program can be found here (https://www2.gmu.edu/admissions-aid/how-apply/accelerated-masters/).

Students should seek out the graduate program's advisor who will aid in choosing the appropriate graduate courses and help prepare the student for graduate studies.

Application requirements for this accelerated master's program include one letter of recommendation from a Forensic Science Program faculty member or advisor. Additionally, a detailed goal statement is required to include why you are interested in the MS in forensic science degree, career goals and professional aspirations, and proposed area of interest of your final Research Project.

The GRE and a resume are not required for admission into this program.

Successful applicants will have an overall GPA of at least 3.00. Additionally, they will have completed each of the following courses or equivalent with a GPA of 3.00 or higher.

Code	Title	Credits
FRSC 200	Survey of Forensic Science	3
FRSC 201	Introduction to Criminalistics	3
FRSC 302	Forensic Trace Analysis	3
FRSC 303	Forensic Evidence and Ethics	3
BIOL 213	Cell Structure and Function (Mason Core)	4
CHEM 211 & CHEM 213	General Chemistry I (Mason Core) and General Chemistry Laboratory I (Mason Core)	4
CHEM 212 & CHEM 214	General Chemistry II (Mason Core) and General Chemistry Laboratory II (Mason Core)	4

Forensic Biology Analysis Concentration Applicants:

In order to obtain a career as a DNA Analyst, the student should have undergraduate coursework in Statistics, Molecular Biology, Genetics, and Biochemistry.

Accelerated Option Requirements

After the completion of 75 undergraduate credits, students may complete 3 to 12 credits of graduate coursework that can apply to both the undergraduate and graduate degrees.

In addition to applying to graduate from the undergraduate program, students in the accelerated program must submit a bachelor's/accelerated master's transition form (available from the Office of the University Registrar (https://registrar.gmu.edu/forms/)) to the College of Science's Office of Academic and Student Affairs (https://cos.gmu.edu/about/contact-us/) by the last day to add classes of their final undergraduate semester. Students shall enroll for courses in the master's program in the fall or spring semester immediately following conferral of the bachelor's degree.

Students must maintain an overall GPA of 3.00 or higher in all graduate coursework and should consult with their faculty advisor to coordinate their academic goals.

Reserve Graduate Credit

Accelerated master's students may also take up to 6 graduate credits as reserve graduate credits. These credits do not apply to the undergraduate degree, but will reduce the master's degree by up to 6 credits. With 12 graduate credits counted toward the undergraduate degree plus the maximum 6 reserve graduate credits, the credits necessary for the graduate degree can be reduced by up to 18.

Premium Tuition

Students enrolled in this professional MS program are charged at a differential (premium) tuition rate after the bachelor's degree has been conferred. Therefore, any courses or secondary programs that they may enroll in are subject to the differential tuition rate. The Forensics Graduate Certificate (https://catalog.gmu.edu/colleges-schools/science/forensic-program/forensics-graduate-certificate/) has the same premium tuition rate, making it the ideal program for concurrent enrollment (if desired).

Criminal Background Check

The successful passing of a Virginia Department of Forensic Sciences background check is required prior to gaining access to FRSC 540 Advanced Forensic Chemistry, FRSC 541 Forensic Chemistry Laboratory, FRSC 560 Advanced Forensic DNA Sciences, and FRSC 561 Forensic DNA Laboratory.

Course Notes

- FRSC 560 Advanced Forensic DNA Sciences **and** FRSC 561 Forensic DNA Laboratory

Students shall have completed undergraduate coursework in molecular and/or cell biology, as well as genetics, or students must obtain permission of the instructor prior to taking FRSC 560 Advanced Forensic DNA Sciences and FRSC 561 Forensic DNA Laboratory.

- FRSC 540 Advanced Forensic Chemistry **and** FRSC 541 Forensic Chemistry Laboratory.

Students shall have completed undergraduate coursework in general chemistry including polarity and acid/base chemistry. Students shall also have completed Organic Chemistry and be able to identify functional groups and other chemistry structures that make up a molecule. Exposure to instrumental techniques such as gas chromatography, mass spectrometry and infrared spectroscopy is recommended or permission of instructor.

Graduate Course Suggestions

Upon acceptance, students must meet with a master's accelerated program advisor to complete a Plan of Study form in order to approve eligible graduate coursework prior to registering for any graduate courses. Failure to do so may result in the removal of the course(s). Approval does not guarantee availability in a course. The following are suggested graduate courses:

Code	Title	Credits
FRSC 500	Introduction to Forensic Science	3
FRSC 510	Basic Crime Analysis [1]	3
FRSC 514	Survey of Forensic Chemistry, Biology, and DNA Analysis [2]	3
FRSC 530	Law and Forensic Science	3
FRSC 570	Trace and Physical Evidence Concepts [3]	3

1. Can only be selected if FRSC 401 has been completed.
2. Can only be selected if FRSC 304 Forensic Chemistry and FRSC 460 Forensic DNA Analysis have been completed. This course is suggested for the Forensic Biology Analysis, the Forensic Chemistry Analysis, or the Forensic/Biometric Identity Analysis concentrations.
3. Suggested for the Crime Scene Investigation, the Forensic Biology Analysis, or the Forensic Chemistry Analysis concentrations.

Forensics Graduate Certificate

Banner Code: SC-CERG-FORS

Academic Advising

3400 Exploratory Hall
Fairfax Campus

Phone: 703-993-5071
Email: fscience@gmu.edu

Website: science.gmu.edu/academics/departments-units/forensic-science

This interdisciplinary graduate certificate program is designed for students seeking training in forensic science, as well as for current professionals employed by the federal government, local law enforcement, and private security corporations. Forensics refers to the application of scientific methodologies to the analysis of crime scenes, the collection of evidence, and the laboratory analysis of that evidence in support of criminal investigations. Related legal aspects are also considered as part of a comprehensive approach to forensics.

At the time of completion, depending on the concentration, students will be able to understand the basic principles of forensics and perform a general crime scene analysis. Available concentrations include: Crime Scene Investigation, Forensic Biometric Identity Analysis, and General Forensic Science; curriculum requirements for each concentration are listed in the Requirements tab.

This certificate may be pursued on a part-time or full-time basis.

This certificate program qualifies for Title IV Federal Financial Aid.

Admissions & Policies

Admissions

University-wide admissions policies can be found in the Graduate Admissions Policies section of this catalog.

Applicants to the general forensics concentration should hold a BA or BS degree from an institution of higher education accredited by a Mason-recognized U.S. institutional accrediting agency or international equivalent with a minimum GPA of 3.00.

To apply, prospective students should submit a completed George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now/), two copies of official transcripts from all institutions attended, and a current résumé. TOEFL scores are required of all international applicants who do not hold at least a bachelor's degree from an institution of higher education accredited by a Mason-recognized U.S. institutional accrediting agency or international equivalent.

Pursuing the Forensic Science, MS

Students who wish to continue their studies may apply to the Forensic Science, MS. Please see AP.6.9 Requirements for Master's Degrees and contact an advisor for details.

Policies

For policies governing all graduate programs, see AP.6 Graduate Policies.

Premium Tuition

Students enrolled in this professional program are charged at a differential (premium) tuition rate. Therefore, any courses or secondary programs that they may enroll in are subject to the differential tuition rate. The Forensic Science, MS has the same premium tuition rate, making it the ideal program for concurrent enrollment (if desired).

Requirements

Certificate Requirements

Total credits: 18

This certificate may be pursued on a full-or part-time basis.

Students should refer to the Admissions & Policies tab for specific policies related to this program.

Students must complete all core courses and select one concentration.

Forensic Core Courses

Code	Title	Credits
FRSC 500	Introduction to Forensic Science	3
FRSC 510	Basic Crime Analysis	3
Total Credits		6

Concentration in Crime Scene Investigation (CSCN)

Code	Title	Credits
Choose 12 credits from the following:		12
FRSC 511	Advanced Crime Scene Analysis	
FRSC 513	Forensic Photography	
FRSC 530	Law and Forensic Science	
FRSC 550	Issues in Forensic Anthropology	
FRSC 590	Medicolegal Death Investigation and Pathology	
FRSC 690	Capstone - Moot Court Expert Testimony	
Total Credits		12

Concentration in Forensic Biometric Identity Analysis (FRBI)

Code	Title	Credits
FRSC 514	Survey of Forensic Chemistry, Biology, and DNA Analysis	3
FRSC 620	Face and Biometric Pattern Analysis	3
FRSC 630	Fingerprint Identification	3
FRSC 640	Legal, Privacy and Ethical Issues in Identity Analysis	3
Total Credits		12

Concentration in General Forensic Science (FRSG)

Students enrolled in this concentration obtain a more general background in the field with a focus on criminal law and anthropology.

Code	Title	Credits
Choose 12 credits from the following:		12
FRSC 514	Survey of Forensic Chemistry, Biology, and DNA Analysis	
FRSC 517	Questioned Document Examination	
FRSC 520	Toxicology	
FRSC 530	Law and Forensic Science	
FRSC 570	Trace and Physical Evidence Concepts	
FRSC 580	Facial Reconstruction	
FRSC 630	Fingerprint Identification	
FRSC 690	Capstone - Moot Court Expert Testimony	
Total Credits		12

Interdisciplinary Program in Neuroscience (IPN)

Phone: 703-993-4334
Website: neuroscience.gmu.edu

Administration

- Saleet Jafri, Director
- Ted Dumas, PhD Program Director and Associate Director
- Wendy Lewis, Undergraduate Coordinator

The Interdisciplinary Program in Neuroscience (IPN) at George Mason University is grounded in systems biology, biochemistry, bioengineering, and psychology. Research and education within the IPN is coordinated under the efforts of faculty participating from a number of colleges across the university.

The IPN administers the Neuroscience Minor, Neuroscience BS, and the Neuroscience PhD. Participating neuroscience faculty comprise a unique blend of traditional, experimental, and computational scientists with research spanning a spectrum of key topics in neuroscience including: behavior, anatomy, physiology, neuropharmacology, computational modeling, and informatics. Key research initiatives currently underway within the IPN are:

- Plasticity mechanisms underlying neurological development
- Identifying and characterizing protein interactions for the dopamine and nicotinic acetylcholine receptors in the brain
- Biochemical dynamics in disorders of the basal ganglia
- Computational methods for simulation of complex biological systems
- Description and generation of neuronal morphology
- Adaptive control for stabilization of epilepsy
- Role of metals in memory and Alzheimer's disease
- Biochemical/metabolic simulations at the organism level
- Cellular and sub-cellular models of associative learning
- Experimental and computational models in calcium signaling
- Synaptic plasticity

Faculty

Program Faculty

Professors

Ascoli, Barreto, Blackwell, Cebral, Flinn, Houser, Jafri, Klimov, Lipsky, McCabe, Olds, Sander

Associate Professors

Brielmaier, Dumas, Fryxell, Greenwood, Herin, Kabbani, Krueger, McDonald, Peixoto, Peterson, Sikdar, So, Thompson

Assistant Professors

Joiner, Lewis

Adjunct Faculty

Sharhnaz Kemal

Programs

- Neuroscience Minor
- Neuroscience, BS
- Neuroscience, PhD

The IPN also co-administers the Neuroscience Concentration in the Biology, MS.

Neuroscience Minor

Banner Code: NEUR

Academic Advising

204 Krasnow Institute
Fairfax Campus

Phone: 703-993-4334
Email: neurosci@gmu.edu
Website: neuroscience.gmu.edu

Neuroscience is one of the most rapidly growing disciplines in science and society today. Due to its interdisciplinary nature, it draws on skills from anatomy, chemistry, electrical engineering, genetics, math, psychology, economics, and philosophy among others. Students in diverse fields can benefit from neuroscience through this minor.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor. For policies governing all minors, see AP.5.3.4 Minors.

For policies governing all undergraduate programs, see AP.5 Undergraduate Policies.

Requirements

Minor Requirements

Total credits: 21-22

Students should refer to the Admissions & Policies tab for specific policies related to this minor.

Students must complete at least 21 credits of coursework with a minimum GPA of 2.00.

Biology Courses

Code	Title	Credits
BIOL 213	Cell Structure and Function (Mason Core)	4
Total Credits		4

Psychology Courses

Code	Title	Credits
PSYC 373	Biopsychology Laboratory	2
PSYC 375	Brain and Sensory Processes	3
PSYC 376	Brain and Behavior	3
Total Credits		8

Neuroscience Courses

Code	Title	Credits
NEUR 327	Cellular, Neurophysiological, and Pharmacological Neuroscience	3
NEUR 335	Molecular, Developmental, and Systems Neuroscience	3
Total Credits		6

Electives

Code	Title	Credits
Choose one from the following:		
BIOL 311	General Genetics	4
BIOL 320	Comparative Chordate Anatomy	4
BIOL 322	Developmental Biology	3
BIOL 326	Animal Physiology	3
BIOL 425	Human Physiology	3
BIOL 430	Advanced Human Anatomy and Physiology I	4
NEUR 101	Introduction to Neuroscience (Mason Core)	3
NEUR 405	RS: Laboratory Methods in Behavioral Neuroscience	3
NEUR 406	Zebrafish Neurodevelopment Laboratory	3
NEUR 407	Lab Investigations Using Voltage Clamp Electrophysiology	3
NEUR 410	Current Topics in Neuroscience	3
NEUR 411	Seminar in Neuroscience	3
NEUR 422	Glutamatergic Systems	3
NEUR 440	Independent Study in Neuroscience	1-3
NEUR 461	Special Topics in Neuroscience	1-3
NEUR 480	Biological Bases of Alzheimer's Disease	3

Neuroscience, BS

Banner Code: SC-BS-NEUR

Academic Advising

204 Krasnow Institute
Fairfax Campus

Phone: 703-993-4334
Email: neurosci@gmu.edu
Website: neuroscience.gmu.edu

The Bachelor of Science in Neuroscience is an interdisciplinary program emphasizing the relationship between the biology and chemistry of the nervous system and the behavior of an organism. The BS prepares students for graduate level study in both medical school and doctoral and

master's level programs in neuroscience and other health-related fields, and work in the neuroscience field.

Admissions & Policies

Admissions

University-wide admissions policies can be found in the Undergraduate Admissions Policies section of this catalog.

To apply for this program, please complete the George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now/).

Policies

Students must fulfill all Requirements for Bachelor's Degrees, including the Mason Core.

NEUR 410 Current Topics in Neuroscience or NEUR 411 Seminar in Neuroscience fulfill the writing intensive requirement.

For policies governing all undergraduate programs, see AP.5 Undergraduate Policies.

Requirements

Degree Requirements

Total credits: minimum 120

Students should refer to the Admissions & Policies tab for specific policies related to this program.

Foundation Courses

Code	Title	Credits
Biology		
BIOL 213	Cell Structure and Function (Mason Core)	4
Select one from the following: [1,2]		4
BIOL 311	General Genetics	
BIOL 322	Developmental Biology	
BIOL 326	Animal Physiology	
BIOL 425	Human Physiology	
BIOL 430	Advanced Human Anatomy and Physiology I	
Chemistry		
CHEM 211 & CHEM 213	General Chemistry I (Mason Core) and General Chemistry Laboratory I (Mason Core)	4
CHEM 212 & CHEM 214	General Chemistry II (Mason Core) and General Chemistry Laboratory II (Mason Core)	4
Mathematics		
Select one option (4 or 6 credits) from the following:		4-6
MATH 113	Analytic Geometry and Calculus I (Mason Core)	
MATH 123 & MATH 124	Calculus with Algebra/Trigonometry, Part A and Calculus with Algebra/Trigonometry, Part B (Mason Core)	
Statistics		
Select one course (3 or 4 credits) from the following:		3-4
BIOL 214	Biostatistics for Biology Majors	
STAT 250	Introductory Statistics I (Mason Core)	
PSYC 300	Statistics in Psychology	
MATH 352	Statistics	
Physics		
Select one of the following sequences:		8
PHYS 243 & PHYS 244 & PHYS 245 & PHYS 246	College Physics I (Mason Core) and College Physics I Lab (Mason Core) and College Physics II (Mason Core) and College Physics II Lab (Mason Core)	
PHYS 160 & PHYS 161 & PHYS 260 & PHYS 261	University Physics I (Mason Core) and University Physics I Laboratory (Mason Core) and University Physics II (Mason Core) and University Physics II Laboratory (Mason Core)	
Psychology [1,3]		
PSYC 100	Basic Concepts in Psychology (Mason Core)	3
PSYC 375	Brain and Sensory Processes	3
PSYC 376	Brain and Behavior	3
Computer Science		
CDS 130	Computing for Scientists	3
Core Courses in Neuroscience [1]		
NEUR 327	Cellular, Neurophysiological, and Pharmacological Neuroscience	3
NEUR 335	Molecular, Developmental, and Systems Neuroscience	3
Technical Writing [1,2,4]		
NEUR 410	Current Topics in Neuroscience	3
or NEUR 411	Seminar in Neuroscience	
Required Psychology Lab Course [1]		
PSYC 373	Biopsychology Laboratory	2
Total Credits		54-57

1. Students must earn a minimum grade of 1.67 (C-) in these courses.
2. The course chosen to fulfill this requirement cannot be applied to the 24 credits of approved neuroscience electives.
3. Transfer students who have earned transfer credit for PSYC 372 Biopsychology may substitute this course for PSYC 375 Brain and Sensory Processes.
4. Either course fulfills the writing intensive requirement.

Electives

Students should consult with an advisor to choose appropriate elective courses, which must be approved by the director of the program. A sample of possible electives is given below. Only courses not already taken in the degree will apply as electives, with the exception of seminar and topics courses; a different topic must be addressed in the second instance of a seminar or topics course. Students may apply no more than 6 credits of courses with a grade of 'D' to this requirement.

Students intending to pursue a doctorate in neuroscience or a medical degree are advised to take CHEM 313 Organic Chemistry I and CHEM 315 Organic Chemistry Lab I.

Code	Title	Credits
Select 24 credits from the following:		24
BENG 101	Introduction to Bioengineering	
BENG 313	Physiology for Engineers	
BENG 434	Computational Modelling of Neurons and Networks	
BIOL 305	Biology of Microorganisms	
BIOL 306	Biology of Microorganisms Laboratory	
BIOL 311	General Genetics	
BIOL 322	Developmental Biology	
BIOL 323	Lab for Developmental Biology	
BIOL 326	Animal Physiology	
BIOL 417	Selected Topics in Molecular and Cellular Biology (when topic is Foundations of the Mammalian Brain)	
BIOL 420	Vaccines	
BIOL 425	Human Physiology	
BIOL 426	Mechanisms of Aging	
BIOL 429	Biological Foundations of Pharmacology	
BIOL 430	Advanced Human Anatomy and Physiology I	
BIOL 431	Advanced Human Anatomy and Physiology II	
BIOL 432	Clinical Applications in Human Physiology	
BIOL 452	Immunology	
BIOL 453	Immunology Laboratory	
BIOL 471	Evolution	
BIOL 482	Introduction to Molecular Genetics	
BIOL 483	General Biochemistry	
BIOL 484	Cell Signaling and Disease	
BIOL 515	Developmental Neurobiology	
CDS 301	Scientific Information and Data Visualization	
CHEM 313	Organic Chemistry I	
CHEM 314	Organic Chemistry II	
CHEM 315	Organic Chemistry Lab I	
CHEM 318	Organic Chemistry Lab II	
CHEM 321	Quantitative Chemical Analysis	
CHEM 463	General Biochemistry I	
CHEM 464	General Biochemistry II	
CHEM 465	Biochemistry Lab	
MATH 114	Analytic Geometry and Calculus II	
or MATH 116	Analytic Geometry and Calculus II (Honors)	
MATH 203	Linear Algebra	
MATH 213	Analytic Geometry and Calculus III	
MATH 214	Elementary Differential Equations	
NEUR 405	RS: Laboratory Methods in Behavioral Neuroscience	
NEUR 406	Zebrafish Neurodevelopment Laboratory	
NEUR 407	Lab Investigations Using Voltage Clamp Electrophysiology	
NEUR 410	Current Topics in Neuroscience (when not used to fulfill the technical writing requirement) [1]	
NEUR 411	Seminar in Neuroscience [1]	
NEUR 422	Glutamatergic Systems	
NEUR 440	Independent Study in Neuroscience	
NEUR 450	Honors Thesis Proposal	
NEUR 451	Honors Thesis	
NEUR 461	Special Topics in Neuroscience	
NEUR 480	Biological Bases of Alzheimer's Disease	
PHYS 262	University Physics III (Mason Core)	
PHYS 263	University Physics III Laboratory (Mason Core)	
PSYC 304	Principles of Learning	
PSYC 309	Sensation, Perception, and Information Processing	
PSYC 317	Cognitive Psychology	
PSYC 441	Criminal Behavior: Psychological and Neurological Aspects	
PSYC 472	Current Topics in Brain and Behavior	
Total Credits		24

[1] Fulfills the writing intensive requirement.

Mason Core and Elective Credits

In order to meet a minimum of 120 credits, this degree requires an additional 39-42 credits which may be applied toward any remaining Mason Core requirements (outlined below), Requirements for Bachelor's Degrees, and elective courses. Students are strongly encouraged to consult with their advisors to ensure that they fulfill all requirements.

Mason Core

Some Mason Core requirements may already be fulfilled by the major requirements listed above. Students are strongly encouraged to consult their advisors to ensure they fulfill all remaining Mason Core requirements.

Code	Title	Credits
Foundation Requirements		
Written Communication (ENGH 101)		3
Oral Communication		3
Quantitative Reasoning		3
Information Technology and Computing		3
Exploration Requirements		
Arts		3
Global Understanding		3
Literature		3
Natural Science		7
Social and Behavioral Sciences		3
Western Civilization/World History		3
Integration Requirements		
Written Communications (ENGH 302)		3
Writing-Intensive [1]		3

Synthesis/Capstone [2]	3
Total Credits	40

1 Most programs include the writing-intensive course designated for the major as part of the major requirements; this course is therefore not counted towards the total required for Mason Core.

2 Minimum 3 credits required.

Honors

Honors in the Major

Highly-qualified students may apply to graduate with honors in the major.

Eligibility

To be eligible for admission, neuroscience majors must have completed at least 60 credits and have a minimum cumulative GPA of 3.25 and a minimum GPA of 3.25 in neuroscience courses.

Honors Requirements

If accepted, students must take a sequence of three courses, which culminates in the successful completion and presentation of an independent honors thesis.

Code	Title	Credits
NEUR 410	Current Topics in Neuroscience	3
or NEUR 411	Seminar in Neuroscience	
NEUR 450	Honors Thesis Proposal	2-3
NEUR 451	Honors Thesis	3-4
Total Credits		8-10

To graduate with honors, students must earn a minimum GPA of 3.50 in their honors courses, maintain a minimum cumulative GPA of 3.25, and complete an honors thesis.

Accelerated Master's

Neuroscience, BS/Biology, Accelerated MS

Overview

This bachelor's/accelerated master's degree program allows academically strong undergraduates with a commitment to advance their education to obtain both the Neuroscience, BS and the Biology, MS (https://catalog.gmu.edu/colleges-schools/science/systems-biology/biology-ms/) degrees within an accelerated timeframe. Upon completion of this 138 credit accelerated program, students will be exceptionally well prepared for entry into their careers or into a doctoral program in the field or in a related discipline.

Students are eligible to apply for this accelerated program once they have earned at least 60 undergraduate credits and can enroll in up to 18 credits of graduate coursework after successfully completing 75 undergraduate credits. This flexibility makes it possible for students to complete a bachelor's and a master's in five years.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies. For more information on undergraduates enrolling in graduate courses, see AP.1.4.4 Graduate Course Enrollment by Undergraduates (https://catalog.gmu.edu/policies/academic/registration-attendance/#text).

Application Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in the Graduate Admission Policies section of this catalog.

Important application information and processes for this accelerated master's program can be found here (https://www2.gmu.edu/admissions-aid/how-apply/accelerated-masters/).

Students should seek out the graduate program's advisor who will aid in choosing the appropriate graduate courses and help prepare the student for graduate studies.

GRE scores are not required for students in this accelerated program.

Students must obtain a graduate faculty advisor prior to beginning graduate coursework.

Successful applicants will have an overall undergraduate GPA of at least 3.10. Three letters of recommendation, including one from a prospective thesis or project advisor, are required. Additionally, they will have completed[2] the following courses with a GPA of 3.00[1] or higher.

Code	Title	Credits
BIOL 213	Cell Structure and Function (Mason Core)	4
One Course in Statistics:		3-4
BIOL 214	Biostatistics for Biology Majors	
or STAT 250	Introductory Statistics I (Mason Core)	
or PSYC 300	Statistics in Psychology	
or MATH 352	Statistics	
BIOL 311	General Genetics	4
CHEM 313 & CHEM 315	Organic Chemistry I and Organic Chemistry Lab I [1]	5
NEUR 327	Cellular, Neurophysiological, and Pharmacological Neuroscience [2]	3

1 Grades of 2.50 in CHEM 313 Organic Chemistry I and CHEM 315 Organic Chemistry Lab I are acceptable for admission into this accelerated pathway.

2 Registration in, as opposed to completion of, NEUR 327 Cellular, Neurophysiological, and Pharmacological Neuroscience is sufficient.

Accelerated Option Requirements

After the completion of 75 undergraduate credits, students may complete 3 to 12 credits of graduate coursework that can apply to both the undergraduate and graduate degrees.

In addition to applying to graduate from the undergraduate program, students in the accelerated program must submit a bachelor's/accelerated master's transition form (available from the Office of the University Registrar (https://registrar.gmu.edu/forms/)) to the College of Science's Office of Academic and Student Affairs (https://cos.gmu.edu/about/contact-us/) by the last day to add classes of their final undergraduate semester. Students should enroll for courses in the master's program in the fall or spring semester immediately following

conferral of the bachelor's degree, but should contact an advisor if they would like to defer up to one semester.

Students must maintain an overall GPA of 3.00 or higher in all graduate coursework and should consult with their faculty advisor to coordinate their academic goals.

Reserve Graduate Credit

Accelerated master's students may also take up to 6 graduate credits as reserve graduate credits. These credits do not apply to the undergraduate degree, but will reduce the master's degree by up to 6 credits. With 12 graduate credits counted toward the undergraduate degree plus the maximum 6 reserve graduate credits, the credits necessary for the graduate degree can be reduced by up to 18.

Graduate Course Suggestions

The following list of suggested courses is provided for general reference. To ensure an efficient route to graduation and post-graduation readiness, students are strongly encouraged to meet with an advisor before registering for graduate-level courses.

Code	Title	Credits
BIOL 682	Advanced Eukaryotic Cell Biology	3
BIOL 689	Interdisciplinary Tools in the Biosciences	3
BIOL 690	Introduction to Graduate Studies in Biology	1-2
BIOL 695	Seminar in Molecular, Microbial, and Cellular Biology	1
NEUR 612	Neuroethics	3
NEUR 601	Developmental Neuroscience	3
NEUR 602	Cellular Neuroscience	3
NEUR 603	Mammalian Neuroanatomy	3
NEUR 634	Neural Modeling	3
NEUR 651	Molecular Neuropharmacology	3

Bachelor's Degree (selected), Bioinformatics Management, Accelerated PSM

Overview

This bachelor's/accelerated master's degree program allows academically strong undergraduates with a commitment to advance their education to obtain both the Biology, BS (https://catalog.gmu.edu/colleges-schools/science/biology/biology-bs/), or the Chemistry, BS, or the Computational and Data Sciences, BS (https://catalog.gmu.edu/colleges-schools/science/computational-data-sciences/computational-data-sciences-bs/), or the Physics, BS (https://catalog.gmu.edu/colleges-schools/science/physics-astronomy/physics-bs/), or the Neuroscience, BS (https://catalog.gmu.edu/colleges-schools/science/neuroscience-program/neuroscience-bs/) and the Bioinformatics Management, PSM (https://catalog.gmu.edu/colleges-schools/science/systems-biology/bioinformatics-management-professional-science-masters/) degrees within an accelerated timeframe. Upon completion of this 138 credit accelerated program, students will be exceptionally well prepared for entry into their careers or into a doctoral program in the field or in a related discipline.

Students are eligible to apply for this accelerated program once they have earned at least 60 undergraduate credits and can enroll in up to 18 credits of graduate coursework after successfully completing 75 undergraduate credits. This flexibility makes it possible for students to complete a bachelor's and a master's in five years.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies. For more information on undergraduates enrolling in graduate courses, see AP.1.4.4 Graduate Course Enrollment by Undergraduates (https://catalog.gmu.edu/policies/academic/registration-attendance/#text).

Application Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in the Graduate Admission Policies section of this catalog.

Important application information and processes for this accelerated master's program can be found here (https://www2.gmu.edu/admissions-aid/how-apply/accelerated-masters/).

Students in the Biology, BS (https://catalog.gmu.edu/colleges-schools/science/biology/biology-bs/); Chemistry, BS (https://catalog.gmu.edu/colleges-schools/science/chemistry-biochemistry/chemistry-bs/); Computational and Data Sciences, BS (https://catalog.gmu.edu/colleges-schools/science/computational-data-sciences/computational-data-sciences-bs/); Neuroscience, BS (https://catalog.gmu.edu/colleges-schools/science/neuroscience-program/neuroscience-bs/); or Physics, BS (https://catalog.gmu.edu/colleges-schools/science/physics-astronomy/physics-bs/) with an overall GPA of at least 3.00 in their last 60 credits are welcome to apply to the Bioinformatics Management, PSM accelerated master's program. Applicants to this accelerated master's should have previously taken courses in molecular biology, computer science, calculus, physical chemistry, and statistics. Students with deficiencies in one or more of these areas may be required to take additional courses from the undergraduate curriculum.

The GRE requirement is waived for students accepted into this accelerated program.

Students should seek out the graduate program's advisor who will aid in choosing the appropriate graduate courses and help prepare the student for graduate studies.

Accelerated Option Requirements

After the completion of 75 undergraduate credits, students may complete 3 to 12 credits of graduate coursework that can apply to both the undergraduate and graduate degrees.

In addition to applying to graduate from the undergraduate program, students in the accelerated program must submit a bachelor's/accelerated master's transition form (available from the Office of the University Registrar (https://registrar.gmu.edu/forms/)) to the College of Science's Office of Academic and Student Affairs (https://cos.gmu.edu/about/contact-us/) by the last day to add classes of their final undergraduate semester. Students should enroll for courses in the master's program in the fall or spring semester immediately following conferral of the bachelor's degree, but should contact an advisor if they would like to defer up to one semester.

Students must maintain an overall GPA of 3.00 or higher in all graduate coursework and should consult with their faculty advisor to coordinate their academic goals.

Reserve Graduate Credits

Accelerated master's students may also take up to 6 graduate credits as reserve graduate credits. These credits do not apply to the undergraduate degree, but will reduce the master's degree by up to 6 credits. With 12 graduate credits counted toward the undergraduate degree plus the maximum 6 reserve graduate credits, the credits necessary for the graduate degree can be reduced by up to 18.

Graduate Course Suggestions

The following list of suggested courses is provided for general reference. To ensure an efficient route to graduation and post-graduation readiness, students are strongly encouraged to meet with an advisor before registering for graduate-level courses.

Code	Title	Credits
BINF 630	Bioinformatics Methods	3
BINF 631	Molecular Cell Biology for Bioinformatics	3
BINF 702	Biological Data Analysis	3
GBUS 738	Data Mining for Business Analytics	3
or MBA 738	Data Mining for Business Analytics	

Neuroscience, PhD

Banner Code: SC-PHD-NEUR

Academic Advising

204 Krasnow Institute
Fairfax Campus

Phone: 703-993-4334
Email: neurosci@gmu.edu
Website: neuroscience.gmu.edu

The Neuroscience, PhD program focuses on the study of the brain and addresses the challenge of developing an integrative understanding of cognition and higher brain function. In response to this challenge, the rapidly developing field of neuroscience has produced an exponential increase in the amount of data available to investigators as they develop new theories of brain function and new hypotheses to test. The main objective of the program is to prepare students to participate at the cutting edge of this exciting field in academia, industry, and government. The program provides students with a rich interdisciplinary intellectual environment that fosters the development of the skills they will need to successfully pursue research careers.

Current faculty research focuses on the broad areas of behavior, anatomy, physiology, neuropharmacology, molecular biology, computational modeling, and informatics. External research collaborations exist with federal agencies, private and not-for-profit corporations, and other universities. The scope of research ranges from the subcellular and molecular level (in the context of such phenomena as drug addiction and the biological basis of schizophrenia) to the systems and behavioral level.

Current research projects include plasticity mechanisms supporting development, network formation and information processing, cellular and subcellular models of associative learning, biochemical dynamics in disorders of the basal ganglia, computational methods for simulation of complex biological systems, role of metals in memory and Alzheimer's disease, and dynamical behavior of neurons and networks of neurons, and identifying and characterizing protein interactions for the dopamine and nicotinic acetylcholine receptors in the brain.

Admissions & Policies

Admissions

University-wide admissions policies can be found in the Graduate Admissions Policies section of this catalog.

To apply for this program, please complete the George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now/).

Applicants should have a bachelor's degree in a relevant field and undergraduate courses in organic chemistry, cell biology, and calculus. Coursework in biochemistry (e.g. BIOL 483 General Biochemistry), cell biology (e.g. BIOL 484 Cell Signaling and Disease), and molecular genetics (e.g. BIOL 482 Introduction to Molecular Genetics) is highly recommended. Admission requires a minimum GPA of 3.25 in undergraduate work and acceptable GRE scores. The GRE exam is waived if applicants hold a master's degree from an institution of higher education accredited by a Mason-recognized U.S. institutional accrediting agency or international equivalent at the time of their application. In addition, the applicant's goal statement should relate to the research interests of at least one faculty member in the program and include the names of two faculty members who may be suitable as advisors or supervisory committee members.

To apply, complete the George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now/), supply a goal statement, two copies of official transcripts from each college and graduate institution attended, three letters of recommendation from faculty members or individuals who have firsthand knowledge of the applicant's academic or research capabilities, and an official report of scores obtained on the GRE-GEN. The GRE-SUB is optional. TOEFL scores are required of all international applicants.

Policies

For policies governing all graduate programs, see AP.6 Graduate Policies.

Reduction of Credits

For students entering the doctoral program with a master's degree in a related field from an institution of higher education accredited by a Mason-recognized U.S. institutional accrediting agency or international equivalent, the number of required credits may be reduced up to 30 credits, subject to approval of the program faculty and the college's associate dean for student affairs. See AP.6.5.2 Reduction of Credits for more information.

Transfer of Credit

An alternative to the reduction of credit is a transfer of credit. With this option, up to 24 credits of previous, relevant graduate coursework may be transferred into the program, provided those credits have not been applied toward a previous degree.

Requirements

Degree Requirements

Total credits: 72

Students should refer to the Admissions & Policies tab for specific policies related to this program.

Doctoral Coursework

Code	Title	Credits
Core Science		
NEUR 702	Research Methods	3
Select one statistics course from the following:		3-4
ECE 528	Introduction to Random Processes in Electrical and Computer Engineering	
PSYC 611	Advanced Statistics	
STAT 535	Analysis of Experimental Data	
STAT 544	Applied Probability	
STAT 554	Applied Statistics I	
Core Neuroscience		
NEUR 601	Developmental Neuroscience	3
NEUR 602	Cellular Neuroscience	3
NEUR 603	Mammalian Neuroanatomy	3
NEUR 701	Neuroscience Laboratory	3
Rotations and Readings		**9**
NEUR 703	Laboratory Rotation and Readings (This course will be taken three times)	
Electives		
Select 20-21 credits of electives		20-21
Elective course options for students interested in attaining professional skills include:		
COS 600	Multidisciplinary Problem Solving and Leadership	
Complete the Business Fundamentals Graduate Certificate and receive both the graduate certificate and the Neuroscience PhD upon completion of both programs' requirements.		
Total Credits		47-49

Publication

An additional requirement for graduation calls for students to have at least one publication (in print or in press) in a refereed journal.

Doctoral Committee and Proposal

When coursework is nearing completion, the student should form a doctoral committee of at least three graduate faculty members and start preparing their dissertation proposal. Students in consultation with their advisor identify which faculty are appropriate to be a part of their committee. The dissertation committee administers the qualifying exam and evaluates the dissertation proposal as well as the dissertation itself. At least one of the committee members must be outside of the dissertation advisor's department.

Candidacy Examination and Advancement to Candidacy

The doctoral candidacy examination includes written and oral components. After passing the candidacy exam and receiving committee approval for the dissertation proposal, the student is advanced to doctoral candidacy.

Dissertation Research

Note: No more than 24 combined credits from NEUR 998 Dissertation Proposal and NEUR 999 Doctoral Dissertation may be applied toward satisfying doctoral degree requirements, with no more than 12 credits of NEUR 998 Dissertation Proposal.

Code	Title	Credits
Select 24 credits from the following:		24
NEUR 998	Dissertation Proposal	
NEUR 999	Doctoral Dissertation	
Total Credits		24

School of Systems Biology

Monique Sweeney, Administrative Assistant

Phone: 703-993-8400
Email: binf@gmu.edu
Website: ssb.gmu.edu

Administration

- Iosif Vaisman, Director
- Dmitri Klimov, BCB PhD Program Director
- Alessandra Luchini, BIOS PhD Program Director
- Don Seto, BCB MS Program Director
- Ancha Baranova, Biology MS Program Director
- Vikas Chandhoke, PSM Program Director
- Kimberly Harris, Graduate Coordinator
- Andrea Nikoi, Director of HR and Finance

The School of Systems Biology offers undergraduate and graduate degree programs in bioinformatics and computational biology, and graduate degree programs in biology and biosciences. The school also offers research opportunities at the graduate and undergraduate levels. For additional details about current faculty research activities, please visit the school's website.

The School of Systems Biology works closely with and provides faculty and administrative support to the Department of Biology, through which the Biology, BA and Biology, BS degrees are offered. Accelerated master's options are also available.

Faculty

School Faculty

Professors

Bailey (distinguished), Chandhoke, Jafri, Kashanchi, Klimov, Liotta, Petricoin, Seto, Vaisman (director), Wu

Associate Professors

Baranova, Fryxell, Kabbani, Luchini, Pierobon, van Hoek

Assistant Professors
Hakami, Narayanan, Ullah

Adjunct Faculty
Solka

Affiliate Faculty
Afzal, Akob, Albini, Alomair, Araujo, Blower, Bokhari, Campbell, Cao, Casey, Chen, Colombatti, Conrads, Cooper, Dabisch, Dasgupta, Dikow, Finn, Gelber, Goldsborough, Guirguis, Jessup, Kehn-Hall, Kim, Koepfli, Lee, Leighton, Lipsky, Lockhart, Lu, Manyam, Marakasova, Masso, Mayburd, Mazon, Mehta, Molestina, Moskalev, O'Hara, Peet, Pukazhenthi, Quong, Rajasimha, Reid, Smith, Stepanova, Tang, Tatarinova, Taylor, Veytsman, Via, Ward, Weller, Zhao

Emeritus
Isbister, Royt, Soyfer, Willett

Requirements & Policies

Policies
Students are governed by the university's policies.

Using Laboratories
Only authorized experiments and exercises may be carried out in the school's research and teaching laboratories and must be done under the supervision of a university faculty or staff member. No unauthorized work is allowed in any laboratory.

Using Organisms in Classes
Direct observations of actual organisms are considered an essential part of learning biology at all levels. Direct observations of organisms may involve the use of living or preserved specimens, dissections of organisms or parts of organisms, and microscopic examination of organisms or parts of organisms. All use of live animals conforms to National Institutes of Health guidelines for the use and care of laboratory animals. Activities specified above may be a required part of a course and thus serve as a basis for grading in the course. Any questions about the administration of this policy should be directed to the course coordinator or instructor.

Programs

- Bioinformatics Management, MS
- Bioinformatics Management, Professional Science Master's
- Bioinformatics Minor
- Bioinformatics and Computational Biology Graduate Certificate
- Bioinformatics and Computational Biology, MS
- Bioinformatics and Computational Biology, PhD
- Biology, MS
- Biosciences, PhD
- Personalized Medicine Graduate Certificate

Bioinformatics and Computational Biology Graduate Certificate

Banner Code: SC-CERG-BCB

Academic Advising

312 Colgan Hall
Science and Technology Campus

Phone: 703-993-8400
Email: binf@gmu.edu
Website: science.gmu.edu/academics/departments-units/systems-biology

This graduate certificate addresses the growing national and regional demand for trained computational biologists by combining a solid foundation in biotechnology with computational skills relevant to bioinformatics. With online and onsite courses, the flexibility of this certificate's structure permits students to custom design their curriculum under an advisor's guidance, making the graduate certificate especially relevant for students employed in today's diverse Northern Virginia high-technology workplace. Ideal candidates for this certificate are those who have a background in biological and computer sciences, and are currently working in or planning to enter the fields of biotechnology or bioinformatics. The certificate is also highly relevant for students who are interested in advancing their career goals but may not have adequate time available to undertake a graduate degree program.

All courses are also offered online, allowing students to participate in class without having to travel to campus. Further information can be found with Mason Online (http://masononline.gmu.edu/).

The certificate may be pursued on a part-time or full-time basis.

Admissions & Policies

Admissions
University-wide admissions policies can be found in the Graduate Admissions Policies section of this catalog.

To apply for this program, please complete the George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now/).

Applicants should hold a BA or BS degree in a discipline related to biological or computer science from an institution of higher education accredited by a Mason-recognized U.S. institutional accrediting agency or international equivalent, with a minimum GPA of 3.00. Applicants should have taken courses in molecular biology, computer science, calculus, physical chemistry, or statistics, and should also possess working knowledge of a computer programming language. To apply, prospective students should complete a George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now/), supply two copies of official transcripts from each college and graduate institution attended, and a current résumé. TOEFL scores are required of all international applicants.

Policies

For policies governing all graduate certificate programs, see AP.6 Graduate Policies.

Premium Tuition

The certificate is a professional certification program that charges students at a differential (premium) tuition rate, with an additional $100 per credit added to the standard George Mason University graduate tuition rate for students who enroll in this certificate program, regardless of in-state or out-of-state status. The differential tuition is used to fund continuing improvements in the College of Science's (COS) educational facilities used to support the certificate program.

Students may not pursue this certificate concurrently with any other graduate degree program or certificate program offered by COS. In addition, students may not apply previous credit hours from another certificate, degree, or non-degree studies to this certificate program because of the differential (premium) tuition rate.

Requirements

Certificate Requirements

Total credits: 15

This certificate may be pursued on a full-or part-time basis.

Students should refer to the Admissions & Policies tab for specific policies related to this program.

Required Courses

Code	Title	Credits
BINF 630	Bioinformatics Methods	3
BINF 631	Molecular Cell Biology for Bioinformatics	3
BINF 634	Bioinformatics Programming	3
Total Credits		9

Electives

Code	Title	Credits
Select two courses from the following courses, or other courses as approved by the coordinator:		6
BINF 633	Molecular Biotechnology	
BINF 636	Microarray Methodology and Analysis	
BINF 639	Introduction to Biometrics	
BINF 730	Biological Sequence and Genome Analysis	
BINF 731	Protein Structure Analysis	
BINF 732	Genomics	
BINF 733	Gene Expression Analysis	
BINF 734	Advanced Bioinformatics Programming	
BINF 739	Topics in Bioinformatics	
Total Credits		6

Bioinformatics and Computational Biology, MS

Banner Code: SC-MS-BCB

Don Seto, Program Director

312 Colgan Hall
Science and Technology Campus

Phone: 703-993-8400
Email: binf@gmu.edu
Website: science.gmu.edu/academics/departments-units/systems-biology

In the field of bioinformatics and computational biology, specialists collect, store, analyze and present complex biological data. Through this work, critical contributions are made to basic biology, disease detection, drug design, modeling biosystems, forensics, agriculture, and environmental sciences through the combination of biological analysis and high-performance computing. This degree addresses the growing national and regional demand for trained computational biologists. It combines a solid foundation in biotechnology with the computational skills required for bioinformatics. The flexibility of the degree structure permits students to custom design their curriculum under an advisor's guidance, making the program especially relevant for students employed in today's diverse biotechnology workplace. Students completing the program are qualified to pursue careers that require knowledge of current bioinformatics methods and applications, and the ability to develop and/or use new bioinformatics software.

Courses are generally offered in the late afternoon or early evening to accommodate students with full-time employment outside the university. Students employed at area biotechnology organizations may take up to 6 credits (out of 31) for bioinformatics work done on the job, under the guidance of a faculty member. This work-related project may be applied as either a 3-credit research project or a 6-credit master's thesis.

All courses are also offered online, allowing students to participate in class without having to travel to campus. Further information can be found on with Mason Online (http://masononline.gmu.edu/).

Admissions & Policies

Admissions

University-wide admissions policies can be found in the Graduate Admissions Policies section of this catalog.

To apply for this program, please complete the George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now/).

Eligibility

Applicants should have a bachelor's degree in biology, computer science, or a related field, with a GPA of at least 3.00 in their last 60 credits of study. Applicants should have taken courses in biology, computer science, calculus, physical chemistry, and statistics. Students with deficiencies in one or more of these areas may be required to take additional courses from the undergraduate curriculum.

Application Requirements

To apply, prospective students should complete a George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now/), supply two copies of official transcripts from each college and graduate institution attended, a current résumé, and an expanded goals statement. Applicants should also include three letters of recommendation and official scores obtained on the GRE general exam. The GRE requirement will be waived if the student holds a master's degree from an institution of higher education accredited by a Mason-recognized U.S. institutional accrediting agency or international equivalent. TOEFL scores are required for all international applicants.

Policies

For policies governing all graduate programs, see AP.6 Graduate Policies.

Requirements

Degree Requirements

Total credits: 31

Students should refer to the Admissions & Policies tab for specific policies related to this program.

Bioinformatics Core Courses

Code	Title	Credits
BINF 630	Bioinformatics Methods	3
BINF 631	Molecular Cell Biology for Bioinformatics	3
BINF 634	Bioinformatics Programming	3
BINF 701	Systems Biology	3
Total Credits		12

Advanced Bioinformatics

Code	Title	Credits
Advanced bioinformatics courses numbered BINF 730 and above		3
Total Credits		3

Bioinformatics Seminar

Code	Title	Credits
BINF 704	Colloquium in Bioinformatics	1
Total Credits		1

Research Project or Thesis and Electives

Select either a research project or a master's thesis and electives courses.

Research Project

Code	Title	Credits
BINF 798	Research Project	3
Select 12 credits of elective in bioinformatics and computational biology, biology and biotechnology, or computational sciences, as approved by the advisor		12
Total Credits		15

Thesis

Code	Title	Credits
BINF 799	Master's Thesis	6
Select 9 credits of electives in bioinformatics and computational biology, biology and biotechnology, or computational sciences, as approved by the advisor		9
Total Credits		15

Bioinformatics and Computational Biology, PhD

Banner Code: SC-PHD-BCB

Dmitri Klimov, Program Director

312 Colgan Hall
Science and Technology Campus

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Website: science.gmu.edu/academics/departments-units/systems-biology

In the field of bioinformatics and computational biology, specialists collect, store, analyze, and present complex biological data. Through this work, critical contributions are made to disease detection, drug design, forensics, agriculture, and environmental sciences through the combination of biological analysis and high-performance computing. The main objective of this doctorate is to educate the next generation of computational biologists for careers in academia, industry, and government. The program provides students with interdisciplinary academic training that includes fundamental bioscience courses as well as core and advanced courses in bioinformatics. Courses are designed to be completed in approximately two years. Completion of coursework, the comprehensive exam, and a successful dissertation proposal results in advancement to candidacy status. In the final phase, students focus on research that culminates in a dissertation.

The program is structured to be accessible for full and part-time students. Many of the courses are offered in a distance-learning format, allowing students to participate in class without having to travel to campus; visit Mason Online (http://masononline.gmu.edu/) for details.

Admissions & Policies

Admissions

University-wide admissions policies can be found in the Graduate Admissions Policies section of this catalog.

To apply for this program, please complete the George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now/).

Eligibility

Applicants should have a bachelor's degree in biology, computer science, or a related field, with a minimum GPA of 3.25 in the last earned degree. Applicants should have taken courses in molecular biology, cell biology, biochemistry, genetics, calculus, physical chemistry, computer programming and data structures, and probability and statistics. Students with deficiencies in one or more of these areas may be admitted

provisionally and required to take additional courses, some of which may not be applicable to the degree's course total. Students whose undergraduate record does not include basic biochemistry will be required to take a basic course prior to BINF 701 Systems Biology.

Application Requirements

To apply, prospective students should submit the George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now/), two copies of official transcripts from each college and graduate institution attended, a current résumé, and an expanded goals statement. Applicants should also include three letters of recommendation and an official report of scores obtained on the GRE general exam. Scores should be in the 45th percentile or above. The GRE requirement for admission to the doctoral program will be waived if the student holds a master's degree from an institution of higher education accredited by a Mason-recognized U.S. institutional accrediting agency or international equivalent. TOEFL or IELTS scores are required of all international applicants.

Policies

For policies governing all graduate programs, see AP.6 Graduate Policies.

Reduction of Credits

For students entering the doctoral program with a master's degree in a related field from an institution of higher education accredited by a Mason-recognized U.S. institutional accrediting agency or international equivalent, the number of required credits may be reduced up to 30 credits, subject to approval of the program director and the college's associate dean for student affairs. See AP.6.5.2 Reduction of Credits for more information.

Requirements

Degree Requirements

Total credits: 72

Students should refer to the Admissions & Policies tab for specific policies related to this program.

Doctoral Coursework

Code	Title	Credits
Fundamental Bioscience Courses		
BINF 701	Systems Biology	3
BINF 702	Biological Data Analysis	3
Core Bioinformatics Courses		
BINF 690	Numerical Methods for Bioinformatics	3
BINF 705	Research Ethics	1
BINF 730	Biological Sequence and Genome Analysis	3
BINF 731	Protein Structure Analysis	3
BINF 740	Introduction to Biophysics	3
General Electives		
Select 23-35 credits of approved general electives or independent research		23-35
Lab Rotation		**3**
BINF 703	Bioinformatics Lab Rotation (taken three times)	
Colloquium		**3**
BINF 704	Colloquium in Bioinformatics (taken three times)	
Total Credits		48-60

Doctoral Committee and Advancement to Candidacy

By the end of the semester when coursework is completed, the student must form a doctoral committee made up of a minimum of three graduate faculty members and take a written comprehensive exam. The exam includes written and oral components. Upon passing the comprehensive exam and submitting an acceptable dissertation proposal, the student is advanced to doctoral candidacy to begin the dissertation writing phase.

Dissertation Research

A minimum of 12 and maximum of 24 combined credits from BINF 998 Doctoral Dissertation Proposal and BINF 999 Doctoral Dissertation may be applied toward satisfying doctoral degree requirements. Students must take at least 3 credits of BINF 999 Doctoral Dissertation.

Code	Title	Credits
Select 12-24 credits from the following:		12-24
BINF 998	Doctoral Dissertation Proposal	
BINF 999	Doctoral Dissertation	
Total Credits		12-24

Doctoral Dissertation

After advancing to doctoral candidacy, students work on their doctoral dissertation while enrolled in BINF 999 Doctoral Dissertation. The dissertation should represent a significant contribution that is suitable for publication in a refereed scientific journal. The dissertation must be defended in a public forum before the dissertation committee and other interested faculty.

Bioinformatics Management, MS

Banner Code: SC-MS-BNFM

Academic Advising

312 Colgan Hall
Science and Technology Campus

Phone: 703-993-8400
Email: binfpsm@gmu.edu
Website: science.gmu.edu/academics/departments-units/systems-biology

This degree addresses the regional and national need for technically trained managers who will be able to lead teams of bioinformaticians in both the public and private sectors. The degree combines a solid foundation in bioinformatics research, tools, and techniques, with the management skills needed to address the associated legal, ethical, managerial, and business issues. The degree is intended for:

- Students seeking advancement in their current bioinformatics careers that requires an advanced degree in bioinformatics combined with management expertise.
- Students with a general background in biological science or computational methods who are planning to enter the field of

bioinformatics as managers and would like to strengthen their bioinformatics and managerial expertise.

Admissions & Policies

Admissions

University-wide admissions policies can be found in the Graduate Admissions Policies section of this catalog.

To apply for this program, please complete the George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now/).

Eligibility

Applicants should have a bachelor's degree in biology, computer science, or a related field, with a GPA of at least 3.00 in their last 60 credits of study. Applicants should have taken courses in molecular biology, computer science, calculus, physical chemistry, and statistics. Students with deficiencies in one or more of these areas may be required to take additional courses from the undergraduate curriculum.

Application Requirements

To apply, prospective students should submit the George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now/), supply two copies of official transcripts from each college and graduate institution attended, a current résumé, and an expanded goals statement. Applicants should also include three letters of recommendation and official scores obtained on the GRE general exam. The GRE requirement will be waived if the student holds a master's degree from an institution of higher education accredited by a Mason-recognized U.S. institutional accrediting agency or international equivalent. TOEFL or IELTS scores are required of all international applicants.

Policies

For policies governing all graduate programs, see AP.6 Graduate Policies.

Requirements

Degree Requirements

Total credits: 30

Students should refer to the Admissions & Policies tab for specific policies related to this program.

Bioinformatics Core Courses

Foundational courses in modern biotechnology, tools and methods for bioinformatics analysis, and methods for creating customized bioinformatics tools.

Code	Title	Credits
BINF 530	Introduction to Bioinformatics Methods	3
or BINF 630	Bioinformatics Methods	
BINF 531	Molecular Cell Biology for Bioinformatics	3
or BINF 631	Molecular Cell Biology for Bioinformatics	
BINF 634	Bioinformatics Programming	3
BINF 730	Biological Sequence and Genome Analysis	3
Select one from the following:		3
BINF 633	Molecular Biotechnology	
BINF 650	Introduction to Bioinformatics Database Design	
BINF 702	Biological Data Analysis	
Total Credits		15

Management Core Courses

Foundational courses in management theory related directly to the management of scientific programs and personnel.

Code	Title	Credits
Select 12 credits from the following courses:		12
COS 500	Professional Preparation for STEM Disciplines	
COS 600	Multidisciplinary Problem Solving and Leadership	
EVPP 638	Corporate Environmental Management and Policy	
GBUS 613	Financial Reporting and Decision Making	
GBUS 623	Marketing Management	
GBUS 643	Managerial Finance	
GBUS 653	Organizational Behavior	
GCH 691	Project Management in Public Health	
HAP 713	Project Management in Health Information Technology	
MBA 712	Project Management	
SWE 625	Software Project Management	
Total Credits		12

Capstone Research Project

Focusing on bioinformatics management issues and techniques.

Code	Title	Credits
BINF 798	Research Project	3
Total Credits		3

Bioinformatics Management, Professional Science Master's

Banner Code: SC-MSP-BNFM

Vikas Chandhoke, Program Director

312 Colgan Hall
Science and Technology Campus

Phone: 703-993-8400
Email: binfpsm@gmu.edu
Website: science.gmu.edu/academics/departments-units/systems-biology

This Professional Science Master's (https://www.professionalsciencemasters.org/) (PSM) degree addresses the growing demand for trained bioinformatics professionals with solid management skills able to assume leadership roles in biotechnology, pharmaceutical and health care sectors. The flexible degree structure

allows students to custom design a curriculum that best suits their needs and allows a focus on the biological big data analysis, genomics, or bioinformatics software development and management. Students will receive advanced training in bioinformatics and management through coursework and an external internship. The curriculum was developed with active input from the Program Advisory Board consisting of recognized leaders in the field. Many courses are offered in a distance-learning format, allowing students to participate in class without having to travel to campus.

Admissions & Policies

Admissions

University-wide admissions policies can be found in the Graduate Admissions Policies section of this catalog.

To apply for this program, please complete the George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now/).

Applicants should have a bachelor's degree in biology, computer science, or a related field from an institution of higher education accredited by a Mason-recognized U.S. institutional accrediting agency or international equivalent with a GPA of at least 3.00 in their last 60 credits of study. Applicants should have taken courses in molecular biology, computer science, calculus, physical chemistry, and statistics. Students with deficiencies in one or more of these areas may be required to take additional courses from the undergraduate curriculum. To apply, prospective students should submit the George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now/), supply an official transcript from each college and graduate institution attended, a current résumé, three letters of recommendation, and an expanded goals statement. TOEFL or IELTS scores are required of all international applicants.

The GRE is not required for admission into this program.

Policies

For policies governing all graduate programs, see AP.6 Graduate Policies.

Requirements

Degree Requirements

Total credits: 31

Students should refer to the Admissions & Policies tab for specific policies related to this program.

Due to the varied course options and their associated prerequisites, students are encouraged to create a program of study with their faculty advisor by the end of their first semester of studies.

Bioinformatics Courses

Code	Title	Credits
BINF 630	Bioinformatics Methods	3
BINF 631	Molecular Cell Biology for Bioinformatics	3
BINF 702	Biological Data Analysis	3
Select two from the following or other BINF-prefixed courses in consultation with the faculty advisor:		6
BINF 633	Molecular Biotechnology	
BINF 634	Bioinformatics Programming	
BINF 650	Introduction to Bioinformatics Database Design	
BINF 731	Protein Structure Analysis	
BINF 732	Genomics	
BINF 740	Introduction to Biophysics	
Total Credits		15

Professional Skills Courses

Please note: MBA-prefixed courses are offered on an alternative semester schedule (view the Schedule of Classes (https://patriotweb.gmu.edu/pls/prod/bwckschd.p_disp_dyn_sched/) for details). Considering this, it may be advisable to take these courses in one semester rather than over several.

Code	Title	Credits
BINF 705	Research Ethics	1
MBA 712	Project Management	3
Select one course from the following that hasn't previously been taken:		3
BIOL 508	Selected Topics in Animal Biology [1]	
COS 500	Professional Preparation for STEM Disciplines	
COS 600	Multidisciplinary Problem Solving and Leadership	
EVPP 638	Corporate Environmental Management and Policy	
AIT 671	Information System Infrastructure Lifecycle Management	
COMM 641	Advanced Communication Skills for STEM	
GBUS 613	Financial Reporting and Decision Making	
GBUS 623	Marketing Management	
GBUS 643	Managerial Finance	
GBUS 653	Organizational Behavior	
GBUS 738	Data Mining for Business Analytics	
or MBA 738	Data Mining for Business Analytics	
GCH 691	Project Management in Public Health	
HAP 713	Project Management in Health Information Technology	
MBA 712	Project Management	
MBA 726	Negotiations	
PUAD 781	Information Management: Technology and Policy	
SWE 625	Software Project Management	
Or other courses in consultation with the faculty advisor		
Total Credits		7

[1] When the topic is Research & Development in Biotechnology Companies.

Scientific Electives

Close attention should be paid to each course's prerequisites.

Code	Title	Credits
Select 6 credits in courses that haven't previously been taken, tailored to suit interests and goals in consultation with the faculty advisor.		6
Big Data Analysis:		
CSI 695	Scientific Databases	
AIT 580	Analytics: Big Data to Information	
AIT 581	Problem Formation and Solving in Big Data	
AIT 622	Determining Needs for Complex Big Data Systems	
Synthetic and Systems Biology:		
BIOS 701	Systems Biology	
CHEM 665	Protein-Protein Interactions: Methods and Applications	
Human Health and Personal Genomics:		
BINF 732	Genomics	
BIOL 562	Personalized Medicine	
BIOL 566	Cancer Genomics	
BIOL 665	Environmental Hazards to Human Health	
BIOS 740	Laboratory Methods in Functional Genomics and Biotechnology	
BIOS 741	Genomics	
Software Development and Analysis:		
BINF 634	Bioinformatics Programming	
SWE 510	Object-Oriented Programming in Java	
SWE 619	Object-Oriented Software Specification and Construction	
SWE 621	Software Design and Architecture	
SWE 626	Software Project Laboratory	
SWE 637	Software Testing	
SWE 645	Component-Based Software Development	
SWE 760	Software Analysis and Design of Real-Time Systems	
Colloquium: [1]		
BINF 704	Colloquium in Bioinformatics (may be repeated for up to 3 credits)	
Additional Internship Experience [2]		
BINF 795	Bioinformatics Internship	
Total Credits		6

1 If chosen, it is recommended that students take the colloquium course early in their studies so that they may be exposed to various possibilities and areas of research presented by the speakers.

2 The maximum amount of internship credits that can be applied to the degree is 6 credits.

Internship

The internship component is intended to provide students with the opportunity to put into practice all of the skills and knowledge accumulated throughout their studies in this program. Students must arrange an internship with a private company, a governmental agency, a non-governmental organization, or some other entity with an interest in bioinformatics *and* management. Students must identify a specific person within that outside entity who will be the contact and manager of the internship.

Internship credit is never given for work previously done, or for work that would have been done in any case due to an existing employment relationship.

The internship work must produce one or more products such as: a comprehensive report, a departmental presentation, a research project, or an article. Internship placement and product type must be approved by the student's faculty advisor.

Further details and procedures for completing the internship can be found with the faculty advisor.

Code	Title	Credits
Three credits of internship		3
BINF 795	Bioinformatics Internship	
Total Credits		3

Accelerated Master's

Bachelor's Degree (selected), Bioinformatics Management, Accelerated PSM

Overview

This bachelor's/accelerated master's degree program allows academically strong undergraduates with a commitment to advance their education to obtain both the Biology, BS (https://catalog.gmu.edu/colleges-schools/science/biology/biology-bs/), or the Chemistry, BS, or the Computational and Data Sciences, BS (https://catalog.gmu.edu/colleges-schools/science/computational-data-sciences/computational-data-sciences-bs/), or the Physics, BS (https://catalog.gmu.edu/colleges-schools/science/physics-astronomy/physics-bs/), or the Neuroscience, BS (https://catalog.gmu.edu/colleges-schools/science/neuroscience-program/neuroscience-bs/) and the Bioinformatics Management, PSM (https://catalog.gmu.edu/colleges-schools/science/systems-biology/bioinformatics-management-professional-science-masters/) degrees within an accelerated timeframe. Upon completion of this 138 credit accelerated program, students will be exceptionally well prepared for entry into their careers or into a doctoral program in the field or in a related discipline.

Students are eligible to apply for this accelerated program once they have earned at least 60 undergraduate credits and can enroll in up to 18 credits of graduate coursework after successfully completing 75 undergraduate credits. This flexibility makes it possible for students to complete a bachelor's and a master's in five years.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies. For more information on undergraduates enrolling in graduate courses, see AP.1.4.4 Graduate Course Enrollment by Undergraduates (https://catalog.gmu.edu/policies/academic/registration-attendance/#text).

Application Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate

study as specified in the Graduate Admission Policies section of this catalog.

Important application information and processes for this accelerated master's program can be found here (https://www2.gmu.edu/admissions-aid/how-apply/accelerated-masters/).

Students in the Biology, BS (https://catalog.gmu.edu/colleges-schools/science/biology/biology-bs/); Chemistry, BS (https://catalog.gmu.edu/colleges-schools/science/chemistry-biochemistry/chemistry-bs/); Computational and Data Sciences, BS (https://catalog.gmu.edu/colleges-schools/science/computational-data-sciences/computational-data-sciences-bs/); Neuroscience, BS (https://catalog.gmu.edu/colleges-schools/science/neuroscience-program/neuroscience-bs/); or Physics, BS (https://catalog.gmu.edu/colleges-schools/science/physics-astronomy/physics-bs/) with an overall GPA of at least 3.00 in their last 60 credits are welcome to apply to the Bioinformatics Management, PSM accelerated master's program. Applicants to this accelerated master's should have previously taken courses in molecular biology, computer science, calculus, physical chemistry, and statistics. Students with deficiencies in one or more of these areas may be required to take additional courses from the undergraduate curriculum.

The GRE requirement is waived for students accepted into this accelerated program.

Students should seek out the graduate program's advisor who will aid in choosing the appropriate graduate courses and help prepare the student for graduate studies.

Accelerated Option Requirements

After the completion of 75 undergraduate credits, students may complete 3 to 12 credits of graduate coursework that can apply to both the undergraduate and graduate degrees.

In addition to applying to graduate from the undergraduate program, students in the accelerated program must submit a bachelor's/accelerated master's transition form (available from the Office of the University Registrar (https://registrar.gmu.edu/forms/)) to the College of Science's Office of Academic and Student Affairs (https://cos.gmu.edu/about/contact-us/) by the last day to add classes of their final undergraduate semester. Students should enroll for courses in the master's program in the fall or spring semester immediately following conferral of the bachelor's degree, but should contact an advisor if they would like to defer up to one semester.

Students must maintain an overall GPA of 3.00 or higher in all graduate coursework and should consult with their faculty advisor to coordinate their academic goals.

Reserve Graduate Credits

Accelerated master's students may also take up to 6 graduate credits as reserve graduate credits. These credits do not apply to the undergraduate degree, but will reduce the master's degree by up to 6 credits. With 12 graduate credits counted toward the undergraduate degree plus the maximum 6 reserve graduate credits, the credits necessary for the graduate degree can be reduced by up to 18.

Graduate Course Suggestions

The following list of suggested courses is provided for general reference. To ensure an efficient route to graduation and post-graduation readiness, students are strongly encouraged to meet with an advisor before registering for graduate-level courses.

Code	Title	Credits
BINF 630	Bioinformatics Methods	3
BINF 631	Molecular Cell Biology for Bioinformatics	3
BINF 702	Biological Data Analysis	3
GBUS 738	Data Mining for Business Analytics	3
or MBA 738	Data Mining for Business Analytics	

Bioinformatics Minor

Banner Code: BNF

Academic Advising

312 Colgan Hall
Science and Technology Campus

Phone: 703-993-8400
Email: binf@gmu.edu
Website: science.gmu.edu/academics/departments-units/systems-biology

The minor is an interdisciplinary program consisting of required courses in biology, programming, statistics, and bioinformatics.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. For policies governing all minors, see AP.5.3.4 Minors.

For policies governing all undergraduate programs, see AP.5 Undergraduate Policies.

Requirements

Minor Requirements

Total credits: 19-20

Students should refer to the Admissions & Policies tab for specific policies related to this program.

Students must complete the following courses with a minimum GPA of 2.00.

Coursework

Code	Title	Credits
BINF 401	Bioinformatics and Computational Biology I	3
BINF 402	Bioinformatics and Computational Biology II	3
BIOL 213	Cell Structure and Function (Mason Core)	4
BIOL 482	Introduction to Molecular Genetics	3
STAT 250	Introductory Statistics I (Mason Core)	3

or STAT 344	Probability and Statistics for Engineers and Scientists I	
CS 112	Introduction to Computer Programming	3-4
or IT 306	Data Structures and Algorithms in Java	
Total Credits		19-20

Biology, MS

Banner Code: SC-MS-BIOL

Ancha Baranova, Program Director

312 Colgan Hall
Science and Technology Campus

Phone: 703-993-8400
Email: biologygrad@gmu.edu
Website: science.gmu.edu/academics/departments-units/systems-biology

This program provides advanced training for college graduates or professionals seeking careers in the biomedical research, biotechnology, neuroscience or biodefense, as well as evolutionary and animal biology, animal biology and biology teaching. Master's level concentrations are available in microbiology and infectious disease, molecular biology, neuroscience, evolutionary biology, and translational and clinical research. Alternatively, students may choose the program in general biological sciences, which allows flexibility to build a degree program tailored to a specific research or career interest.

Admissions & Policies

Admissions

University-wide admissions policies can be found in the Graduate Admissions Policies section of this catalog.

To apply for this program, please complete the George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now/).

While each applicant's qualifications are reviewed as a whole, the following are required: Applicants to the program must have a bachelor's degree in biology or other relevant fields from an institution of higher education accredited by a Mason-recognized U.S. institutional accrediting agency or international equivalent. Additionally, all MS concentrations require a GPA of 3.00 in biology coursework or in the last 60 credits of undergraduate study. Students must also submit three letters of recommendation and scores on the GRE general exam. GRE is waived for those with previous MS degree in any field, with graduate-level certificate or at least 9 credits of relevant non-degree studies. Previous research experience or relevant employment is a plus. Admission is contingent on acceptance by a faculty research advisor.

Evolutionary Biology (EB) Concentration

Students who choose the Evolutionary Biology concentration must also submit a personal statement/statement of interest consistent with at least one faculty member's research program.

Microbiology and Infectious Disease (MID) Concentration

Students who choose the Microbiology and Infectious Disease concentration must have a lecture and lab course in microbiology and a lecture course in biochemistry.

Translational and Clinical Research (TCR) Concentration

Students who choose the Translational and Clinical Research concentration may submit MCAT scores in place of GRE general exam scores.

Policies

For policies governing all graduate programs, see AP.6 Graduate Policies.

Requirements

Degree Requirements

Total credits: 30

Students should refer to the Admissions & Policies tab for specific policies related to this program.

Candidates for the Biology, MS must complete the Core Courses and may choose one concentration or the MS without concentration requirements, detailed below, for a total of 30 credits (minimum).

Program of Study

The faculty advisor and the student work together to develop a program of study that best fits the student's background and interests. The student must submit a program of study to the program director for approval within the first 12 credits of coursework. By the end of the second semester of coursework, students will form a graduate committee made up of three faculty members. At least two committee members must be faculty in the School of Systems Biology.

Students must complete all core courses and choose one concentration option:

Core Courses

Code	Title	Credits
Cell and Molecular Requirement		**3**
BIOL 682	Advanced Eukaryotic Cell Biology	
or BIOS 744	Molecular Genetics	
Professional Methods Requirement		**4**
BIOL 690	Introduction to Graduate Studies in Biology	
Choose one from the following:		
BIOL 689	Interdisciplinary Tools in the Biosciences	
BIOL 691	Current Topics in Biology [1]	
or BIOS 702	Research Methods	
NEUR 702	Research Methods	
Seminar Requirement		**3**
Select a total of 3 credits from the following courses:		
BIOL 692	Seminar in Biology	
BIOL 695	Seminar in Molecular, Microbial, and Cellular Biology [2]	
Systems Biology/Evolution Requirement		**3**

BIOL 502	Adaptation in Biosystems	
Research Requirement		**2-6**
Students have the option to complete a 2-3 credit research project (BIOL 798 Master's Research Project) or a 3-5 credit master's thesis (BIOL 799 Thesis). In accordance with AP.6 Graduate Policies, the same quality of work is expected of students regardless of which option they choose.		
Research Project: The MS project is most appropriate for students who have scheduling commitments, such as a full-time job, that may preclude performing a complete series of laboratory experiments. Students pursuing the project option must successfully complete written and oral comprehensive exams. Additionally, students should present their research orally or as a poster to a community outside of the classroom, at Mason conferences or at external conferences.		
Thesis: In general, the MS thesis is most appropriate for students planning or considering a research career. Students pursuing the thesis option must write a formal thesis that meets the requirements of the school and must defend their thesis and present their results in a public seminar.		
Select a Research Project or a Master's Thesis		
BIOL 798	Master's Research Project (2-3 credits)	
BIOL 799	Thesis (3-5 credits)	
Total Credits		15-19

1 When the topic is "Research Methods," or "Creativity and Innovation".

2 May be taken up to six times in this program under different topics.

MS without Concentration

Code	Title	Credits
General Coursework		**12**
In consultation with an advisor, select at least 12 credits of graduate coursework from BIOL, BIOS, BMED, or NEUR-prefixed courses. Suggestions include:		
BIOL 508	Selected Topics in Animal Biology [1]	
BIOL 553	Advanced Topics in Immunology	
BIOL 566	Cancer Genomics	
BIOL 568	Advanced Topics in Molecular Genetics	
BIOL 575	Selected Topics in Genetics	
BIOL 579	Molecular Evolution and Conservation Genetics	
BIOL 583	General Biochemistry	
BIOL 585	Eukaryotic Cell Biology Laboratory	
BIOL 693	Directed Studies in Biology [2]	
or BINF 795	Bioinformatics Internship	
BIOL 793	Research in Biology	
BIOS 740	Laboratory Methods in Functional Genomics and Biotechnology	
BIOS 741	Genomics	
BIOS 742	Biotechnology	
BIOS 743	Genomics, Proteomics, and Bioinformatics	
BIOS 744	Molecular Genetics	
BIOS 767	Molecular Evolution	
Total Credits:		**30**

1 Suggested section topics: "Research and Development in a Biotechnology Company," or "Biology of Obesity and Weight Loss". Other relevant topics may only be applied toward the degree with advisor approval.

2
- No more than 3 credits of directed study or internship can be applied.
- Topics should be relevant and approved by the program director.

Concentration in Evolutionary Biology (EB)

Code	Title	Credits
Populations and Species		**3-6**
Select 3-6 credits from the following:		
BIOL 574	Population Genetics	
BIOL 579	Molecular Evolution and Conservation Genetics	
or BIOS 767	Molecular Evolution	
BIOL 648	Population Ecology	
Organismal Biology		**3-6**
Select 3-6 credits from the following:		
BIOL 501	Microbial Diversity: An Organismal Approach	
BIOL 507	Selected Topics in Ecology	
BIOL 508	Selected Topics in Animal Biology	
BIOL 518	Conservation Biology	
BIOL 532	Animal Behavior	
BIOL 533	Selected Topics in Plant Biology	
BIOL 537	Ornithology	
BIOL 538	Mammalogy	
BIOL 539	Herpetology	
BIOL 543	Tropical Ecosystems	
BIOL 559	Fungi and Ecosystems	
BIOL 566	Cancer Genomics	
BIOL 581	Estuarine and Coastal Ecology	
BIOL 582	Estuarine and Coastal Ecology Laboratory	
BIOL 643	Microbial Ecology	
EVPP 536	The Diversity of Fishes	
Molecular Techniques		**3-4**
Select 3-4 credits from the following:		
BIOL 693	Directed Studies in Biology [1]	
or BINF 795	Bioinformatics Internship	
BIOS 716	Methods in Evolutionary Biology	
EVPP 515	Molecular Environmental Biology I	
EVPP 615	Molecular Environmental Biology II	
Electives		**2-6**
If needed in order to reach a total of 30 credits, select from the following courses: [2]		
BIOL 583	General Biochemistry	
BIOL 693	Directed Studies in Biology [1]	
or BINF 795	Bioinformatics Internship	
BIOS 741	Genomics	

Any additional course listed in the Core Courses section	
Total Credits:	**30**

1
- No more than 3 credits of directed study or internship can be applied to this concentration.
- Topics should be relevant to the concentration and should be approved by the program director.

2 Other relevant graduate-level coursework may be selected in consultation with the advisor.

Concentration in Microbiology and Infectious Disease (MID)

Code	Title	Credits
Microbiology and Infectious Diseases		**12**
In consultation with an advisor, select 12 credits from the following:		
BINF 739	Topics in Bioinformatics [1]	
BIOL 553	Advanced Topics in Immunology	
BIOL 563	Virology	
BIOL 685	Emerging Infectious Diseases	
BIOL 693	Directed Studies in Biology [2]	
BIOL 669	Pathogenic Microbiology	
BIOL 715	Microbial Physiology	
Electives		**0-3**
If needed to reach a total of 30 credits, select from the following courses:		
BIOL 560	Infectious Diseases of Wildlife	
BIOL 564	Techniques in Virology	
BIOL 583	General Biochemistry	
BIOL 718	Techniques in Microbial Pathogenesis	
BIOS 742	Biotechnology	
Any additional course listed in the Core Courses section		
Total Credits:		**30**

1 When the topic is "Computational Analysis: Viral Genomes".

2
- No more than 3 credits of directed study can be applied to this concentration.
- Topics should be relevant to the concentration and should be approved by the program director.

Concentration in Molecular Biology (MOB)

Code	Title	Credits
Molecular Biology		**12**
In consultation with an advisor, select 12 credits from the following:		
BIOL 508	Selected Topics in Animal Biology [1]	
BIOL 568	Advanced Topics in Molecular Genetics	
BIOL 579	Molecular Evolution and Conservation Genetics	
or BIOS 767	Molecular Evolution	
BIOL 580	Computer Applications for the Life Sciences	
or BINF 630	Bioinformatics Methods	
BIOL 583	General Biochemistry	
BIOL 585	Eukaryotic Cell Biology Laboratory	
BIOL 678	Cell-Based Assays	
BIOL 693	Directed Studies in Biology [2]	
or BINF 795	Bioinformatics Internship	
BIOS 716	Methods in Evolutionary Biology	
BIOS 742	Biotechnology	
or BINF 633	Molecular Biotechnology	
NEUR 651	Molecular Neuropharmacology	
Electives		**0-3**
If needed to reach a total of 30 credits, select from the following courses:		
BINF 641	Biomolecular Modeling	
BIOL 693	Directed Studies in Biology [2]	
or BINF 795	Bioinformatics Internship	
BIOS 741	Genomics	
NEUR 592	Special Topics in Neuroscience [3]	
or NEUR 689	Topics in Neuroscience	
CHEM 564	General Biochemistry II	
CHEM 660	Protein Biochemistry	
Any additional course listed in the Core Courses section		
Total Credits:		**30**

1 When the topic is "Research and Development in a Biotechnology Company".

2
- No more than 3 credits of directed study or internship can be applied to this concentration.
- Topics should be relevant to the concentration and should be approved by the program director.

3 When the topic is "Glutamatergic Systems".

Concentration in Neuroscience (NEUR)

Code	Title	Credits
Statistics		**3**
Select 3 credits from the following:		
BINF 530	Introduction to Bioinformatics Methods	
BINF 630	Bioinformatics Methods	
BINF 702	Biological Data Analysis	
BIOL 691	Current Topics in Biology [1]	
STAT 535	Analysis of Experimental Data	
STAT 544	Applied Probability	
STAT 554	Applied Statistics I	
Neurobiology		**9**
In consultation with an advisor, select 9 credits from the following, at least 6 of which must be in NEUR-prefixed courses:		
BIOL 508	Selected Topics in Animal Biology [2]	
BIOL 568	Advanced Topics in Molecular Genetics [3]	
BIOL 693	Directed Studies in Biology [4]	
or BINF 795	Bioinformatics Internship	
NEUR 592	Special Topics in Neuroscience	
NEUR 601	Developmental Neuroscience	
NEUR 602	Cellular Neuroscience	
NEUR 603	Mammalian Neuroanatomy	
NEUR 612	Neuroethics	
NEUR 621	Synaptic Plasticity	

NEUR 634	Neural Modeling	
NEUR 651	Molecular Neuropharmacology	
NEUR 689	Topics in Neuroscience	
NEUR 701	Neuroscience Laboratory	
NEUR 709	Neuroscience Seminars	
NEUR 710	Special Topics in Neuroscience	
NEUR 734	Computational Neurobiology	
NEUR 741	Introduction to Neuroimaging	
Electives		**0-3**
If needed to reach a total of 30 credits, select from the following:		
BIOL 583	General Biochemistry	
BIOL 691	Current Topics in Biology [5]	
or BIOS 743	Genomics, Proteomics, and Bioinformatics	
BIOL 693	Directed Studies in Biology [4]	
or BINF 795	Bioinformatics Internship	
Any additional NEUR-prefixed course at the 500-700 levels		
Total Credits:		**30**

1 When the topic is "MATLAB for Brain, Biological, and Cognitive Scientists".

2 When the topic is "Biology of Obesity and Weight Loss".

3 When the topic is "Epigenetics".

4
- No more than 3 credits of directed study or internship can be applied to this concentration.
- Topics should be relevant to the concentration and should be approved by the program director.

5 When the topic is "Genomics, Proteomics, and Bioinformatics".

Concentration in Nutrition Genetics and Nutraceuticals (NGN)

Code	Title	Credits
Nutrition		**6**
In consultation with an advisor, choose 6 credits from the following:		
BIOL 508	Selected Topics in Animal Biology [1]	
NUTR 522	Nutrition Across the Lifespan	
NUTR 642	Macronutrients	
NUTR 670	Nutrition Research Methods	
Human Diseases		**6**
In consultation with an advisor, choose 6 credits from the following:		
BIOL 566	Cancer Genomics	
BIOL 666	Human Genetics Concepts for Health Care	
BIOS 743	Genomics, Proteomics, and Bioinformatics	
Electives		
If needed to reach a total of 30 credits, select from the following courses:		
BIOL 508	Selected Topics in Animal Biology [2]	
BIOL 562	Personalized Medicine	
BIOL 568	Advanced Topics in Molecular Genetics	
BIOL 583	General Biochemistry	
BIOL 693	Directed Studies in Biology [3]	
or BINF 795	Bioinformatics Internship	
CHEM 564	General Biochemistry II	
Any additional course listed in the Core Courses section		
Total Credits		**30**

1 When the topic is "Biology of Obesity and Weight Loss".

2 When the topic is "Research and Development in Biotechnology Companies".

3
- No more than 3 credits of directed study or internship can be applied to this concentration.
- Topics should be relevant to the concentration and should be approved by the program director.

Concentration in Translational and Clinical Research (TCR)

Code	Title	Credits
Translational and Clinical Research [1]		**12**
In consultation with an advisor, select 12 credits from the following:		
BIOL 508	Selected Topics in Animal Biology [2]	
BIOL 562	Personalized Medicine	
BIOL 566	Cancer Genomics	
BIOL 666	Human Genetics Concepts for Health Care	
BIOL 667	Signal Transduction in Cancer	
BIOL 691	Current Topics in Biology [3]	
or BIOS 743	Genomics, Proteomics, and Bioinformatics	
BIOL 693	Directed Studies in Biology [4]	
or BINF 795	Bioinformatics Internship	
BMED 603	Cell Biology and Microscopic Anatomy [5]	
BMED 604	Fundamentals of Human Physiology [5]	
BMED 605	Introduction to Human Anatomy [5]	
Electives		**0-3**
If needed to reach a total of 30 credits, select from the following courses:		
BIOL 508	Selected Topics in Animal Biology [6]	
BIOL 568	Advanced Topics in Molecular Genetics	
BIOL 583	General Biochemistry	
BIOL 693	Directed Studies in Biology [4]	
or BINF 795	Bioinformatics Internship	
BIOS 741	Genomics	
Any additional course listed in the Core Courses section		
Total Credits:		**30**

1
- For students concurrently enrolled in the Advanced Biomedical Sciences Graduate Certificate, contact your advisor for details regarding:
  - BMED course credit that may be counted towards this concentration
  - Meeting the requirements for graduate certificates and for master's degrees

2 When the topic is "Research and Development in a Biotechnology Company," or "Biology of Obesity and Weight Loss".

3 When the topic is "Genomics/Proteomics/Bioinformatics".

[4]
- No more than 3 credits of directed study or internship can be applied to this concentration.
- Topics should be relevant to the concentration and should be approved by the program director.

[5] Course is only available for students enrolled in the Advanced Biomedical Sciences Graduate Certificate (https://catalog.gmu.edu/colleges-schools/science/advanced-biomedical-sciences-graduate-certificate/).

[6] When the topic is "Research and Development in a Biotechnology Company".

Accelerated Master's

Biology, BS/Biology, Accelerated MS

Overview

This bachelor's/accelerated master's degree program allows academically strong undergraduates with a commitment to advance their education to obtain both the Biology, BS and the Biology, MS degrees within an accelerated timeframe. Upon completion of this 138 credit accelerated program, students will be exceptionally well prepared for entry into their careers or into a doctoral program in the field or in a related discipline.

Students are eligible to apply for this accelerated program once they have earned at least 60 undergraduate credits and can enroll in up to 18 credits of graduate coursework after successfully completing 75 undergraduate credits. This flexibility makes it possible for students to complete a bachelor's and a master's in five years.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies. For more information on undergraduates enrolling in graduate courses, see AP.1.4.4 Graduate Course Enrollment by Undergraduates (https://catalog.gmu.edu/policies/academic/registration-attendance/#text).

Application Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in the Graduate Admission Policies section of this catalog.

Important application information and processes for this accelerated master's program can be found here (https://www2.gmu.edu/admissions-aid/how-apply/accelerated-masters/).

Students should seek out the graduate program's advisor who will aid in choosing the appropriate graduate courses and help prepare the student for graduate studies.

Three letters of recommendation, including one from a prospective thesis or project advisor, are required.

GRE scores are not required for students in this accelerated program.

Successful applicants will have an overall undergraduate GPA of at least 3.10. Additionally, they will have completed the following courses with a GPA of 3.00 or higher[2]:

Code	Title	Credits
BIOL 213	Cell Structure and Function (Mason Core)	4
BIOL 214	Biostatistics for Biology Majors	4
BIOL 300	BioDiversity [1]	4
or BIOL 311	General Genetics	
CHEM 313 & CHEM 315	Organic Chemistry I and Organic Chemistry Lab I [2]	5

[1] Students should speak with an advisor to choose the course most appropriate for their post-graduation goals.

[2] Grades of 2.50 in CHEM 313 Organic Chemistry I and CHEM 315 Organic Chemistry Lab I are acceptable for admission into this accelerated pathway.

Accelerated Option Requirements

After the completion of 60 undergraduate credits, students must submit a bachelor's/accelerated master's transition form (available from the Office of the University Registrar (http://registrar.gmu.edu/)) to the College of Science's Office of Academic and Student Affairs (https://cos.gmu.edu/about/contact-us/).

At the completion of 75 undergraduate credits, students may begin completing up to 12 credits of graduate coursework that will count toward their bachelor's and master's.

Students must maintain an overall GPA of 3.00 or higher in graduate coursework and should consult with their faculty advisor to coordinate their academic goals.

Reserve Graduate Credit

Accelerated master's students may also take up to 6 graduate credits as reserve graduate credits. These credits do not apply to the undergraduate degree, but will reduce the master's degree by up to 6 credits. With 12 graduate credits counted toward the undergraduate degree plus the maximum 6 reserve graduate credits, the credits necessary for the graduate degree can be reduced by up to 18.

Graduate Course Suggestions

The following list of suggested courses is provided for general reference. To ensure an efficient route to graduation and post-graduation readiness, students are strongly encouraged to meet with an advisor before registering for graduate-level courses.

Code	Title	Credits
BIOL 508	Selected Topics in Animal Biology (When the topic is "Research and Development in a Biotechnological Company")	1-4
BIOL 682	Advanced Eukaryotic Cell Biology	3
BIOL 689	Interdisciplinary Tools in the Biosciences	3
BIOL 690	Introduction to Graduate Studies in Biology	1-2
BIOL 695	Seminar in Molecular, Microbial, and Cellular Biology	1

Neuroscience, BS/Biology, Accelerated MS

Overview

This bachelor's/accelerated master's degree program allows academically strong undergraduates with a commitment to advance

their education to obtain both the Neuroscience, BS and the Biology, MS (https://catalog.gmu.edu/colleges-schools/science/systems-biology/biology-ms/) degrees within an accelerated timeframe. Upon completion of this 138 credit accelerated program, students will be exceptionally well prepared for entry into their careers or into a doctoral program in the field or in a related discipline.

Students are eligible to apply for this accelerated program once they have earned at least 60 undergraduate credits and can enroll in up to 18 credits of graduate coursework after successfully completing 75 undergraduate credits. This flexibility makes it possible for students to complete a bachelor's and a master's in five years.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies. For more information on undergraduates enrolling in graduate courses, see AP.1.4.4 Graduate Course Enrollment by Undergraduates (https://catalog.gmu.edu/policies/academic/registration-attendance/#text).

Application Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in the Graduate Admission Policies section of this catalog.

Important application information and processes for this accelerated master's program can be found here (https://www2.gmu.edu/admissions-aid/how-apply/accelerated-masters/).

Students should seek out the graduate program's advisor who will aid in choosing the appropriate graduate courses and help prepare the student for graduate studies.

GRE scores are not required for students in this accelerated program.

Students must obtain a graduate faculty advisor prior to beginning graduate coursework.

Successful applicants will have an overall undergraduate GPA of at least 3.10. Three letters of recommendation, including one from a prospective thesis or project advisor, are required. Additionally, they will have completed[2] the following courses with a GPA of 3.00[1] or higher:

Code	Title	Credits
BIOL 213	Cell Structure and Function (Mason Core)	4
One Course in Statistics:		3-4
BIOL 214	Biostatistics for Biology Majors	
or STAT 250	Introductory Statistics I (Mason Core)	
or PSYC 300	Statistics in Psychology	
or MATH 352	Statistics	
BIOL 311	General Genetics	4
CHEM 313 & CHEM 315	Organic Chemistry I and Organic Chemistry Lab I [1]	5
NEUR 327	Cellular, Neurophysiological, and Pharmacological Neuroscience [2]	3

[1] Grades of 2.50 in CHEM 313 Organic Chemistry I and CHEM 315 Organic Chemistry Lab I are acceptable for admission into this accelerated pathway.

[2] Registration in, as opposed to completion of, NEUR 327 Cellular, Neurophysiological, and Pharmacological Neuroscience is sufficient.

Accelerated Option Requirements

After the completion of 75 undergraduate credits, students may complete 3 to 12 credits of graduate coursework that can apply to both the undergraduate and graduate degrees.

In addition to applying to graduate from the undergraduate program, students in the accelerated program must submit a bachelor's/accelerated master's transition form (available from the Office of the University Registrar (https://registrar.gmu.edu/forms/)) to the College of Science's Office of Academic and Student Affairs (https://cos.gmu.edu/about/contact-us/) by the last day to add classes of their final undergraduate semester. Students should enroll for courses in the master's program in the fall or spring semester immediately following conferral of the bachelor's degree, but should contact an advisor if they would like to defer up to one semester.

Students must maintain an overall GPA of 3.00 or higher in all graduate coursework and should consult with their faculty advisor to coordinate their academic goals.

Reserve Graduate Credit

Accelerated master's students may also take up to 6 graduate credits as reserve graduate credits. These credits do not apply to the undergraduate degree, but will reduce the master's degree by up to 6 credits. With 12 graduate credits counted toward the undergraduate degree plus the maximum 6 reserve graduate credits, the credits necessary for the graduate degree can be reduced by up to 18.

Graduate Course Suggestions

The following list of suggested courses is provided for general reference. To ensure an efficient route to graduation and post-graduation readiness, students are strongly encouraged to meet with an advisor before registering for graduate-level courses.

Code	Title	Credits
BIOL 682	Advanced Eukaryotic Cell Biology	3
BIOL 689	Interdisciplinary Tools in the Biosciences	3
BIOL 690	Introduction to Graduate Studies in Biology	1-2
BIOL 695	Seminar in Molecular, Microbial, and Cellular Biology	1
NEUR 612	Neuroethics	3
NEUR 601	Developmental Neuroscience	3
NEUR 602	Cellular Neuroscience	3
NEUR 603	Mammalian Neuroanatomy	3
NEUR 634	Neural Modeling	3
NEUR 651	Molecular Neuropharmacology	3

Biosciences, PhD

Banner Code: SC-PHD-BIOS

Alessandra Luchini, Program Director

312 Colgan Hall
Science and Technology Campus

Phone: 703-993-8400

Email: biologygrad@gmu.edu
Website: science.gmu.edu/academics/departments-units/systems-biology

This program is a research-oriented field of study that prepares students for significant contributions in academic or industrial settings. It is broken down into three concentrations: Cell and Molecular Biology, Microbiology and Infectious Disease, and Biocomplexity and Evolutionary Biology.

The academic component is a three-tiered structure. The first tier provides a set of core courses designed to advance research skills across all disciplines. The second tier comprises additional core courses and elective courses. The first two tiers are designed to be completed in approximately two years, including the comprehensive qualifying exam. Only on completion of these requirements, the qualifying exam, and a successful dissertation proposal can the students advance to candidacy status. The third tier focuses on research and culminates in a dissertation.

Admissions & Policies

Admissions

University-wide admissions policies can be found in the Graduate Admissions Policies section of this catalog.

To apply for this program, please complete the George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now/).

Application Requirements

The following are required of applicants to this program:

- Minimum 3.25 GPA in previous coursework with significant training in the biological sciences from an institution of higher education accredited by a Mason-recognized U.S. institutional accrediting agency or international equivalent.
- Three letters of recommendation from faculty members or individuals who have firsthand knowledge of the applicant's academic or professional capabilities.
- Statement of purpose consistent with the research interests of at least one faculty member in the program.
- Scores on GRE general exam (required) and biology or biochemistry subject exam (recommended) taken within the past five years prior to date of application submission. The GRE exam is waived if applicants hold a master's degree from a fully-accredited U.S. university at the time of their application.
- A TOEFL score of 575 on the paper-based exam or 230 on the computer-based exam is required of international students.

An interview may also be required. Applications should be submitted by January 1st for fall admission. Under unusual circumstances, applications may be considered for spring admission if they are received by October 1st. Applications will be considered until positions are filled. Students are encouraged to meet application deadlines to be considered for scholarships and stipends.

Strong candidates who lack several prerequisites may be admitted to provisional status. Removal from provisional status and continuation in the program is contingent on earning a GPA of 3.25 in the program's fundamental courses, plus completion of missing prerequisites.

Students who have not taken a course in basic biochemistry will be required to complete one prior to BIOS 701 Systems Biology.

Policies

For policies governing all graduate programs, see AP.6 Graduate Policies.

Reduction of Credits

For students entering the doctoral program with a master's degree in a related field from an institution of higher education accredited by a Mason-recognized U.S. institutional accrediting agency or international equivalent, the number of required credits may be reduced up to 30 credits, subject to approval of the program faculty and the college's associate dean for student affairs.

Transfer of Credit

Graduate credits taken previously and not used toward another degree may be transferred, subject to the approval of the advisor, the program director, and the associate dean. See AP.6.5 Credit by Exam, Reduction or Transfer for more information.

Requirements

Degree Requirements

Total credits: 72

Students should refer to the Admissions & Policies tab for specific policies related to this program.

Students in the doctoral program are required to present two research papers at a meeting or conference any time before graduation.

Doctoral Coursework

Bioscience Core

Code	Title	Credits
BIOL 682	Advanced Eukaryotic Cell Biology	3
Six credits or two instances of		6
BIOS 703	Laboratory Rotation	
Three credits of		3
BIOS 704	Topics in Biosciences	
Total Credits		12

Concentration in Cell and Molecular Biology (CMB)

This concentration prepares students for significant contributions in an academic or industrial research career. Coursework covers microarray analysis of gene expression, proteome analysis, sequencing and analysis of gene polymorphisms, gene and genome evolution, molecular studies of disease mechanisms, mechanisms of toxicology and mutagenesis, developmental neuroscience, and biotechnological applications.

Code	Title	Credits
Select 12 credits from the following:		12
BIOL 666	Human Genetics Concepts for Health Care	
BIOS 702	Research Methods	

BIOS 740	Laboratory Methods in Functional Genomics and Biotechnology	
BIOS 741	Genomics	
BIOS 742	Biotechnology	
BIOS 743	Genomics, Proteomics, and Bioinformatics	
BIOS 767	Molecular Evolution	
Total Credits		12

Concentration in Microbiology and Infectious Disease (MID)

Students in this concentration will be prepared for employment in academia, government, or industry. By stressing mechanisms of pathogenicity, physiology, metabolism, and genomic and proteomic analysis of pathogens, students will have a firm foundation for future research in infectious disease. Students will also be introduced to advanced laboratory practices, such as animal research methodologies and biocontainment laboratory work.

Code	Title	Credits
Select 12-13 credits from the following:		12-13
BIOL 553	Advanced Topics in Immunology	
BIOL 563	Virology	
BIOL 583	General Biochemistry	
BIOL 669	Pathogenic Microbiology	
BIOL 715	Microbial Physiology	
BIOS 702	Research Methods	
Total Credits		12-13

Concentration in Biocomplexity and Evolutionary Biology (BEB)

This concentration prepares students for careers in academia, government or industry. Through this concentration students will learn laboratory and quantitative skills that will enable them to investigate evolutionary relationships among organisms at the population, species or ecosystem level. Students will be encouraged to explore a wide range of coursework in order to develop a broad background in evolutionary biology and a deep knowledge of relevant methodologies necessary to keep abreast in this rapidly changing field.

The science of evolutionary biology is fundamentally concerned with documenting not only genetic change, but also the processes that cause it. Evolutionary biology includes paleobiology, population genetics, evolutionary ecology and phylogenetics. Biocompexity is the study of living organisms, including their unique structural, chemical and genetic properties, their distribution and abundance in nature, and their evolutionary relationships to all other organisms. Given the fact that most of the earth's biodiversity is unknown, collecting, cataloging and studying organisms have always been and will continue to be one of the most challenging aspects of biology.

Code	Title	Credits
Select 12 credits from the following:		12
BIOL 574	Population Genetics	
BIOL 585	Eukaryotic Cell Biology Laboratory	
BIOS 716	Methods in Evolutionary Biology	
BIOS 767	Molecular Evolution	
Total Credits		12

Electives

Code	Title	Credits
Select 23-36 credits from the following lists associated with the chosen concentration:		23-36
Cell and Molecular Biology & Microbiology and Infectious Disease Concentrations		
BIOL 564	Techniques in Virology	
BIOL 568	Advanced Topics in Molecular Genetics	
BIOL 579	Molecular Evolution and Conservation Genetics	
BIOL 580	Computer Applications for the Life Sciences	
BIOL 685	Emerging Infectious Diseases	
BIOL 718	Techniques in Microbial Pathogenesis	
BIOS 701	Systems Biology	
BIOS 702	Research Methods	
BIOS 710	Current Topics in Bioscience	
BIOS 740	Laboratory Methods in Functional Genomics and Biotechnology	
BIOS 741	Genomics	
BIOS 742	Biotechnology	
BIOS 743	Genomics, Proteomics, and Bioinformatics	
BIOS 744	Molecular Genetics	
BIOS 898	Directed Studies in Biosciences	
BIOS 899	Directed Research in Biosciences	
BINF 633	Molecular Biotechnology	
BINF 641	Biomolecular Modeling	
BINF 705	Research Ethics	
Biocomplexity and Evolutionary Biology Concentration [1]		
BIOL 506	Selected Topics in Microbiology	
BIOL 507	Selected Topics in Ecology	
BIOL 508	Selected Topics in Animal Biology	
BIOL 518	Conservation Biology	
BIOL 532	Animal Behavior	
BIOL 533	Selected Topics in Plant Biology	
BIOL 537	Ornithology	
BIOL 538	Mammalogy	
BIOL 539	Herpetology	
BIOL 543	Tropical Ecosystems	
BIOL 559	Fungi and Ecosystems	
BIOL 561	Comparative Animal Physiology	
BIOL 566	Cancer Genomics	
BIOL 572	Human Genetics	
BIOL 573	Developmental Genetics	
BIOL 643	Microbial Ecology	
BIOL 715	Microbial Physiology	
BIOS 741	Genomics	
BIOS 742	Biotechnology	

BIOS 743	Genomics, Proteomics, and Bioinformatics
BIOS 744	Molecular Genetics
BIOS 898	Directed Studies in Biosciences
BIOS 899	Directed Research in Biosciences
EVPP 536	The Diversity of Fishes
GEOL 501	Selected Topics in Modern Geology (may be repeated once)
GEOL 534	Vertebrate Paleontology
Total Credits	23-36

[1] Students may take other courses related to their research topic if approved by their committee. Courses in Geographic Information Systems or Statistics are encouraged.

Dissertation Committee

Upon admission to the program, each student is assigned an advisor from the bioscience faculty. The advisor may be changed by mutual consent of student and advisor, or petition to the program director and associate dean. With their advisor, students adopt an individual program that focuses on a specific area of research.

By the end of the fourth semester of coursework, students assemble a dissertation committee of four graduate faculty members with representation from at least two academic departments. The faculty advisor and the program director approve the program of study.

Qualifying Examination

On nearing completion of course requirements, students take a qualifying exam with a written and an oral component. At the discretion of the committee, the written qualifying exam may be retaken once if the student's performance was deemed below satisfaction.

Advancement to Candidacy

Upon successful completion of the qualifying exam, the majority of all coursework, and an accepted dissertation proposal, students will be recommended for advancement to candidacy by the committee and the program director.

The semester after advancement to candidacy, students are eligible to enroll in dissertation research (BIOS 999 Doctoral Dissertation Research). Students must review their progress on the dissertation with their graduate committee on a regular basis until graduation.

Dissertation Research

No more than 24 combined credits from BIOS 998 Doctoral Dissertation Proposal and BIOS 999 Doctoral Dissertation Research may be applied toward satisfying doctoral degree requirements. Students register for a minimum of 3 credits of BIOS 999 Doctoral Dissertation Research in the first semester of advancement.

Code	Title	Credits
Select 12-24 credits from the following:		12-24
BIOS 998	Doctoral Dissertation Proposal	
BIOS 999	Doctoral Dissertation Research	
Total Credits		12-24

Doctoral Dissertation

After advancing to doctoral candidacy, students work with their dissertation committee to develop their dissertation proposal into a completed doctoral dissertation. The dissertation research should represent a significant contribution that is publishable in a refereed scientific journal. When the dissertation is complete, students will present their results to their graduate committee and defend their dissertation in a public forum.

Personalized Medicine Graduate Certificate

Banner Code: SC-CERG-PRSM

Academic Advising

312 Colgan Hall
Science and Technology Campus

Phone: 703-993-8400
Email: biologygrad@gmu.edu
Website: science.gmu.edu/academics/departments-units/systems-biology

This certificate is based upon a set of core courses that currently support the Biology, MS; the Biosciences, PhD; the Bioinformatics and Computational Biology, MS; and the Bioinformatics and Computational Biology, PhD degree programs. Students completing this certificate will receive the most up-to-date advanced education available in the region. Completion of the certificate will enhance the careers of those students who are already working in this area, and can also serve as a useful intermediate step towards later enrollment in master's or doctoral programs.

Courses are generally offered in the late afternoon or in the evening to accommodate students with full-time employment outside of the university.

This certificate may be pursued on a part-time or full-time basis.

Admissions & Policies

Admissions

University-wide admissions policies can be found in the Graduate Admissions Policies section of this catalog.

To apply for this program, please complete the George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now/).

Prospective students should hold an undergraduate GPA of 3.00 or current employment in clinical or translational research, diagnostics lab, or biological data analysis field.

To be considered for admission, applicants must submit the George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now/), all undergraduate transcript(s), three letters of recommendation, and a statement of interest.

Policies

Students may not enroll initially in any College of Science master's or doctoral program and later transfer into this certificate program.

For policies governing all graduate programs, see AP.6 Graduate Policies.

Premium Tuition

This certificate charges students a differential tuition rate of $100 per credit hour, which is added to the standard graduate tuition rate (regardless of in or out of state status).

Requirements

Certificate Requirements

Total credits: 15

This certificate may be pursued on a full-or part-time basis.

Students should refer to the Admissions & Policies tab for specific policies related to this program.

Required Core Courses

Code	Title	Credits
Select 9 credits from the following:		9
BIOL 562	Personalized Medicine	
BIOL 566	Cancer Genomics	
BIOL 572	Human Genetics	
or BIOL 666	Human Genetics Concepts for Health Care	
BIOL 685	Emerging Infectious Diseases	
BIOS 743	Genomics, Proteomics, and Bioinformatics	
Total Credits		9

Electives

Code	Title	Credits
Select 6 credits from the following:		6
BIOL 506	Selected Topics in Microbiology	
BIOL 508	Selected Topics in Animal Biology	
BIOL 553	Advanced Topics in Immunology	
BIOL 566	Cancer Genomics	
BIOL 568	Advanced Topics in Molecular Genetics	
BIOL 575	Selected Topics in Genetics	
BIOL 583	General Biochemistry	
BIOL 669	Pathogenic Microbiology	
BIOL 682	Advanced Eukaryotic Cell Biology	
BIOL 685	Emerging Infectious Diseases	
BIOL 691	Current Topics in Biology [1]	
BIOL 695	Seminar in Molecular, Microbial, and Cellular Biology	
BIOS 701	Systems Biology	
BIOS 741	Genomics	
BINF 630	Bioinformatics Methods	
BINF 633	Molecular Biotechnology	
Up to 4 credits of BIOL 693 and/or BINF 796. [1]		
Total Credits		6

[1] Credit for these courses may only be applied toward the certificate's electives if the research topic is relevant to personalized or translational medicine.

College of Visual and Performing Arts

C211 College Hall
Fairfax Campus
MSN: 1H4

Phone: 703-993-8877
Website: cvpa.gmu.edu

Administration

- Rick Davis, Dean
- Lisa C. Kahn, Associate Dean for Research and Graduate Studies
- John Wilkin, Director Finance and Administration, CFO
- Julie Thompson, Executive Director, Center for the Arts

College Code: AR

The mission of the College of Visual and Performing Arts (CVPA) is to advance the study, creation, performance, exhibition, and management of the arts, acting on the strong belief in their transformative influence on individuals and civilizations. Fusing the academic and the professional, the campus and the community, the past and the present, CVPA seeks to engage new art forms, populations, and ways of working to meet the needs of a changing world both inside and beyond the walls of the university. The College strives to ensure that Mason's entire student population has the opportunity to experience and study the arts as a key component of a well-rounded liberal education.

Studying the arts goes hand in hand with creation, performance, and management. Each major features strong academic preparation in the history and theory of the art form in support of discipline-based technique courses. The college's faculty of practicing artist-teachers-managers works closely with students in a variety of curricular and co-curricular creative projects. Once basic techniques are established, students are encouraged to stretch, grow, and experiment within this supportive environment, enhancing their experience as working artists and arts managers while enriching the cultural life of the campus community.

An education in the arts is deepened by regular contact with the work of distinguished visiting artists. The college is home to the Center for the Arts (http://cfa.gmu.edu/) on the Fairfax campus and the Hylton Performing Arts Center (https://hyltoncenter.org/) on the Science and Technology campus, both of which present diverse programs of cultural experiences for the entire university community, as well as Northern Virginia and the greater Washington, D.C., area. Artists from across the country and around the world regularly perform, give master classes, work with students during extended residencies, and interact with the community in a variety of other ways. The accessibility and vitality of the Concert Hall, Hylton Center, TheaterSpace, the Gillespie Gallery of Art, Johnson Center Cinema, Harris Theater, and other campus and regional venues provide an unparalleled educational experience in the arts.

Requirements & Policies

General Academic Policies

The requirements for each academic program offered by the college are described in the sections below. Students are ultimately responsible for their academic progress towards their degrees. All students are subject to the university's general academic policies in addition to those specific to each academic unit.

Accommodations for Disabled Students

Students with documented disabilities should contact the Office of Disability Services (http://ods.gmu.edu) (Student Union I, Room 222; 703-993-2474) to open a file and learn more about accommodations that may be available to them.

Auditing

Students who wish to audit a course must obtain written permission from the instructor before registering for the class. Students do not receive grades or credit for audited courses. A student who audits a course does so for the purposes of self-enrichment and academic exploration and is not required to actively participate in class assignments, presentations, or exams. The course is offered **only** on a space-available basis with the approval of the instructor. It is expected that auditing students will respect all class rules and practices.

The Course Audit Form can be found on the Registrar's website (http://registrar.gmu.edu). The form must be submitted to the Office of the University Registrar by the last day to drop the course.

Note: A previously audited course may be taken again for credit in a later term. Students may also audit a course previously taken and passed; however, students may not change from credit to audit status nor from audit to credit status after the end of the drop period, as defined above. The usual tuition and fees apply to audit status.

Auditing Courses under the Senior Citizen Waiver Program

Under terms of the Senior Citizen Higher Education Act of 1974, eligible Virginia residents (requires legal domicile for one year) that are 60 years of age or older are entitled to enroll to audit (no academic credit received) up to three academic credit courses per semester and pay no tuition or fees, except fees established for the purpose of paying for course materials or laboratory fees.

For more information on policies and procedures, please refer to the Registrar's website (https://registrar.gmu.edu/topics/senior-citizen-waiver/).

E-mail

George Mason University uses only Mason e-mail accounts to communicate with enrolled students. Students should activate their Mason e-mail, use it to communicate with their school/ department/ program and other administrative units, and check it regularly for important information.

Registration

Students are personally responsible for correctly registering for courses and paying all tuition and fees by the official university registration and payment deadlines. Instructors do not have the authority to add students to courses. All students should verify the accuracy of their enrollment before the end of the add and drop periods.

Questions about Academic Policies

Students with questions regarding exceptions to academic policies should contact the CVPA Academic Affairs Office (College Hall, C200; 703-993-4551).

Undergraduate Policies and Information

Degree Programs

The undergraduate degree consists of coursework in the Mason Core, a major area of study, and electives. To earn a bachelor's degree, students must complete a minimum of 120 credits, of which at least 45 must be upper level courses (numbered 300 and above). At least one course at the 300 or 400 level must be designated "writing intensive."

Academic Course Load

Undergraduate students earning degrees in CVPA may register for 18 credits per fall and spring semester without the dean's permission. Students are advised that they will be required to pay additional tuition beyond the 15-credit, university full-time academic load. Students should be cognizant of the time commitment when they register for their courses, especially if they register for high numbers of credits. Students are urged to consult with their academic advisor regularly and familiarize themselves with Mason guidelines for work and academic load. Students are reminded that employment must not take priority over coursework.

Advising

Students are assigned academic advisors and are strongly encouraged to meet with them at least once per semester, and particularly when they achieve 75 credits or are two semesters before expected graduation. Undeclared CVPA students and undergraduate students in academic difficulty (cumulative GPA under 2.00) are required to see an advisor prior to registration for the semester following registration restriction.

Minimum Cumulative GPA in Major

Undergraduate students earning CVPA degrees must earn a minimum 2.00 cumulative GPA in their major, or higher if required by their program.

Foreign Language Requirement

Some degrees within CVPA require intermediate-level proficiency in one foreign language or the completion of a minor, double major or double degree. The foreign language requirement may be fulfilled by completing a course in a foreign language numbered 202, 209, or 210 (or higher level courses taught in the language) or achieving a satisfactory score on an approved proficiency test. International students should consult the CVPA Academic Affairs Office about a possible waiver of this requirement.

Leave of Absence

All undergraduate students who are planning an absence from George Mason must submit a formal request for Leave of Absence to the Office of the University Registrar. Students do not need to complete the Leave of Absence form if they are participating in a George Mason University sponsored study abroad program or have received permission to study elsewhere. The maximum time allowed for a Leave of Absence is four semesters. A new application for admission to the university will be required if a student is away for more than 2 academic years OR a Leave of Absence form was not submitted. Re-admission is not guaranteed. See AP.1.8 Undergraduate Leave of Absence for full university policy.

Mason Core Program

The baccalaureate degree requires students to take a range of courses that provide a broad knowledge of the world, develop the ability to think both conceptually and critically, acquaint them with many different methods of inquiry, and provide the skills to continue intellectual growth throughout their lives. Students select from a range of courses outlined in the Mason Core section. Students accepted into the Honors College fulfill some/all of their Mason Core requirements with completion of that program of study. Students are strongly advised to consult the University Mason Core page.

Minors

Some degrees within CVPA require a minor or intermediate-level proficiency in one foreign language. University policy states that as part of their minor, students must earn 8 distinct credits that are not used to fulfill requirements for their major. Some programs have more specific criteria for applying credits to a minor.

RECR courses

Any 100-level RECR courses incorporating dance, offered by the College of Education and Human Development, cannot be counted toward credits required for a degree in CVPA. Students may take non-dance RECR courses for elective credit for CVPA degrees.

Prerequisites

Undergraduate students must earn a C or better in prerequisite courses to proceed to the next course.

Study Elsewhere

Students with fewer than 60 hours of transfer coursework (not including registration through the Consortium of Universities of the Washington Metropolitan Area or coursework completed through the Center for Global Education) may take up to 12 hours of coursework in CVPA disciplines at another institution. A student may seek permission for additional hours beyond these limits for summer registration if his/her permanent residence is more than 50 miles from the George Mason University Fairfax campus. Students must obtain advance, written approval from the student's dean and the course dean's office. Students who enroll elsewhere without advance written permission while enrolled at Mason will not receive transfer credit for the coursework taken at another institution unless they re-apply for admission to Mason as transfer applicants and meet all priority deadlines. Re-admission is not guaranteed, and transfer credit is awarded based upon course equivalences in effect at the time of re-admission. Freshmen and transfer students in their first semester at Mason are not permitted to study elsewhere. Courses previously attempted at Mason (including withdrawals) cannot be taken elsewhere. Schools and Colleges have study elsewhere criteria for courses in their disciplines in addition to University policy. Students must be in good standing with a minimum cumulative GPA of 2.00 in their Mason courses. See AP.1.4.2 Permission to Study Elsewhere for additional information.

Transfer of Credit

Transfer students must resolve transfer credit issues within the first academic year of enrollment.

Undergraduate students may transfer a maximum of 18 credits earned in non-degree status at Mason.

Withdrawals

Students are responsible for all courses in which they remain officially enrolled once the drop period has ended.

Undergraduates enrolled in degree programs are eligible to withdraw from three classes through the ninth week (of a fifteen week semester) without dean's approval and at the student's own discretion during their entire undergraduate career at Mason. See AP.1.5.1 Selective Withdrawal for Undergraduates for further details.

Instructors do not have the authority to withdraw students from classes. Withdrawals other than Selective Withdrawals require the approval of the academic dean and are typically allowed only for full semesters at a time (all enrolled courses) and are only permitted for non-academic reasons. No withdrawals can be approved to avoid an unsatisfactory grade. When submitting a withdrawal request, students must provide original, verifiable, third-party documentation for the reason for the withdrawal. Requests for withdrawals should be submitted as early in the semester as possible, and never after the last day of classes.

Graduate Policies and Information

For items not listed below, please refer to the university's policies: AP.6 Graduate Policies.

Admissions

CVPA follows university policies for graduate admissions. Some programs ask for additional admissions requirements. Please refer to the program for a listing of all requirements.

All applicants, regardless of admission or not, will have their decision uploaded through their self-service center. Applicants will be notified that their decision is ready for their review via email to the address they provided at the point of application. Applicants will not be told decisions over the phone or in-person. Applicants who do not meet our minimum requirements (e.g., GPA, test scores, pre-screening requirements, portfolio requirements) may be issued a denial decision before their application is completed.

The College of Visual and Performing Arts does not offer an appeal process for admissions decisions. Applicants are welcome to file a new application for a future semester.

Graduate Programs

CVPA's graduate programs offer highly focused study designed to prepare students for professional work in the arts and education. The requirements for each graduate degree are described under the program's catalog entry.

Transfer of Credit

Graduate credit earned prior to admission to a certificate, master's, or doctoral program may be eligible to be transferred and applied to a CVPA graduate program, certificate or doctoral degree. Please see AP.6.5.3 Transfer of Credit for more detailed information about the requirements.

Appeals Process

Appeals of Academic Procedures

See Appeals of Academic Procedures for University Policies.

CVPA Procedures for Grade Appeal

Although faculty members are generally the best judges of student performance in their classes, circumstances may cause a student to

believe that a professor has made an unfair grade decision. Therefore, a Grade Appeal process has been established to ensure a fair hearing in such cases. Grade appeals are not accepted after the last day of classes for the following semester, as indicated in the Schedule of Classes (spring for fall grades, fall for spring and summer grades). The process for initiating and resolving a Grade Appeal is as follows:

1. The first step to resolve differences between an instructor and student concerning a grade should be a discussion with the instructor; this meeting should occur within two weeks of the student's written request for a meeting; if the instructor is no longer affiliated with the University, the appeal is made to the Program Director.
2. If the instructor and student cannot resolve the issue, and the student wishes to pursue the matter further, he or she must present to the Program Director, a written appeal including the following: A description of the outcome of the informal discussion process. Any relevant documents the student would like to have reviewed as part of the appeal process. A copy of the course syllabus and assignment descriptions. Failing a satisfactory resolution, the student may appeal the grade by submitting a written appeal to the CVPA Academic Affairs Office. Undergraduate students will submit their request to the assistant dean; graduate students will submit their requests to the associate dean in the CVPA Academic Affairs Office.

The decision of the CVPA Assistant or Associate Dean is final.

CVPA Procedure for Non-Academic Appeals or Grievance

A student who intends to file a non-academic appeal, or intends to file a grievance against a faculty member, another student, or administrator undertakes the following steps:

1. The student meets with the professor and Program Director to discuss the non-academic appeal/grievance; this meeting should occur within two weeks of the student's written request for a meeting; if the person is no longer affiliated with the University, the request is made to the Department or Program Director only.
2. The professor (Program Director) responds to the student within three days of the meeting.
3. If the student wishes to continue the non-academic appeal/grievance, the student must submit a written explanation to Academic Affairs Office. The Associate Dean reviews all non-academic appeals and grievances, and has the final decision for the college
4. The student may follow additional University appeal procedures outlines in Appeals of Academic Procedures.

Academic Termination from an Undergraduate Program

Termination from a major may be imposed as a result of excessive repeating of required courses without achieving the minimum standard, and for other evidence of continued failure to make adequate progress toward completion of the major. Some programs have specific criteria for termination from the major. See the program and AP.5.2.4 Termination from the Major.

Academic Dismissal from an Undergraduate Program

A third suspension results in academic dismissal from the university. See AP.5.2.6 Academic Dismissal for details.

Academic Dismissal from a Graduate Program

The Office of the University Registrar contacts students via e-mail if they have earned an academic warning, or dismissal. Students wishing to appeal should contact the CVPA Graduate Programs Office within three days of the e-mail date. A deadline for the appeal documentation is determined, normally two weeks. Students are to submit:

1. A written statement explaining the circumstances that led to the dismissal, along with supporting documentation from employers, physicians, or other sources as necessary;
2. Evidence that the circumstances precipitating the unsatisfactory academic performance have been remedied;
3. Statement from department and program's graduate coordinator supporting the student's continued enrollment at the University.

Upon receipt of the above,

1. The Associate Dean of Academic Affairs reviews the appeal.
2. The final decision of the Associate Dean is forwarded to the student and the Office of the University Registrar.
3. The student may follow University appeal procedures outlined in Appeals of Academic Procedures.

For these, and any other academic concerns, students are encouraged to contact George Mason University's Ombudsman for Student Academic Affairs. The ombudsman is a neutral, independent, informal, and confidential party who provides assistance to students in resolving university-related concerns. The ombudsman is an advocate for fairness and the equitable treatment of students, operates independently of all formal grievance processes at the university, and considers all sides of an issue in an impartial and objective manner. The ombudsman has no authority to make exceptions or to grant requests but can perform informal investigations and, as a result, may recommend actions that lead to changes in processes and policies at the university. Meetings with the ombudsman are confidential. The ombudsman serves all undergraduate and graduate students at the university.

Academic Units

- Arts Management Program
- Computer Game Design Program
- Film and Video Studies Program
- Reva and Sid Dewberry Family School of Music
- School of Art
- School of Dance
- School of Theater

Programs

- Visual and Performing Arts, MFA

Visual and Performing Arts, MFA

Banner Code: AR-MFA-VPA

Phone: 703-993-2196
Email: cvpaaff@gmu.edu

The MFA in Visual and Performing Arts is a terminal degree which prepares students as professional artists and scholars who can work

within their specialty and teach at the university level. Creative work and skill building are at the core of the study. The curriculum is designed for serious and talented students who are prepared to examine modes of creative inquiry in an inclusive, unique environment that promotes exploration, analysis, synthesis, and development as artists.

Admissions & Policies

Admissions

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified on the Graduate Admissions policy page (https://catalog.gmu.edu/admissions/graduate-policies/). Specific graduate admissions requirements can be found on the College of Visual and Performing Arts Graduate Admissions requirements page (https://cvpa.gmu.edu/admissions/graduate-admissions/graduate-admission-requirements/).

Concentration in Dance

The MFA in Visual and Performing Arts, concentration in Dance, is a highly selective 60-credit program of study grounded in the modern dance genre that emphasizes mastery in performance, choreography, and teaching in higher education. Applicants must have significant (5 years or more) professional performance experience in modern or ballet at the national or international level. They must also demonstrate professional competence in choreography as exemplified by a significant body of work, and have experience teaching technique at the advanced level.

Specific graduate admissions requirements can be found on the College of Visual and Performing Arts Graduate Admissions requirements page (https://cvpa.gmu.edu/admissions/graduate-admissions/graduate-admission-requirements/).

Concentration in Graphic Design

The MFA in Visual and Performing Arts, Graphic Design concentration, is a terminal degree that offers creative students a broad study of design as well as the development of skills for teaching at the university level. The 60-credit program includes courses in typography, web and motion design, user experience, and branding. Coursework in theoretical and historical design will supplement the studio experience. The broad range of study is intended to develop design educators and professionals, preparing them for the ever-evolving field of design. Admission is selective, ideal applicants should possess a BFA degree in graphic design and a significant design portfolio, reflecting professional achievement.

Specific graduate admissions requirements can be found on the College of Visual and Performing Arts Graduate Admissions requirements page (https://cvpa.gmu.edu/admissions/graduate-admissions/graduate-admission-requirements/).

Concentration in Theater

The MFA in Visual and Performing Arts with a concentration in Theater is a highly selective program designed for theater artists with some professional experience who continue to work professionally during their course of study. Students are admitted to a specific emphasis: Acting, Design & Technology, or Directing. A program of study will be designed for each individual, based on their area of expertise, previous experience and professional goals.

Specific graduate admissions requirements can be found on the College of Visual and Performing Arts Graduate Admissions requirements page (https://cvpa.gmu.edu/admissions/graduate-admissions/graduate-admission-requirements/).

Concentration in Visual Art

The MFA in Visual and Performing Arts with a concentration in Visual Arts is a highly selective 60 credit terminal degree that prepares students to become professional artists, work in technology or arts-related fields, and teach at the university level. Coursework includes research in areas of study that include New Media, Painting and Drawing, Photography, Printmaking, Sculpture, and InterArts. Students have the opportunity to combine art forms in projects that may be installation, performance, publishing, time-based, or writing-based, and combine creative and critical approaches in their work.

Specific graduate admissions requirements can be found on the College of Visual and Performing Arts Graduate Admissions requirements page (https://cvpa.gmu.edu/admissions/graduate-admissions/graduate-admission-requirements/).

Policies

Program Requirements

Candidates are required to complete 60 credits, of which 30 are made up from core requirements. An additional 30 credits are based on concentration area and comprehensive experience.

MFA concentrations include:

- Dance
- Graphic Design
- Theater
- Visual Art

While the faculty anticipate that students will work through their coursework as described in this catalog, individuals with extensive professional accomplishment may craft an individualized program that meets curricular requirements. Individualized programs require the recommendation of the Graduate Committee within the student's respective school as well as the approval of the CVPA Associate Dean.

Requirements

Degree Requirements

Total credits: 60

Students should complete all requirements within the concentration to which they have been admitted. Candidates are required to complete 60 credits, of which 30 are made up from core requirements. An additional 30 credits are based on concentration area and comprehensive experience.

Concentration in Dance (DANC)

The MFA in Visual and Performing Arts, concentration in Dance, is a highly selective 60-credit program of study grounded in the modern dance genre that emphasizes mastery in performance, choreography, and teaching in higher education.

Core Degree Requirements

Code	Title	Credits
Research Methods		
AVT 600	Research Methodologies	3

Graduate Seminar		
Two credits of		2
DANC 501	Graduate Dance Seminar	
Writing Seminar		
AVT 621	Art Writing Seminar	3
Advanced Aesthetics		
DANC 598	Philosophy and Aesthetics of Dance	3
Studies in History/Theory/Contemporary Trend		
DANC 615	Contemporary Trends	3
Teaching Practicum		
DANC 627	Advanced Teaching Seminar	3
Directed Reading		
AVT 796	Directed Reading	1
Project		
Six credits of		6
DANC 798	Directed Choreography/Project	
Thesis		
Six credits of		6
DANC 799	Thesis	
CVPA 600	CVPA Graduate ProSeminar [1]	0
Total Credits		30

[1] Must be taken within the student's first two semesters.

Concentration Requirements

Code	Title	Credits
DANC 510	Contemporary Movement Theories	3
DANC 560	Advanced Choreography	3
Three credits of		3
DANC 570	Advanced Dance Performance	
DANC 571	Residency Workshop	3
Three credits of		3
DANC 790	Internship	
DANC 672	Dance Production	3
Select 12 credits from the following:		12
DANC 525	Advanced Modern Dance (must be taken for a minimum 6 credits)	
DANC 545	Advanced Ballet (must be taken for a minimum 3 credits)	
Total Credits		30

Concentration in Graphic Design (GD)

The MFA in Visual and Performing Arts, concentration in Graphic Design offers students a comprehensive study and preparation for the graphic design profession. The program includes courses in typography, web design, image making, and brand design, as well as prepares students for an academic career in Graphic Design. The broad range of study is intended to develop professionals prepared for an ever-expanding graphic design field.

Core Degree Requirements

Code	Title	Credits
Research Methods		
AVT 600	Research Methodologies	3
Graduate Seminar		
Eight credits of		8
AVT 611	Graduate Design Seminar	
Writing Seminar		
AVT 621	Art Writing Seminar	3
Advanced Aesthetics		
AVT 613	Experiential Design History	3
Studies in History/Theory/Contemporary Trend		
AVT 618	Visual Communication Theories	3
Teaching Practicum		
Four credits of		4
AVT 670	Teaching Practicum	
Directed Reading		
AVT 796	Directed Reading [1]	3
Project		
Six credits of		6
AVT 798	Directed Project and Exhibition (6 credits) [1]	
Thesis		
Three credits of		3
AVT 799	Thesis [1]	
CVPA 600	CVPA Graduate ProSeminar [2]	0
Total Credits		36

[1] Involves a study of the historical basis for a studio project; an independent creative production suitable for public viewing; and a written thesis documenting the evolution of the creative problem and exploring the intention, purpose, and relative success of the finished project.

[2] Must be taken within the student's first two semesters.

Concentration Requirements

Code	Title	Credits
AVT 614	Brand Identity Design	3
AVT 617	Advanced Typography	3
Select 6 credits from the following:		6
AVT 519	Special Topics in Graphic Design	
AVT 619	Advanced Web Design	
AVT 596	Independent Study	
AVT 599	Special Topics in Art and Visual Technology	
Other graduate studio courses as approved by director		
AVT 641	Graduate Graphic Design I	3
AVT 646	Graduate Graphic Design II	3
AVT 647	Advanced Graduate Graphic Design I	3
AVT 648	Advanced Graphic Design II	3
Total Credits		24

Concentration in Theater (THR)

The MFA in Visual and Performing Arts, concentration in Theater, is a terminal degree that prepares students to become professional artists, work in theater or arts-related fields, and teach at the university level.

Core Degree Requirements

Code	Title	Credits
Research Methods		
AVT 600	Research Methodologies	3
Graduate Seminar		
Two credits of		2
THR 591	Graduate Seminar	
Writing Seminar		
THR 652	Writing Seminar	3
Advanced Aesthetics		
AVT 621	Art Writing Seminar	3
Studies in History/Theory/Contemporary Trend		
Six credits of		6
THR 651	Advanced Dramatic Theory and Criticism	
Teaching Practicum		
THR 655	Teaching Practicum	3
Directed Reading		
THR 796	Directed Reading	1
Project		
THR 797 & THR 798	Project Preparation and Project Practicum	6
Thesis		
THR 799	Thesis (3 credits)	3
CVPA 600	CVPA Graduate ProSeminar [1]	0
Total Credits		30

[1] Must be taken within the student's first two semesters.

Concentration Requirements for All Emphases

Code	Title	Credits
THR 539	Aesthetics for the Theater	3
THR 560	Advanced Script Analysis	3
THR 691	Professional Development	3
THR 790	Directed Research	3
Total Credits		12

Track Requirements

In each area of emphasis, students must pick either a professional or academic track. Students in the professional track will complete at least three additional credits in practical production experience over and above the core in the following:

Code	Title	Credits
Select 3 credits from the following:		3
THR 694	Graduate Field Experience	
THR 696	Advanced Acting Practicum	
THR 697	Advanced Playwriting and Dramaturgy Practicum	
THR 698	Advanced Directing Practicum	
THR 699	Advanced Design Practicum	
Total Credits		3

Students in the academic track will complete at least three additional credits in practical teaching over and above the core in the following:

Code	Title	Credits
THR 755	Academic Track Practicum	3
Total Credits		3

Emphasis Requirements

With the approval of their mentor, students will have the flexibility to select courses from Emphasis areas:

Code	Title	Credits
Select 15 credits from the following:		15
Acting Emphasis:		
THR 525	Advanced Musical Theater Workshop	
THR 590	Special Topics for Graduate Study	
THR 599	Independent Study	
THR 610	Acting Mentorship	
THR 620	Acting Techniques	
THR 694	Graduate Field Experience	
THR 696	Advanced Acting Practicum	
Design & Technology Emphasis:		
THR 530	Topics in Theater Design	
THR 590	Special Topics for Graduate Study	
THR 599	Independent Study	
THR 630	Design Mentorship	
THR 694	Graduate Field Experience	
THR 699	Advanced Design Practicum	
AMGT 602	Seminar in Arts Management	
AMGT 609	Performing Arts Management	
AMGT 706	Festivals and Special Events	
AMGT 752	Arts Entrepreneurship	
GAME 635	Issues in Interactive Entertainment	
GAME 650	Advanced Music and Sound for Games	
AVT 682	Experimental 2D Animation	
AVT 686	Experimental 3D Animation	
AVT 687	Advanced Topics: New Media	
AVT 688	Hybrid Animation	
FAVS 565	Documentary Filmmaking	
FAVS 575	Fiction Film Directing	
FAVS 599	Special Topics	
Directing Emphasis:		
THR 540	Directing Techniques	
THR 590	Special Topics for Graduate Study	
THR 599	Independent Study	
THR 640	Directing Mentorship	
THR 694	Graduate Field Experience	
THR 698	Advanced Directing Practicum	
THR 755	Academic Track Practicum	
FAVS 565	Documentary Filmmaking	
FAVS 575	Fiction Film Directing	
FAVS 599	Special Topics	
Musical Theater Emphasis:		
THR 525	Advanced Musical Theater Workshop	
THR 590	Special Topics for Graduate Study	
THR 599	Independent Study	

THR 610	Acting Mentorship	
THR 620	Acting Techniques	
THR 694	Graduate Field Experience	
THR 696	Advanced Acting Practicum	
THR 755	Academic Track Practicum	
MUSI 621	Graduate Applied Music	
MUSI 688	Opera and Musical Theater Ensemble	
MUSI 699	Independent Study	
Playwriting & Dramaturgy Emphasis:		
THR 571	Advanced Playwriting Workshop	
THR 590	Special Topics for Graduate Study	
THR 599	Independent Study	
THR 694	Graduate Field Experience	
THR 697	Advanced Playwriting and Dramaturgy Practicum	
THR 740	Directors and Dramaturgs in Collaboration	
Total Credits		15

Concentration in Visual Art (VART)

The MFA in Visual and Performing Arts, concentration in Visual Arts, is a terminal degree that prepares students to become professional artists, work in technology or arts-related fields, and teach at the university level. Students select an emphasis in one of the following: New Media, Painting and Drawing, Photography, Printmaking, Sculpture, or InterArts. Students have the opportunity to combine art forms in projects that may be installation, performance, publishing, time-based, or writing-based, and combine creative and critical approaches in their work.

Core Requirements

Code	Title	Credits
Research Methods		
AVT 600	Research Methodologies	3
Graduate Seminar		
Six credits of		6
AVT 610	Graduate Seminar	
Writing Seminar		
AVT 621	Art Writing Seminar	3
Advanced Aesthetics		
AVT 507	Advanced Aesthetics	3
or AVT 599	Special Topics in Art and Visual Technology	
Studies in History/Theory/Contemporary Trend		
AVT 620	Theory, Criticism, and the Arts	3
Teaching Practicum		
Four credits of		4
AVT 670	Teaching Practicum	
Directed Reading		
AVT 796	Directed Reading	3
Project		
Six credits of		6
AVT 798	Directed Project and Exhibition	
Thesis		
Three credits of		3
AVT 799	Thesis	
CVPA 600	CVPA Graduate ProSeminar [1]	0
Total Credits		34

[1] Must be taken within the student's first two semesters.

Note:

AVT 796 Directed Reading/AVT 798 Directed Project and Exhibition/AVT 799 Thesis involves a study of the historical basis for a studio project; an independent creative production suitable for public viewing; and a written thesis documenting the evolution of the creative problem and exploring the intention, purpose, and relative success of the finished project.

Concentration Requirements

Code	Title	Credits
Select 9 credits from the following:		9
AVT 596	Independent Study	
AVT 599	Special Topics in Art and Visual Technology	
Other courses as approved by director		
Three credits of		3
AVT 599	Special Topics in Art and Visual Technology	
AVT 610	Graduate Seminar	2
AVT Emphasis Courses		12
Total Credits		26

Areas of Emphasis

InterArts

Code	Title	Credits
Select 12 credits of any 500 - 600 level AVT course as approved by the division director. InterArts graduate students may combine courses from studio areas of emphasis (as indicated below) and work with faculty to design an interdisciplinary thesis project.		12
Total Credits		12

New Media Art

Code	Title	Credits
Select four from the following courses:		12
AVT 616	Advanced Art and Interactivity	
AVT 676	Graduate Sound Art	
AVT 682	Experimental 2D Animation	
AVT 684	Advanced Image Making	
AVT 685	Video Art	
AVT 686	Experimental 3D Animation	
AVT 687	Advanced Topics: New Media	
AVT 688	Hybrid Animation	
Total Credits		12

Painting and Drawing

Code	Title	Credits
Select four courses from the following:		12
AVT 522	Drawing V	
AVT 523	Drawing VI	

AVT 599	Special Topics in Art and Visual Technology (Must be approved by advisor)	
AVT 622	Advanced Drawing	
AVT 632	Graduate Painting I	
AVT 633	Graduate Painting II	
AVT 634	Advanced Graduate Painting I	
AVT 635	Advanced Graduate Painting II	
Total Credits		12

Photography

Code	Title	Credits
AVT 652	Graduate Photography I	3
AVT 653	Graduate Photography II	3
AVT 654	Advanced Graduate Photography I	3
AVT 655	Advanced Graduate Photography II	3
Total Credits		12

Printmaking

Code	Title	Credits
AVT 642	Graduate Printmaking I	3
AVT 643	Graduate Printmaking II	3
AVT 644	Advanced Graduate Printmaking I	3
AVT 645	Advanced Graduate Printmaking II	3
Total Credits		12

Sculpture

Code	Title	Credits
AVT 662	Graduate Sculpture I	3
AVT 663	Graduate Sculpture II	3
AVT 664	Advanced Graduate Sculpture I	3
AVT 665	Advanced Graduate Sculpture II	3
Total Credits		12

Note:

Mason does not guarantee the availability of these courses every semester; some are offered in alternate years.

Arts Management Program

3434 N. Washington Boulevard
Arlington, VA 22201

Phone: 703-993-8926
Website: artsmanagement.gmu.edu

Administration

- William Reeder, Program Director

Undergraduate Program

Arts Management Minor

The field of visual and performing arts offers many career paths that rely on a strong foundation in one or more art forms and require specific knowledge and skills in administration and management. The minor in arts management is open to all CVPA majors as well as art history majors. All other students must complete 9 credits of arts-related course work to be eligible for this minor.

Graduate Program

MA in Arts Management

The Master of Arts in Arts Management responds to a growing demand for graduates who can manage and coordinate the arts, bridging the worlds of performing and visual arts with applied managerial skills. The Washington, D.C., region is home to one of the nation's largest concentrations of arts organizations. The demand for arts managers with skills in financial and budgetary management, strategic management and entrepreneurship, and public relations, including marketing and advertising, has arguably never been more acute. The need for arts managers with skills in philanthropy, fund raising, and ongoing relationship management in the private and public arts sectors also continues to grow at a fast pace.

The MA in Arts Management is a 36-credit program of study that provides a core curriculum in the fundamentals of arts management. Students complete a 24-credit core and then select 9 credits of approved elective courses. Students also take an internship, which affords an in-depth opportunity to work with professionals in the field. The internship provides the opportunity to work at more than 60 different visual and performing arts venues in Washington, D.C., as well as national and international locations.

Faculty

Program Faculty

Program Director

William Reeder

Professor

Reeder

Associate Professors

Rosenstein

Assistant Professors

Balazs, Fullman, MacKay

Adjunct Faculty

Berardelli, Corbett, Curtain, Damer, Garfinkle, Gold, Hanna, Huschle, Kamara, Kennedy, MacKay, Johnson, Rosenfeld, Salmon, Smyers, Thompson

Requirements & Policies

Requirements

Admissions

The program is geared toward those with a passion for the arts. Diversity among applicants is anticipated and sought, and candidates are evaluated on a case-by-case basis. Work experience is strongly preferred. It is anticipated that some students will come from the arts community, with experience and training in music, dance, theater, visual and technical arts and wish to add the skills of marketing, finance, strategy, fundraising, entrepreneurship, and management to their repertoire. It is also expected

that some students will enter with more developed skills in business and wish to unite these skills with prior experiences in the arts.

For admissions requirements and deadlines, applicants should visit the graduate admissions page of the Arts Management website (http://artsmanagement.gmu.edu).

Programs

- Arts Management Minor
- Arts Management, MA

Arts Management Minor

Banner Code: AMGT

C211 College Hall
Fairfax Campus

Phone: 703-993-8926
Email: amgtgmu@gmu.edu
Website: https://artsmanagement.gmu.edu/academics/arts-management-minor

The fields of visual and performing arts offer many career paths that rely on a strong foundation in one or more art forms and require specific knowledge and skills in administration and management. The minor is open to all CVPA majors as well as art history majors. Non-CVPA students must complete 9 credits of arts-related coursework to be eligible for this minor.

Faculty

MacKay

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor, with a minimum 2.00 GPA earned in all courses applied to the minor. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 18

Required Courses

Code	Title	Credits
AMGT 405	Introduction to Arts Management	3
AMGT 410	The Arts and Community Engagement	3
AMGT 489	Internship in Arts Management	3-4
Total Credits		9-10

Mini-Courses

Code	Title	Credits
Select 2-3 credits from the following:		2-3
AMGT 402	Professional Development	
AMGT 471	Introduction to Grant Writing	
AMGT 472	Technology in the Arts	
Total Credits		2-3

Electives

Code	Title	Credits
Select 6 credits from the following:		6
AVT 307	Aesthetics	
AVT 309	Art as Social Action	
DANC 390	Dance History I (Mason Core)	
DANC 391	Dance History II (Mason Core)	
GAME 230	History of Computer Game Design	
THR 201	Stage Management	
THR 355	Moral Vision in American Theater	
THR 359	World Stages (Mason Core)	
THR 395	Theater as the Life of the Mind (Mason Core)	
AVT 395	Writing for Artists	
DANC 270	Dance Production Lab	
DANC 318	Global Perspectives: World Dance Forms (Mason Core)	
DANC 372	Advanced Dance Production	
FAVS 352	Ethics of Film and Video (Mason Core)	
MUSI 331	Music History in Society I	
MUSI 332	Music History in Society II	
MUSI 393	Music Administration and Management	
ARTH 374	Art Now	
ARTH 394	The Museum (Mason Core)	
COMM 300	Rhetorical Theory and Criticism	
Total Credits		6

Note

The above courses may have prerequisites that must be met; see individual course descriptions for details.

Arts Management, MA

Banner Code: AR-MA-AMGT

Setarra Kennedy, Assistant Director, Arts Management

5064 Metropolitan Building
Arlington Campus

Phone: 703-993-8926
Email: amgtgmu@gmu.edu
Website: https://artsmanagement.gmu.edu/

The MA in Arts Management responds to a growing demand for graduates who can manage and coordinate the arts, bridging the worlds of performing and visual arts with applied managerial skills. The Washington, D.C. region is home to one of the nation's largest

concentrations of arts organizations. The demand for arts managers with skills in financial and budgetary management, strategic management and entrepreneurship, and public relations, including marketing and advertising, has arguably never been more acute. The need for arts managers with skills in philanthropy, fund raising, and ongoing relationship management in the private and public arts sectors also continues to grow at a fast pace.

The program provides a core curriculum in the fundamentals of arts management. Students complete a 24-credit core and then select 9 credits of approved elective courses. Students also take an internship, which affords an in-depth opportunity to work with professionals in the field. The internship provides the opportunity to work at more than 60 different visual and performing arts venues in Washington, D.C., as well as national and international locations.

Admissions & Policies

Admissions

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified on the Graduate Admissions policy page (https://catalog.gmu.edu/admissions/graduate-policies/). Specific graduate admissions requirements can be found on the College of Visual and Performing Arts Graduate Admissions requirements page (https://cvpa.gmu.edu/admissions/graduate-admissions/graduate-admission-requirements/).

Policies

Please see College of Visual and Performing Arts for college academic policies.

Requirements

Degree Requirements

Total credits: 36

Core Requirements

Elective courses at the 600 or higher course level may be taken only after a candidate has completed and/or registered for at least 12 core course credits. Students are required to successfully complete AMGT 602 Seminar in Arts Management within their first 12 credits.

Code	Title	Credits
AMGT 601	Fund Raising/Development I	3
AMGT 602	Seminar in Arts Management	3
AMGT 603	The Arts in Society	3
AMGT 604	Public Relations and Marketing Strategies for the Arts I	3
AMGT 606	Governance and Leadership	3
AMGT 704	Finance and Budgeting for Arts I	3
AMGT 705	Finance and Budgeting for Arts II	2
AMGT 710	Arts Policy	3
AMGT 795	Capstone in Arts Management	1
CVPA 600	CVPA Graduate ProSeminar (must be taken within the student's first 2 semesters)	0
Total Credits		24

Internship

Code	Title	Credits
AMGT 742	Internship I	3
Total Credits		3

Electives

Code	Title	Credits
Select 9 credits from the following:		9
AMGT 504	Professional Development Arts Management	
AMGT 511	Introduction to Grant Writing	
AMGT 513	Technology in the Arts	
AMGT 599	Special Topics in Arts Management	
AMGT 609	Performing Arts Management	
AMGT 610	Visual Arts Management	
AMGT 620	Legal Aspects in Arts Management	
AMGT 640	Programming and Project Arts Management	
AMGT 706	Festivals and Special Events	
AMGT 711	Directed Readings and Project	
AMGT 752	Arts Entrepreneurship	
AMGT 792	Internship II	
Total Credits		9

Accelerated Master's

Art and Visual Technology, BA/Arts Management, Accelerated MA

Overview

Undergraduates in art may apply to the accelerated master's degree in arts management. If accepted, students will be able to earn an Art and Visual Technology, BA and an Arts Management, MA after satisfactory completion of 150 credits.

Students choosing the accelerated option must fulfill all university requirements for the master's degree. The regular designed time frame would be a start in the Fall and completion of all coursework in the Summer five years later with the exception of Capstone, which is only offered in Fall and Spring. Students may need a longer time frame to complete all requirements.

This accelerated option is offered through joint cooperation between the School of Art and the Arts Management Program.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies.

Admissions Requirements

Applicants to accelerated master's programs must have completed at least 75 credits that apply to their undergraduate degree (with at least

24 credits at Mason) and no more than 100 credits. Applicants should submit an Accelerated Master's Program Application, available from the College of Visual and Performing Arts (CVPA) Academic Affairs Office. It includes the proposed conferral date for the undergraduate degree and the two graduate courses that are to be applied to the undergraduate degree.

Interested students should contact the Arts Management Program Office for more details about the application process.

Accelerated Option Requirements

As an undergraduate, the accelerated master's student is required to complete the two graduate courses indicated on their Accelerated Master's Program application with a minimum grade of 3.00 in each course. Students must maintain a minimum GPA of 3.00 in all coursework and in coursework applied to their major. On completion and conferral of the undergraduate degree in the semester indicated in the application, candidates submit the Bachelor's/Accelerated Master's Transition Form (which shall incorporate all of the Graduate Admission requirements of the university) and are admitted to graduate status.

As graduate students, accelerated master's students have an advanced standing and must meet all master's degree requirements except for the two courses (6 credits) completed as undergraduates. Students will begin their master's program in the semester immediately following conferral of the undergraduate degree, and they may also begin in the summer term.

Reserve Graduate Credit

Students may take up to 6 additional graduate credits as reserve graduate credit. These credits do not apply to the undergraduate degree. The ability to take courses for reserve graduate credit is available to all high achieving undergraduates with permission of the School of Art. Permission to take a graduate course for reserve graduate credit is normally granted only to Mason seniors within 15 credit hours of graduation and must be approved by the Dean's Office.

To apply these credits to the master's degree, students must request that the credits be moved from the undergraduate degree to the graduate degree using the Bachelor's/Accelerated Master's Transition Form.

Art and Visual Technology, BFA/Arts Management, Accelerated MA

Overview

Undergraduates in art may apply to the accelerated master's degree in arts management. If accepted, students will be able to earn an Art and Visual Technology, BFA and an Arts Management, MA after satisfactory completion of 150 credits.

Students choosing the accelerated option must fulfill all university requirements for the master's degree. The regular designed time frame would be a start in the Fall and completion of all coursework in the Summer five years later with the exception of Capstone, which is only offered in Fall and Spring. Students may need a longer time frame to complete all requirements.

This accelerated option is offered through joint cooperation between the School of Art and the Arts Management Program.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies.

Admissions Requirements

Applicants to accelerated master's programs must have completed at least 75 credits that apply to their undergraduate degree (with at least 24 credits at Mason) and no more than 100 credits. Applicants should submit an Accelerated Master's Program Application, available from the College of Visual and Performing Arts (CVPA) Academic Affairs Office. It includes the proposed conferral date for the undergraduate degree and the two graduate courses that are to be applied to the undergraduate degree.

Interested students should contact the Arts Management Program Office for more details about the application process.

Accelerated Option Requirements

As an undergraduate, the accelerated master's student is required to complete the two graduate courses indicated on their Accelerated Master's Program application with a minimum grade of 3.00 in each course. Students must maintain a minimum GPA of 3.00 in all coursework and in coursework applied to their major. On completion and conferral of the undergraduate degree in the semester indicated in the application, candidates submit the Bachelor's/Accelerated Master's Transition Form (which shall incorporate all of the Graduate Admission requirements of the university) and are admitted to graduate status.

As graduate students, accelerated master's students have an advanced standing and must meet all master's degree requirements except for the two courses (6 credits) completed as undergraduates. Students will begin their master's program in the semester immediately following conferral of the undergraduate degree, and they may also begin in the summer term.

Reserve Graduate Credit

Students may take up to 6 additional graduate credits as reserve graduate credit. These credits do not apply to the undergraduate degree. The ability to take courses for reserve graduate credit is available to all high achieving undergraduates with permission of the School of Art. Permission to take a graduate course for reserve graduate credit is normally granted only to Mason seniors within 15 credit hours of graduation and must be approved by the Dean's Office.

To apply these credits to the master's degree, students must request that the credits be moved from the undergraduate degree to the graduate degree using the Bachelor's/Accelerated Master's Transition Form.

Music, BA/Arts Management, Accelerated MA

Overview

Students choosing the accelerated option must fulfill all university requirements for the master's degree. The regular designed timeframe would be a start in the Fall and completion of all coursework in the Summer five years later with the exception of Capstone, which is only offered in Fall and Spring. Students may need a longer timeframe to complete all requirements.

This accelerated option is offered through joint cooperation between the School of Music and the Arts Management Program.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see the Academic Policies section of the catalog.

Application Requirements

Applicants to accelerated master's programs must have completed at least 75 credits that apply to their undergraduate degree (with at least 24 credits at Mason) and no more than 100 credits. Applicants should submit an Accelerated Master's Program Application, available from the College of Visual and Performing Arts (CVPA) Graduate Studies. It includes the proposed conferral date for the undergraduate degree and the two graduate courses that are to be applied to the undergraduate degree.

Interested students should contact the Arts Management Program Office for more details about the application process.

Accelerated Option Requirements

As an undergraduate, the accelerated master's student is to complete the two graduate courses indicated on their Accelerated Option Requirements.

As an undergraduate, the accelerated master's student is to complete the two graduate courses indicated on their Accelerated Master's Program application with a minimum grade of B in each course. Students must maintain a minimum GPA of 3.00 in all coursework and in coursework applied to their major. On completion and conferral of the undergraduate degree in the semester indicated in the application, they submit the Bachelor's/Accelerated Master's Transition Form (which shall incorporate all of the Graduate Admission requirements of the university) and are admitted to graduate status.

As graduate students, accelerated master's students have an advanced standing. They must meet all master's degree requirements except for the two courses (6 credits) they completed as undergraduates. Students will begin their master's program in the semester immediately following conferral of the undergraduate degree, and they may also begin in the summer term.

Reserve Graduate Credits

Students may take up to 6 additional graduate credits as reserve graduate credit. These credits do not apply to the undergraduate degree. The ability to take courses for reserve graduate credit is available to all high achieving undergraduates with permission of the School of Music. Permission to take a graduate course for reserve graduate credit is normally granted only to Mason seniors within 15 hours of graduation and must be approved by the Dean's Office.

To apply these credits to the master's degree, students must request that the credits be moved from the undergraduate degree to the graduate degree using the Bachelor's/Accelerated Master's Transition Form.

Music, BM/Arts Management, Accelerated MA

Overview

Students choosing the accelerated option must fulfill all university requirements for the master's degree. The regular designed timeframe would be a start in the Fall and completion of all coursework in the Summer five years later with the exception of Capstone, which is only offered in Fall and Spring. Students may need a longer timeframe to complete all requirements.

This accelerated option is offered through joint cooperation between the School of Music and the Arts Management Program.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see the Academic Policies section of the catalog.

Admissions

Applicants to accelerated master's programs must have completed at least 75 credits that apply to their undergraduate degree (with at least 24 credits at Mason) and no more than 100 credits. Applicants should submit an Accelerated Master's Program Application, available from the College of Visual and Performing Arts (CVPA) Graduate Studies. It includes the proposed conferral date for the undergraduate degree and the two graduate courses that are to be applied to the undergraduate degree.

Interested students should contact the Arts Management Program Office for more details about the application process.

Accelerated Option Requirements

As an undergraduate, the accelerated master's student is to complete the two graduate courses indicated on their Accelerated Option Requirements.

As an undergraduate, the accelerated master's student is to complete the two graduate courses indicated on their Accelerated Master's Program application with a minimum grade of C in each course. Students must maintain a minimum GPA of 3.00 in all coursework and in coursework applied to their major. On completion and conferral of the undergraduate degree in the semester indicated in the application, they submit the Bachelor's/Accelerated Master's Transition Form (which shall incorporate all of the Graduate Admission requirements of the university) and are admitted to graduate status.

As graduate students, accelerated master's students have an advanced standing. They must meet all master's degree requirements except for the two courses (6 credits) they completed as undergraduates. Students will begin their master's program in the semester immediately following conferral of the undergraduate degree, and they may also begin in the summer term.

Reserve Graduate Credits

Students may take up to 6 additional graduate credits as reserve graduate credit. These credits do not apply to the undergraduate degree. The ability to take courses for reserve graduate credit is available to all high achieving undergraduates with permission of the School of Music. Permission to take a graduate course for reserve graduate credit is normally granted only to Mason seniors within 15 hours of graduation and must be approved by the Dean's Office.

To apply these credits to the master's degree, students must request that the credits be moved from the undergraduate degree to the graduate degree using the Bachelor's/Accelerated Master's Transition Form.

Theater, BA/Arts Management, Accelerated MA

Overview

Undergraduates in Theater may apply to the accelerated master's degree in Arts Management. If accepted, students will be able to earn a BA in Theater and an MA in Arts Management after satisfactory completion of 150 credits.

Students choosing the accelerated option must fulfill all university requirements for the master's degree. The regular designed timeframe would be a start in the Fall and the completion in the Summer five years later, but longer time frames may also be available.

See AP.6.7 Bachelor's/Accelerated Master's Degree for policies related to this program. For policies governing all graduate degrees, see AP.6 Graduate Policies.

Admission Requirements

Applicants to accelerated master's programs must have completed at least 75 credits that apply to their undergraduate degree (with at least 24 credits at Mason) and no more than 90 credits. Applicants should submit an Accelerated Master's Program Application, available from the College of Visual and Performing Arts (CVPA) Graduate Studies. It includes the proposed conferral date for the undergraduate degree and the two graduate courses that are to be applied to the undergraduate degree.

Interested students should contact the Arts Management Program Office for more details about the application process.

Accelerated Option Requirements

As an undergraduate, the accelerated master's student is to complete the two graduate courses indicated on their Accelerated Master's Program application with a minimum grade of 3.00 in each course. Students must maintain a minimum GPA of 3.00 in all coursework and in coursework applied to their major. On completion and conferral of the undergraduate degree in the semester indicated in the application, they submit the Bachelor's/Accelerated Master's Transition Form (which shall incorporate all of the Graduate Admission requirements of the university) and are admitted to graduate status.

As graduate students, accelerated master's students have an advanced standing. They must meet all master's degree requirements except for the two courses (6 credits) they completed as undergraduates. The Internal Internship (AMGT 742 Internship I) will be within Theater at Mason (generally with the School of Theater). Students will begin their master's program in the semester immediately following conferral of the undergraduate degree, and they may also begin in the summer term.

Reserve Graduate Credit

Students may take up to 6 additional graduate credits as reserve graduate credit. These credits do not apply to the undergraduate degree. The ability to take courses for reserve graduate credit is available to all high achieving undergraduates with permission of the School of Theater. Permission to take a graduate course for reserve graduate credit is normally granted only to Mason seniors within 15 hours of graduation and must be approved by the Dean's Office.

To apply these credits to the master's degree, students must request that the credits be moved from the undergraduate degree to the graduate degree using the Bachelor's/Accelerated Master's Transition Form.

Computer Game Design Program

Sang Nam, Director

2019 Art and Design Building
Fairfax Campus

Phone: 703-993-5734
Website: game.gmu.edu

Undergraduate Program

The 120-credit Computer Game Design, BFA program enables students to focus on the artistic components of computer game design while providing them with the technical skills prerequisite to the field. Required courses include computer science, art and visual technology, music, the humanities, and computer game design. The required internship provides students with practical experience that enhances their employability post-graduation.

Graduate Program

The Master of Arts in Computer Game Design prepares graduate students who may have studied game design at the undergraduate level or who have degrees in a related technology, humanities, or arts disciplines for a career in game development and design. The program's intention is to prepare students for employment and further study in computer game design and development fields with a curriculum that reflects the gaming industry's demand for an academically rigorous, technical program coupled with an understanding of the artistic and creative elements of the evolving field of study.

Faculty

Program Faculty

Associate Professor

Enfield (Research Associate, VSGI), Martin (Director VSGI), Willis

Assistant Professors

Dieterich, Grimsby, Hudson, Lebowitz, Nam (Director, Graduate Coordinator), Nolan, Piccione (Associate Director), Prawat, Strangio

Administrative Faculty (Instructional)

Casey (Associate Director, VSGI)

Requirements & Policies

Undergraduate Program

Admissions

A writing sample will be reviewed prior to admission into the Game Design Program. Students will either be accepted, provisionally accepted, or denied. Visit the department website (http://game.gmu.edu/) for further instruction.

Writing-Intensive Requirement

The university requires all undergraduate students to complete at least one course designated "writing intensive" in their majors at the 300 level or above. Students in the BFA in computer game design fulfill this requirement by successfully completing GAME 332 RS: Story Design for Computer Games.

Upper-Level Credits

All undergraduate students are required to complete a minimum of 45 credits of upper-division courses at the 300-499 level. Fulfilling degree requirements does not guarantee this requirement will be met.

Major GPA

All GAME undergraduate students must earn a minimum 2.00 cumulative GPA in their major.

All GAME courses except GAME 101 Introduction to Game Design (Mason Core), GAME 250 Music for Film and Video and GAME 367 Writing and Editing Music and Sound must be passed with a grade of C or better.

Academic Policies

All GAME majors are required to adhere to the George Mason University Honor code. Failure to do so may result in academic sanctions up to an including dismissal from the University.

Please see College of Visual and Performing Arts for college academic policies.

Graduate Program

Admissions

Admission is competitive. An offer of admission is valid only for the semester for which the student applies. For application requirements and deadlines, applicants should visit the Computer Game Design website (http://game.gmu.edu/). Mason encourages early applications from prospective students who wish to be considered for academic scholarships or grants.

Programs

- Computer Game Design Minor (CVPA)
- Computer Game Design, BFA
- Sport and Computer Game Design Minor (CVPA)

Computer Game Design Minor (CVPA)

Banner Code: GAME

Jeremy Tuohy, Academic Advisor

2020 Art and Design Building
Fairfax Campus

Phone: 703-993-2041
Email: wtuohy@gmu.edu
Website: game.gmu.edu/undergraduate/

The minor embodies the core components discovered in the larger game design field. It offers a core of foundational studies with intermediate and advanced course options in game animation, game sound and music, or game design and development. Students pursuing the minor will be able to participate in game program events, special activities, game design competitions, and in most projects hosted in the Computer Game Design Research Studio.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 15-16

Coursework

Code	Title	Credits
GAME 101	Introduction to Game Design (Mason Core)	3
or GAME 210	Basic Game Design	
GAME 230	History of Computer Game Design	3
GAME 400	Game Design Practicum	3
Select a two or three-course sequence from the following:		6-7
GAME 231 & GAME 398	Computer Animation for Games and Advanced Game Design Animation	
GAME 232 & GAME 330 & GAME 331	Online and Mobile Gaming and Computer Game Platform Analysis and Consumer Gaming Platform Analysis Lab	
GAME 250 & GAME 367	Music for Film and Video and Writing and Editing Music and Sound	
6-7 credits selected from GAME 200-499		
Total Credits		15-16

Computer Game Design, BFA

Banner Code: AR-BFA-GAME

Jeremy Tuohy, Academic Advisor

2020 Art and Design Building
Fairfax Campus

Phone: 703-993-2041
Email: wtuohy@gmu.edu
Website: game.gmu.edu/undergraduate/

The 120-credit Computer Game Design program enables students to focus on the artistic components of computer game design while providing them with the technical skills prerequisite to the field.

Admissions & Policies

Policies

Upper-Level Credits

All undergraduate students are required to complete a minimum of 45 credits of upper-division courses at the 300-499 level. Fulfilling degree requirements does not guarantee this requirement will be met.

Major GPA

All GAME undergraduate students must earn a minimum 2.00 cumulative GPA in their major. All GAME courses except GAME 101 Introduction to Game Design (Mason Core), GAME 250 Music for Film and Video, and GAME 367 Writing and Editing Music and Sound must be passed with a grade of C or better.

Requirements

Degree Requirements

Total credits: 120

Mason Core

Code	Title	Credits
ENGH 101	Composition (Mason Core) [1]	3
ENGH 302	Advanced Composition (Mason Core)	3
AVT 180	New Media in the Creative Arts	3
MATH 113	Analytic Geometry and Calculus I (Mason Core)	4
Select one from the following:		4
PHYS 103	Physics and Everyday Phenomena I (Mason Core)	
PHYS 160 & PHYS 161	University Physics I (Mason Core) and University Physics I Laboratory (Mason Core) (or another laboratory science course approved by advisor)	
PSYC 100	Basic Concepts in Psychology (Mason Core)	3
Total Credits		20

[1] Nonnative speakers of English with limited proficiency in the language may substitute ENGH 100 Composition for Multilingual Writers (Mason Core)for ENGH 101 Composition (Mason Core). Students must attain a minimum grade of C in ENGH 100 Composition for Multilingual Writers (Mason Core) or ENGH 101 Composition (Mason Core), as well as ENGH 302 Advanced Composition (Mason Core), to fulfill degree requirements.

Non-Specific Mason Core Requirements

Code	Title	Credits
Oral Communication		3
Arts		3
Literature		3
Natural Science [1]		4
Western Civilization/World History		3
Global Understanding		3
Total Credits		19

[1] including laboratory

Approved courses may be found under the Mason Core section of this catalog.

Major Core

Code	Title	Credits
AVT 104	Two-Dimensional Design and Color (Mason Core)	3
GAME 140	Applied Coding for Game Designers	3
or CS 112	Introduction to Computer Programming	
GAME 101	Introduction to Game Design (Mason Core)	3
or GAME 210	Basic Game Design	
GAME 230	History of Computer Game Design	3
GAME 231	Computer Animation for Games	3
GAME 232	Online and Mobile Gaming	3
GAME 250	Music for Film and Video	3
GAME 300	Portfolio Preparation	1
GAME 310	Game Design Studio	3
GAME 330	Computer Game Platform Analysis	3
GAME 331	Consumer Gaming Platform Analysis Lab	1
GAME 332	RS: Story Design for Computer Games	3
GAME 367	Writing and Editing Music and Sound	3
GAME 398	Advanced Game Design Animation	3
GAME 410	Advanced Game Design Studio	3
GAME 489	Pre-Internship Seminar	1
Six credits of		6
GAME 490	Senior Game Design Capstone (Mason Core) (Must be taken twice for 3 credits each)	
GAME 491	Internship	3-4
Total Credits		51-52

Digital Media Electives

Code	Title	Credits
Select at least 12 credits from the following (or another course approved by your advisor):		12
AVT 280	Introduction to New Media Arts	
AVT 354	Digital Photography II	
AVT 382	2D Experimental Animation	
AVT 383	3D Experimental Animation	
AVT 390	Video Art	
AVT 482	Advanced Image Making	
AVT 487	Advanced Topics: New Media Art	
ENGH 372	Introduction to Film (Mason Core)	
FAVS 399	Special Topics in Film and Video Studies	
GAME 320	Digital Painting for Games	
GAME 399	Special Topics	
GAME 431	Advanced Game Animation I	
Total Credits		12

Visual Arts Electives

Code	Title	Credits
Select 6-8 credits from the following (or another course approved by your advisor):		6-8
AVT 215	Typography (Mason Core)	
AVT 217	Introduction to Web Design	
AVT 222	Drawing I (Mason Core)	
AVT 232	Painting I (Mason Core)	
AVT 243	Printmaking I (Mason Core)	
AVT 252	Darkroom Photography I (Mason Core)	
AVT 262	Sculpture I (Mason Core)	
AVT 311	Graphic Design Methods and Principles	
AVT 323	Drawing II	
AVT 324	Figure Drawing	
AVT 333	Painting II	

AVT 337	Figurative Painting	
AVT 343	Printmaking II	
AVT 353	Darkroom Photography II	
AVT 363	Sculpture II	
Total Credits		6-8

General Electives

Code	Title	Credits
Select 8-11 credits of General Electives		8-11
Total Credits		8-11

4-Year Plan

Bachelor of Fine Arts in Computer Game Design Sample Plan of Study

The sample plan below is a recommended sequencing of courses based on pre-requisites and scheduling. This may not fit every student's needs and is a guideline, not a requirement. Students should confirm major requirements with their academic advisor and with PatriotWeb Degree Evaluation to ensure they enroll in the proper courses and are on track to graduate.

First Year

Fall Semester	Credits	Spring Semester	Credits
GAME 210	3	GAME 250	3
GAME 230	3	GAME 140	3
ENGH 101	3	MATH 113	4
MATH 105	4	AVT 104	3
Mason Core Western Civilization Requirement	3		
	16		13

Second Year

Fall Semester	Credits	Spring Semester	Credits
GAME 231	3	GAME 310	3
GAME 232	3	GAME 398	3
Mason Core Oral Communication Requirement	3	PSYC 100	3
AVT 180	3	Mason Core Literature Requirement	3
Any Visual Arts Elective	3-4	Any Digital Media Elective	3-4
	15-16		15-16

Third Year

Fall Semester	Credits	Spring Semester	Credits
GAME 330	3	GAME 410	3
GAME 331	1	GAME 489	1
ENGH 302	3	GAME 332	3
GAME 367	3	Mason Core Natural Science Including Lab	4
PHYS 103	4	Any Visual Arts Elective	3-4
GAME 300	1		
	15		14-15

Fourth Year

Fall Semester	Credits	Spring Semester	Credits
GAME 490	3	GAME 490	3
GAME 491	3	Any Digital Media Elective	3-4
Any Digital Media Elective	3-4	Any Digitial Media Elective	3-4
Mason Core Global Understanding Requirement	3	General Elective	3
General Elective	3	General Elective	3
	15-16		15-17

Total Credits 118-124

Detailed four year plans and degree planning checklists can be found at https://advising.gmu.edu/current-student/majors-at-mason/.

Sport and Computer Game Design Minor (CVPA)

Banner Code: SCGD

Phone: 703-993-5734
Website: http://game.gmu.edu/

This minor is offered jointly with the School of Recreation, Health, and Tourism.

It offers academic preparation in an industry that has seen rapid expansion in the sale, design, and production of sport-related games around the world. The required courses provide students with a foundational overview of the sports industry, the sport management academic discipline, and computer game design. Students can complement that knowledge with the selection of courses in these two disciplines that meet their individual interests.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 18

Required Courses

Code	Title	Credits
GAME 210	Basic Game Design	3
SPMT 201	Introduction to Sport Management	3
Total Credits		6

Electives

Code	Title	Credits
Select four courses (at least one in each discipline) from the following:		12
GAME 230	History of Computer Game Design	
GAME 231	Computer Animation for Games	
GAME 232	Online and Mobile Gaming	
GAME 250	Music for Film and Video	
GAME 310	Game Design Studio	
GAME 330	Computer Game Platform Analysis	
SPMT 304	Sport, Culture, and Society	
SPMT 320	Psychology of Sport	
SPMT 405	Sport Venues and Events	
SPMT 412	Sport Marketing and Sales	
SPMT 420	Economics and Finance in the Sport Industry	
SPMT 455	Governance and Policy in Sport Organizations	
Total Credits		12

Film and Video Studies Program

Cynthia Fuchs, Interim Director

C100 College Hall
Fairfax Campus

Phone: 703-993-3287
Website: film.gmu.edu

The Film and Video Studies Program offers a multidisciplinary Bachelor of Arts degree in cinematic arts production. We emphasize Directing, Producing, Cinematography, Screenwriting, Sound Design and Editing, along with business, ethics, history, and theory of film and media. Students engage with many genres of cinematic storytelling, including short fiction, documentary, video art, television, web series and interactive video.

Students take most of their courses in Film and Video Studies with additional coursework in Film and Media Studies, Art, Communication, Computer Game Design, Music, Theater, and many other departments. Students engage with emerging technologies alongside entrepreneurship and industry standards to prepare for our vibrant, ever-changing field. Screening events, guest lectures, pitching competitions, and production work on a teaching film set (our Mason Film Lab) allow students to earn credits while they learn.

Film at Mason is a community of cinematic storytellers that fosters creativity, analysis, and diverse perspectives, professional practice and socially-conscious filmmaking. The Film and Video Studies Program is grounded in flexible thinking, critical engagement, interpersonal communication and regional storytelling. Graduates apply their skills on film sets, in corporate environments, and with community organizations with professionalism that is creative, entrepreneurial, and adaptable.

Faculty

Program Faculty

Program Director

Cynthia Fuchs

Program Faculty

Britt, Charles, Chesler, Fuchs, Jusu, Kraus, Steger, Thrasher, Ugarte

Affiliated Faculty

Farr, Kehoe, McDonald, Meddis, Murray, Santiago, Santos, Wood

Requirements & Policies

Requirements

Portfolio

Admission to Film and Video Studies is considered separately from admission to the university and only through a digital portfolio review. Information about the portfolio process, including submission deadlines and portfolio application requirements, can be found on the program's website (https://film.gmu.edu/) or by calling the Film office at 703-993-3287. Admission to the university is determined by the Admissions Office.

Writing-Intensive

The university requires all students to complete at least one course designated "writing-intensive" in their majors at the 300 level or above. Students seeking a BA in Film and Video studies fulfill this requirement by completing FAVS 304 Ways of Thinking: Film, TV, and Beyond, FAVS 380 TV Writing, or FAVS 498 Development for Senior Project.

Major GPA

All Film and Video Studies undergraduate students must earn a minimum grade of C in all courses in their major.

Policies

Upper-Level Credits

All undergraduate students are required to complete a minimum of 45 credits of upper-division courses at the 300-499 level.

Termination from the Major

No Film and Video Studies course that is required for the major may be unsuccessfully attempted more than three times. A grade lower than a C constitutes an unsuccessful attempt in any given course. Those students who do not successfully complete such a course within three

attempts will be terminated from the major. For more information, see the "Termination from the Major" section under AP.5 Undergraduate Policies.

Academic Policies

Please see College of Visual and Performing Arts for college academic policies.

Programs

- Film and Video Studies, BA

Film and Video Studies, BA

Banner Code: AR-BA-FAVS

Lori Yi, Academic Advisor

C100 College Hall
Fairfax Campus

Phone: 703-993-3287
Email: film@gmu.edu
Website: film.gmu.edu

The Film and Video Studies degree is the first multidisciplinary undergraduate degree in Virginia focusing on cinematic arts production and film theory and history with core courses in ethics, business, writing for the moving image, fiction, documentary, interactive storytelling and episodic television.

Students complete courses in the Film Core. To fine-tune their craft, students select advanced courses of study from four concentrations:

- Directing
- Producing
- Production/Post-Production (Cinematography or Editing/Sound)
- Screenwriting

Each concentration includes a capstone experience wherein students are mentored by faculty on original projects in their senior year that prepare them for work in the cinematic arts.

Admissions & Policies

Admissions

All students are admitted to the Film program separately from their admission to the university and only by portfolio review.

Policies

Major GPA

All Film and Video Studies undergraduate students must earn a minimum grade of C in all courses in their major.

For policies governing all undergraduate degrees, see AP.5 Undergraduate Policies. See College of Visual and Performing Arts for policies specific to the college.

Requirements

Degree Requirements

Total credits: 120

Students must earn a minimum grade of C in all required Film degree courses.

Mason Core

Film majors may not double-count Literature and Art courses toward both the Film major and Mason Core requirements. The synthesis requirement is part of the Film core requirements.

Code	Title	Credits
Foundation Requirements		
ENGH 101	Composition (Mason Core) [1]	3
ENGH 302	Advanced Composition (Mason Core) [1]	3
Oral Communication		3
Quantitative Reasoning		3
Information Technology		3
Exploration Requirements		
Arts		3
Global Understanding		3
Literature		3
Natural Science [2]		7
Social and Behavioral Sciences		3
Western Civilization/World History		3
Total Credits		37

1 Nonnative speakers of English with limited proficiency in the language may substitute ENGH 100 Composition for Multilingual Writers (Mason Core) for ENGH 101 Composition (Mason Core). Students must attain a minimum grade of C in ENGH 100 Composition for Multilingual Writers (Mason Core) or ENGH 101 Composition (Mason Core), as well as ENGH 302 Advanced Composition (Mason Core), to fulfill degree requirements.

2 including one laboratory science

Major

Code	Title	Credits
Film and Video Studies Core Requirements		
FAVS 204	Ways of Seeing: Perception, Form and Film (Mason Core)	3
FAVS 225	Introduction to World Cinema (Mason Core)	3
FAVS 250	Business of Film and Television	3
FAVS 255	Video Production for Film	3
FAVS 280	Writing for the Moving Image (Mason Core)	3
FAVS 311	Producing I	3
FAVS 304	Ways of Thinking: Film, TV, and Beyond	3
FAVS 352	Ethics of Film and Video (Mason Core)	3
FAVS 400	Career Development Seminar	3
FAVS 450	Internship in Film and Video Studies	3
Analysis, History, Theory		

Choose one course from the following:		3
AVT 377	Cyberpunk	
COMM 380	Media Criticism	
COMM 399	Special Topics in Communication [1]	
ENGH 370	Introduction to Documentary (Mason Core)	
ENGH 371	Television Studies (Mason Core)	
ENGH 372	Introduction to Film (Mason Core)	
ENGH 470	RS: Topics in Film/Media History (Mason Core)	
ENGH 472	Topics in Film/Media Theory	
ENGH 474	Topics in Film/Media Studies	
FAVS 399	Special Topics in Film and Video Studies [1]	
HIST 389	Topics in U.S. History [1]	
HIST 393	Topics in Film and History	
MUSI 301	Music in Motion Pictures (Mason Core)	
THR 411	Great Film Directors (Mason Core)	
THR 412	Great Film Performances (Mason Core)	
Other courses as approved by Program Director		
Diversity of Perspectives		
Choose one course from the following:		3
ARAB 360	Topics in Arabic Cultural Production	
COMM 365	Gender, Race, and Class in the Media	
COMM 399	Special Topics in Communication [1]	
ENGH 318	Introduction to Cultural Studies [1]	
ENGH 362	Global Voices (Mason Core) [1]	
ENGH 418	Cultural Constructions of Sexualities	
FAVS 300	Global Horror Film (Mason Core)	
FAVS 320	Afrofuturism and Their Kin (Mason Core)	
FAVS 399	Special Topics in Film and Video Studies [1]	
FREN 470	French and Francophone Cinema	
FRLN 331	Contexts for Global Cinema (Mason Core)	
HIST 357	Postwar Japan (Mason Core)	
INTS 347	Gender Representation in Popular Culture (Mason Core)	
JAPA 320	Japanese Cinema	
RELI 362	Religion and Film	
WMST 300	Current Issues in Women and Gender Studies [1]	
WMST 450	Current Topics in Women and Gender Studies [1]	
Other courses as approved by Program Director		
Concentration		
Select one of the following concentrations:		30
Directing		
Producing		
Production and Post-Production		
Screenwriting		
Total Credits		66

[1] Must be approved by Program Director.

[2] May not be used to fulfill Mason Core.

Concentration in Directing (DIR)

Code	Title	Credits
Fundamental Courses		
FAVS 260	Video Editing for Film	3
FAVS 331	Cinematography	3
FAVS 333	Sound Editing and Recording	3
Fundamental Electives		
Select one course from the following:		3
FAVS 356	Film Marketing	
FAVS 460	Advanced Video Editing	
FAVS 431	Advanced Cinematography	
FAVS 433	Advanced Sound	
FAVS 380	TV Writing	
FAVS 483	Feature-Length Scriptwriting	
AVT 382	2D Experimental Animation	
AVT 383	3D Experimental Animation	
MUSI 301	Music in Motion Pictures (Mason Core)	
THR 210	Acting I (Mason Core)	
Other courses as approved by Program Director		
Authoring Courses		
FAVS 365	Documentary Filmmaking	3
FAVS 375	Fiction Film Directing	3
Authoring Electives		
Choose two courses from the following:		6
FAVS 312	Film Lab	
FAVS 366	Video Production for Social Change	
FAVS 377	Interactive Storytelling for Social Change	
FAVS 378	Web Series	
FAVS 399	Special Topics in Film and Video Studies [1]	
FAVS 475	Advanced Fiction Directing	
AVT 309	Art as Social Action	
AVT 390	Video Art	
AVT 457	Documentary Photography	
THR 329	Directing	
THR 340	Advanced Studies in Directing	
Other courses as approved by Program Director		
Required Core		
FAVS 498	Development for Senior Project	3
FAVS 499	Senior Project (Mason Core)	3
Total Credits		30

[1] Must be approved by Program Director.

Concentration in Producing (PRD)

Code	Title	Credits
Fundamental Courses		
FAVS 260	Video Editing for Film	3
FAVS 356	Film Marketing	3
FAVS 380	TV Writing	3
Fundamental Electives		
Select two courses from the following:		6
AMGT 471	Introduction to Grant Writing	

BULE 303	Legal Environment of Business	
COMM 305	Foundations of Intercultural Communication (Mason Core)	
COMM 204	Introduction to Public Relations	
COMM 350	Mass Communication and Public Policy	
COMM 359	Media Management	
COMM 375	Digital Advertising and Promotions	
COMM 430	Persuasion	
COMM 435	Digital Communication	
FAVS 331	Cinematography	
INTS 404	Ethics and Leadership	
INTS 405	Women and Leadership	
INTS 431	Principles of Fund Raising	
INTS 435	Leadership in a Changing Environment	
MBUS 301	Managing People and Organizations in a Global Economy	
MBUS 304	Entrepreneurship: Starting and Managing a New Enterprise	
MBUS 305	Introduction to International Business (Mason Core)	
Other courses as approved by Program Director		
Authoring Courses		
FAVS 312	Film Lab	3
FAVS 375	Fiction Film Directing	3
Authoring Electives		
Choose two courses from the following:		6
FAVS 365	Documentary Filmmaking	
FAVS 366	Video Production for Social Change	
FAVS 377	Interactive Storytelling for Social Change	
FAVS 378	Web Series	
FAVS 399	Special Topics in Film and Video Studies [1]	
FAVS 475	Advanced Fiction Directing	
Other courses as approved by Program Director		
Required Core		
FAVS 497	Senior Film Practicum (Mason Core)	3
Total Credits		30

[1] Must be approved by Program Director.

Concentration in Production and Post Production (PROP)

Code	Title	Credits
Fundamental Courses		
FAVS 260	Video Editing for Film	3
FAVS 331	Cinematography	3
FAVS 333	Sound Editing and Recording	3
Fundamental Electives		
Choose four courses from the following:		12
ARTH 101	Introduction to the Visual Arts (Mason Core)	
or ARTH 102	Symbols and Stories in Art (Mason Core)	
or ARTH 200	History of Western Art I (Mason Core)	
or ARTH 201	History of Western Art II (Mason Core)	
or ARTH 203	Survey of Asian Art (Mason Core)	
or ARTH 204	Survey of Latin American Art (Mason Core)	
or ARTH 206	Survey of African Art (Mason Core)	
AVT 252	Darkroom Photography I (Mason Core)	
AVT 253	Digital Photography I (Mason Core)	
AVT 311	Graphic Design Methods and Principles	
AVT 328	Mixed Media	
AVT 354	Digital Photography II	
AVT 356	Photo Studio Techniques	
AVT 374	Sound Art I	
AVT 382	2D Experimental Animation	
AVT 383	3D Experimental Animation	
AVT 390	Video Art	
AVT 411	Motion Design	
AVT 458	Advanced Studio Lighting	
AVT 474	Sound Art II	
COMM 358	Multi-Camera Studio Production	
COMM 364	Videography	
COMM 366	Visual Communication	
COMM 397	Special Topics in Production [1]	
FAVS 399	Special Topics in Film and Video Studies [1]	
GAME 231	Computer Animation for Games	
GAME 250	Music for Film and Video	
GAME 398	Advanced Game Design Animation	
MUSI 301	Music in Motion Pictures (Mason Core)	
MUSI 355	Recording Techniques	
MUSI 359	Topics in Music Technology [1]	
THR 230	Fundamentals of Production (Mason Core)	
THR 313	Event Technical Production	
THR 314	Lighting Stagecraft	
THR 315	Sound Engineering	
THR 333	Scenic Design	
THR 334	Lighting Design	
THR 337	Sound Design	
THR 339	Principles of Design	
THR 342	Makeup Design	
THR 343	Costume Technology	
THR 415	Advanced Sound Engineering	
THR 434	Advanced Lighting Design	
Other courses as approved by Program Director		
Authoring Electives		
Choose one course from the following:		3
FAVS 312	Film Lab	
FAVS 365	Documentary Filmmaking	
FAVS 366	Video Production for Social Change	
FAVS 375	Fiction Film Directing	
FAVS 377	Interactive Storytelling for Social Change	
FAVS 378	Web Series	
FAVS 380	TV Writing	
FAVS 483	Feature-Length Scriptwriting	
FAVS 399	Special Topics in Film and Video Studies [1]	

AVT 309	Art as Social Action	
AVT 390	Video Art	
AVT 457	Documentary Photography	
Other courses as approved by Program Director		
Advanced Skills Electives		
Choose one course from the following:		3
FAVS 431	Advanced Cinematography	
FAVS 460	Advanced Video Editing	
FAVS 433	Advanced Sound	
Other courses as approved by Program Director		
Required Core		
FAVS 497	Senior Film Practicum (Mason Core)	3
Total Credits		30

[1] Must be approved by Program Director.

Concentration in Screenwriting (SCWR)

Code	Title	Credits
Courses		
ENGH 396	Introduction to Creative Writing (Mason Core)	3
FAVS 380	TV Writing	3
FAVS 483	Feature-Length Scriptwriting	3
Elective Course in English		
Select one course from the following:		3
ENGH 377	Digital Creative Writing	
ENGH 386	Editing for Audience, Style, and Voice	
ENGH 398	Fiction Writing	
ENGH 399	Creative Nonfiction Writing	
ENGH 492	Advanced Fiction Writing Workshop	
ENGH 493	Advanced Workshop in Nonfiction	
ENGH 497	Topics in Creative Writing [1]	
Or other courses as approved by Program Director		
Elective Course in Computer Game Design or Communication		
Choose one course from the following:		3
COMM 303	Writing across the Media	
COMM 397	Special Topics in Production [1]	
COMM 399	Special Topics in Communication [1]	
GAME 332	RS: Story Design for Computer Games	
GAME 399	Special Topics [1]	
Or other courses as approved by Program Director		
Elective Course in Film and Video Studies		
Choose two courses from the following:		6
FAVS 260	Video Editing for Film	
FAVS 312	Film Lab	
FAVS 365	Documentary Filmmaking	
FAVS 366	Video Production for Social Change	
FAVS 375	Fiction Film Directing	
FAVS 377	Interactive Storytelling for Social Change	
FAVS 378	Web Series	
FAVS 399	Special Topics in Film and Video Studies [1]	
Or other courses as approved by Program Director		
Elective Courses in Theater		
Choose two courses from the following:		6
THR 380	Playwriting I	
THR 381	Playwriting II	
THR 480	Advanced Playwriting	
THR 482	Advanced Screenplay Workshop	
THR 484	Translation Adaptation for Stage Screen	
Or other courses as approved by Program Director		
Required Core		
FAVS 496	Advanced Visual Storytelling (Mason Core)	3
Total Credits		30

[1] Must be approved by Program Director.

General Electives

Code	Title	Credits
Students must use general electives to complete a minor, a double major or double degree outside their primary major field of study (15-21 credits) or demonstrate intermediate-level proficiency in one foreign language (0-9 credits). After fulfilling one of these options, the remaining general electives may be taken inside or outside of the department.		17
Total Credits		17

4-Year Plan

Bachelor of Arts in Film and Video Studies

The sample plan below is a recommended sequencing of courses based on prerequisites and scheduling. This may not fit every student's needs and is a guideline, not a requirement. Students should confirm major requirements with their academic advisor and with PatriotWeb Degree Evaluation to ensure they enroll in the proper courses and are on track to graduate.

First Year

Fall Semester	Credits	Spring Semester	Credits
FAVS 255 or 280	3	FAVS 255 or 280	3
FAVS 250 or 225	3	FAVS 250 or 225	3
FAVS 204 or Mason Core	3	FAVS 204 or Mason Core	3
ENGH 100/1 or Oral Communication	3	Mason Core	3
Mason Core	3	ENGH 100/1 or Oral Communication	3
	15		15

Second Year

Fall Semester	Credits	Spring Semester	Credits
FAVS 311 or FAVS Analysis, History Theory	3	FAVS 311 or FAVS Analysis, History Theory	3

FAVS Diversity of Perspective or Film Concentration	3	FAVS Diversity of Perspective or Film Concentration	3
Mason Core (Literature)	3	ENGH 302	3
FAVS 300 Global Horror or Mason Core (Global Understanding)	3	Mason Core	3
Mason Core (Non-lab Science)	3	Mason Core (Lab Science)	4
	15		16

Third Year

Fall Semester	Credits	Spring Semester	Credits
FAVS 304 or 352	3	FAVS 304 or 352	3
Film Concentration	3	Film Concentration or FAVS 450 Internship[1]	3
Film Concentration	3	Film Concentration	3
Minor or Film Concentration	3	Minor or Film Concentration	3
Minor or Foreign Language	3	Minor or Foreign Language	3
	15		15

Fourth Year

Fall Semester	Credits	Spring Semester	Credits
Film Concentration or FAVS 450 Internship[1]	3	FAVS 496 or FAVS 497 or FAVS 499	3
FAVS 400 or Film Concentration	3	FAVS 400 or Film Concentration	3
Minor or Foreign Language or Film Concentration	3	Minor or General Elective or Film Concentration	3
Minor or General Elective or Film Concentration	3	Minor or General Elective	3
Minor or General Elective	3	Minor or General Elective	3
	15		15

Total Credits 121

[1] FAVS 450 is recommended for the summer between Junior and Senior year.

Detailed four year plans and degree planning checklists can be found at https://advising.gmu.edu/current-student/majors-at-mason/.

School of Art

2050 Art and Design Building
Fairfax Campus

Phone: 703-993-8898
Website: soa.gmu.edu

Mission

George Mason University's School of Art is a collaborative academic and professional community focused on advancing creativity through traditional and new media applied to varying social contexts. The School of Art is founded on the premise that art both reflects and inspires a creative society, improving the human condition while describing the world, both as it is and could be. We focus on the role of artists in that conversation. We encourage students to see art both as an individual expression and public interaction. We celebrate historical reference, current relevance and experimentation-emphasizing innovative ways of thinking that enhance the impact of art on the future of society.

Embedded in a major liberal arts university rich in learning resources, the School of Art plays a vital role in the creative climate of the institution and the region through the cross-disciplinary research it facilitates and the artwork it produces and exhibits. The School's facilities engage an exceptional faculty of practicing artists, an active visiting artist program, and a diverse and intellectually curious graduate and undergraduate student body. Artistic skills and principles of creative practice in all visual media are grounded in a forward-thinking, adaptive curriculum. Faculty and students forge cross-disciplinary experimentation, challenging conventional thinking and blurring the lines between traditional artistic disciplines, indeed, between the arts and other humanities and sciences.

The School of Art educates artists and creative professionals to be responsible contributors to society, preparing them to be agents of change in an increasingly connected, complex, inclusive world. We highly value rigor in conceptual approach, skill in art production, and imaginative methods for implementing projects and engaging audiences. Each student is given a background in aesthetic and analytical judgment, the ethical framework for professional practice, the confidence to be both self-reliant and collaborative, and the mastery of design and production necessary to thrive as a professional artist in a competitive global environment.

Undergraduate Programs

Undergraduate studio degrees offered by the School of Art include the bachelor of arts (BA) and the bachelor of fine arts (BFA). An honors program enhances either degree for selected AVT majors. The school also offers undergraduate minors in art and visual technology, arts and social change, graphic design, photography, and web design.

For students who are interested in a career in teaching art in the public schools, neither the BA nor the BFA program satisfies all requirements for those seeking licensure. Undergraduate students interested in this field are highly encouraged to consider the accelerated degree path for the master of art in teaching and should contact the school's art education advisor to learn more about teacher preparation.

All George Mason University students are welcome to enroll in course work in the School of Art to fulfill Mason Core for requirements for the arts or to pursue minors. Consult the course listings for prerequisites and requirements. Students should carefully examine prerequisites for School

of Art courses. Students may be removed from a course if they enroll without having fulfilled the prerequisites.

Studios

The School of Art program is located in the Art and Design Building which houses well-equipped studios for drawing, painting, photography, printmaking, and sculpture, as well as six computer-equipped studios that cross platforms and are installed with current software applications used for two-dimensional imaging, three-dimensional modeling, animation, video production, sound editing, multimedia authoring, photography, and web publishing.

Policies, procedures, and schedules for studio use are established by the AVT studio faculty and are posted in the studios.

Graduate Programs

The MA in Graphic Design offers students a comprehensive study and preparation for the graphic design profession. The program calls for 36 credits, which includes courses in typography, web design, image making, and brand design. The broad range of study is intended to develop professionals prepared for an ever-expanding graphic design field. This degree is the only MA in Graphic Design in the Washington Metropolitan region.

The Art Education Licensure Certificate is a post-baccalaureate program designed for those who currently hold a graduate degree in an art-related field along with those who want a more immediate entrance into the art teaching profession. This 'licensure only' program, which results in a pre K-12 art certification in the Commonwealth of Virginia, is a 21 credit program consisting of graduate education courses, area endorsements, student teaching internships and seminar.

The Master of Arts in Teaching in Art Education is a pre-service degree program that prepares students with a BFA degree or equivalent for pre K-12 art licensure by the Commonwealth of Virginia. Using a studio-based approach to art education and working closely with area public school systems, the MAT degree consists of 30 credits of graduate art education, school practicum experience, studio work, and preservice teaching internship and seminar.

MFA, Visual and Performing Arts

The School of Art offers two concentrations under the Master of Fine Arts, Visual and Performing Arts degree: Graphic Design and Visual Art. Applicants to the program must designate which concentration they intend to apply for on the application. Each concentration has its own unique set of admissions requirements and program requirements. For specific information, please refer to the Visual and Performing Arts, MFA entry.

The MFA is a terminal degree that prepares students to become professional artists, work in technology or arts-related fields, and teach at the university level. Candidates are required to complete 60 credits, of which 30 credits are made up from core requirements and 30 are made up of emphasis and studio requirements.

In the Visual Arts concentration, students may select an emphasis in new media, painting and drawing, photography, printmaking, sculpture, or InterArts. The latter offers students the opportunity to combine art forms in interdisciplinary projects that may be installation, performance, publishing, time-based, or writing-based; and combine creative and critical approaches to their work.

While it is anticipated that students will move through the MFA as described in this catalog, individuals with extensive professional accomplishment may, upon recommendation of the SOA Graduate Committee and with prior approval of the CVPA dean, craft an individualized program within their intended emphasis that meets curricular requirements.

Accelerated Master's Options

The School of Art offers the following Accelerated Master's programs:

- Art and Visual Technology, BA/Arts Management, Accelerated MA
- Art and Visual Technology, BFA/Art Education, Accelerated MAT
- Art and Visual Technology, BFA/Arts Management, Accelerated MA
- Art and Visual Technology, BFA/Graphic Design, Accelerated MA

Each program allows undergraduate students to take graduate classes that can be used towards a designated Master's degree. Undergraduates who wish to pursue the accelerated Master's route should talk to their academic advisor first to see if they qualify. Students must be within 75-100 credits of their Bachelor's program to be eligible to apply; those who have earned more than 100 credits will not be considered. Students must be approved by their academic advisor and formally apply and be accepted to the Master's program through an Accelerated Master's application. For more information about admissions requirements and the application process, students should visit the website (http://cvpa.gmu.edu).

Faculty

School Faculty

Professors

Carbonneau, Elahi (Director), Linton, White

Associate Professors

Cooley, Crawford, Cui, Endress, Frenn, Karametou, Rothstein, Sheridan, Starr (Associate Director), Winant, Wrbican

Assistant Professors

Carrier, Debuque, Del Popolo, Green, Incerti, Kardambikis, McDermott, Sutters, Yi

Research Faculty

Russell

Adjunct Faculty

Adair, Ashworth, Banales, Benassi, Bisese, Booth, Bourke, Bradley, Brinn, Carr, Chaudhary, Cole, Cushner, Davis, Deliyianni, Dixon, Dravenstadt, Durkin, Ellison, Fussner, Geffen, Guerrieri, Heffner, Hicks, Higgins, Ho, Jones, Kallista, Kehoe, Kenney, Lessner, Lillis, McComas, McCoy, Murray, Nesbitt, North, Parada, Petrine, Plakas, Quinones, Rhoades, Rodriguez, Sakai, Sanchez, Sandberg, Sargent, Sawyer, Smyers, Tafalla, Van Meer, Wheeler, Yoder, Zdepski

Requirements & Policies

Requirements

Undergraduate Admission to the School of Art

Students are admitted to School of Art degree programs separately from their admission to George Mason University and only by portfolio review. The College of Visual and Performing Arts strongly encourages students to apply to the university by November 1 in order to receive maximum scholarship consideration, including merit and talent-based scholarships.

Applicants apply to George Mason University. Admission to George Mason is determined by the Admissions Office and is separate from admission to the School of Art degree programs. All School of Art applicants are encouraged to apply for admission to the university prior to submitting a portfolio for review.

Successfully complete a portfolio review. Please refer to the Portfolio Review Criteria (https://art.gmu.edu/portfolio-review/).

Artsbus Requirement

All AVT majors must meet the school's requirement of travel to galleries and museums through the Artsbus program. Students meet this requirement by enrolling in AVT 300 Artsbus Attendance. The procedure and requirements for enrollment in AVT 300 Artsbus Attendance are the same as for any other class.

Freshmen who enroll as AVT majors must register for AVT 300 Artsbus Attendance 5 times during their course of study. Transfer students and students who change their majors to AVT must register for AVT 300 Artsbus Attendance for the equivalent of each semester they are enrolled at Mason, up to a maximum of five semesters. Semesters of enrollment in AVT 300 Artsbus Attendance do not have to be consecutive. Students may take AVT 300 Artsbus Attendance up to three times in a semester if they wish to accelerate their completion of the requirement although this is strongly discouraged.

All rules and requirements to AVT 300 Artsbus Attendance participation are posted on the Artsbus website (http://artsbus.gmu.edu). Students are responsible for being familiar with and following the posted rules and requirements for Artsbus. The site also provides pertinent information for each trip regarding exhibits as well as reviews and articles for exhibitions.

Visual Voices Requirement

All AVT majors must fulfill three credits of AVT 301 Visual Voices Colloquium in order to graduate unless they are enrolled at Mason for fewer than three semesters. If enrolled for less than three semesters, students are required to register for AVT 301 Visual Voices Colloquium each semester in which they are enrolled. Visual Voices is an intrinsic part of the major, offering students a chance to meet with and hear nationally and internationally recognized artists speak about their work.

Writing-Intensive Requirement

Mason requires all students to complete at least one course designated "writing intensive" in their majors at the 300 level or above. AVT students fulfill this requirement by successfully completing AVT 395 Writing for Artists.

Upper-Level Credits

All undergraduate students are required to complete a minimum of 45 credits of upper-division courses at the 300–499 level.

Major GPA

All School of Art BA and BFA majors, AVT minor, Arts and Social Change minor, Graphic Design minor, Photography minor, and Web Design minor students must earn a grade of C or better in required AVT coursework, including Studio Foundation, Critical Analysis and Contemporary Practice, Breadth and Experience, Synthesis and Concentrations. All School of Art undergraduate students must earn a minimum 2.00 cumulative GPA in their major. To graduate with a BA or BFA in Art and Visual Technology with a concentration in Graphic Design, students are required to maintain a 2.40 GPA in concentration classes. Students who fail to maintain this minimum may either retake core classes (an earned higher grade replaces the old one) or take concentration special topics classes in order to raise their average to the threshold. The effect of this change will be that very weak students will have to return to required classes to master core skills, and marginally weak students will be able to meet the requirement while expanding the breadth of their education.

Policies

See CVPA Requirements and Policies.

Honors Program

Students interested in the Honors Program in School of Art should contact the director of the school. Both BA and BFA students are eligible to apply for admission to the program. Honors students must complete at least 4 credits AVT 394 Honors Seminar. They must have a cumulative GPA of at least 3.00 and at least 3.50 in AVT 394 Honors Seminar and the AVT major.

Programs

- Animation Minor
- Art Education Licensure Graduate Certificate
- Art Education, MAT
- Art and Visual Technology, BA
- Art and Visual Technology, BFA
- Arts and Social Change Minor
- Digital Media and Web Design Minor (CVPA)
- Graphic Design Minor
- Graphic Design Undergraduate Certificate
- Illustration Minor
- Photography Minor
- Photojournalism Minor (CVPA)
- Studio Art Minor
- Web Design Minor

Animation Minor

Banner Code: ANMT

2050 Art and Design Building
Fairfax Campus

Phone: 703-993-8898
Email: avt@gmu.edu

Website: soa.gmu.edu

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 15

Required Courses

Code	Title	Credits
AVT 222	Drawing I (Mason Core) [1]	3
AVT 380	Thinking Through Animation	3
AVT 382	2D Experimental Animation	3
Total Credits		9

Elective Courses

Code	Title	Credits
Select 6 credits from the following:		6
AVT 327	Illustration	
AVT 374	Sound Art I	
FAVS 255	Video Production for Film [2]	
FAVS 280	Writing for the Moving Image (Mason Core) [2]	
THR 210	Acting I (Mason Core)	
THR 303	Movement for Actors	
Total Credits		6

1 Animation minors are strongly encouraged to enroll in a *sequential drawing emphasis* section of AVT 222.

2 FAVS majors pursuing the Animation minor may not use FAVS 255 or FAVS 280 to fulfill minor requirements.

Art and Visual Technology, BA

Banner Code: AR-BA-AVT

2050 Art and Design Building
Fairfax Campus

Phone: 703-993-8898
Email: avt@gmu.edu
Website: soa.gmu.edu

Requirements

Degree Requirements

Total credits: 120

Mason Core

Code	Title	Credits
Foundation Requirements		
ENGH 101	Composition (Mason Core) [1]	3
ENGH 302	Advanced Composition (Mason Core) [1]	3
Oral Communication		3
Quantitative Reasoning		3
Information Technology [2]		3
Core Requirements		
Literature		3
Arts [3]		3
Natural Science [4]		7
Western Civilization/World History		3
Global Understanding [5]		3
Social and Behavioral Sciences		3
Total Credits		37

1 Nonnative speakers of English with limited proficiency in the language may substitute ENGH 100 Composition for Multilingual Writers (Mason Core) for ENGH 101 Composition (Mason Core). Students must attain a minimum grade of C in ENGH 100 Composition for Multilingual Writers (Mason Core) or ENGH 101 Composition (Mason Core), as well as in ENGH 302 Advanced Composition (Mason Core), to fulfill degree requirements.

2 All students concentrating in new media art must take AVT 180 New Media in the Creative Arts. All students concentrating in graphic design must take AVT 110 Digital Design Studio.

3 AVT majors may not choose AVT courses to meet this requirement, and they may not double-count ARTH courses toward both the AVT major and the Mason Core arts requirement.

4 Including at least one laboratory science

5 AVT majors may not double-count ARTH courses toward both AVT major requirements and the Mason Core global understanding requirement.

AVT Major Requirements

Code	Title	Credits
Studio Foundation		
AVT 101	New Majors Colloquium	1
AVT 104	Two-Dimensional Design and Color (Mason Core)	3
AVT 105	Three-Dimensional Design and Beyond	3
AVT 110	Digital Design Studio [6]	3
or AVT 180	New Media in the Creative Arts	
AVT 222	Drawing I (Mason Core)	3
AVT 323	Drawing II	3
or AVT 324	Figure Drawing	
Art History, Critical Analysis, Contemporary Practice		
Select one from the following: [1]		3
ARTH 200	History of Western Art I (Mason Core)	
ARTH 203	Survey of Asian Art (Mason Core)	
ARTH 204	Survey of Latin American Art (Mason Core)	
ARTH 206	Survey of African Art (Mason Core)	
ARTH 350	History of Photography (Mason Core)	

AVT 318	History of Graphic Design	
ARTH 201	History of Western Art II (Mason Core)	3
ARTH 374	Art Now	3
Three credits of		3
AVT 301	Visual Voices Colloquium [2]	
AVT 307	Aesthetics	3
AVT 395	Writing for Artists [3]	3
or AVT 396	Writing for Designers	
Breadth and Experience		
Select three courses from the following: [4]		12
AVT 215	Typography (Mason Core)	
AVT 217	Introduction to Web Design	
AVT 232	Painting I (Mason Core)	
AVT 243	Printmaking I (Mason Core)	
AVT 252	Darkroom Photography I (Mason Core)	
AVT 253	Digital Photography I (Mason Core)	
AVT 254	Photography	
AVT 262	Sculpture I (Mason Core)	
AVT 272	Interdisciplinary Arts (Mason Core)	
AVT 280	Introduction to New Media Arts	
AVT 326	Nontraditional Approaches to Drawing	
AVT 327	Illustration	
AVT 346	Digital Printmaking	
AVT 374	Sound Art I	
AVT 385	EcoArt (Mason Core)	
AVT 496	Special Topics	
Other courses as approved by program director		
Professional Practices		
AVT 413	Professional Design Practices [5]	3
or AVT 453	Professional Practices	
Synthesis		
AVT 497	Senior Project (Mason Core) [7]	3
or AVT 498	Senior Design Project (Mason Core)	
Total Credits		52

1 Students concentrating in graphic design must take either AVT 318 History of Graphic Design or AVT 410 Experiential Design History to fulfill this requirement. Students concentrating in photography must complete ARTH 350 History of Photography (Mason Core) to fulfill this requirement.

2 Must be taken for a total of 3 credits or each semester, if less than 3 semesters

3 Students concentrating in graphic design must take AVT 396 Writing for Designers to fulfill this requirement.

4 At least one course must be a 200-level studio course. See each concentration for individual requirements.

5 All students concentrating in graphic design must complete AVT 413 Professional Design Practices

6 Students concentrating in graphic design and printmaking & book arts must take AVT 110 Digital Design Studio for this requirement.

7 Students concentrating in graphic design must take AVT 498 Senior Design Project to fulfill the Synthesis requirement.

Artsbus Requirement

All AVT majors must meet the school's requirement of travel to galleries and museums through the Artsbus program. Students meet the requirement by enrolling in AVT 300 Artsbus Attendance. The procedure and requirements for enrollment in AVT 300 are the same as for any other class.

Freshmen who enroll as AVT majors must register for AVT 300 Artsbus Attendance 5 times during their course of study. Transfer students and students who change their majors to AVT must register for AVT 300 Artsbus Attendance for the equivalent of each semester they are enrolled at Mason, up to a maximum of five semesters.

Concentrations

Select one concentration and complete the requirements therein.

Concentrations

- Drawing (DRW)
- Graphic Design (GD)
- New Media Art (NMA)
- Painting (PNT)
- Photography (PHO)
- Printmaking & Book Arts (PMBA)
- Sculpture (SCL)

Drawing (DRW)

All AVT majors concentrating in drawing must complete AVT 232 Painting I (Mason Core) **under Breadth and Experience.**

Code	Title	Credits
AVT 422	Drawing III	3
AVT 423	Drawing IV	3
Select 6 credits from the following:		6
AVT 324	Figure Drawing	
AVT 326	Nontraditional Approaches to Drawing	
AVT 328	Mixed Media	
AVT 333	Painting II	
AVT 336	Experimental Painting	
AVT 337	Figurative Painting	
AVT 432	Painting III	
AVT 433	Advanced Painting I	
AVT 496	Special Topics [1]	
Other courses as approved by program director.		
Total Credits		12

1 Topic must be Drawing.

Graphic Design (GD)

All AVT majors concentrating in graphic design must complete AVT 252 Darkroom Photography I (Mason Core) **or AVT 253 Digital Photography I** (Mason Core) **under Breadth and Experience.**

Code	Title	Credits
AVT 311	Graphic Design Methods and Principles	3
AVT 313	Editorial Design	3
AVT 414	Corporate Design and Branding	3
Select 3 credits from the following:		3
AVT 412	Advanced Typography	

AVT 415	Web Design and Usability	
AVT 416	Advertising Design	
AVT 419	Topics in Graphic Design	
Other courses as approved by program director.		
Total Credits		12

New Media Art (NMA)

All students concentrating in new media art must complete AVT 280 Introduction to New Media Arts under Breadth and Experience, and AVT 180 New Media in the Creative Arts for their IT Mason Core requirement.

Code	Title	Credits
Select 12 credits from the following:		12
AVT 374	Sound Art I	
AVT 376	Live Movies	
AVT 382	2D Experimental Animation	
AVT 383	3D Experimental Animation	
AVT 385	EcoArt (Mason Core)	
AVT 390	Video Art	
AVT 482	Advanced Image Making	
AVT 483	RS: Art and Interactivity	
AVT 487	Advanced Topics: New Media Art	
Other courses as approved by program director.		
Total Credits		12

Painting (PNT)

All AVT majors concentrating in painting must complete AVT 262 Sculpture I (Mason Core) **under Breadth and Experience.**

Code	Title	Credits
AVT 333	Painting II	3
AVT 432	Painting III	3
AVT 433	Advanced Painting I	3
Select 3 credits from the following:		3
AVT 336	Experimental Painting	
AVT 337	Figurative Painting	
AVT 434	Advanced Painting II	
AVT 435	Advanced Painting III	
Other courses as approved by program director.		
Total Credits		12

Photography (PHO)

All AVT majors concentrating in photography must complete AVT 252 Darkroom Photography I (Mason Core) **under Breadth and Experience.**

Code	Title	Credits
AVT 353	Darkroom Photography II	3
AVT 356	Photo Studio Techniques	3
AVT 359	Photography Seminar	3
Select 3 credits from the following:		3
AVT 350	Alternative Photo Processes	
AVT 354	Digital Photography II	
AVT 357	Photobook: Concepts Form	
AVT 455	Digital Printing Techniques	
AVT 457	Documentary Photography	
AVT 458	Advanced Studio Lighting	
Other courses as approved by program director.		
Total Credits		12

Printmaking & Book Arts (PMBA)

Code	Title	Credits
AVT 343	Printmaking II	3
Select 9 credits from the following:		9
AVT 344	Book Arts: Books Enclosures	
AVT 345	Paper/Print/Book as Language	
AVT 346	Digital Printmaking	
AVT 442	Printmaking III	
AVT 443	Printmaking IV	
Other courses as approved by program director.		
Total Credits		12

Sculpture (SCL)

All AVT majors concentrating in sculpture must complete AVT 262 Sculpture I (Mason Core) **under Breadth and Experience.**

Code	Title	Credits
AVT 363	Sculpture II	3
Three credits of		3
AVT 393	Field Experience in the Arts	
or AVT 489	Internship in Art and Visual Technology	
AVT 462	Sculpture III	3
AVT 463	Sculpture IV	3
Total Credits		12

Concentration Electives

AVT 496 Special Topics or AVT 491 Independent Study in Art and Visual Technology may be taken with permission of respective program director.

General Electives

Code	Title	Credits
BA students must use some/all general electives to complete a		19
Minor		
Double Major		
Double Degree [1]		
Intermediate-level proficiency in one foreign language		
Remaining electives [2]		
Total Credits		19

1. Must be outside student's primary major field of study.
2. May be taken inside or outside of the department. All students are required to take a minimum of 45 credits of upper-division courses (300 and 400 level); most students will require at least 13 elective credits at the 300 level or above. AVT 393 Field Experience in the Arts and AVT 489 Internship in Art and Visual Technology are not required courses but are highly recommended as electives for BA students.

4-Year Plan

Bachelor of Arts in Art and Visual Technology Sample Plan of Study

The sample plan below is a recommended sequencing of courses based on pre-requisites and scheduling. This may not fit every student's needs and is a guideline, not a requirement. Students should confirm major requirements with their academic advisor and with PatriotWeb Degree Evaluation to ensure they enroll in the proper courses and are on track to graduate.

Graphic Design Concentration

First Year

Fall Semester	Credits	Spring Semester	Credits
AVT 300	0	AVT 300	0
AVT 101	1	AVT 105	3
AVT 222	3	AVT 323	3
AVT 104	3	AVT 215	3
AVT 301	1	Quantitative Reasoning: Mason Core	3
AVT 110	3	Literature: Mason Core	3
ENGH 101	3		
Elective (UNIV XXX)	1		
	15		15

Second Year

Fall Semester	Credits	Spring Semester	Credits
AVT 300	0	AVT 300	0
AVT 253	3	AVT 217	3
AVT 307	3	AVT 313	3
AVT 311	3	ENGH 302H: Mason Core	3
AVT 301	1	COMM 100/101: Mason Core	3
Natural Science Lab: Mason Core	4	Minor or Foreign Language	3
Elective (UNIV XXX)	1		
	15		15

Third Year

Fall Semester	Credits	Spring Semester	Credits
AVT 300	0	AVT 414	3
Western Civilization: Mason Core	3	ARTH 374	3
AVT 396	3	AVT 301	1
AVT 318 or 410	3	General Elective	2
ARTH 201	3	Arts: Mason Core	3
Minor or Foreign Language	3	Minor or Foreign Language	3
	15		15

Fourth Year

Fall Semester	Credits	Spring Semester	Credits
Social & Behavioral Science: Mason Core	3	AVT 413	3
AVT Graphic Design Concentration	3	AVT 498	3
Natural Science Non-Lab: Mason Core	3	General Elective	3
Minor or Foreign Language	3	Global Understanding: Mason Core	3
Minor or Foreign Language	3	Minor or Foreign Language	3
	15		15

Total Credits 120

Detailed four year plans and degree planning checklists can be found at https://advising.gmu.edu/current-student/majors-at-mason/.

All Other Concentrations

First Year

Fall Semester	Credits	Spring Semester	Credits
AVT 300	0	AVT 300	0
AVT 101	1	AVT 105	3
AVT 222	3	AVT 323	3
AVT 104	3	AVT Breadth & Experience	3
AVT 301	1	Quantitative Reasoning: Mason Core	3
AVT 110	3	Literature: Mason Core	3
ENGL 101: Mason Core	3		
Elective (UNIV XXX)	1		
	15		15

Second Year

Fall Semester	Credits	Spring Semester	Credits
AVT 300	0	AVT 300	0
AVT Breadth & Experience	3	AVT Breadth & Experience	3

AVT 307	3	AVT Concentration	3
AVT Concentration	3	ENGH 302H: Mason Core	3
AVT 301	1	COMM 100/101: Mason Core	3
Natural Science Lab: Mason Core	4	Minor or Foreign Language	3
Elective (UNIV XXX)	1		
	15		15

Third Year

Fall Semester	Credits	Spring Semester	Credits
AVT 300	0	AVT Concentration	3
Western Civilization: Mason Core	3	ARTH 374	3
ARTH 200, 203, 204, AVT 318, or AVT 410	3	AVT 301	1
AVT 395	3	General Elective	2
ARTH 201	3	Arts: Mason Core	3
Minor or Foreign Language	3	Minor or Foreign Language	3
	15		15

Fourth Year

Fall Semester	Credits	Spring Semester	Credits
Social & Behavioral Science: Mason Core	3	AVT 453	3
AVT Concentration	3	AVT 497	3
Natural Science Non-Lab: Mason Core	3	General Electives	3
Minor or Foreign Language	3	Global Understanding: Mason Core	3
Minor or Foreign Language	3	Minor or Foreign Language	3
	15		15

Total Credits 120

Detailed four year plans and degree planning checklists can be found at https://advising.gmu.edu/current-student/majors-at-mason/.

Accelerated Master's

Art and Visual Technology, BA/Arts Management, Accelerated MA

Overview

Undergraduates in art may apply to the accelerated master's degree in arts management. If accepted, students will be able to earn an Art and Visual Technology, BA and an Arts Management, MA after satisfactory completion of 150 credits.

Students choosing the accelerated option must fulfill all university requirements for the master's degree. The regular designed time frame would be a start in the Fall and completion of all coursework in the Summer five years later with the exception of Capstone, which is only offered in Fall and Spring. Students may need a longer time frame to complete all requirements.

This accelerated option is offered through joint cooperation between the School of Art and the Arts Management Program.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies.

Admissions Requirements

Applicants to accelerated master's programs must have completed at least 75 credits that apply to their undergraduate degree (with at least 24 credits at Mason) and no more than 100 credits. Applicants should submit an Accelerated Master's Program Application, available from the College of Visual and Performing Arts (CVPA) Academic Affairs Office. It includes the proposed conferral date for the undergraduate degree and the two graduate courses that are to be applied to the undergraduate degree.

Interested students should contact the Arts Management Program Office for more details about the application process.

Accelerated Option Requirements

As an undergraduate, the accelerated master's student is required to complete the two graduate courses indicated on their Accelerated Master's Program application with a minimum grade of 3.00 in each course. Students must maintain a minimum GPA of 3.00 in all coursework and in coursework applied to their major. On completion and conferral of the undergraduate degree in the semester indicated in the application, candidates submit the Bachelor's/Accelerated Master's Transition Form (which shall incorporate all of the Graduate Admission requirements of the university) and are admitted to graduate status.

As graduate students, accelerated master's students have an advanced standing and must meet all master's degree requirements except for the two courses (6 credits) completed as undergraduates. Students will begin their master's program in the semester immediately following conferral of the undergraduate degree, and they may also begin in the summer term.

Reserve Graduate Credit

Students may take up to 6 additional graduate credits as reserve graduate credit. These credits do not apply to the undergraduate degree. The ability to take courses for reserve graduate credit is available to all high achieving undergraduates with permission of the School of Art. Permission to take a graduate course for reserve graduate credit

is normally granted only to Mason seniors within 15 credit hours of graduation and must be approved by the Dean's Office.

To apply these credits to the master's degree, students must request that the credits be moved from the undergraduate degree to the graduate degree using the Bachelor's/Accelerated Master's Transition Form.

Art and Visual Technology, BFA

Banner Code: AR-BFA-AVT

2050 Art and Design Building
Fairfax Campus

Phone: 703-993-8898
Email: avt@gmu.edu
Website: soa.gmu.edu

Requirements

Degree Requirements

Total credits: 120

Mason Core

Code	Title	Credits
Foundation Requirements		
Oral Communication		3
Quantitative Reasoning		3
Information Technology [1]		3
ENGH 101	Composition (Mason Core) [2]	3
ENGH 302	Advanced Composition (Mason Core) [2]	3
Core Requirements		
Literature		3
Arts [3]		3
Natural Science [4]		7
Western Civilization		3
Global Understanding [5]		3
Social and Behavioral Sciences		3
Total Credits		37

1. All students concentrating in new media art must take AVT 180 New Media in the Creative Arts.
2. Nonnative speakers of English with limited proficiency in the language may substitute ENGH 100 Composition for Multilingual Writers (Mason Core) for ENGH 101 Composition (Mason Core). Students must attain a minimum grade of C in ENGH 100 Composition for Multilingual Writers (Mason Core) or ENGH 101 Composition (Mason Core), as well as in ENGH 302 Advanced Composition (Mason Core), to fulfill degree requirements.
3. AVT majors may not choose AVT courses to meet this requirement, and they may not double-count ARTH courses toward both the AVT major and the Mason Core arts requirement.
4. including at least one laboratory science
5. AVT majors may not double-count ARTH courses toward both AVT major requirements and the Mason Core global understanding requirement.

AVT Major Requirements

Code	Title	Credits
Studio Foundation		
AVT 101	New Majors Colloquium	1
AVT 104	Two-Dimensional Design and Color (Mason Core)	3
AVT 105	Three-Dimensional Design and Beyond	3
AVT 110	Digital Design Studio [7]	3
or AVT 180	New Media in the Creative Arts	
AVT 222	Drawing I (Mason Core)	3
AVT 323	Drawing II	3
or AVT 324	Figure Drawing	
Art History, Critical Analysis, Contemporary Practice		
ARTH 201	History of Western Art II (Mason Core)	3
ARTH 374	Art Now	3
Three credits of		3
AVT 301	Visual Voices Colloquium [1]	
AVT 307	Aesthetics	3
AVT 395	Writing for Artists [2]	3
or AVT 396	Writing for Designers	
AVT 472	Critical Theory in the Visual Arts	3
Select one from the following: [3]		3
ARTH 200	History of Western Art I (Mason Core)	
ARTH 203	Survey of Asian Art (Mason Core)	
ARTH 204	Survey of Latin American Art (Mason Core)	
ARTH 206	Survey of African Art (Mason Core)	
ARTH 350	History of Photography (Mason Core)	
AVT 318	History of Graphic Design	
AVT 410	Experiential Design History	
Select one from the following: [4]		3
AVT 204	Visual Thinking	
AVT 305	Creative Processes	
AVT 309	Art as Social Action	
AVT 370	Entrepreneurship in the Arts	
AVT 371	Visual Perception and the Arts	
AVT 372	Hip Hop Culture	
AVT 374	Sound Art I	
AVT 380	Thinking Through Animation	
AVT 407	Advanced Aesthetics	
AVT 408	Visual Communication Theories	
AVT 493	Teaching Visual Thinking Through Media, PK-12	
3 credits of 300-400 level ARTH		
Breadth and Experience		
Select three courses from the following: [5]		12
AVT 215	Typography (Mason Core)	
AVT 217	Introduction to Web Design	
AVT 232	Painting I (Mason Core)	
AVT 243	Printmaking I (Mason Core)	
AVT 252	Darkroom Photography I (Mason Core)	
AVT 253	Digital Photography I (Mason Core)	

AVT 254	Photography	
AVT 262	Sculpture I (Mason Core)	
AVT 272	Interdisciplinary Arts (Mason Core)	
AVT 280	Introduction to New Media Arts	
AVT 326	Nontraditional Approaches to Drawing	
AVT 327	Illustration	
AVT 346	Digital Printmaking	
AVT 374	Sound Art I	
AVT 385	EcoArt (Mason Core)	
AVT 496	Special Topics	
Other courses as approved by program director		
Professional Practices		
AVT 413	Professional Design Practices [6]	3
or AVT 453	Professional Practices	
Synthesis		
AVT 497	Senior Project (Mason Core) [8]	3
or AVT 498	Senior Design Project (Mason Core)	
Total Credits		58

1 Transfer students with less than three semesters remaining must take AVT 301 Visual Voices Colloquium for each remaining semester.

2 Students concentrating in Graphic Design must take AVT 396 Writing for Designers to fulfill this requirement.

3 Students concentrating in Graphic Design must take either AVT 318 History of Graphic Design or AVT 410 Experiential Design History to fulfill this requirement. Students concentrating in photography must complete ARTH 350 History of Photography (Mason Core) to fulfill this requirement.

4 Students concentrating in graphic design must take either AVT 370 Entrepreneurship in the Arts or AVT 408 Visual Communication Theories to meet this requirement. Students concentrating in photography must take AVT 204 Visual Thinking to fulfill this requirement.

5 At least one course must be a 200-level studio course. See each concentration for individual requirements.

6 All students concentrating in graphic design must complete AVT 413 Professional Design Practices.

7 All students concentrating in graphic design and printmaking & book arts must take AVT 110 Digital Design Studio

8 Students concentrating in graphic design must take AVT 498 Senior Design Project to fulfill the Synthesis requirement.

Artsbus Requirement

All AVT majors must meet the school's requirement of travel to galleries and museums through the Artsbus program. Students meet the requirement by enrolling in AVT 300 Artsbus Attendance. The procedure and requirements for enrollment in AVT 300 are the same as for any other class.

Freshmen who enroll as AVT majors must register for AVT 300 Artsbus Attendance 5 times during their course of study. Transfer students and students who change their majors to AVT must register for AVT 300 Artsbus Attendance for the equivalent of each semester they are enrolled at Mason, up to a maximum of five semesters.

Concentrations

Select one concentration and complete the requirements therein.

Concentrations

- Drawing (DRW)
- Graphic Design (GD)
- InterArts (IA)
- New Media Art (NMA)
- Painting (PNT)
- Photography (PHO)
- Printmaking & Book Arts (PMBA)
- Sculpture (SCL)

Drawing (DRW)

All AVT majors concentrating in drawing must complete AVT 232 Painting I (Mason Core) under Breadth and Experience.

Code	Title	Credits
AVT 422	Drawing III	3
AVT 423	Drawing IV	3
Select 12 credits from 300-400 level AVT		12
Select 6 credits from the following:		6
AVT 324	Figure Drawing	
AVT 326	Nontraditional Approaches to Drawing	
AVT 328	Mixed Media	
AVT 333	Painting II	
AVT 336	Experimental Painting	
AVT 337	Figurative Painting	
AVT 432	Painting III	
AVT 433	Advanced Painting I	
AVT 496	Special Topics [1]	
Other courses as approved by program director.		
Total Credits		24

1 Topic must be in Drawing.

Graphic Design (GD)

All AVT majors concentrating in graphic design must complete AVT 217 Introduction to Web Design and AVT 252 Darkroom Photography I (Mason Core) or AVT 253 Digital Photography I (Mason Core) under Breadth and Experience.

Code	Title	Credits
AVT 311	Graphic Design Methods and Principles	3
AVT 313	Editorial Design	3
AVT 414	Corporate Design and Branding	3
Select 15 credits from the following: [1]		15
AVT 319	Mobile App Design	
AVT 327	Illustration	
AVT 344	Book Arts: Books Enclosures	
AVT 346	Digital Printmaking	
AVT 409	User Experience Design	
AVT 411	Motion Design	
AVT 412	Advanced Typography	
AVT 415	Web Design and Usability	
AVT 416	Advertising Design	

AVT 417	Package Design	
AVT 419	Topics in Graphic Design	
AVT 420	Advanced Web Design	
Other courses as approved by program director.		
Total Credits		24

[1] AVT 491 Independent Study in Art and Visual Technology or AVT 496 Special Topics may be taken with permission of the Concentration Director.

InterArts (IA)

The concentration in InterArts is an individualized program of study focused on arts research with multidisciplinary goals. Students concentrating in InterArts are engaged with both creative and conceptual inquiry in the development of artistic practice bolstered by knowledge of other disciplines. Often, this work exists at the interstices of artforms, and focuses on research on areas of interest to the student. InterArts students draw on the large resources of the School of Art and the university in creating an individualized program of studio courses and complementary courses for a total of 24 credits (12 credits of disciplinary focus and 12 credits of complementary study). In consultation with a faculty advisor, the student drafts a curriculum contract outlining the course of study, which is approved by the InterArts faculty. Admission to the concentration is based on acceptance into the BFA program via a portfolio review process and project approval from the InterArts faculty.

Code	Title	Credits
Twelve credits of disciplinary focus		12
Twelve credits of complementary study		12
Total Credits		24

New Media Art (NMA)

All majors concentrating in new media art must complete AVT 280 Introduction to New Media Arts under Breadth and Experience and AVT 180 New Media in the Creative Arts for their IT Mason Core requirement.

Code	Title	Credits
Select 12 credits from 300-400 level AVT		12
Select 12 credits from the following:		12
AVT 374	Sound Art I	
AVT 376	Live Movies	
AVT 382	2D Experimental Animation	
AVT 383	3D Experimental Animation	
AVT 385	EcoArt (Mason Core)	
AVT 390	Video Art	
AVT 482	Advanced Image Making	
AVT 483	RS: Art and Interactivity	
AVT 487	Advanced Topics: New Media Art	
Other courses as approved by program director.		
Total Credits		24

Painting (PNT)

All majors concentrating in painting must complete AVT 262 Sculpture I (Mason Core) under Breadth and Experience.

Code	Title	Credits
AVT 333	Painting II	3
AVT 432	Painting III	3
AVT 433	Advanced Painting I	3
300-400 level AVT		3
Select 12 credits from the following:		12
AVT 336	Experimental Painting	
AVT 337	Figurative Painting	
AVT 434	Advanced Painting II	
AVT 435	Advanced Painting III	
AVT 496	Special Topics [1]	
Other courses as approved by program director.		
Total Credits		24

[1] Topic must be in Painting.

Photography (PHO)

All AVT majors concentrating in photography must complete AVT 252 Darkroom Photography I (Mason Core) under Breadth and Experience.

Code	Title	Credits
AVT 353	Darkroom Photography II	3
AVT 356	Photo Studio Techniques	3
AVT 359	Photography Seminar	3
Select 6 credits from 300-400 level AVT		6
Select 9 credits from the following:		9
AVT 350	Alternative Photo Processes	
AVT 354	Digital Photography II	
AVT 357	Photobook: Concepts Form	
AVT 455	Digital Printing Techniques	
AVT 457	Documentary Photography	
AVT 458	Advanced Studio Lighting	
Other courses as approved by program director.		
Total Credits		24

Printmaking & Book Arts (PMBA)

Code	Title	Credits
AVT 343	Printmaking II	3
Select 12 credits from 300-400 level AVT		12
Select 9 credits from the following:		9
AVT 340	Zines and Self-Publishing	
AVT 341	Comics	
AVT 344	Book Arts: Books Enclosures	
AVT 345	Paper/Print/Book as Language	
AVT 346	Digital Printmaking	
AVT 442	Printmaking III	
AVT 443	Printmaking IV	
Other courses as approved by program director.		
Total Credits		24

Sculpture (SCL)

All AVT majors concentrating in sculpture must complete AVT 262 Sculpture I (Mason Core) under Breadth and Experience

Code	Title	Credits
AVT 363	Sculpture II	3
Three credits of		3
AVT 393	Field Experience in the Arts	
or AVT 489	Internship in Art and Visual Technology	
AVT 462	Sculpture III	3
AVT 463	Sculpture IV	3
Additional coursework as approved by program director		12
Total Credits		24

General Electives

Code	Title	Credits
Select 1 credit from General Electives		1
Total Credits		1

4-Year Plan

Bachelor of Fine Arts in Art & Visual Technology Sample Plan of Study

The sample plan below is a recommended sequencing of courses based on pre-requisites and scheduling. This may not fit every student's needs and is a guideline, not a requirement. Students should confirm major requirements with their academic advisor and with PatriotWeb Degree Evaluation to ensure they enroll in the proper courses and are on track to graduate.

Graphic Design Concentration

First Year

Fall Semester	Credits	Spring Semester	Credits
AVT 300	0	AVT 300	0
AVT 101	1	AVT 105	3
AVT 222	3	AVT 323	3
AVT 104	3	AVT 215	3
AVT 301	1	Quantitative Reasoning: Mason Core	3
AVT 110	3	Literature: Mason Core	3
ENGH 101	3		
Elective (UNIV XXX)	1		
	15		15

Second Year

Fall Semester	Credits	Spring Semester	Credits
AVT 300	0	AVT 300	0
AVT 253	3	AVT 217	3
AVT 307	3	AVT 313	3
AVT 311	3	ENGH 302H: Mason Core	3
AVT 301	1	COMM 100/101: Mason Core	3
Natural Science Lab: Mason Core	4	Natural Science Non-Lab: Mason Core	3
Elective (UNIV XXX)	1		
	15		15

Third Year

Fall Semester	Credits	Spring Semester	Credits
AVT 300	0	AVT 414	3
AVT Graphic Design Concentration	3	ARTH 374	3
AVT 396	3	AVT 301	1
AVT 318 or 410	3	General Elective	2
AVT Graphic Design Concentration	3	AVT Graphic Design Concentration	3
ARTH 201	3	Arts: Mason Core	3
	15		15

Fourth Year

Fall Semester	Credits	Spring Semester	Credits
AVT Graphic Design Concentration	3	AVT 413	3
AVT Graphic Design Concentration	3	AVT 498	3
Upper-level elective or ARTH 3xx, 4xx	3	General Elective	3
Social & Behavioral Science: Mason Core	3	AVT 472	3
Western Civilization: Mason Core	3	Global Understanding: Mason Core	3
	15		15

Total Credits 120

Detailed four year plans and degree planning checklists can be found at https://advising.gmu.edu/current-student/majors-at-mason/.

All Other Concentrations

First Year

Fall Semester	Credits	Spring Semester	Credits
AVT 300	0	AVT 300	0
AVT 101	1	AVT 105	3
AVT 222	3	AVT 323	3
AVT 104	3	AVT Breadth & Experience	3

AVT 301	1	Quantitative Reasoning: Mason Core	3
AVT 110	3	Literature: Mason Core	3
ENGL 101: Mason Core	3		
Elective (UNIV XXX)	1		
	15		15

Second Year

Fall Semester	Credits	Spring Semester	Credits
AVT 300	0	AVT 300	0
AVT Breadth & Experience	3	AVT Breadth & Experience	3
AVT 307	3	AVT Concentration Course	3
AVT Concentration	3	ENGH 302H: Mason Core	3
AVT 301	1	COMM 100/101: Mason Core	3
Natural Science Lab: Mason Core	4	Natural Science Non-Lab: Mason Core	3
Elective (UNIV XXX)	1		
	15		15

Third Year

Fall Semester	Credits	Spring Semester	Credits
AVT 300	0	AVT Concentration	3
AVT Concentration	3	ARTH 374	3
ARTH 200, 203, 204, AVT 318, or AVT 410	3	AVT 301	1
AVT 395	3	General Elective	2
AVT Concentration	3	AVT Concentration	3
ARTH 201	3	Arts: Mason Core	3
	15		15

Fourth Year

Fall Semester	Credits	Spring Semester	Credits
AVT Concentration	3	AVT 453	3
AVT Concentration	3	AVT 497	3
Upper-level elective or ARTH 3xx, 4xx	3	General Elective	3
Social & Behavioral Science: Mason Core	3	AVT 472	3
Western Civilization: Mason Core	3	Global Understanding: Mason Core	3
	15		15

Total Credits 120

Detailed four year plans and degree planning checklists can be found at https://advising.gmu.edu/current-student/majors-at-mason/.

Accelerated Master's

Art and Visual Technology, BFA/Art Education, Accelerated MAT

Overview

Undergraduates in art may apply to the accelerated master's degree in Art Education. If accepted, students will be able to earn an Art and Visual Technology, BFA and an Art Education, MAT after satisfactory completion of 144 credits.

Students choosing the accelerated option must fulfill all university requirements for the master's degree. The regular designed timeframe would be a start in the Fall and the completion in the Fall semester five and a half years later, but longer time frames may also be available.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies.

Admissions Requirements

Applicants to accelerated master's programs must have completed at least 75 credits that apply to their undergraduate degree (with at least 24 credits at Mason) and no more than 100 credits. Applicants should submit an Accelerated Master's Program Application, available from the College of Visual and Performing Arts (CVPA) Academic Affairs Office. It includes the proposed conferral date for the undergraduate degree and the two graduate courses that are to be applied to the undergraduate degree.

In addition to meeting the general university requirements for admission for graduate study, applicants must submit:

- Statement of intent and professional goals for entering the field
- Three letters of reference from faculty members or individuals who have firsthand knowledge of the applicant's academic or professional capabilities
- Official score on Praxis Core or SAT equivalent
- MAT (for BFA students) portfolio must include 15 to 20 images that reflect artistic breadth and depth, including samples of work with ample attention to drawing and painting from observation. These works must be submitted through SlideRoom. All pieces must include the title of the piece, date, medium, and size of each work. Incomplete portfolios will not be considered.

Teacher Endorsement

Students for the MAT (for BFA students) must complete ALL endorsements, as well as the Praxis Core Exam. Students must meet Virginia Department of Education's required semester credit hours in the following specific areas:

Code	Title	Credits
12 hours of two-dimensional media		12
12 hours of three-dimensional media		12
9 hours of cultural context and art history, judgment and criticism, aesthetics		9
3 hours of related areas of fine arts		3
Total Credits		36

Students should work closely with their advisor to ensure they complete these course requirements through the BFA in Art and Visual Technology and MAT degrees.

Accelerated Option Requirements

As an undergraduate, the accelerated master's student is required to complete the two graduate courses indicated on their Accelerated Master's Program application with a minimum grade of 3.00 in each course. Students must maintain a minimum GPA of 3.00 in all coursework and in coursework applied to their major. On completion and conferral of the undergraduate degree in the semester indicated on the application, candidates submit the Bachelor's/Accelerated Master's Transition Form (which shall incorporate all of the Graduate Admission requirements of the university) and are admitted to graduate status.

As graduate students, accelerated master's students have an advanced standing and must meet all master's degree requirements except for the two courses (6 credits) completed as undergraduates. Students will begin their master's program in the semester immediately following conferral of the undergraduate degree, and they may also begin in the summer term.

Reserve Graduate Credit

Students may take up to 6 additional graduate credits as reserve graduate credit. These credits do not apply to the undergraduate degree. The ability to take courses for reserve graduate credit is available to all high-achieving undergraduates with permission of the School of Art. Permission to take a graduate course for reserve graduate credit is normally granted only to Mason seniors within 15 credit hours of graduation and must be approved by the Dean's Office.

To apply these credits to the master's degree, students must request that the credits be moved from the undergraduate degree to the graduate degree using the Bachelor's/Accelerated Master's Transition Form.

Art and Visual Technology, BFA/Arts Management, Accelerated MA

Overview

Undergraduates in art may apply to the accelerated master's degree in arts management. If accepted, students will be able to earn an Art and Visual Technology, BFA and an Arts Management, MA after satisfactory completion of 150 credits.

Students choosing the accelerated option must fulfill all university requirements for the master's degree. The regular designed time frame would be a start in the Fall and completion of all coursework in the Summer five years later with the exception of Capstone, which is only offered in Fall and Spring. Students may need a longer time frame to complete all requirements.

This accelerated option is offered through joint cooperation between the School of Art and the Arts Management Program.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies.

Admissions Requirements

Applicants to accelerated master's programs must have completed at least 75 credits that apply to their undergraduate degree (with at least 24 credits at Mason) and no more than 100 credits. Applicants should submit an Accelerated Master's Program Application, available from the College of Visual and Performing Arts (CVPA) Academic Affairs Office. It includes the proposed conferral date for the undergraduate degree and the two graduate courses that are to be applied to the undergraduate degree.

Interested students should contact the Arts Management Program Office for more details about the application process.

Accelerated Option Requirements

As an undergraduate, the accelerated master's student is required to complete the two graduate courses indicated on their Accelerated Master's Program application with a minimum grade of 3.00 in each course. Students must maintain a minimum GPA of 3.00 in all coursework and in coursework applied to their major. On completion and conferral of the undergraduate degree in the semester indicated in the application, candidates submit the Bachelor's/Accelerated Master's Transition Form (which shall incorporate all of the Graduate Admission requirements of the university) and are admitted to graduate status.

As graduate students, accelerated master's students have an advanced standing and must meet all master's degree requirements except for the two courses (6 credits) completed as undergraduates. Students will begin their master's program in the semester immediately following conferral of the undergraduate degree, and they may also begin in the summer term.

Reserve Graduate Credit

Students may take up to 6 additional graduate credits as reserve graduate credit. These credits do not apply to the undergraduate degree. The ability to take courses for reserve graduate credit is available to all high achieving undergraduates with permission of the School of Art. Permission to take a graduate course for reserve graduate credit is normally granted only to Mason seniors within 15 credit hours of graduation and must be approved by the Dean's Office.

To apply these credits to the master's degree, students must request that the credits be moved from the undergraduate degree to the graduate degree using the Bachelor's/Accelerated Master's Transition Form.

Art Education Licensure Graduate Certificate

Banner Code: AR-CERG-ARTL

2005 Art and Design Building
Fairfax Campus

Phone: 703-993-8898
Website: soa.gmu.edu

Following this curriculum does not guarantee entry into the Master of Art Teaching (MAT) Program. Prospective MAT students must meet all MAT admissions requirements.

This certificate may be earned either on a part time or full time basis.

Admissions & Policies

Admissions

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified on the Graduate Admissions policy page (https://catalog.gmu.edu/admissions/graduate-policies/). Specific graduate admissions requirements can be found on the College of Visual and Performing Arts Graduate Admissions requirements page (https://cvpa.gmu.edu/admissions/graduate-admissions/graduate-admission-requirements/).

Policies

Students must earn a B- or higher in all coursework.

For policies governing all graduate certificates, see AP.6 Graduate Policies.

Requirements

Certificate Requirements

Total credits: 21

This certificate may be pursued on a full-or part-time basis.

Coursework

Code	Title	Credits
AVT 595	Introduction to Art Teaching and Learning	3
AVT 691	Elementary Art Education	3
AVT 692	Secondary Art Education	3
EDRD 501	Literacy and Curriculum Integration	3
EDUC 511	Child and Adolescent Development in Global Contexts	3
AVT 695	Internship in Art Education (Student Teaching) [1]	5
AVT 696	Internship in Art Education Seminar [1]	1
Total Credits		21

[1] Prior to internship, student must pass: Praxis II, VCLA, technology and child abuse standards to receive placement for student teaching.

All Licensure Certificate students will receive ongoing evaluations by the art education faculty to determine their readiness for student teaching.

In addition, applicants who did not take equivalent undergraduate courses will be required to take AVT 180 New Media in the Creative Arts, art education endorsements, plus any additional studio or art history course work to meet Virginia licensure requirements.

Art Education, MAT

Banner Code: AR-MAT-ARTE

2005 Art and Design Building
Fairfax Campus

Phone: 703-993-8898
Website: soa.gmu.edu

The Master of Arts in Teaching in Art Education (MAT I) is a pre-service degree program that prepares students with a BFA degree or equivalent for PreK-12 art licensure by the Commonwealth of Virginia. Using a studio-based approach to art education and working closely with area public school systems, the MAT degree consists of 30 credits of graduate art education, school practicum experience, studio work, and pre-service teaching internship and seminar.

Available Concentrations

This degree program has two concentrations: one concentration for those seeking certification (MAT I) as well as one for licensed art teachers who are continuing education (MAT II). The concentration for licensed art teachers (MAT II) is designed for PreK-12 licensed art teachers who currently hold an undergraduate degree in art education and a current teaching license in Art Education. Applicants should be interested in obtaining a graduate art education degree for further professional development. Students take graduate art education courses, approved graduate level studio art courses, education courses, and complete a capstone project.

Admissions & Policies

Admissions

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified on the Graduate Admissions policy page (https://catalog.gmu.edu/admissions/graduate-policies/). Specific graduate admissions requirements can be found on the College of Visual and Performing Arts Graduate Admissions requirements page (https://cvpa.gmu.edu/admissions/graduate-admissions/graduate-admission-requirements/).

Policies

See College of Visual and Performing Arts for policies specific to the college.

Requirements

Degree Requirements

Total Credits: 30

Students must earn a B- or higher in licensure coursework.

Required Core Courses

Code	Title	Credits
AVT 605	Issues and Research in Art Education	3
AVT 667	Two-Dimensional Art Making and Differentiated Instruction	3

AVT 668	Three-Dimensional Art Making Across Cultures	3
CVPA 600	CVPA Graduate ProSeminar (must be taken within a student's first 2 semesters)	0
Total Credits		9

MAT (I) Required Courses

Coursework meets licensure and Master's degree requirements. The listing below follows the recommended sequencing for licensure.

Code	Title	Credits
AVT 595	Introduction to Art Teaching and Learning	3
AVT 691	Elementary Art Education	3
AVT 692	Secondary Art Education	3
AVT 695	Internship in Art Education (Student Teaching) [1]	5
AVT 696	Internship in Art Education Seminar [1]	1
EDRD 501	Literacy and Curriculum Integration	3
EDUC 511	Child and Adolescent Development in Global Contexts	3
Total Credits		21

[1] Prior to internships, students must pass: Praxis II, VCLA, technology & child abuse standards.

MAT (I) Professional Teaching Portfolio

The comprehensive experience for the MAT I includes the following:

1. a group exhibition, "The Art of Teaching Art Showcase," in which MAT candidates display and formally present works of PreK–12 student art completed during the internship, along with exemplars of the MAT candidate's own artwork, and
2. a culminating review of the intern's competencies as reflected in a professional teaching portfolio, accomplished during the internship seminar course that accompanies student teaching.

A committee of MAT faculty will determine whether the student has mastered the field of study based on the final portfolio and exhibition. Students who are unable to successfully complete the full student teaching internship in art education and seminar for student teachers will be terminated from the MAT in Art Education program.

MAT (I) Teacher Endorsement

MAT I students originally admitted under provisional status must complete all endorsements and any assigned art education foundational courses by the date indicated on the student's provisional admission agreement and prior to admission to degree status. These courses may be taken concurrently with other MAT courses, but may not exceed a total of 9 credits. All MAT I students should meet all testing and coursework requirements prior to starting their student teaching internship.

Students must have a studio major in the Visual Arts and meet the Virginia Department of Education's required semester credit hours in the following specific areas: 12 hours of two-dimensional media, 12 hours of three-dimensional media, 9 hours of cultural context and art history, judgment and criticism, aesthetics, and 3 hours of related areas of the fine arts.

Note:

MAT I students will receive ongoing evaluation reviews by the MAT faculty to determine whether they have achieved satisfactory progress toward their degree.

MAT (II) Concentration for Licensed Art Teachers (LAT) Required Courses

Code	Title	Credits
AVT 596	Independent Study [1]	4
or AVT 599	Special Topics in Art and Visual Technology	
AVT 599	Special Topics in Art and Visual Technology (topic: Prints/Paper/Books as Language)	4
AVT 606	Creativity and Cognition in the Arts and Media	3
AVT 615	Technology for Art Teachers	3
AVT 698	Independent Study/Directed Readings	1
EDUC 537	Introduction to Culturally Linguistically Diverse Learners	3
Select 3 credits of graduate education courses from the following:		3
EDUC 511	Child and Adolescent Development in Global Contexts	
EDUC 522	Foundations of Secondary Education	
EDUC 542	Foundations of Education	
EDUC 543	Children, Family, Culture, and Schools, 4-12 Year Olds	
EDUC 597	Special Topics in Education	
EDUC 606	Education and Culture	
EDUC 613	How Students Learn	
EDUC 614	Designing and Assessing Teaching and Learning	
EDUC 615	Educational Change	
Or other course as approved by director		
Total Credits		21

[1] Other courses as approved by director may fulfill this requirement.

Capstone:

LAT concentration students must complete a Capstone Project. Under the guidance of a faculty advisor, students will select a topic in a personal area of interest in art education pedagogy, carry out in-depth research, and prepare a capstone final project in the form of a written report and visual presentation.

Student Teaching Placement Requirement

All MAT students must pass Praxis II and Virginia Communication and Language Assessment (VCLA) to receive placement for student teaching in the final semester.

Accelerated Master's

Art and Visual Technology, BFA/Art Education, Accelerated MAT

Overview

Undergraduates in art may apply to the accelerated master's degree in Art Education. If accepted, students will be able to earn an Art and Visual Technology, BFA and an Art Education, MAT after satisfactory completion of 144 credits.

Students choosing the accelerated option must fulfill all university requirements for the master's degree. The regular designed timeframe would be a start in the Fall and the completion in the Fall semester five and a half years later, but longer time frames may also be available.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies.

Admissions Requirements

Applicants to accelerated master's programs must have completed at least 75 credits that apply to their undergraduate degree (with at least 24 credits at Mason) and no more than 100 credits. Applicants should submit an Accelerated Master's Program Application, available from the College of Visual and Performing Arts (CVPA) Academic Affairs Office. It includes the proposed conferral date for the undergraduate degree and the two graduate courses that are to be applied to the undergraduate degree.

In addition to meeting the general university requirements for admission for graduate study, applicants must submit:

- Statement of intent and professional goals for entering the field
- Three letters of reference from faculty members or individuals who have firsthand knowledge of the applicant's academic or professional capabilities
- Official score on Praxis Core or SAT equivalent
- MAT (for BFA students) portfolio must include 15 to 20 images that reflect artistic breadth and depth, including samples of work with ample attention to drawing and painting from observation. These works must be submitted through SlideRoom. All pieces must include the title of the piece, date, medium, and size of each work. Incomplete portfolios will not be considered.

Teacher Endorsement

Students for the MAT (for BFA students) must complete ALL endorsements, as well as the Praxis Core Exam. Students must meet Virginia Department of Education's required semester credit hours in the following specific areas:

Code	Title	Credits
12 hours of two-dimensional media		12
12 hours of three-dimensional media		12
9 hours of cultural context and art history, judgment and criticism, aesthetics		9
3 hours of related areas of fine arts		3
Total Credits		36

Students should work closely with their advisor to ensure they complete these course requirements through the BFA in Art and Visual Technology and MAT degrees.

Accelerated Option Requirements

As an undergraduate, the accelerated master's student is required to complete the two graduate courses indicated on their Accelerated Master's Program application with a minimum grade of 3.00 in each course. Students must maintain a minimum GPA of 3.00 in all coursework and in coursework applied to their major. On completion and conferral of the undergraduate degree in the semester indicated on the application, candidates submit the Bachelor's/Accelerated Master's Transition Form (which shall incorporate all of the Graduate Admission requirements of the university) and are admitted to graduate status.

As graduate students, accelerated master's students have an advanced standing and must meet all master's degree requirements except for the two courses (6 credits) completed as undergraduates. Students will begin their master's program in the semester immediately following conferral of the undergraduate degree, and they may also begin in the summer term.

Reserve Graduate Credit

Students may take up to 6 additional graduate credits as reserve graduate credit. These credits do not apply to the undergraduate degree. The ability to take courses for reserve graduate credit is available to all high-achieving undergraduates with permission of the School of Art. Permission to take a graduate course for reserve graduate credit is normally granted only to Mason seniors within 15 credit hours of graduation and must be approved by the Dean's Office.

To apply these credits to the master's degree, students must request that the credits be moved from the undergraduate degree to the graduate degree using the Bachelor's/Accelerated Master's Transition Form.

Arts and Social Change Minor

Banner Code: ASC

2050 Art and Design Building
Fairfax Campus

Phone: 703-993-8898
Email: avt@gmu.edu
Website: soa.gmu.edu

The minor leverages artistic and creative practice in an array of academic and social contexts. The goal is to infuse these practices into territories outside the traditional art world through research, participatory experimentation and documentary aesthetic aspects of social practice. With a focus on creative research and project production students experience direct engagement with communities while developing skills toward fostering positive change in communities via the arts.

Admissions & Policies

Policies

Students must complete an approved AVT course for their Mason Core Arts requirement.

Special topics courses will be notated in Patriot Web as a designated Arts and Social Change course.

Twelve credits of coursework must be unique to the minor. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 21

Coursework

Code	Title	Credits
AVT 390	Video Art	3
AVT 393	Field Experience in the Arts	3
AVT 496	Special Topics [1]	3
Total Credits		9

[1] Must be a designated Arts and Social Change section.

Breadth and Experience

Code	Title	Credits
Select two courses from the following:		6
AVT 309	Art as Social Action	
AVT 345	Paper/Print/Book as Language	
AVT 363	Sculpture II	
AVT 374	Sound Art I	
AVT 385	EcoArt (Mason Core)	
AVT 457	Documentary Photography	
Total Credits		6

Affiliated Courses

Code	Title	Credits
Select two courses from the following:		6
AMGT 410	The Arts and Community Engagement	
AMGT 471	Introduction to Grant Writing	
ANTH 370	Environment and Culture	
CONF 300	Conflict Resolution Techniques and Practice	
CONF 302	Culture, Identity, and Conflict	
CONF 325	Dialogue and Difference	
FAVS 365	Documentary Filmmaking	
FAVS 399	Special Topics in Film and Video Studies [1]	
FRLN 385	Multilingualism, Identity, and Power (Mason Core)	
INTS 337	Social Justice Consciousness and Action	
SOCI 320	Globalization and Social Change (Mason Core)	
SOCI 355	Social Inequality (Mason Core)	
THR 490	Special Topics in Theater [1]	
Or other courses as approved by program director		
Total Credits		6

[1] Must be a designated Arts and Social Change section.

Digital Media and Web Design Minor (CVPA)

Banner Code: DMWD

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must earn a minimum grade of 2.00 in all courses applied to the minor. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 18

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Coursework

Code	Title	Credits
Core		
Select one course from the following:		3
AVT 217	Introduction to Web Design	
ENGH 375	Web Authoring and Design	
IT 213	Multimedia and Web Design	
Design		
Select one course from the following:		3
AVT 180	New Media in the Creative Arts	
AVT 215	Typography (Mason Core)	
AVT 311	Graphic Design Methods and Principles	
IT 415	Information Visualization	
User Experience Design or Accessibility		
Select one course from the following:		3
AVT 415	Web Design and Usability	
EDIT 426	Web Accessibility and Design	
SWE 205	Software Usability Analysis and Design	
Content Development		
Select one course from the following:		3
COMM 208	Introduction to Media Production	
COMM 435	Digital Communication	
ENGH 376	Rhetoric and New Media	
ENGH 377	Digital Creative Writing	
Elective		
Select one course not already taken as a required course above from the following:		3
AVT 180	New Media in the Creative Arts	
AVT 215	Typography (Mason Core)	
AVT 311	Graphic Design Methods and Principles	
AVT 319	Mobile App Design	
AVT 411	Motion Design	
AVT 415	Web Design and Usability	

AVT 420	Advanced Web Design	
COMM 208	Introduction to Media Production	
COMM 360	Digital Postproduction	
COMM 435	Digital Communication	
EDIT 426	Web Accessibility and Design	
ENGH 376	Rhetoric and New Media	
ENGH 377	Digital Creative Writing	
IT 315	Mobile Development	
IT 331	Web I: Web Development	
IT 332	Web Server Administration	
IT 335	Web Development using Content Management Systems	
IT 415	Information Visualization	
SWE 205	Software Usability Analysis and Design	
Capstone		
IT/AVT/COMM 479	Digital Media and Web Design Capstone	3
Total Credits		18

Graphic Design Undergraduate Certificate

Banner Code: AR-CERB-GD

2050 Art and Design Building
Fairfax Campus

Phone: 703-993-8898
Email: avt@gmu.edu
Website: soa.gmu.edu

The Graphic Design Undergraduate Certificate is for prospective students with a 4-year baccalaureate undergraduate degree from an accredited institution who seek to gain the skills and competency to advance into a career in graphic design. It encompasses a specific body of knowledge and practice that prepares candidates for rewarding positions in the design field.

Due to prerequisites, the certificate requirements need to be taken on a part-time basis.

Admissions & Policies

Admissions

There is not a portfolio review required for admission, but prospective students--with graphic design experience--should consider scheduling an interview with the program director prior to applying. Tuition is billed at the undergraduate rate, and most students complete certificate requirements in four semesters.

Students entering the certificate must be able to demonstrate basic skills in visual language and should have working knowledge of professional graphic design software, or must take AVT 110 Digital Design Studio in addition to other required courses.

Policies

For policies governing all undergraduate programs, see AP.5 Undergraduate Policies.

Requirements

Certificate Requirements

Total credits: 24

This certificate may be pursued on a full-or part-time basis.

Foundation Courses

Code	Title	Credits
AVT 215	Typography (Mason Core)	3
AVT 217	Introduction to Web Design	3
AVT 311	Graphic Design Methods and Principles	3
AVT 318	History of Graphic Design	3
Total Credits		12

Advanced Design Specialties Tracks

Code	Title	Credits
Select 3 courses from one of the following tracks:		9
Branding & Advertising Design		
AVT 414	Corporate Design and Branding	
AVT 416	Advertising Design	
AVT 417	Package Design	
AVT 419	Topics in Graphic Design	
Digital Design		
AVT 319	Mobile App Design	
AVT 409	User Experience Design	
AVT 411	Motion Design	
AVT 415	Web Design and Usability	
AVT 420	Advanced Web Design	
Publication Design		
AVT 313	Editorial Design	
AVT 327	Illustration	
AVT 344	Book Arts: Books Enclosures	
AVT 412	Advanced Typography	
Total Credits		9

Capstone

Code	Title	Credits
AVT 413	Professional Design Practices	3
Total Credits		3

Graphic Design Minor

Banner Code: GD

2050 Art and Design Building
Fairfax Campus

Phone: 703-993-8898
Email: avt@gmu.edu
Website: soa.gmu.edu

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor. For policies governing all minors, see AP.5.3.4 Minors.

This minor is available to AVT majors. AVT majors must complete 12 credits unique to the minor.

It is recommended that non-AVT majors take AVT 104 Two-Dimensional Design and Color (Mason Core) for their Art Mason Core requirement as well as AVT 180 New Media in the Creative Arts for the Information Technology (IT, except ethics) requirement. These courses are prerequisites for Graphic Design coursework.

Requirements

Minor Requirements

Total credits: 15

Note: Students pursuing the Graphic Design minor are only responsible for the prerequisites required in the minor curriculum. Please contact the department for questions or issues when registering for classes.

Coursework

Code	Title	Credits
AVT 215	Typography (Mason Core)	3
AVT 311	Graphic Design Methods and Principles	3
AVT 313	Editorial Design	3
or AVT 414	Corporate Design and Branding	
AVT 318	History of Graphic Design	3
AVT 412	Advanced Typography	3
or AVT 416	Advertising Design	
Total Credits		15

Illustration Minor

Banner Code: ILLU

Admissions & Policies

Admissions

Prospective Illustration Minor applicants are required to earn a 3.0 GPA in both AVT 222 Drawing I (Mason Core) and AVT 323 Drawing II prior to applying. A portfolio review is required for admission.

Policies

Eight credits of coursework must be unique to the minor, with a minimum 2.00 GPA earned in all courses applied to the minor. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 18

Coursework

Code	Title	Credits
AVT 324	Figure Drawing	3
AVT 327	Illustration	3
AVT 346	Digital Printmaking	3
AVT 382	2D Experimental Animation	3
AVT 370	Entrepreneurship in the Arts	3
AVT 413	Professional Design Practices	3
Total Credits		18

Photography Minor

Banner Code: PHO

2050 Art and Design Building
Fairfax Campus

Phone: 703-993-8898
Email: avt@gmu.edu
Website: soa.gmu.edu

The minor provides opportunities for students to develop a personal vision in response to photography's role in contemporary art and culture. Various studio classes emphasize a range of techniques in the production of traditional, digital and experimental imagery. Critical thinking combined with studio/lab experience enhance this comprehensive introduction to the field and practice of photography.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor with a minimum 2.00 GPA earned in all courses applied to the minor. For policies governing all minors, see AP.5.3.4 Minors.

This minor is available to AVT majors. AVT majors must complete 12 credits unique to the minor.

Requirements

Minor Requirements

Total credits: 15

Required Courses

Code	Title	Credits
AVT 252	Darkroom Photography I (Mason Core)	3
or AVT 253	Digital Photography I (Mason Core)	
AVT 353	Darkroom Photography II	3
or AVT 354	Digital Photography II	

AVT 356	Photo Studio Techniques	3
Total Credits		9

Additional Courses

Code	Title	Credits
Select two courses from the following:		6
ARTH 350	History of Photography (Mason Core)	
AVT 353	Darkroom Photography II (if not used above)	
AVT 354	Digital Photography II (if not used above)	
AVT 359	Photography Seminar	
AVT 453	Professional Practices	
AVT 455	Digital Printing Techniques	
AVT 457	Documentary Photography	
AVT 458	Advanced Studio Lighting	
Or other courses as approved by program director		
Total Credits		6

Photojournalism Minor (CVPA)

Banner Code: PHOJ

The photojournalism minor explores photography as a journalistic storytelling medium. Offered jointly by the Department of Communication and the School of Art, the minor prepares students to bear witness through the lens of a camera; to examine the world around them, pose questions and inform audiences. Students gain proficiency with digital photo technology, develop reporting skills, apply visual storytelling principles, and examine the ethical and legal challenges of capturing stories in a mediated society.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must earn a minimum grade of 2.00 in all courses applied to the minor. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Total credits: 18

Required Courses

Code	Title	Credits
COMM 203	Introduction to Journalism	3
COMM 303	Writing across the Media	3
COMM 475	Journalism Law	3
AVT 357	Photobook: Concepts Form [1]	3
AVT 359	Photography Seminar	3
AVT 457	Documentary Photography	3
Total Credits		18

[1] Course has a required prerequisite of AVT 253 Digital Photography I (Mason Core)

Studio Art Minor

Banner Code: STAR

Website: https://art.gmu.edu/undergraduate-programs/

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor, with a minimum earned GPA of 2.00. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 18

Coursework

Code	Title	Credits
AVT 104	Two-Dimensional Design and Color (Mason Core)	3
or AVT 105	Three-Dimensional Design and Beyond	
AVT 222	Drawing I (Mason Core)	3
6 credits in AVT 2--- level courses		6
6 credits in AVT 3--- and 4--- level courses		6
Total Credits		18

Web Design Minor

Banner Code: WDSN

2050 Art and Design Building
Fairfax Campus

Phone: 703-993-8898
Website: soa.gmu.edu

Admissions & Policies

Policies

Art and Visual Technology (AVT) majors must complete 12 credits unique to the minor. It is recommended that non-AVT majors take AVT 104 Two-Dimensional Design and Color (Mason Core) for their Mason Core Arts requirement as well as AVT 110 Digital Design Studio. These courses are prerequisites for Web Design coursework. Students must complete all coursework with a minimum GPA of 2.00. For policies governing all minors, see the AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 15

Coursework

Code	Title	Credits
AVT 215	Typography (Mason Core)	3
AVT 217	Introduction to Web Design	3
AVT 311	Graphic Design Methods and Principles	3
AVT 411	Motion Design	3
or AVT 420	Advanced Web Design	
AVT 415	Web Design and Usability	3
Total Credits		15

Note:
Students pursuing the Web Design minor are responsible for fulfilling the prerequisites required in the minor curriculum. Please contact the department for questions or issues when registering for classes.

School of Dance

Karen Reedy, Director

A300 deLaski Performing Arts Building
Fairfax Campus

Phone: 703-993-1114
Website: dance.gmu.edu

Faculty

School Faculty

Professors

Miller, Shields

Associate Professors

d'Amboise (Heritage Professor), Joyce, Reedy (Director)

Assistant Professor

D'Arcy, Jeffery

Adjunct Faculty

Adebusola, Brown, Clark, Kennedy, Matthews, Pilkington, Rocher, Rowley, Salters, Spatz, Windom

Administrative Faculty

Hansen-Honeycutt, Summerall

Requirements & Policies

Requirements

BFA Admissions Requirements

The School of Dance offers a BFA. Entrance to the program is by audition. Information about the audition process, including dates and audition application, can be found on the School of Dance website. Admission to the university is determined by the Admissions Office.

Master of Fine Arts, Visual and Performing Arts, Concentration in Dance

A Visual and Performing Arts, Master of Fine Arts with a concentration in Dance is offered by the College of Visual and Performing Arts. For specific information, please refer to the Visual and Performing Arts, MFA.

Writing-Intensive Requirement

The university requires all students to complete at least one course designated "writing intensive" in their major at the 300-level or above. Students in the Dance, BFA fulfill this requirement by successfully completing DANC 390 Dance History I (Mason Core)or DANC 391 Dance History II (Mason Core).

Policies

See CVPA Requirements and Policies.

Programs

- Dance Appreciation Minor
- Dance, BFA
- World Dance Minor

Dance Appreciation Minor

Banner Code: DNCA

A300 deLaski Performing Arts Building
Fairfax Campus

Phone: 703-993-1114
Email: dance@gmu.edu
Website: https://catalog.gmu.edu/colleges-schools/visual-performing-arts/dance/#programstext

The minor offers students the opportunity to study a variety of movement styles and understand dance in its historical and cultural context.

Admissions & Policies

Policies

A maximum of four transfer credits may be applied to the minor. Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 21

Core

Code	Title	Credits
DANC 101	Dance Appreciation (Mason Core)	3
DANC 118	World Dance (Mason Core)	3
Total Credits		6

Dance Foundations

Code	Title	Credits
Select three courses from the following:		9
DANC 125	Modern/Contemporary Dance I (Mason Core)	
DANC 145	Ballet I (Mason Core)	
DANC 225	Modern/Contemporary Dance II (Mason Core)	
DANC 245	Ballet II (Mason Core)	
Total Credits		9

Note:

Students with prior experience in ballet and/or modern dance may, with permission of instructor, take all 9 credits of technique courses at the 200 level.

All students pursuing the minor must demonstrate a basic level of training in both modern dance and ballet, and therefore, complete 9 credits of modern and ballet technique.

Breadth

Code	Title	Credits
Select two or more courses from the following:		6
DANC 118	World Dance (Mason Core) [1]	
DANC 119	Dance in Popular Culture: Afro-Latino Dance (Mason Core)	
DANC 120	Special Topics in Dance	
DANC 125	Modern/Contemporary Dance I (Mason Core)	
DANC 131	Beginning Jazz Technique (Mason Core)	
DANC 145	Ballet I (Mason Core)	
DANC 161	Beginning Tap Dance (Mason Core)	
DANC 225	Modern/Contemporary Dance II (Mason Core)	
DANC 231	Intermediate Jazz Technique (Mason Core)	
DANC 245	Ballet II (Mason Core)	
DANC 301	What is Dance? (Mason Core)	
DANC 318	Global Perspectives: World Dance Forms (Mason Core)	
DANC 331	Advanced Jazz Dance (Mason Core)	
DANC 418	Global Dance Intensive (Mason Core)	
DANC 420	Special Topics in Dance	
Or other courses as approved by the School of Dance Director or Advisor		
Total Credits		6

[1] DANC 118 World Dance (Mason Core) fulfills the global understanding requirement. Students who choose to take this course twice for the minor must select two different world cultures.

Notes

Mason does not guarantee the availability of these courses every semester; some are offered in alternate years.

Dance, BFA

Banner Code: AR-BFA-DANC

A300 deLaski Performing Arts Building
Fairfax Campus

Phone: 703-993-1114
Email: dance@gmu.edu
Website: https://workingcatalog.gmu.edu/colleges-schools/visual-performing-arts/dance/#programstext

The BFA in Dance is a performance-oriented contemporary dance program designed to prepare students professionally as performers, choreographers, educators, and active leaders of the dance community. Students in this program demonstrate technical mastery and devote their college study to an intensive and comprehensive dance curriculum.

Daily technical training in modern dance and ballet, and numerous performance opportunities develops a versatile dancer. Student progress in the BFA program is assessed consistently. Because of the professional nature of the BFA degree, the program requires completion of 124 credits of coursework.

Admissions & Policies

Admissions

Entrance to the program is by audition. Information about the audition process, including dates and audition application, can be found on the school web page (http://dance.gmu.edu), or by calling the dance office at 703-993-1114. Admission to the university is determined by the Admissions Office.

Policies

For policies governing all undergraduate degrees, see AP.5 Undergraduate Policies.

Requirements

Degree Requirements

Total credits: 124

Mason Core

Code	Title	Credits
Written Communication		
ENGH 101	Composition (Mason Core) [1]	3
ENGH 302	Advanced Composition (Mason Core) [1]	3
Foundation Requirements		
Quantitative Reasoning		3
Information Technology		3
Exploration Requirements		
Global		3
Core Requirements		
Literature		3
Natural Science [2]		7
Western Civilization/World History		3

Social and Behavioral Sciences	3
Total Credits	31

1 Nonnative speakers of English with limited proficiency in the language may substitute ENGH 100 Composition for Multilingual Writers (Mason Core) for ENGH 101 Composition (Mason Core). Students must attain a minimum grade of C in ENGH 100 Composition for Multilingual Writers (Mason Core) or ENGH 101 Composition (Mason Core), as well as in ENGH 302 Advanced Composition (Mason Core), to fulfill degree requirements.

2 Must include one laboratory science.

Dance Major Core

Additional technique and performance credits beyond those required in the major core may be applied to dance electives.

Code	Title	Credits
DANC 114	Rhythmic Analysis and Music Resources for Dance	3
DANC 150	Dance Improvisation	3
DANC 170	Orientation to Dance Production	1
DANC 190	First Year Seminar	0
DANC 210	Anatomy and Kinesiology for Dance	3
DANC 251	Dance Composition I	3
DANC 252	Dance Composition II	3
DANC 270	Dance Production Lab	1
DANC 360	Choreography	3
DANC 362	RS: Directed Choreography	1
DANC 370	Dance Performance	2
DANC 372	Advanced Dance Production	1
DANC 390	Dance History I (Mason Core)	3
DANC 391	Dance History II (Mason Core)	3
DANC 410	Introduction to Contemporary Movement Theories	3
DANC 454	Methods of Teaching Dance (Mason Core)	3
DANC 490	Senior Dance Seminar (Mason Core)	3
Select 8 credits from the following:		8
DANC 325	Modern/Contemporary Dance III (Mason Core) [2]	
DANC 324	Introduction to Dance Conditioning	
Select 12 credits from the following:		12
DANC 305	Intermediate Modern/Contemporary Dance I	
DANC 315	Intermediate Modern/Contemporary Dance II	
DANC 324	Introduction to Dance Conditioning	
DANC 425	Advanced Modern/Contemporary Dance I (Mason Core)	
DANC 435	Advanced Modern/ Contemporary II	
Select 8 credits from the following:		8
DANC 345	Ballet III (Mason Core)	
DANC 324	Introduction to Dance Conditioning	
Select 12 credits from the following:		12
DANC 304	Intermediate Ballet I	
DANC 314	Intermediate Ballet II	
DANC 324	Introduction to Dance Conditioning	
DANC 424	Advanced Ballet I	
DANC 434	Advanced Ballet II	
Dance Electives		
Select 4 credits from the following:		4
DANC 118	World Dance (Mason Core)	
DANC 119	Dance in Popular Culture: Afro-Latino Dance (Mason Core)	
DANC 120	Special Topics in Dance	
DANC 131	Beginning Jazz Technique (Mason Core)	
DANC 161	Beginning Tap Dance (Mason Core)	
DANC 225	Modern/Contemporary Dance II (Mason Core)	
DANC 231	Intermediate Jazz Technique (Mason Core)	
DANC 245	Ballet II (Mason Core)	
DANC 318	Global Perspectives: World Dance Forms (Mason Core)	
DANC 325	Modern/Contemporary Dance III (Mason Core)	
DANC 331	Advanced Jazz Dance (Mason Core)	
DANC 345	Ballet III (Mason Core)	
DANC 362	RS: Directed Choreography	
DANC 370	Dance Performance	
DANC 371	Residency Workshop	
DANC 399	Independent Study	
DANC 410	Introduction to Contemporary Movement Theories	
DANC 418	Global Dance Intensive (Mason Core)	
DANC 420	Special Topics in Dance	
DANC 425	Advanced Modern/Contemporary Dance I (Mason Core)	
DANC 434	Advanced Ballet II	
DANC 435	Advanced Modern/ Contemporary II	
DANC 445	Ballet IV	
DANC 453	Teaching Creative Movement	
DANC 462	Independent Choreography	
DANC 470	Advanced Dance Performance	
DANC 471	Advanced Residency Workshop	
Or other courses approved by the School of Dance Director or Advisor		
Total Credits		83

1 Meets Mason Core global understanding requirement

2 Three credits will meet the Mason Core arts requirement.

Electives

Code	Title	Credits
BFA majors are encouraged to complete coursework in any of the following areas to enhance their artistry:		10
AVT		
ARTH		
MUSI		

THR	
Total Credits	10

4-Year Plan

Bachelors of Fine Arts in Dance Sample Plan of Study

The sample plan below is a recommended sequencing of courses based on pre-requisites and scheduling. This may not fit every student's needs and is a guideline, not a requirement. Students should confirm major requirements with their academic advisor and with PatriotWeb Degree Evaluation to ensure they enroll in the proper courses and are on track to graduate.

First Year

Fall Semester	Credits	Spring Semester	Credits
ENGH 101	3	DANC 210	3
MATH 106	3	DANC 251	3
DANC 150	3	DANC 270	1
DANC 170	1	DANC 325 or 305	2
DANC 325 or 305	2	DANC 345 or 304	2
DANC 345 or 304	2	DANC 370	1
DANC 190	0	HIST 100	3
DANC 370	1		
	15		15

Second Year

Fall Semester	Credits	Spring Semester	Credits
DANC 325 or 315	2	DANC 325 or 315	2
DANC 345 or 314	2	DANC 345 or 314	3
DANC 114	3	DANC 360	3
DANC 252	3	DANC 372	1
Mason Core (Literature)	3	DANC 410	3
Mason Core (Social Science)	3	Mason Core (Lab Science)	4
	16		16

Third Year

Fall Semester	Credits	Spring Semester	Credits
DANC 425 or 325	3	DANC 425 or 325	3
DANC 424 or 345	2	DANC 345 or 424	3
DANC 390	3	DANC 391	3
DANC 362	1	Dance Elective	1
Elective	1	Mason Core (IT)	3
Mason Core (Non-Lab Science)	3	General Elective	3
Mason Core (ENGH 302)	3		
	16		16

Fourth Year

Fall Semester	Credits	Spring Semester	Credits
DANC 325 or 435	3	DANC 435 or 325	3
DANC 434 or 345	3	DANC 345	3
DANC 454	3	DANC 490	3
Dance Elective	1	Dance Elective	1
Mason Core (Global Understanding)	3	General Electives	5
General Elective	2		
	15		15

Total Credits 124

Detailed four year plans and degree planning checklists can be found at https://advising.gmu.edu/current-student/majors-at-mason/.

World Dance Minor

Banner Code: DNCW

A300 deLaski Performing Arts Building
Fairfax Campus

Phone: 703-993-1114
Website: dance.gmu.edu

The minor in World Dance develops knowledge and appreciation of the vast diaspora of the philosophies, history, and cultural diversity of world dance forms.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 21

Core Courses

Code	Title	Credits
DANC 101	Dance Appreciation (Mason Core)	3
MUSI 103	Musics of the World (Mason Core)	3
Six credits of [1]		6
DANC 118	World Dance (Mason Core)	

DANC 119	Dance in Popular Culture: Afro-Latino Dance (Mason Core)	3
Total Credits		15

[1] Must complete two different world cultures.

Electives

Code	Title	Credits
Select two courses from the following:		6
DANC 125	Modern/Contemporary Dance I (Mason Core)	
DANC 131	Beginning Jazz Technique (Mason Core)	
DANC 145	Ballet I (Mason Core)	
DANC 225	Modern/Contemporary Dance II (Mason Core)	
DANC 231	Intermediate Jazz Technique (Mason Core)	
DANC 245	Ballet II (Mason Core)	
MUSI 303	Topics in Ethnomusicology	
DANC 331	Advanced Jazz Dance (Mason Core)	
DANC 418	Global Dance Intensive (Mason Core)	
Other courses as approved by the School of Dance Director or Advisor		
Total Credits		6

Note:
Mason does not guarantee the availability of these courses every semester.

Reva and Sid Dewberry Family School of Music

Linda Monson, Director

A417 deLaski Performing Arts Building
Fairfax Campus

Phone: 703-993-1380
Website: music.gmu.edu

Undergraduate Programs

Bachelor's Degrees

The two undergraduate degree programs offered through the School of Music, the Bachelor of Arts (BA) in Music and the Bachelor of Music (BM), prepare students for graduate work in music and music literature; research and professional work in musical activities; and state licensure, or certification, to teach vocal and choral or instrumental music at the elementary and secondary school levels.

The School of Music enables students to pursue worthwhile vocational goals as teachers, performers, conductors, composers, and in music technology. The School of Music also seeks to educate its students to reflect a concern for cultural and humanistic values as future ambassadors and advocates of music and other arts. Through innovative learning experiences, the School of Music provides all students in the BA and BM programs with opportunities to become effective musicians, teachers, and advocates of music. Teaching music is the principal area in which students can find employment in private studios, public and private schools, academies, and higher education within the ever-changing workplace. Because of this, all music majors at Mason receive some training in the teaching of music.

The School of Music also recognizes the critical outreach role it provides in serving students from all majors, as well as members of the community who significantly benefit from the values and experiences of an education in music. The School of Music seeks to provide unique educational opportunities through its various course offerings, workshops, presentations, and performances for those seeking music enrichment.

Teacher Licensure

Undergraduate students seeking certification to teach vocal and choral or instrumental music at the elementary and secondary levels must earn the BM degree as specified under Concentration in Music Education section in this section. Students who have earned a baccalaureate degree and are seeking state licensure to teach music must also complete this sequence of courses, which constitute a state-approved program for teacher education in music.

Graduate Certificates

Music Education Licensure for PK-12

This graduate certificate is designed as a pathway to music education licensure for music students without an undergraduate degree in music education. Upon completing this certificate students will be equipped with the necessary skills, knowledge, and experience to obtain music teaching licensure from the Commonwealth of Virginia.

Music for Well-Being Graduate Certificate

The Graduate Certificate in Music for Well-Being builds on courses currently offered in the School of Music and on the school-wide initiative around well-being as an important consideration and subject of study for all musicians.

Expanding and supplementing courses developed in connection with the undergraduate minor in Music for Well-Being, the certificate allows students to explore the connections between music and consciousness and between vibration, meditation, and well-being. The graduate certificate gives students a thorough grounding in theory and practice and includes instruction in compositional and improvisational approaches. Although there is some overlap in subject matter, this is not intended as a program in music therapy. The certificate is conceived as a compliment to the programs focused on mindfulness and well-being that are a priority across the university. The success of the long-running Healing Arts Ensemble at the graduate level, as well as the undergraduate level, and the growth in the new minor in Music for Well-Being indicates the potential level of student interest in the program.

This certificate may be pursued in either part-time or full-time status.

Instrumental Performance Artist Graduate Certificate

The certificate is a specialized, graduate-level program for advanced musicians who desire to further develop and refine their performance art. The certificate program is a two-year course of study requiring at least two consecutive semesters of residence. A total of 32 credits is required. Advisor's approval is required for each semester's enrollment.

Piano Performance Artist Certificate

The certificate is a specialized, graduate-level program for advanced musicians who desire to further develop and refine their performance art.

The certificate program is a two-year course of study requiring at least two consecutive semesters of residence. A total of 32 credits is required. Advisor's approval is required for each semester's enrollment.

Vocal Performance Artist Certificate

The certificate is a specialized, graduate-level program for advanced musicians who desire to further develop and refine their performance art. The certificate program is a two-year course of study requiring at least two consecutive semesters of residence. A total of 32 credits is required. Advisor's approval is required for each semester's enrollment.

Graduate Programs

Accelerated Master's Option

The School of Music offers a Music, BM (Performance)/Music, Accelerated MM (Performance) option which allows undergraduate students to take graduate classes that can be used towards a designated master's degree. Undergraduates who wish to pursue the accelerated master's route should talk to their academic advisor first to see if they qualify. Students must be within 75-90 credits of their bachelor's program to be eligible to apply; those who have earned more than 90 credits will not be considered. Students must be approved by their academic advisor and formally apply and be accepted to the master's program through an accelerated master's application. For more information about admissions requirements and the application process, students should visit the website (http://cvpa.gmu.edu).

Music, Master of Music (MM)

The Master of Music (MM) degree is offered as an educational channel to meet the intellectual and career needs of qualified students. It is a comprehensive and advanced program of study with a choice of concentrations in performance, music education, composition, conducting, jazz studies, and pedagogy. The MM with a concentration in music education does not provide licensure to teach music in public or private schools.

Music Education, Ph.D.

The PhD in music education, a research-intensive degree, focuses on the gathering, processing, and interpretation of information. Students in the PhD program take seminars and topics courses in music education, as well as research courses through the College of Education and Human Development. PhD graduates are expected to demonstrate the ability to communicate significant concepts of music education.

The PhD in music education requires 60 credits beyond the master's degree in music.

Doctor of Musical Arts (DMA)

The DMA concentrations are composition, conducting, and performance. While these concentrations share some required coursework, each is also distinct in course requirements. Professional musicians earn the DMA to enhance and extend their knowledge and practice within their area of specialization. The DMA student focuses on the profession of music performance, conducting, or composition, as well as the theory and practice of those disciplines.

The Doctor of Musical Arts (DMA) degree requires 60 credits beyond the master's degree in music.

Faculty

School Faculty

Professors

Balakerskaia, Billingham, Camphouse, Carroll, Maiello, Miller, Monson (Director), Rendler, G. Smith

Associate Professors

Aler, Ciorba, Gillam, Green, Guessford, Kilkenny, Nickens, T. Owens (Associate Director), D. Purcell, G. Robinson

Assistant Professors

Alvarez, Carr, Huang, Lavengood, Mulcahy, Walsh

Administrative Faculty

Delaney, Freer

Adjunct Faculty

Ammerman, Beach, Berger, Bisesi, Breedlove, Brough, Chao, Cole, Dewey, East, Eckert, Edelbrock, Falkner, Ferguson, Foster, Fowkes, Fraedrich, Gammon, Gebo, Healey, Horn, Jenkins, Jewell, E. Johnson, K. Johnson, Kim, Knoeckel, Kurland, Laget, G. McCarthy, McDonald, Mirtcheva, Nam, Ja. Nickel, Ju. Nickel, Nickels, J. Owen, Perez, Porter, Provost, S. Purcell, Racz, Rance, Rothenberg, K. Smith, Spirtas, Stephansky, Stokes, Trkula, Van Slyke, Walker, Wenner, Whitehead, Wilkerson, Wilson, Woods, Yang, Yi

Requirements & Policies

Requirements

Admission Requirements

Entrance to all music degree programs is by audition. Arrangements for an audition must be made in advance by contacting the School of Music before the scheduled audition date. Auditions are held approximately once per month. Audition dates and audition application forms are available through the School of Music (http://music.gmu.edu).

Program Requirements

A fundamentals of music test is given prior to the first week of classes to all students enrolled in MUSI 115 Introduction to Music Theory . Call for additional information.

Competency placement tests are required of all transfer students who wish to present transfer credit in any of the following areas: music theory, aural skills, and keyboard skills.

Students must earn a minimum 2.00 cumulative GPA in their major or higher, if required by their program.

Policies

See CVPA Requirements and Policies.

Termination from the Major

No School of Music course that is required for the major may be unsuccessfully attempted more than three times. A grade of F constitutes an unsuccessful attempt in any given course. Those students who do not successfully complete such a course within three attempts

will be terminated from the major. For more information, see AP.5.2.4 Termination from the Major.

Writing-Intensive Requirement

Mason requires all students to complete at least one course designated "writing intensive" in their major at the 300 level or above. Students majoring in music may fulfill this requirement by successfully completing MUSI 332 Music History in Society II or MUSI 438 Music History in Society B. Students who transfer this course into Mason may be required to repeat it or enroll in some other suitable course to fulfill the writing intensive requirement.

Programs

- Artist Graduate Certificate
- Ethnomusicology Minor
- Jazz Studies Minor
- Music Education Licensure for PK-12 Graduate Certificate
- Music Education, PhD
- Music Minor
- Music Pedagogy Minor
- Music Technology Minor
- Music for Well-Being Graduate Certificate
- Music for Well-Being Minor
- Music, BA
- Music, BM
- Music, MM
- Musical Arts, DMA

Artist Graduate Certificate

Banner Code: AR-CERG-ARTC

Admissions & Policies

Admissions

Application Materials

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified on the Graduate Admissions policy page (https://catalog.gmu.edu/admissions/graduate-policies/). Specific graduate admissions requirements can be found on the College of Visual and Performing Arts Graduate Admissions requirements page (https://cvpa.gmu.edu/admissions/graduate-admissions/graduate-admission-requirements/).

Policies

For policies governing all graduate certificates, see AP.6.8 Requirements for Graduate Certificates.

Requirements

Certificate Requirements

Total credits: 22-32

This certificate may be pursued on a full-or part-time basis.

Requirements

Students must complete all requirements within a concentration. Total credits varies dependent on the concentration.

Concentration in Instrumental Performance (IPFM)

Total credits:32

Studies in Performance

Code	Title	Credits
Select 12 credits of Graduate Applied Music from the following:		12
MUSI 721	Applied Music	
MUSI 724	Applied Music in Woodwind	
MUSI 725	Applied Music in Brass	
MUSI 727	Applied Music in Percussion	
MUSI 592	Topics in Music	2
Three credits of		3
MUSI 790	Graduate Recital [1]	
Total Credits		17

[1] Two semesters of solo recitals and one semester of chamber recital.

Support Studies in Literature and Pedagogy

Code	Title	Credits
MUSI 630	Topics in Music History and Literature	3
or MUSI 730	Advanced Topics in Music History	
MUSI 551	Keyboard Pedagogy	3
or MUSI 553	Instrumental Pedagogy and Literature	
MUSI 695	Teaching Internship	2
Total Credits		8

Support Studies in Accompanying or Ensemble plus Electives

Code	Title	Credits
Select Accompanying or Ensemble:		7
Accompanying:		
MUSI 571	Techniques of Accompanying I	
MUSI 685	Graduate Chamber Ensemble	
500-700 level MUSI electives		
Ensemble:		
MUSI 682	Wind Symphony [1]	
MUSI 683	Symphonic Band [1]	
MUSI 685	Graduate Chamber Ensemble [1]	
MUSI 687	Symphony Orchestra [1]	
MUSI 689	Jazz Ensemble [1]	
500-700 level MUSI electives		
Total Credits		7

[1] One of MUSI 682 Wind Symphony, MUSI 683 Symphonic Band, MUSI 685 Graduate Chamber Ensemble, MUSI 687 Symphony Orchestra or MUSI 689 Jazz Ensemble must be taken twice.

Concentration in Music and Well-Being (MUWB)

Total credits: 22

Required Courses

Code	Title	Credits
MUSI 555	Music as a Healing Art	3
MUSI 577	Music and Consciousness (Three semesters of)	3
Three semesters of		3
MUSI 685	Graduate Chamber Ensemble (three semesters of)	
MUSI 699	Independent Study	3
MUSI 777	Music and Consciousness 2	3
Six credits of		6
MUSI 728	Applied Music in Composition	
MUSI 790	Graduate Recital	1
Total Credits		22

Concentration in Piano Performance (PPFR)

Total credits:32

Studies in Performance

Code	Title	Credits
Select 12 credits of Graduate Applied Music from the following:		12
MUSI 721	Applied Music	
MUSI 722	Applied Music in Keyboard (over four semesters)	
Two credits of		2
MUSI 592	Topics in Music	
Three credits of		3
MUSI 790	Graduate Recital [1]	
Total Credits		17

[1] Two semesters of solo recital and one semester of chamber recital.

Support Studies in Literature and Pedagogy

Code	Title	Credits
MUSI 630	Topics in Music History and Literature	3
or MUSI 730	Advanced Topics in Music History	
MUSI 551	Keyboard Pedagogy	3
or MUSI 553	Instrumental Pedagogy and Literature	
MUSI 695	Teaching Internship	2
Total Credits		8

Support Studies in Accompanying or Ensemble plus Electives

Code	Title	Credits
Select Accompanying or Ensemble:		7
Accompanying:		
MUSI 571	Techniques of Accompanying I	
MUSI 685	Graduate Chamber Ensemble	
5 credits of MUSI 500 - MUSI 700 level electives		
Ensemble:		
MUSI 682	Wind Symphony [1]	
MUSI 683	Symphonic Band [1]	
MUSI 685	Graduate Chamber Ensemble [1]	
MUSI 687	Symphony Orchestra [1]	
MUSI 689	Jazz Ensemble [1]	
1 credit of MUSI 500 - MUSI 700 level electives		
Total Credits		7

[1] One of MUSI 682 Wind Symphony, MUSI 683 Symphonic Band, MUSI 685 Graduate Chamber Ensemble, MUSI 687 Symphony Orchestra or MUSI 689 Jazz Ensemble must be taken twice.

Concentration in Vocal Performance (VPFM)

Total credits: 32

Studies in Performance

Code	Title	Credits
Twelve credits of		12
MUSI 723	Applied Music in Voice	
Four credits of		4
MUSI 592	Topics in Music	
MUSI 526	Performance Seminar and Vocal Literature for Singers and Accompanists II	2
MUSI 541	Diction for Singers I: Italian Diction and English Diction	2
or MUSI 542	Diction for Singers II: German Diction and French Diction	
Total Credits		20

Support Studies in Ensemble Performance plus Electives

Code	Title	Credits
Nine credits of		9
MUSI 685 & MUSI 688	Graduate Chamber Ensemble and Opera and Musical Theater Ensemble	
One credit of		1
MUSI 690	Graduate Lecture Recital (1 credit)	
MUSI 790	Graduate Recital	1
Select 1 credit of elective		1
Total Credits		12

Ethnomusicology Minor

Banner Code: EMUS

Music Academic Advisor

A417 deLaski Performing Arts Building
Fairfax Campus

Phone: 703-993-1392
Email: music@gmu.edu
Website: music.gmu.edu/degree-programs/undergraduate/

The minor is designed for students who wish to widen their scope of knowledge about music, while deepening their understanding of the

world's peoples. Students learn in the classroom, as well as experientially, in the form of applied studies and exercises in field work, how music-making functions within cultural contexts, conveying varied meanings in bodily action and musical sound worldwide. Students gain skills that will serve them in many fields of endeavor, from developing specific musical expertise to acquiring proficiency with technological and anthropological aspects of ethnographic inquiry.

Admissions & Policies

Admissions

Students must first demonstrate to the Ethnomusicology coordinator a basic level of knowledge and training in some area of Western or non-Western music, or earn a grade of B or higher in MUSI 103 Musics of the World (Mason Core) or MUSI 431 Music History in Society III (Mason Core).

Policies

Eight credits of coursework must be unique to the minor with a minimum 2.00 GPA earned in all courses applied to the minor. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 18

Core

Code	Title	Credits
MUSI 103	Musics of the World (Mason Core)	3
or MUSI 431	Music History in Society III (Mason Core)	
MUSI 303	Topics in Ethnomusicology	3
Two credits of		2
MUSI 394	Ethnomusicology Internship [1]	
ANTH 114	Introduction to Cultural Anthropology (Mason Core)	3
Select 1 credit from the following:		1
Applied Music Options (course list follows)		
Music Ensemble Options (course list follows)		
Total Credits		12

[1] Subject to approval from the Ethnomusicology minor coordinator.

Electives

Electives subject to approval from the Ethnomusicology minor coordinator and should be selected from the following list. Additional electives may include summer travel courses, as appropriate, and must be approved by the minor coordinator.

Code	Title	Credits
Select 6 credits from the following:		6
MUSI 102	Popular Music in America (Mason Core)	
MUSI 107	Jazz and Blues in America (Mason Core)	
MUSI 379	Jazz Improvisation	
MUSI 485	Chamber Ensembles (Mason Core)	
Applied Music Options (course list follows)		
AFAM 200	Introduction to African American Studies (Mason Core)	
AFAM 390	Special Topics in African and African American Studies	
ANTH 302	Peoples and Cultures of Latin America (Mason Core)	
ANTH 309	Peoples and Cultures of India (Mason Core)	
COMM 157	Digital Media Workshop	
COMM 305	Foundations of Intercultural Communication (Mason Core)	
DANC 118	World Dance (Mason Core)	
DANC 119	Dance in Popular Culture: Afro-Latino Dance (Mason Core)	
ENGH 315	Folklore and Folklife (Mason Core)	
Total Credits		6

Applied Music Options

Code	Title	Credits
See Music advisor for registration permission and options.		
MUSI 221	Applied Music I	1
MUSI 222	Applied Music in Keyboard	1
MUSI 223	Applied Music in Voice	1
MUSI 224	Applied Music in Woodwind	1
MUSI 225	Applied Music in Brass	1
MUSI 226	Applied Music in String	1
MUSI 227	Applied Music in Percussion	1
MUSI 228	Applied Music in Composition	1
MUSI 242	Applied Music in Keyboard	2
MUSI 243	Applied Music in Voice	2
MUSI 244	Applied Music in Woodwind	2
MUSI 245	Applied Music in Brass	2
MUSI 246	Applied Music in String	2
MUSI 247	Applied Music in Percussion	2
MUSI 248	Applied Music in Composition	2
MUSI 442	Applied Music in Keyboard	2-3
MUSI 443	Applied Music in Voice	2-3
MUSI 444	Applied Music in Woodwind	2-3
MUSI 445	Applied Music in Brass	2-3
MUSI 446	Applied Music in String	2-3
MUSI 447	Applied Music in Percussion	2-3
MUSI 448	Applied Music in Composition	2-3

Music Ensemble Options

Code	Title	Credits
MUSI 380	Wind Symphony (Mason Core)	1
MUSI 381	University Chorale (Mason Core)	1
MUSI 382	Piano Ensemble (Mason Core)	1
MUSI 383	Symphonic Band (Mason Core)	1
MUSI 385	Chamber Singers (Mason Core)	1
MUSI 387	Symphony Orchestra (Mason Core)	1
MUSI 389	Jazz Ensemble (Mason Core)	1

MUSI 485	Chamber Ensembles (Mason Core)	1
MUSI 280	Athletic and Ceremonial Ensemble (Mason Core) For Music Technology Students only	1

Jazz Studies Minor

Banner Code: JAZZ

Music Academic Advisor

A417 deLaski Performing Arts Building
Fairfax Campus

Phone: 703-993-1392
Email: music@gmu.edu
Website: music.gmu.edu/degree-programs/undergraduate/

This minor is open to music and non-music majors who wish to explore America's unique art form. It is open to all instrumentalists and vocalists, including students who perform on instruments not typically associated with jazz.

Admissions & Policies

Admissions

No prior experience in jazz is needed, but candidates must pass a music audition.

Policies

Students in the keyboard area use the Keyboard Skills I credit as a music elective.

University policy states that students must earn 8 distinct credits that are not used for their major toward their degree, with a minimum 2.00 GPA earned in all courses applied to the minor. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 21

Coursework

Code	Title	Credits
Select 2 credits of Applied Music Options (course list follows)		2
MUSI 107	Jazz and Blues in America (Mason Core)	3
MUSI 113	Aural Skills I	1
MUSI 115	Introduction to Music Theory	3
MUSI 171	Keyboard Skills I	1
MUSI 215	Theory for Pop and Jazz Music	3
MUSI 274	Jazz/Commercial Piano	1
Two semesters of		
MUSI 300	Recital Attendance (two semesters) [1]	
MUSI 311	Jazz Studies	3
Three credits of		3
MUSI 485	Chamber Ensembles (Mason Core) (Jazz Chamber Ensembles)	
MUSI 379	Jazz Improvisation	1
Total Credits		21

[1] All students who enroll as music minors and jazz studies minors must take MUSI 300 Recital Attendance for two semesters. A grade of S (satisfactory) must be earned each semester.

Applied Music Options

Code	Title	Credits
See Music advisor for registration permission and options.		
MUSI 221	Applied Music I	1
MUSI 222	Applied Music in Keyboard	1
MUSI 223	Applied Music in Voice	1
MUSI 224	Applied Music in Woodwind	1
MUSI 225	Applied Music in Brass	1
MUSI 226	Applied Music in String	1
MUSI 227	Applied Music in Percussion	1
MUSI 228	Applied Music in Composition	1
MUSI 242	Applied Music in Keyboard	2
MUSI 243	Applied Music in Voice	2
MUSI 244	Applied Music in Woodwind	2
MUSI 245	Applied Music in Brass	2
MUSI 246	Applied Music in String	2
MUSI 247	Applied Music in Percussion	2
MUSI 248	Applied Music in Composition	2
MUSI 442	Applied Music in Keyboard	2-3
MUSI 443	Applied Music in Voice	2-3
MUSI 444	Applied Music in Woodwind	2-3
MUSI 445	Applied Music in Brass	2-3
MUSI 446	Applied Music in String	2-3
MUSI 447	Applied Music in Percussion	2-3
MUSI 448	Applied Music in Composition	2-3

Music Education Licensure for PK-12 Graduate Certificate

Banner Code: AR-CERG-MELP

Music Academic Advisor

A417 deLaski Performing Arts Building
Fairfax Campus

Phone: 703-993-1392
Email: music@gmu.edu
Website: music.gmu.edu/degree-programs/undergraduate/

This certificate may be earned on a full-time or part-time basis.

This certificate program qualifies for Title IV Federal Financial Aid.

Admissions & Policies

Admissions

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified on the Graduate Admissions policy page (https://catalog.gmu.edu/admissions/graduate-policies/). Specific graduate admissions requirements can be found on the College of Visual and Performing Arts Graduate Admissions requirements page (https://cvpa.gmu.edu/admissions/graduate-admissions/graduate-admission-requirements/).

Policies

For policies governing all undergraduate programs, see AP.5 Undergraduate Policies.

Requirements

Certificate Requirements

Total credits: 21

This certificate may be pursued on a full-or part-time basis.

Required Courses

Code	Title	Credits
MUSI 561	Music Curriculum and Instructional Procedures	3
MUSI 593	Foundations of Music Education	3
EDRD 501	Literacy and Curriculum Integration	3
EDUC 511	Child and Adolescent Development in Global Contexts	3
Select one course from the following:		3
MUSI 566	Instrumental Methods for Band	
MUSI 567	Instrumental Methods, Strings	
MUSI 568	Vocal and Choral Methods	
CVPA 600	CVPA Graduate ProSeminar [2]	
Total Credits		15

[2] Must be taken within the student's first 2 semesters

[1] Students should contact their academic advisor in regards to fulfilling this requirement.

Internship

Upon completion of coursework the candidate must complete a student teaching internship at the elementary and secondary levels in a program-approved public or private school (6 credits). Prior to being permitted to student teach, the candidate must complete and pass the VCLA, the Praxis Subject Assessment (Music Content Knowledge-5113), and the MTEC Competency Check[1].

Code	Title	Credits
MUSI 595	Internship in Music Education	6
Total Credits		6

[1] The requirements and procedures for applying for an internship as well as the MTEC Competency Check is outlined in the Music Education Handbook (https://music.gmu.edu/resources/students/music-education-resources/) . Candidates will be advised to sign up for vocal and/or instrumental technique courses during coursework as needed to help prepare them for these exams. Note that techniques courses are not required and thus cannot be transferred or counted as course substitutions for completion of the certificate.

Music Education, PhD

Banner Code: AR-PHD-MUE

Charles Ciorba, Director of Music Education

A417 deLaski Performing Arts Building
Fairfax Campus

Phone: 703-993-1395
Email: music@gmu.edu
Website: music.gmu.edu/degree-programs/graduate/

The Music Education, PhD is a research-intensive degree focusing on the gathering, processing, and interpretation of information. Students in the Music Education PhD program take seminars and topics courses in music education, as well as research courses through the College of Education and Human Development. Music Education, PhD graduates are expected to demonstrate the ability to communicate significant concepts of music education. The Music Education, PhD requires 90 credits, 60 beyond the master's degree in music.

Admissions & Policies

Admissions

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified on the Graduate Admissions policy page (https://catalog.gmu.edu/admissions/graduate-policies/). Specific graduate admissions requirements can be found on the College of Visual and Performing Arts Graduate Admissions requirements page (https://cvpa.gmu.edu/admissions/graduate-admissions/graduate-admission-requirements/).

Policies

For policies governing all graduate programs, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/).

500- to 800-level music courses may be counted as electives except for the following classes: MUSI 501, MUSI 502, MUSI 516, MUSI 532, MUSI 533. These are review courses that cover undergraduate-level material and they may not be counted toward the MM, DMA, or Ph.D.

Reduction of Credit

Students must have a master's degree before being admitted. Most students receive a reduction of study of 30 credits based on their previous master's degree.

Requirements

Degree Requirements

Total credits: 90

The following degree plan is based on a student who receives a full 30 credit reduction. Students who do not receive a full credit reduction should choose additional credits in consultation with their advisor.

Placement Examinations

Prior to the beginning of the first semester of doctoral studies, the student must complete placement examinations in music theory, music history, and musicianship (including aural skills and keyboard skills). Positive scores on the placement exams may reduce or eliminate prerequisites for courses in music history and music theory.

Doctoral Coursework

The doctoral student must maintain a minimum of 3.00 GPA in courses presented on the degree plan, which may include no more than 6 credits with a grade of C. The GPA calculation excludes all transfer courses and Mason extended studies or nondegree credits not formally approved for the degree.

Code	Title	Credits
800-level EDEP/EDRS/EDUC Research Courses from CEHD, selected in consultation with the Director of Music Education		9
Select six credits in music theory		6
MUSI 610	Topics in Music Theory	
MUSI 710	Advanced Topics in Music Theory	
MUSI 810	Doctoral Seminar in Analysis	
MUSI 630	Topics in Music History and Literature	3
or MUSI 730	Advanced Topics in Music History	
or MUSI 830	Doctoral Seminar in Music History	
MUSI 640	Topics in World Musics	3
MUSI 660	Topics in Music Education	3
MUSI 810	Doctoral Seminar in Analysis	3
or MUSI 830	Doctoral Seminar in Music History	
MUSI 860	Doctoral Seminar in Music Education	12
MUSI 880	Doctoral Major Ensemble	3
CVPA 600	CVPA Graduate ProSeminar (must be taken within the student's first 2 semesters)	0
Select 6 credits of MUSI 500 - 800 level electives as approved by advisor.		6
Total Credits		48

Residency

More than half of all credits (minimum 72) must be taken in doctoral degree status, after admission to the degree program. One year (fall and spring) of consecutive full-time study (9 credits per semester) is recommended (18 total credits). Or, the academic residency requirement may be fulfilled by earning 21 credits within 12 months (fall and spring semesters and summer term). Academic residency should be completed during the first year of study. Any necessary prerequisite courses at the 500 level can be included to meet the residency requirement. Language courses at the undergraduate level may not be included. Note: The academic residency does not imply meeting the standards of Virginia residency for tuition purposes.

Language Requirements

Reading proficiency is required in a language appropriate to the student's major area of study. Normally, this will be German, French, or Italian. Alternatively, the student may choose to demonstrate proficiency interpreting statistical findings in quantitative-based educational research. The director of graduate studies and the Graduate Committee will determine the appropriate area of study. Reading proficiency may be accomplished by completing a reading examination provided by the music faculty. The reading examination provided by the faculty will normally consist of translation (with dictionary) of appropriate technical passages relevant to the student's area of study within a two-hour period. The language reading proficiency should be completed prior to earning 12 credits of courses at the 600 level or above.

Graduate Committee

The Graduate Committee will evaluate the progress of the student annually. Continuation in the program is subject to the endorsement of this group.

Comprehensive Exams

After the completion of required courses (excluding dissertation credits) or during the semester when completion of those courses is anticipated, the student will take comprehensive examinations. The written exams may also be followed by a one-hour oral exam if needed to clarify issues included in the written exams.

Doctoral Research

Code	Title	Credits
Select 12 credits from the following:		12
MUSI 998	Dissertation Proposal (A minimum of 3 credits)	
MUSI 999	Dissertation (A minimum of 6 credits)	
Total Credits		12

Advancement to Candidacy

Before doctoral students may be advanced to candidacy by the dean of the College of Visual and Performing Arts, they must complete all coursework required by the program faculty, be certified in all relevant doctoral research skills, pass the comprehensive exams, and be recommended by the Graduate Committee, the director of graduate studies, and the director of the School of Music. Students advanced to candidacy after the add period for a given semester must wait until the following semester to register for MUSI 999 Dissertation.

Dissertation

The dissertation is the capstone experience of doctoral study. The dissertation will be guided by the Dissertation Committee consisting of at least three members of the music faculty. The student's major professor will chair the committee. The director of graduate studies of the School of Music may be a part of the committee; if not, he or she will serve exofficio. All Dissertation Committee members will be appointed by the dean of the College of Visual and Performing Arts and have graduate faculty status, as approved by the university provost.

Final Defense and Graduation

When all degree requirements have been satisfied, including completion of the doctoral dissertation, the doctoral candidate may request a

doctoral defense. Approval for the defense must be obtained from the Dissertation Committee, the director of graduate studies and the director of the School of Music, and the dean of the College of Visual and Performing Arts. Notice of a defense must be circulated to the university community two weeks before the defense date.

All relevant rules regarding schedule, fees, and other matters as described in the catalog must be followed. All copies of the dissertation materials and fees must be paid before the doctoral degree is awarded.

Music for Well-Being Graduate Certificate

Banner Code: AR-CERG-MWB

Phone: 703-993-1380
Website: music.gmu.edu

Admissions & Policies

Admissions

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified on the Graduate Admissions policy page (https://catalog.gmu.edu/admissions/graduate-policies/). Specific graduate admissions requirements can be found on the College of Visual and Performing Arts Graduate Admissions requirements page (https://cvpa.gmu.edu/admissions/graduate-admissions/graduate-admission-requirements/).

Policies

For policies governing all graduate certificates, see AP.6.8 Requirements for Graduate Certificates.

Requirements

(Formerly AR-CERG-MUWB)

Certificate Requirements

Total credits: 22

This certificate may be pursued on a full-or part-time basis.

Required Courses

Code	Title	Credits
MUSI 555	Music as a Healing Art	3
MUSI 577	Music and Consciousness	3
Three semesters of		3
MUSI 685	Graduate Chamber Ensemble (Healing Arts Ensemble)	
MUSI 699	Independent Study (Music Healing Practicum for 3 credits)	3
MUSI 777	Music and Consciousness 2	3
Six credits of		6
MUSI 728	Applied Music in Composition	
MUSI 790	Graduate Recital	1
CVPA 600	CVPA Graduate ProSeminar [1]	0
Total Credits		22

[1] Must be taken within the student's first two semesters.

Music for Well-Being Minor

Banner Code: MWB

A417 deLaski Performing Arts Building

Fairfax Campus

Phone: 703-993-1392
Email: music@gmu.edu
Website: music.gmu.edu/degree-programs/advising/

The minor is designed to allow participation by students with minimal formal musical training. The coursework allows students to explore the connections between music and consciousness and between vibration, mindfulness, and well-being.

Admissions & Policies

Admissions

Admission to the Music for Well-Being minor is by interview with the minor coordinator.

Policies

University policy states that students must earn 8 distinct credits that are not used for their major toward their minor, with a minimum grade of 2.00 earned in all courses applied to the minor. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

(Formerly MUWB)

Minor Requirements

Total credits: 18

Coursework

Code	Title	Credits
MUSI 100	Fundamentals of Music (Mason Core)	3
or MUSI 115	Introduction to Music Theory	
MUSI 101	Introduction to Classical Music (Mason Core)	3
MUSI 171	Keyboard Skills I [1]	1
Two semesters of		
MUSI 300	Recital Attendance [2]	
MUSI 366	Class Percussion [1]	1
MUSI 367	Class Guitar [1]	1
MUSI 455	Music as a Healing Art	3
MUSI 477	Music and Consciousness	3
Three credits of		3

MUSI 485	Chamber Ensembles (Mason Core) (Healing Arts Ensemble)	
Total Credits		18

[1] Students demonstrating proficiency in keyboard, percussion, or guitar may substitute other MUSI 100-MUSI 499 courses at the discretion of the Program Coordinator.

[2] A grade of S (satisfactory) must be earned each semester

Music Minor

Banner Code: MUSI

Music Academic Advisor

A417 deLaski Performing Arts Building
Fairfax Campus

Phone: 703-993-1392
Email: music@gmu.edu
Website: music.gmu.edu/degree-programs/undergraduate/

Admissions & Policies

Admissions

All students pursuing a music minor must pass a music audition. Students in the keyboard area use the Keyboard Skills I credit as a music elective.

Policies

University policy states that students must earn 8 distinct credits that are not used for their major toward their minor, with a minimum grade of C earned in all courses applied to the minor. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 21

Coursework

Code	Title	Credits
MUSI 101	Introduction to Classical Music (Mason Core)	3
MUSI 113	Aural Skills I	1
MUSI 115	Introduction to Music Theory	3
MUSI 171	Keyboard Skills I	1
MUSI 215	Theory for Pop and Jazz Music	3
or MUSI 216	Theory for 20th- and 21st-Century Music	
or MUSI 217	Theory for 18th-Century Music	
MUSI 114	Aural Skills II	1
or MUSI 172	Keyboard Skills II	
Select 6 credits from Applied Music Options (course list follows)		6
Two semesters of		
MUSI 300	Recital Attendance [1]	
Select 3 credits from Music Ensemble Options (course list follows)		3
Total Credits		21

[1] All students who enroll as music minors and jazz studies minors must take MUSI 300 Recital Attendance for two semesters. A grade of S (satisfactory) must be earned each semester.

Applied Music Options

Code	Title	Credits
See Music advisor for registration permission and options.		
MUSI 221	Applied Music I	1
MUSI 222	Applied Music in Keyboard	1
MUSI 223	Applied Music in Voice	1
MUSI 224	Applied Music in Woodwind	1
MUSI 225	Applied Music in Brass	1
MUSI 226	Applied Music in String	1
MUSI 227	Applied Music in Percussion	1
MUSI 228	Applied Music in Composition	1
MUSI 242	Applied Music in Keyboard	2
MUSI 243	Applied Music in Voice	2
MUSI 244	Applied Music in Woodwind	2
MUSI 245	Applied Music in Brass	2
MUSI 246	Applied Music in String	2
MUSI 247	Applied Music in Percussion	2
MUSI 248	Applied Music in Composition	2
MUSI 442	Applied Music in Keyboard	2-3
MUSI 443	Applied Music in Voice	2-3
MUSI 444	Applied Music in Woodwind	2-3
MUSI 445	Applied Music in Brass	2-3
MUSI 446	Applied Music in String	2-3
MUSI 447	Applied Music in Percussion	2-3
MUSI 448	Applied Music in Composition	2-3

Music Ensemble Options

Code	Title	Credits
MUSI 380	Wind Symphony (Mason Core)	1
MUSI 381	University Chorale (Mason Core)	1
MUSI 382	Piano Ensemble (Mason Core)	1
MUSI 383	Symphonic Band (Mason Core)	1
MUSI 385	Chamber Singers (Mason Core)	1
MUSI 387	Symphony Orchestra (Mason Core)	1
MUSI 389	Jazz Ensemble (Mason Core)	1
MUSI 485	Chamber Ensembles (Mason Core)	1
MUSI 280	Athletic and Ceremonial Ensemble (Mason Core) For Music Technology Students only	1

Music Pedagogy Minor

Banner Code: MPED

Music Academic Advisor

A417 deLaski Performing Arts Building

Fairfax Campus

Phone: 703-993-1392
Email: music@gmu.edu
Website: music.gmu.edu/degree-programs/undergraduate/

Admissions & Policies

Admissions

All students pursuing a music pedagogy minor must pass a music audition and an interview.

Policies

University policy states that students must earn 8 distinct credits that are not used for their major toward their minor, with a minimum grade of C earned in all courses applied to the minor. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 20

Coursework

Code	Title	Credits
MUSI 351	Keyboard Pedagogy	3
or MUSI 352	Vocal Pedagogy and Lab	
or MUSI 353	Instrumental Pedagogy and Literature	
MUSI 456	Pedagogy II [1]	2
MUSI 457	Pedagogy III [1]	2
MUSI 458	Pedagogy IV	2
MUSI 494	Pedagogy Internship	2
Select 3 courses from the following:		9
AMGT 410	The Arts and Community Engagement	
COMM 301	Relational Communication Theory	
EDEP 350	Perspectives on Achievement Motivation (Mason Core)	
EDUC 302	Human Growth and Development	
MBUS 304	Entrepreneurship: Starting and Managing a New Enterprise	
PSYC 211	Developmental Psychology (Mason Core)	
Total Credits		20

[1] Keyboard concentrators substitute MUSI 451 Keyboard Pedagogy II and 1 credit of MUSI elective for MUSI 456 Pedagogy II and MUSI 457 Pedagogy III.

Note: The Music Pedagogy Minor may not be taken in combination with the BA in Music.

Music Technology Minor

Banner Code: MTEC

Music Academic Advisor

A417 deLaski Performing Arts Building
Fairfax Campus

Phone: 703-993-1392
Email: music@gmu.edu
Website: music.gmu.edu/degree-programs/undergraduate/

This minor is open to majors from throughout the university who seek to expand their knowledge and skill in this area of study.

Admissions & Policies

Admissions

Entrance requirements

MUSI 100 Fundamentals of Music (Mason Core) or MUSI 115 Introduction to Music Theory with a grade of C or higher. A music audition and interview with music technology faculty is required.

Policies

University policy states that students must earn 8 distinct credits that are not used for their major toward their degree, with a minimum 2.00 GPA earned in all courses applied to the minor. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 18

Required Courses

Code	Title	Credits
MUSI 254	Music and Technology	3
Two semesters of		0
MUSI 300	Recital Attendance	
MUSI 354	Electronic Composition	3
MUSI 355	Recording Techniques	3
Total Credits		9

Music Technology Electives

Code	Title	Credits
Select from the following: [1]		
Applied Music, Ensemble and Skills Courses:		**0-3**
Applied Music Options (course list follows)		
Music Ensemble Options (course list follows)		
MUSI 171	Keyboard Skills I	
MUSI 367	Class Guitar	
MUSI 368	Class Voice	
Music Theory		**0-3**
MUSI 100	Fundamentals of Music (Mason Core)	
MUSI 115	Introduction to Music Theory	
Music History		**0-3**
MUSI 102	Popular Music in America (Mason Core)	
MUSI 103	Musics of the World (Mason Core)	
MUSI 107	Jazz and Blues in America (Mason Core)	

Music Technology Topics:		**0-3**
MUSI 359	Topics in Music Technology	
Total Credits		9

[1] Select 0-3 credits from each category.

Applied Music Options

Code	Title	Credits
See Music advisor for registration permission and options.		
MUSI 221	Applied Music I	1
MUSI 222	Applied Music in Keyboard	1
MUSI 223	Applied Music in Voice	1
MUSI 224	Applied Music in Woodwind	1
MUSI 225	Applied Music in Brass	1
MUSI 226	Applied Music in String	1
MUSI 227	Applied Music in Percussion	1
MUSI 228	Applied Music in Composition	1
MUSI 242	Applied Music in Keyboard	2
MUSI 243	Applied Music in Voice	2
MUSI 244	Applied Music in Woodwind	2
MUSI 245	Applied Music in Brass	2
MUSI 246	Applied Music in String	2
MUSI 247	Applied Music in Percussion	2
MUSI 248	Applied Music in Composition	2
MUSI 442	Applied Music in Keyboard	2-3
MUSI 443	Applied Music in Voice	2-3
MUSI 444	Applied Music in Woodwind	2-3
MUSI 445	Applied Music in Brass	2-3
MUSI 446	Applied Music in String	2-3
MUSI 447	Applied Music in Percussion	2-3
MUSI 448	Applied Music in Composition	2-3

Music Ensemble Options

Code	Title	Credits
MUSI 380	Wind Symphony (Mason Core)	1
MUSI 381	University Chorale (Mason Core)	1
MUSI 382	Piano Ensemble (Mason Core)	1
MUSI 383	Symphonic Band (Mason Core)	1
MUSI 385	Chamber Singers (Mason Core)	1
MUSI 387	Symphony Orchestra (Mason Core)	1
MUSI 389	Jazz Ensemble (Mason Core)	1
MUSI 485	Chamber Ensembles (Mason Core)	1
MUSI 280	Athletic and Ceremonial Ensemble (Mason Core) For Music Technology Students only	1

Music, BA

Banner Code: AR-BA-MUSI

Music Academic Advisor

A417 deLaski Performing Arts Building
Fairfax Campus

Phone: 703-993-1392

Email: music@gmu.edu
Website: music.gmu.edu/degree-programs/undergraduate/

Requirements

Degree Requirements

Total credits: 120

Mason Core

Code	Title	Credits
Foundation Requirements		
Quantitative Reasoning (Mathematics)		3
ENGH 101	Composition (Mason Core) [1]	3
ENGH 302	Advanced Composition (Mason Core) [1]	3
Oral Communication [2]		3
Core Requirements		
Literature [3]		3
Natural Science [3,4]		7
Western Civilization/World History		3
Social or Behavioral Sciences [3]		3
Global Understanding [5]		3
Total Credits		31

[1] Nonnative speakers of English with limited proficiency in the language may substitute ENGH 100 Composition for Multilingual Writers (Mason Core) for ENGH 101 Composition (Mason Core). Students must attain a minimum grade of C in ENGH 100 Composition for Multilingual Writers (Mason Core) or ENGH 101 Composition (Mason Core), as well as in ENGH 302 Advanced Composition (Mason Core), to fulfill degree requirements.

[2] All students excluding Music Technology and Pedagogy students must take MUSI 251 Musical/Oral Communication

[3] Also have significant elective choices as per Mason Core listing.

[4] Two classes; one must contain a lab.

[5] All students excluding Music Technology and Pedagogy students must take MUSI 431 Music History in Society III (Mason Core)

Remaining Mason Core requirements are fulfilled with major coursework.

Additional Non-Major coursework

Code	Title	Credits
One of the following:		0-18
Intermediate-level language proficiency [1]		
Minor		
Double Major [2]		
Double Degree [2]		
Total Credits		0-18

[1] See CVPA Requirements and Policies for details regarding foreign language requirement.

[2] In a discipline other than music.

Music Major

Code	Title	Credits
Musicianship		
MUSI 113	Aural Skills I	1
One credit of		1
MUSI 114	Aural Skills II	
MUSI 115	Introduction to Music Theory	3
MUSI 171	Keyboard Skills I [1]	1
MUSI 215	Theory for Pop and Jazz Music (Required for Music Technology Concentration)	3
or MUSI 216	Theory for 20th- and 21st-Century Music	
or MUSI 217	Theory for 18th-Century Music	
MUSI 172	Keyboard Skills II [2]	1
Music History Courses		
Music Technology concentration students only:		9
MUSI 338	Music History in Society A	
MUSI 438	Music History in Society B [3]	
MUSI 439	Music History in Society C	
All other students:		6
Select from the following for 3 credits		
MUSI 331	Music History in Society I	
MUSI 303	Topics in Ethnomusicology	
MUSI 304	Topics in Musicology	
MUSI 432	Music History in Society IV	
MUSI 332	Music History in Society II [4]	3
Performance and Music Electives		
Five semesters of		0
MUSI 300	Recital Attendance	
All students except Music Technology Students:		
MUSI 490	RS: Musical Communication in Context (Mason Core)	3
Music Technology students only:		
MUSI 489	Music Technology Capstone	3
Select one from the following:		3-5
Music Technology concentration students only:		
CS 112 & PHIL 112	Introduction to Computer Programming and Ethics and the Cybersociety (Mason Core)	
All other students:		
MUSI 259	Music in Computer Technology	
Electives		
All students excluding Music Technology and Pedagogy students:		12-13
MUSI electives		
Applied Music Options (list follows) [5]		6-8
Music Ensemble (list follows)		3
Total Credits		41-47

1. Pianists may substitute MUSI 371 Techniques of Accompanying I for MUSI 171 Keyboard Skills I
2. Pianists may substitute MUSI 372 Techniques of Accompanying II for MUSI 172 Keyboard Skills II
3. Meets Writing Intensive requirement in the BA in Music with a concentration in Music Technology.
4. Meets Writing Intensive requirement in the BA in Music (all concentrations except Music Technology).
5. Students in the Music Technology concentration should take 6 credits of Applied Music. All others should take 8 credits.

Pedagogy

All students (except for Music Technology and Pedagogy Concentration students) must register for a pedagogy and literature class appropriate to their major instrument or register for a teaching internship.

Code	Title	Credits
Select one from the following:		0-3
MUSI 395	Teaching Internship (2 credits)	
MUSI 351	Keyboard Pedagogy [1]	
MUSI 352	Vocal Pedagogy and Lab [2]	
MUSI 353	Instrumental Pedagogy and Literature [3]	
Total Credits		0-3

1. Required for keyboard students.
2. Required for vocal students.
3. Topic varies; students must register for the topic corresponding with their major instrument. Required for strings and guitar students; recommended for wind, brass, or percussion students.

Concentration in Music Technology (MTEC)

Students pursuing this concentration may not also pursue the Music and Technology minor. Students who wish to complete a concentration in music technology must also complete the following:

Code	Title	Credits
MUSI 252	Popular Music Arranging	3
MUSI 254	Music and Technology	3
MUSI 354	Electronic Composition	3
MUSI 355	Recording Techniques	3
MUSI 359	Topics in Music Technology	3
Total Credits		15

Concentration in Pedagogy (PDGY)

Students pursuing this concentration may not also pursue the Music and Technology minor. Students who wish to complete a concentration in pedagogy must also complete the following:

Code	Title	Credits
MUSI 351	Keyboard Pedagogy	3
or MUSI 352	Vocal Pedagogy and Lab	
or MUSI 353	Instrumental Pedagogy and Literature	
MUSI 456	Pedagogy II [1]	2
MUSI 457	Pedagogy III [1]	2
MUSI 458	Pedagogy IV	2
MUSI 494	Pedagogy Internship	2
Choose four credits from the following:		4
MUSI 221	Applied Music I	
MUSI 222	Applied Music in Keyboard	
MUSI 223	Applied Music in Voice	

MUSI 224	Applied Music in Woodwind	
MUSI 225	Applied Music in Brass	
MUSI 226	Applied Music in String	
MUSI 227	Applied Music in Percussion	
MUSI 241	Applied Music II	
MUSI 242	Applied Music in Keyboard	
MUSI 243	Applied Music in Voice	
MUSI 244	Applied Music in Woodwind	
MUSI 245	Applied Music in Brass	
MUSI 246	Applied Music in String	
MUSI 247	Applied Music in Percussion	
MUSI 380	Wind Symphony (Mason Core)	
MUSI 381	University Chorale (Mason Core)	
MUSI 382	Piano Ensemble (Mason Core)	
MUSI 383	Symphonic Band (Mason Core)	
MUSI 385	Chamber Singers (Mason Core)	
MUSI 387	Symphony Orchestra (Mason Core)	
MUSI 389	Jazz Ensemble (Mason Core)	
MUSI 421	Applied Music III	
MUSI 441	Private Music Instruction III	
MUSI 442	Applied Music in Keyboard	
MUSI 443	Applied Music in Voice	
MUSI 444	Applied Music in Woodwind	
MUSI 445	Applied Music in Brass	
MUSI 446	Applied Music in String	
MUSI 447	Applied Music in Percussion	
MUSI 485	Chamber Ensembles (Mason Core)	
Choose three credits from the following:		3
AMGT 410	The Arts and Community Engagement	
COMM 301	Relational Communication Theory	
EDEP 350	Perspectives on Achievement Motivation (Mason Core)	
EDUC 302	Human Growth and Development	
MBUS 304	Entrepreneurship: Starting and Managing a New Enterprise	
PSYC 211	Developmental Psychology (Mason Core)	
Total Credits		18

[1] Keyboard concentrators substitute MUSI 451 Keyboard Pedagogy II and 1 credit of MUSI elective for MUSI 456 Pedagogy II and MUSI 457 Pedagogy III.

General Electives

Code	Title	Credits
Select the amount of elective credit corresponding with degree path: [1]		
Music Technology students		20-38
Pedagogy students		20-38
All other students		21-41

[1] Electives for all students excluding Pedagogy students may not include additional music courses. Pedagogy students may apply no more than 54 credits of MUSI courses to their degree.

Applied Music Options

Code	Title	Credits
See Music advisor for registration permission and options.		
MUSI 221	Applied Music I	1
MUSI 222	Applied Music in Keyboard	1
MUSI 223	Applied Music in Voice	1
MUSI 224	Applied Music in Woodwind	1
MUSI 225	Applied Music in Brass	1
MUSI 226	Applied Music in String	1
MUSI 227	Applied Music in Percussion	1
MUSI 228	Applied Music in Composition	1
MUSI 242	Applied Music in Keyboard	2
MUSI 243	Applied Music in Voice	2
MUSI 244	Applied Music in Woodwind	2
MUSI 245	Applied Music in Brass	2
MUSI 246	Applied Music in String	2
MUSI 247	Applied Music in Percussion	2
MUSI 248	Applied Music in Composition	2
MUSI 442	Applied Music in Keyboard	2-3
MUSI 443	Applied Music in Voice	2-3
MUSI 444	Applied Music in Woodwind	2-3
MUSI 445	Applied Music in Brass	2-3
MUSI 446	Applied Music in String	2-3
MUSI 447	Applied Music in Percussion	2-3
MUSI 448	Applied Music in Composition	2-3

Music Ensemble Options

Code	Title	Credits
MUSI 380	Wind Symphony (Mason Core)	1
MUSI 381	University Chorale (Mason Core)	1
MUSI 382	Piano Ensemble (Mason Core)	1
MUSI 383	Symphonic Band (Mason Core)	1
MUSI 385	Chamber Singers (Mason Core)	1
MUSI 387	Symphony Orchestra (Mason Core)	1
MUSI 389	Jazz Ensemble (Mason Core)	1
MUSI 485	Chamber Ensembles (Mason Core)	1
MUSI 280	Athletic and Ceremonial Ensemble (Mason Core) For Music Technology Students only	1

4-Year Plan

Bachelor of Arts in Music Sample Plan of Study

The sample plan below is a recommended sequencing of courses based on prerequisites and scheduling. This may not fit every student's needs and is a guideline, not a requirement. Students should confirm major requirements with their academic advisor and with PatriotWeb Degree Evaluation to ensure they enroll in the proper courses and are on track to graduate.

First Year

Fall Semester	Credits	Spring Semester	Credits
ENGH 101	3	Literature (Mason Core)	3
MATH 106	3	Natural Science (non-Lab) (Mason Core)	3
MUSI 113	1	MUSI 114	1
MUSI 115	3	MUSI 217 or 216	3
MUSI 171	1	MUSI 172	1
MUSI 22X Applied Music Lessons	1	MUSI 22X Applied Music Lessons	1
MUSI 259	3	MUSI 251	3
MUSI 300	0	MUSI 300	0
Ensemble	1	Ensemble	1
	16		16

Total Credits 32

Detailed four year plans and degree planning checklists can be found at https://advising.gmu.edu/current-student/majors-at-mason/.

Concentration in Music Technology

First Year

Fall Semester	Credits	Spring Semester	Credits
ENGH 101	3	Literature (Mason Core)	3
MATH 106	3	Social/ Behavioral Science (Mason Core)	3
MUSI 113	1	MUSI 114	1
MUSI 115	3	MUSI 216 or 217	3
MUSI 171	1	MUSI 172	1
MUSI 22X Applied Music Lessons	1	MUSI 22X Applied Music Lessons	1
MUSI 254	3	MUSI 300	0
MUSI 300	0	MUSI 355	3
Ensemble	1	Ensemble	1
	16		16

Total Credits 32

Detailed four year plans and degree planning checklists can be found at https://advising.gmu.edu/current-student/majors-at-mason/.

Accelerated Master's

Music, BA/Arts Management, Accelerated MA

Overview

Students choosing the accelerated option must fulfill all university requirements for the master's degree. The regular designed timeframe would be a start in the Fall and completion of all coursework in the Summer five years later with the exception of Capstone, which is only offered in Fall and Spring. Students may need a longer timeframe to complete all requirements.

This accelerated option is offered through joint cooperation between the School of Music and the Arts Management Program.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see the Academic Policies section of the catalog.

Application Requirements

Applicants to accelerated master's programs must have completed at least 75 credits that apply to their undergraduate degree (with at least 24 credits at Mason) and no more than 100 credits. Applicants should submit an Accelerated Master's Program Application, available from the College of Visual and Performing Arts (CVPA) Graduate Studies. It includes the proposed conferral date for the undergraduate degree and the two graduate courses that are to be applied to the undergraduate degree.

Interested students should contact the Arts Management Program Office for more details about the application process.

Accelerated Option Requirements

As an undergraduate, the accelerated master's student is to complete the two graduate courses indicated on their Accelerated Option Requirements.

As an undergraduate, the accelerated master's student is to complete the two graduate courses indicated on their Accelerated Master's Program application with a minimum grade of B in each course. Students must maintain a minimum GPA of 3.00 in all coursework and in coursework applied to their major. On completion and conferral of the undergraduate degree in the semester indicated in the application, they submit the Bachelor's/Accelerated Master's Transition Form (which shall incorporate all of the Graduate Admission requirements of the university) and are admitted to graduate status.

As graduate students, accelerated master's students have an advanced standing. They must meet all master's degree requirements except for the two courses (6 credits) they completed as undergraduates. Students will begin their master's program in the semester immediately following conferral of the undergraduate degree, and they may also begin in the summer term.

Reserve Graduate Credits

Students may take up to 6 additional graduate credits as reserve graduate credit. These credits do not apply to the undergraduate degree. The ability to take courses for reserve graduate credit is available to all high achieving undergraduates with permission of the School of Music. Permission to take a graduate course for reserve graduate credit is

normally granted only to Mason seniors within 15 hours of graduation and must be approved by the Dean's Office.

To apply these credits to the master's degree, students must request that the credits be moved from the undergraduate degree to the graduate degree using the Bachelor's/Accelerated Master's Transition Form.

Music, BM

Banner Code: AR-BM-MUSI

Music Academic Advisor

A417 deLaski Performing Arts Building
Fairfax Campus

Phone: 703-993-1392
Email: music@gmu.edu
Website: music.gmu.edu/degree-programs/undergraduate/

Requirements

Degree Requirements

Total credits: 120

Students must complete all Mason Core requirements and core coursework, as well as the requirements within one selected concentration.

Mason Core

Coursework within the major and concentration fulfills the information technology, global understanding, oral communications, fine arts, and synthesis requirements. Students must fulfill the requirements remaining in the following areas:

Code	Title	Credits
Quantitative Reasoning [1]		3
Written Communication		6
Literature		3
Non-Lab Natural Science		3
Western Civilization		3
Social or Behavioral Sciences		3
Information Technology [2]		3
Total Credits		24

1. Students in the Music Technology concentration, will fulfill this requirement as part of their concentration requirements.
2. Music Technology concentration students only.

Core Courses Required for All Concentrations

Code	Title	Credits
MUSI 113	Aural Skills I	1
One credit of		1
MUSI 114	Aural Skills II	
MUSI 115	Introduction to Music Theory	3
MUSI 213	Aural Skills III	2
MUSI 251	Musical/Oral Communication [1]	3
MUSI 273	Keyboard Skills III	1
Five instances of:		0
MUSI 300	Recital Attendance	
MUSI 431	Music History in Society III (Mason Core)	3
Total Credits		14

1. Fulfills Mason Core requirement in oral communication for Music, BM students only.

Concentration in Composition (CPO)

Students must complete all concentration requirements as well as requirements for one of the following emphases:

- Brass
- Guitar
- Keyboard
- Percussion
- String
- Voice
- Woodwind

Courses Required for All Emphases

Code	Title	Credits
MUSI 214	Aural Skills IV	2
MUSI 215	Theory for Pop and Jazz Music	3
MUSI 216	Theory for 20th- and 21st-Century Music	3
MUSI 217	Theory for 18th-Century Music	3
MUSI 317	Baroque and Classical Forms	3
Select 8 credits from MUSI 242-MUSI 248 (see Applied Music Options)		8
Select 8 credits from MUSI 442-MUSI 448 (see Applied Music Options)		8
MUSI 259	Music in Computer Technology	3
MUSI 319	Class Composition and Arranging	3
MUSI 324	Junior Recital (Mason Core)	1
MUSI 331	Music History in Society I	3
MUSI 332	Music History in Society II	3
MUSI 354	Electronic Composition	3
MUSI 361	Class Strings	1
MUSI 363	Class Woodwinds	1
MUSI 365	Class Brass	1
MUSI 366	Class Percussion	1
MUSI 379	Jazz Improvisation	1
MUSI 391	Conducting I	2
MUSI 396	Conducting II	2
MUSI 419	Orchestration	3
MUSI 424	Senior Recital (Mason Core)	1
Three credits of		3
MUSI 454	Jazz Arranging	
or MUSI 485	Chamber Ensembles (Mason Core)	
Four credits of		4
MUSI 485	Chamber Ensembles (Mason Core) (Contemporary Ensemble or Healing Arts Ensemble only)	
MUSI 485	Chamber Ensembles (Mason Core) [1]	1

MUSI 491	Musical Communication in Performance (Mason Core)	1
MUSI 438	Music History in Society B	3
MUSI 439	Music History in Society C	3
Select 2 credits from MUSI 100-MUSI 499 [2]		2
Total Credits		76

1 Additional to Contemporary Ensemble/Healing Arts Ensemble requirement.

2 As approved by Music advisor.

Emphasis Requirement

Composition: Brass Emphasis

Code	Title	Credits
MUSI 171	Keyboard Skills I	1
MUSI 172	Keyboard Skills II	1
MUSI 353	Instrumental Pedagogy and Literature	3
Select 4 credits from the following:		4
MUSI 380	Wind Symphony (Mason Core)	
MUSI 383	Symphonic Band (Mason Core)	
MUSI 387	Symphony Orchestra (Mason Core)	
MUSI 389	Jazz Ensemble (Mason Core)	
Total Credits		9

Composition: Guitar Emphasis

Code	Title	Credits
MUSI 171	Keyboard Skills I	1
MUSI 172	Keyboard Skills II	1
MUSI 353	Instrumental Pedagogy and Literature	3
Select 4 credits from the following:		4
MUSI 381	University Chorale (Mason Core)	
MUSI 385	Chamber Singers (Mason Core)	
MUSI 389	Jazz Ensemble (Mason Core)	
Total Credits		9

Composition: Keyboard Emphasis

Code	Title	Credits
MUSI 351	Keyboard Pedagogy	3
MUSI 371	Techniques of Accompanying I	1
MUSI 372	Techniques of Accompanying II	1
Select 4 credits from the following:		4
MUSI 381	University Chorale (Mason Core)	
MUSI 385	Chamber Singers (Mason Core)	
Total Credits		9

Composition: Percussion Emphasis

Code	Title	Credits
MUSI 171	Keyboard Skills I	1
MUSI 172	Keyboard Skills II	1
MUSI 353	Instrumental Pedagogy and Literature	3
Select 4 credits from the following:		4
MUSI 380	Wind Symphony (Mason Core)	
MUSI 383	Symphonic Band (Mason Core)	
MUSI 387	Symphony Orchestra (Mason Core)	
MUSI 389	Jazz Ensemble (Mason Core)	
Total Credits		9

Composition: String Emphasis

Code	Title	Credits
MUSI 171	Keyboard Skills I	1
MUSI 172	Keyboard Skills II	1
MUSI 353	Instrumental Pedagogy and Literature	3
Four credits of		4
MUSI 387	Symphony Orchestra (Mason Core)	
Total Credits		9

Composition: Voice Emphasis

Code	Title	Credits
MUSI 171	Keyboard Skills I	1
MUSI 172	Keyboard Skills II	1
MUSI 352	Vocal Pedagogy and Lab	3
Select 4 credits from the following:		4
MUSI 381	University Chorale (Mason Core)	
MUSI 385	Chamber Singers (Mason Core)	
Total Credits		9

Composition: Woodwind Emphasis

Code	Title	Credits
MUSI 171	Keyboard Skills I	1
MUSI 172	Keyboard Skills II	1
MUSI 353	Instrumental Pedagogy and Literature	3
Select 4 credits from the following:		4
MUSI 380	Wind Symphony (Mason Core)	
MUSI 383	Symphonic Band (Mason Core)	
MUSI 387	Symphony Orchestra (Mason Core)	
MUSI 389	Jazz Ensemble (Mason Core)	
Total Credits		9

Concentration in Jazz (JAZC)

Students must complete all concentration requirements as well as requirements for one of the following emphases:

- Brass
- Guitar
- Keyboard
- Percussion
- Steel Pan
- Voice
- Woodwind

Courses Required for All Emphases

Code	Title	Credits
MUSI 107	Jazz and Blues in America (Mason Core)	3
MUSI 214	Aural Skills IV	2
Select 9 credits from:		9
MUSI 215	Theory for Pop and Jazz Music	
MUSI 216	Theory for 20th- and 21st-Century Music	
MUSI 217	Theory for 18th-Century Music	
MUSI 317	Baroque and Classical Forms	

Select 8 credits from MUSI 242-MUSI 248 (see Applied Music Options)		8
Select 8 credits from MUSI 442-MUSI 448 (see Applied Music Options)		8
MUSI 259	Music in Computer Technology	3
MUSI 274	Jazz/Commercial Piano	1
MUSI 311	Jazz Studies	3
MUSI 319	Class Composition and Arranging	3
MUSI 324	Junior Recital (Mason Core)	1
MUSI 338	Music History in Society A	3
MUSI 379	Jazz Improvisation	1
MUSI 391	Conducting I	2
MUSI 424	Senior Recital (Mason Core)	1
MUSI 438	Music History in Society B	3
MUSI 439	Music History in Society C	3
MUSI 450	Jazz Improvisation I	2
MUSI 452	Jazz Improvisation II	2
MUSI 454	Jazz Arranging	3
Six credits of		6
MUSI 485	Chamber Ensembles (Mason Core) (Jazz Chamber Ensembles only)	
MUSI 491	Musical Communication in Performance (Mason Core)	1
Three credits of		3
MUSI 492	Selected Topics in Music (Topics in Jazz Studies only)	
Select 4 credits from MUSI 100-MUSI 499 [1]		4
Total Credits		75

[1] As approved by Music advisor.

Emphasis Requirement

Jazz: Brass Emphasis

Code	Title	Credits
MUSI 171	Keyboard Skills I	1
MUSI 172	Keyboard Skills II	1
Select 8 credits from the following:		8
MUSI 380	Wind Symphony (Mason Core)	
MUSI 381	University Chorale (Mason Core)	
MUSI 383	Symphonic Band (Mason Core)	
MUSI 385	Chamber Singers (Mason Core)	
MUSI 387	Symphony Orchestra (Mason Core)	
MUSI 389	Jazz Ensemble (Mason Core)	
Total Credits		10

Jazz: Guitar Emphasis

Code	Title	Credits
MUSI 171	Keyboard Skills I	1
MUSI 172	Keyboard Skills II	1
Select 8 credits from the following:		8
MUSI 380	Wind Symphony (Mason Core)	
MUSI 381	University Chorale (Mason Core)	
MUSI 383	Symphonic Band (Mason Core)	
MUSI 385	Chamber Singers (Mason Core)	
MUSI 387	Symphony Orchestra (Mason Core)	
MUSI 389	Jazz Ensemble (Mason Core)	
Total Credits		10

Jazz: Keyboard Emphasis

Code	Title	Credits
MUSI 371	Techniques of Accompanying I	1
MUSI 372	Techniques of Accompanying II	1
Select 8 credits from the following:		8
MUSI 380	Wind Symphony (Mason Core)	
MUSI 381	University Chorale (Mason Core)	
MUSI 383	Symphonic Band (Mason Core)	
MUSI 385	Chamber Singers (Mason Core)	
MUSI 387	Symphony Orchestra (Mason Core)	
MUSI 389	Jazz Ensemble (Mason Core)	
Total Credits		10

Jazz: Percussion Emphasis

Code	Title	Credits
MUSI 171	Keyboard Skills I	1
MUSI 172	Keyboard Skills II	1
Select 8 credits from the following:		8
MUSI 380	Wind Symphony (Mason Core)	
MUSI 381	University Chorale (Mason Core)	
MUSI 383	Symphonic Band (Mason Core)	
MUSI 385	Chamber Singers (Mason Core)	
MUSI 387	Symphony Orchestra (Mason Core)	
MUSI 389	Jazz Ensemble (Mason Core)	
Total Credits		10

Jazz: Steel Pan Emphasis

Code	Title	Credits
MUSI 171	Keyboard Skills I	1
MUSI 172	Keyboard Skills II	1
Select 8 credits from:		8
MUSI 380	Wind Symphony (Mason Core)	
MUSI 381	University Chorale (Mason Core)	
MUSI 383	Symphonic Band (Mason Core)	
MUSI 387	Symphony Orchestra (Mason Core)	
MUSI 389	Jazz Ensemble (Mason Core)	
Total Credits		10

Jazz: Voice Emphasis

Code	Title	Credits
MUSI 171	Keyboard Skills I	1
MUSI 172	Keyboard Skills II	1
Select 8 credits from:		8
MUSI 380	Wind Symphony (Mason Core)	
MUSI 381	University Chorale (Mason Core)	
MUSI 383	Symphonic Band (Mason Core)	
MUSI 385	Chamber Singers (Mason Core)	
MUSI 387	Symphony Orchestra (Mason Core)	

MUSI 389	Jazz Ensemble (Mason Core)	
Total Credits		10

Jazz: Woodwind Emphasis

Code	Title	Credits
MUSI 171	Keyboard Skills I	1
MUSI 172	Keyboard Skills II	1
Select 8 credits from the following:		8
MUSI 380	Wind Symphony (Mason Core)	
MUSI 381	University Chorale (Mason Core)	
MUSI 383	Symphonic Band (Mason Core)	
MUSI 385	Chamber Singers (Mason Core)	
MUSI 387	Symphony Orchestra (Mason Core)	
MUSI 389	Jazz Ensemble (Mason Core)	
Total Credits		10

Concentration in Music Education (MUE)

Certification to Teach

The music education concentration at George Mason University is recognized by the Virginia Department of Education (VDOE) as an approved teacher preparation program that imparts licensure. Even though an undergraduate student may declare music education as their major, this is not an official indication of a student's degree status. In order to be accepted into the degree, students must complete an application, meet all eligibility requirements, and pass the MTEC Interview and Skill Proficiency Exam. All entry requirements are described in Part 1 of the GMUsicEd Handbook located online (https://sites.google.com/site/gmusicedhandbook/Information/part1bme/).

The deadline for applying to the BME and taking the MTEC exam is the 4th semester of coursework. The 4th semester is defined as a minimum of 36 attempted credits. Transfer and continuing students entering GMU as an undergraduate with 36 or more credits will be required to apply to the BME no later than their 2nd semester of coursework at GMU.

Student must complete all concentration requirements as well as requirements for one of the following emphases:

- Brass
- Guitar
- Keyboard
- Percussion
- String
- Voice
- Woodwind

Courses Required for All Emphases

Code	Title	Credits
MUSI 214	Aural Skills IV	2
Select 9 credits from:		9
MUSI 215	Theory for Pop and Jazz Music	
MUSI 216	Theory for 20th- and 21st-Century Music	
MUSI 217	Theory for 18th-Century Music	
MUSI 317	Baroque and Classical Forms	
Select 8 credits from MUSI 242-MUSI 248 (see Applied Music Options)		8
Select 6 credits from MUSI 442-MUSI 448 (see Applied Music Options)		6
MUSI 259	Music in Computer Technology	3
MUSI 319	Class Composition and Arranging	3
MUSI 323	Music Education Recital	0
MUSI 331	Music History in Society I	3
MUSI 332	Music History in Society II	3
MUSI 361	Class Strings	1
MUSI 366	Class Percussion	1
MUSI 367	Class Guitar	1
MUSI 370	Laboratory Ensemble (To be repeated six times)	0
MUSI 393	Music Administration and Management	2
MUSI 432	Music History in Society IV	3
Six credits of		6
MUSI 495	Internship in Music Education (Mason Core) [1]	
EDRD 300	Literacy and Curriculum Integration	3
EDUC 301	Educating Diverse and Exceptional Learners	3
EDUC 302 or EDUC 539	Human Growth and Development	3
Total Credits		60

Emphasis Requirement

Music Education: Brass Emphasis

Code	Title	Credits
MUSI 171	Keyboard Skills I	1
MUSI 172	Keyboard Skills II	1
Two credits of		2
MUSI 363	Class Woodwinds	
Two credits of		2
MUSI 365	Class Brass	
MUSI 368	Class Voice	1
MUSI 391	Conducting I	2
MUSI 396	Conducting II	2
MUSI 464	Instrumental Music Methods I	3
MUSI 466	Instrumental Music Methods II	3
Select 1 credit from MUSI 100-MUSI 499 [1]		1
Select 7 credits from the following:		7
MUSI 380	Wind Symphony (Mason Core)	
MUSI 383	Symphonic Band (Mason Core)	
MUSI 387	Symphony Orchestra (Mason Core)	
MUSI 389	Jazz Ensemble (Mason Core)	
Total Credits		25

[1] As approved by Music advisor.

Music Education: Guitar Emphasis

Code	Title	Credits
MUSI 171	Keyboard Skills I	1
MUSI 172	Keyboard Skills II	1
Two credits of		2
MUSI 363	Class Woodwinds	
Two credits of		2
MUSI 365	Class Brass	

MUSI 368	Class Voice	1
MUSI 391	Conducting I	2
MUSI 396	Conducting II	2
MUSI 464	Instrumental Music Methods I	3
or MUSI 467	Instrumental Music Methods I: Orchestra	
MUSI 466	Instrumental Music Methods II	3
Select 1 credit from MUSI 100-MUSI 499 [1]		1
Select 7 credits from the following:		7
MUSI 381	University Chorale (Mason Core)	
MUSI 385	Chamber Singers (Mason Core)	
MUSI 389	Jazz Ensemble (Mason Core)	
Total Credits		25

[1] As approved by Music advisor.

Music Education: Keyboard Emphasis

Code	Title	Credits
Two credits of		2
MUSI 223	Applied Music in Voice	
MUSI 352	Vocal Pedagogy and Lab	3
MUSI 371	Techniques of Accompanying I	1
MUSI 372	Techniques of Accompanying II	1
MUSI 391	Conducting I	2
MUSI 396	Conducting II	2
MUSI 461	The Teaching of General Music in the Elementary and Middle School	3
MUSI 463	The Teaching of Vocal Music in the Secondary School	3
Select 1 credit from the following:		1
MUSI 363	Class Woodwinds	
MUSI 365	Class Brass	
Select 7 credits from the following:		7
MUSI 381	University Chorale (Mason Core)	
MUSI 385	Chamber Singers (Mason Core)	
Total Credits		25

Music Education: Percussion Emphasis

Code	Title	Credits
MUSI 171	Keyboard Skills I	1
MUSI 172	Keyboard Skills II	1
Two credits of		2
MUSI 363	Class Woodwinds	
Two credits of		2
MUSI 365	Class Brass	
MUSI 368	Class Voice	1
MUSI 391	Conducting I	2
MUSI 396	Conducting II	2
MUSI 464	Instrumental Music Methods I	3
MUSI 466	Instrumental Music Methods II	3
Select 1 credit from MUSI 100-MUSI 499 [1]		1
Select 7 credits from the following:		7
MUSI 380	Wind Symphony (Mason Core)	
MUSI 383	Symphonic Band (Mason Core)	
MUSI 387	Symphony Orchestra (Mason Core)	
MUSI 389	Jazz Ensemble (Mason Core)	
Total Credits		25

[1] As approved by Music advisor.

Music Education: String Emphasis

Code	Title	Credits
MUSI 171	Keyboard Skills I	1
MUSI 172	Keyboard Skills II	1
Two credits of		2
MUSI 363	Class Woodwinds	
Two credits of		2
MUSI 365	Class Brass	
MUSI 368	Class Voice	1
Seven credits of		7
MUSI 387	Symphony Orchestra (Mason Core)	
MUSI 391	Conducting I	2
MUSI 396	Conducting II	2
MUSI 466	Instrumental Music Methods II	3
MUSI 467	Instrumental Music Methods I: Orchestra	3
Select 1 credit from MUSI 100-MUSI 499		1
Total Credits		25

[1] As approved by Music advisor.

Music Education: Voice Emphasis

Code	Title	Credits
MUSI 171	Keyboard Skills I	1
MUSI 172	Keyboard Skills II	1
Two credits of		2
MUSI 222	Applied Music in Keyboard	
MUSI 352	Vocal Pedagogy and Lab	3
MUSI 391	Conducting I	2
MUSI 396	Conducting II	2
MUSI 461	The Teaching of General Music in the Elementary and Middle School	3
MUSI 463	The Teaching of Vocal Music in the Secondary School	3
Select 1 credit from the following:		1
MUSI 363	Class Woodwinds	
MUSI 365	Class Brass	
Select 7 credits from the following:		7
MUSI 381	University Chorale (Mason Core)	
MUSI 385	Chamber Singers (Mason Core)	
Total Credits		25

Music Education: Woodwind Emphasis

Code	Title	Credits
MUSI 171	Keyboard Skills I	1
MUSI 172	Keyboard Skills II	1
Two credits of		2
MUSI 363	Class Woodwinds	
Two credits of		2
MUSI 365	Class Brass	
MUSI 368	Class Voice	1

MUSI 391	Conducting I	2
MUSI 396	Conducting II	2
MUSI 464	Instrumental Music Methods I	3
MUSI 466	Instrumental Music Methods II	3
Select 1 credit from MUSI 100-MUSI 499		1
Select 7 credits from the following:		7
MUSI 380	Wind Symphony (Mason Core)	
MUSI 383	Symphonic Band (Mason Core)	
MUSI 387	Symphony Orchestra (Mason Core)	
MUSI 389	Jazz Ensemble (Mason Core)	
Total Credits		25

[1] As approved by Music advisor.

Concentration in Music Technology (MTEC)

Students must complete all concentration requirements as well as requirements for one of the following emphases:

- Electroacoustic Music
- Engineering
- Recording

Courses Required for All Emphases

Code	Title	Credits
MUSI 171	Keyboard Skills I	1
MUSI 172	Keyboard Skills II	1
Select 6 credits from:		6
MUSI 215	Theory for Pop and Jazz Music	
MUSI 216	Theory for 20th- and 21st-Century Music	
MUSI 217	Theory for 18th-Century Music	
MUSI 317	Baroque and Classical Forms	
Six credits of		6
MUSI 248	Applied Music in Composition [1]	
or MUSI 242	Applied Music in Keyboard	
or MUSI 243	Applied Music in Voice	
or MUSI 244	Applied Music in Woodwind	
or MUSI 245	Applied Music in Brass	
or MUSI 246	Applied Music in String	
or MUSI 247	Applied Music in Percussion	
MUSI 252	Popular Music Arranging	3
MUSI 254	Music and Technology	3
MUSI 338	Music History in Society A	3
MUSI 354	Electronic Composition	3
MUSI 355	Recording Techniques	3
MUSI 358	Music Programming	3
MUSI 359	Topics in Music Technology	3
Music Ensemble Options [2]		3
Two credits of		2
MUSI 397	Music Technology Internship	
MUSI 438	Music History in Society B	3
MUSI 439	Music History in Society C	3
MUSI 489	Music Technology Capstone	3
Lab Science (Mason Core)		4
6-7 credits of general electives		6-7
Total Credits		59

[1] See Music advisor for permission and course options.

[2] Transfer students must earn at least 2 credits at Mason.

Emphasis Requirement

Music Technology: Electroacoustic Music

Code	Title	Credits
Core Courses		
MUSI 359	Topics in Music Technology [1]	3
Four credits of		4
MUSI 448	Applied Music in Composition	
Two credits of		2
MUSI 485	Chamber Ensembles (Mason Core) (Healing Arts Ensemble or Contemporary Ensemble)	
MATH		
Select one from the following:		3-4
MATH 106	Quantitative Reasoning (Mason Core)	
MATH 108	Introductory Calculus with Business Applications (Mason Core)	
MATH 113	Analytic Geometry and Calculus I (Mason Core)	
MATH 115	Analytic Geometry and Calculus I (Honors) (Mason Core)	
MATH 125	Discrete Mathematics I (Mason Core)	
Additional Coursework		
Select 13-14 credits from the following: [1]		13-14
MUSI 228	Applied Music in Composition	
or MUSI 248	Applied Music in Composition	
or MUSI 448	Applied Music in Composition	
MUSI 359	Topics in Music Technology	
MUSI 397	Music Technology Internship	1-4
MUSI 485	Chamber Ensembles (Mason Core) (1-3 credits)	
Coursework from any of the following prefixes:		
CS		
ECE		
IT		
MATH		
PHYS		
Total Credits		27-30

[1] Must be electroacoustic music emphasis.

[2] At least one credit of additional coursework or general electives must come from 300 or 400 level courses.

Music Technology: Engineering Emphasis

A double degree in a STEM field or the following:

Code	Title	Credits
MATH		
MATH 113	Analytic Geometry and Calculus I (Mason Core)	4

or MATH 115	Analytic Geometry and Calculus I (Honors) (Mason Core)	
Additional Coursework [1]		
Coursework from any of the following prefixes:		22
CS		
ECE		
IT		
MATH		
MBUS		
PHYS		
Total Credits		26

[1] At least 10 credits from additional coursework or general electives must come from 300 or 400 level courses.

Music Technology: Recording Emphasis

Code	Title	Credits
Courses		
BUS 100	Business and Society (Mason Core)	3
MUSI 359	Topics in Music Technology [1]	3
Two credits of		2
MUSI 395	Teaching Internship	
MATH		
Select one from the following:		3-4
MATH 106	Quantitative Reasoning (Mason Core)	
MATH 108	Introductory Calculus with Business Applications (Mason Core)	
MATH 113	Analytic Geometry and Calculus I (Mason Core)	
MATH 115	Analytic Geometry and Calculus I (Honors) (Mason Core)	
MATH 125	Discrete Mathematics I (Mason Core)	
Additional Coursework [2]		
Select 14-15 credits of additional coursework from the following:		14-15
MUSI 221	Applied Music I (1-4 credits)	
MUSI 359	Topics in Music Technology	
MUSI 397	Music Technology Internship	1-4
MUSI 485	Chamber Ensembles (Mason Core) (1-3 credits)	
Coursework from any of the following prefixes:		
ECE		
ECON		
IT		
MATH		
MBUS		
PHYS		
Total Credits		27-30

[1] Topic must be in Recording emphasis.

[2] At least 5 credits from additional coursework or general electives must come from 300 or 400 level courses.

Concentration in Performance (PFM)

Students must complete all concentration requirements as well as requirements for one of the following emphases:

- Brass
- Guitar
- Keyboard
- Percussion
- String
- Voice
- Woodwind

Courses Required for All Emphases

Code	Title	Credits
MUSI 214	Aural Skills IV	2
Select 9 credits from:		9
MUSI 215	Theory for Pop and Jazz Music	
MUSI 216	Theory for 20th- and 21st-Century Music	
MUSI 217	Theory for 18th-Century Music	
MUSI 317	Baroque and Classical Forms	
Select 8 credits from MUSI 242-MUSI 248 (see Applied Music Options)		8
Select 8 credits from MUSI 442-MUSI 448 (see Applied Music Options)		8
MUSI 259	Music in Computer Technology	3
MUSI 319	Class Composition and Arranging	3
MUSI 324	Junior Recital (Mason Core)	1
MUSI 331	Music History in Society I	3
MUSI 332	Music History in Society II	3
MUSI 424	Senior Recital (Mason Core)	1
MUSI 432	Music History in Society IV	3
MUSI 491	Musical Communication in Performance (Mason Core)	1
Total Credits		45

Emphasis Requirement

Performance: Brass Emphasis

Code	Title	Credits
MUSI 171	Keyboard Skills I	1
MUSI 172	Keyboard Skills II	1
MUSI 353	Instrumental Pedagogy and Literature	3
MUSI 379	Jazz Improvisation	1
MUSI 391	Conducting I	2
Two credits of		2
MUSI 395	Teaching Internship	
MUSI 396	Conducting II	2
MUSI 419	Orchestration	3
or MUSI 493	Topics in Music Theory	
Eight credits of		8
MUSI 485	Chamber Ensembles (Mason Core)	
Select 9 credits from MUSI 100-MUSI 499 [1]		9
Select 8 credits from the following:		8
MUSI 380	Wind Symphony (Mason Core)	
MUSI 383	Symphonic Band (Mason Core)	

MUSI 387	Symphony Orchestra (Mason Core)	
MUSI 389	Jazz Ensemble (Mason Core)	
Total Credits		40

[1] As approved by Music advisor.

Performance: Guitar Emphasis

Code	Title	Credits
MUSI 171	Keyboard Skills I	1
MUSI 172	Keyboard Skills II	1
MUSI 353	Instrumental Pedagogy and Literature	3
MUSI 379	Jazz Improvisation	1
MUSI 391	Conducting I	2
Two credits of		2
MUSI 395	Teaching Internship	
MUSI 396	Conducting II	2
MUSI 419	Orchestration	3
or MUSI 493	Topics in Music Theory	
Eight credits of		8
MUSI 485	Chamber Ensembles (Mason Core)	
Select 9 credits from MUSI 100-MUSI 499 [1]		9
Select 8 credits from the following:		8
MUSI 381	University Chorale (Mason Core)	
MUSI 385	Chamber Singers (Mason Core)	
MUSI 389	Jazz Ensemble (Mason Core)	
Total Credits		40

[1] As approved by Music advisor.

Performance: Keyboard Emphasis

Code	Title	Credits
MUSI 351	Keyboard Pedagogy	3
MUSI 371	Techniques of Accompanying I	1
MUSI 372	Techniques of Accompanying II	1
MUSI 373	Advanced Accompanying and Musicianship Skills	3
MUSI 379	Jazz Improvisation	1
MUSI 382	Piano Ensemble (Mason Core)	1
or MUSI 485	Chamber Ensembles (Mason Core)	
MUSI 391	Conducting I	2
Two credits of		2
MUSI 395	Teaching Internship	
Six credits of		6
MUSI 485	Chamber Ensembles (Mason Core)	
Three credits of		3
MUSI 492	Selected Topics in Music	
Select 9 credits from MUSI 100-MUSI 499 [1]		9
Select 8 credits from the following:		8
MUSI 381	University Chorale (Mason Core)	
MUSI 385	Chamber Singers (Mason Core)	
Total Credits		40

[1] As approved by Music advisor.

Performance: Percussion Emphasis

Code	Title	Credits
MUSI 171	Keyboard Skills I	1
MUSI 172	Keyboard Skills II	1
MUSI 353	Instrumental Pedagogy and Literature	3
MUSI 379	Jazz Improvisation	1
MUSI 391	Conducting I	2
Two credits of		2
MUSI 395	Teaching Internship	
MUSI 396	Conducting II	2
MUSI 419	Orchestration	3
or MUSI 493	Topics in Music Theory	
Eight credits of		8
MUSI 485	Chamber Ensembles (Mason Core)	
Select 9 credits from MUSI 100-MUSI 499 [1]		9
Select 8 credits from the following:		8
MUSI 380	Wind Symphony (Mason Core)	
MUSI 383	Symphonic Band (Mason Core)	
MUSI 387	Symphony Orchestra (Mason Core)	
MUSI 389	Jazz Ensemble (Mason Core)	
Total Credits		40

[1] As approved by Music advisor.

Performance: String Emphasis

Code	Title	Credits
MUSI 171	Keyboard Skills I	1
MUSI 172	Keyboard Skills II	1
MUSI 353	Instrumental Pedagogy and Literature	3
MUSI 379	Jazz Improvisation	1
Eight credits of		8
MUSI 387	Symphony Orchestra (Mason Core) (8 credit)	
MUSI 391	Conducting I	2
Two credits of		2
MUSI 395	Teaching Internship	
MUSI 396	Conducting II	2
MUSI 419	Orchestration	3
or MUSI 493	Topics in Music Theory	
Eight credits of		8
MUSI 485	Chamber Ensembles (Mason Core)	
Select 9 credits from MUSI 100-MUSI 499 [1]		9
Total Credits		40

[1] As approved by Music advisor.

Performance: Voice Emphasis

Code	Title	Credits
MUSI 171	Keyboard Skills I	1
MUSI 172	Keyboard Skills II	1
MUSI 325	Performance Seminar and Vocal Literature for Singers and Accompanists I	2
MUSI 326	Performance Seminar and Vocal Literature for Singers and Accompanists II - German and French	2

MUSI 341	Diction for Singers I: Italian Diction and English Diction	2
MUSI 342	Diction for Singers II: German Diction and French Diction	2
MUSI 352	Vocal Pedagogy and Lab	3
MUSI 388	Fundamental Techniques of Stagecraft for Opera and Music Theater	2
MUSI 391	Conducting I	2
MUSI 396	Conducting II	2
Four credits of		4
MUSI 485	Chamber Ensembles (Mason Core)	
Foreign language (French, German, and/or Italian)		9
French		
German		
Italian		
Select 8 credits from the following:		8
MUSI 381	University Chorale (Mason Core)	
MUSI 385	Chamber Singers (Mason Core)	
Total Credits		40

Performance: Woodwind Emphasis

Code	Title	Credits
MUSI 171	Keyboard Skills I	1
MUSI 172	Keyboard Skills II	1
MUSI 353	Instrumental Pedagogy and Literature	3
MUSI 379	Jazz Improvisation	1
MUSI 391	Conducting I	2
Two credits of		2
MUSI 395	Teaching Internship	
MUSI 396	Conducting II	2
MUSI 419	Orchestration	3
or MUSI 493	Topics in Music Theory	
Eight credits		8
MUSI 485	Chamber Ensembles (Mason Core)	
Select 9 credits from MUSI 100-MUSI 499 [1]		9
Select 8 credits from the following:		8
MUSI 380	Wind Symphony (Mason Core)	
MUSI 383	Symphonic Band (Mason Core)	
MUSI 387	Symphony Orchestra (Mason Core)	
MUSI 389	Jazz Ensemble (Mason Core)	
Total Credits		40

[1] As approved by Music advisor.

Applied Music Options

Code	Title	Credits
See Music advisor for registration permission and options.		
MUSI 221	Applied Music I	1
MUSI 222	Applied Music in Keyboard	1
MUSI 223	Applied Music in Voice	1
MUSI 224	Applied Music in Woodwind	1
MUSI 225	Applied Music in Brass	1
MUSI 226	Applied Music in String	1
MUSI 227	Applied Music in Percussion	1
MUSI 228	Applied Music in Composition	1
MUSI 242	Applied Music in Keyboard	2
MUSI 243	Applied Music in Voice	2
MUSI 244	Applied Music in Woodwind	2
MUSI 245	Applied Music in Brass	2
MUSI 246	Applied Music in String	2
MUSI 247	Applied Music in Percussion	2
MUSI 248	Applied Music in Composition	2
MUSI 442	Applied Music in Keyboard	2-3
MUSI 443	Applied Music in Voice	2-3
MUSI 444	Applied Music in Woodwind	2-3
MUSI 445	Applied Music in Brass	2-3
MUSI 446	Applied Music in String	2-3
MUSI 447	Applied Music in Percussion	2-3
MUSI 448	Applied Music in Composition	2-3

Music Ensemble Options

Code	Title	Credits
MUSI 380	Wind Symphony (Mason Core)	1
MUSI 381	University Chorale (Mason Core)	1
MUSI 382	Piano Ensemble (Mason Core)	1
MUSI 383	Symphonic Band (Mason Core)	1
MUSI 385	Chamber Singers (Mason Core)	1
MUSI 387	Symphony Orchestra (Mason Core)	1
MUSI 389	Jazz Ensemble (Mason Core)	1
MUSI 485	Chamber Ensembles (Mason Core)	1
MUSI 280	Athletic and Ceremonial Ensemble (Mason Core) For Music Technology Students only	1

4-Year Plan

Bachelor of Music Sample Plan of Study

The sample plan below is a recommended sequencing of courses based on prerequisites and scheduling. This may not fit every student's needs and is a guideline, not a requirement. Students should confirm major requirements with their academic advisor and with PatriotWeb Degree Evaluation to ensure they enroll in the proper courses and are on track to graduate.

Music Technology Electroacoustic

First Year

Fall Semester	Credits	Spring Semester	Credits
ENGH 101	3	MATH 106, 108, 113, 115, or 125	3-4
MUSI 113	1	MUSI 114	1
MUSI 115	3	MUSI 217 or 216	3
MUSI 171	1	MUSI 172	1
MUSI 254	3	MUSI 251	3
MUSI 300	0	MUSI 300	0

Applied Music (Major Instrument)	2	Applied Music (Major Instrument)	2
Ensemble	1	Ensemble	1
	14		14-15

Second Year

Fall Semester	Credits	Spring Semester	Credits
Western Civilization/ World History	3	Natural Science with or without lab	3
MUSI 213	2	MUSI 300	0
MUSI 215 or 317	3	MUSI 355	3
MUSI 273	1	Applied Music (Composition)	2
MUSI 300	0	Music Technology Elective	3
Applied Music (Major Instrument)	2	General Elective	3
Ensemble	1	Chamber Ensemble (NSC or Healing Arts Ensemble)	1
General Elective	3		
	15		15

Third Year

Fall Semester	Credits	Spring Semester	Credits
Literature	3	ENGH 302	3
Natural Science w/lab	4	MUSI 252	3
MUSI 300	0	MUSI 359	3
MUSI 354	3	MUSI 338	3
MUSI 431	3	300-400 level Music Technology Elective	3
Applied Music (Composition)	2		
Chamber Ensemble (NSC or Healing Arts Ensemble)	1		
	16		15

Fourth Year

Fall Semester	Credits	Spring Semester	Credits
MUSI 358	3	Social/ Behavioral Science	3
MUSI 438	3	MUSI 359	3
MUSI 489	3	MUSI 397	2
Music Technology Elective	3	MUSI 431	3
Emphasis Elective	2-3	MUSI 439	3
Emphasis Elective	2-3	Emphasis Elective	2-3
	16-18		16-17

Total Credits 121-125

Detailed four year plans and degree planning checklists can be found at https://advising.gmu.edu/current-student/majors-at-mason/.

Winds, Strings, and Percussion Performance

First Year

Fall Semester	Credits	Spring Semester	Credits
ENGH 101	3	Quantitative Reasoning	3
MUSI 113	1	Literature	3
MUSI 115	3	MUSI 114	1
MUSI 171	1	MUSI 217 or 216	3
MUSI 251	3	MUSI 172	1
MUSI 300	0	MUSI 300	0
MUSI 485	1	MUSI 485	1
MUSI Applied Music	2	MUSI Applied Music	2
MUSI Large Ensemble	1	MUSI Large Ensemble	1
		Elective	1
	15		16

Second Year

Fall Semester	Credits	Spring Semester	Credits
Western Civilization/ World History	3	ENGH 302	3
Natural Science	3	MUSI 214	2
MUSI 213	2	MUSI 216 or 217	3
MUSI 215 or 317	3	MUSI 259	3
MUSI 273	1	MUSI 300	0
MUSI 300	0	MUSI 485	1
MUSI 485	1	MUSI Applied Music	2
MUSI Applied Music	2	MUSI Large Ensemble	1
MUSI Large Ensemble	1		
	16		15

Third Year

Fall Semester	Credits	Spring Semester	Credits
MUSI 300	0	MUSI 324	1

MUSI 319	3	MUSI 332	3
MUSI 331	3	MUSI 353	3
MUSI 379	1	MUSI 396	2
MUSI 391	2	MUSI 485	1
MUSI 485	1	MUSI Applied Music	2
MUSI Applied Music	2	MUSI Large Ensemble	1
MUSI Large Ensemble	1	Elective	3
Elective	1		
	14		16

Fourth Year

Fall Semester	Credits	Spring Semester	Credits
Social/ Behavioral Science	3	MUSI 419	3
MUSI 395	2	MUSI 424	1
MUSI 431	3	MUSI 432	3
MUSI 485	1	MUSI 485	1
MUSI Applied Music	2	MUSI 491	1
MUSI Large Ensemble	1	MUSI Applied Music	2
Elective	1	MUSI Large Ensemble	1
		Elective	3
	13		15

Total Credits 120

Detailed four year plans and degree planning checklists can be found at https://advising.gmu.edu/current-student/majors-at-mason/.

Choral Education

First Year

Fall Semester	Credits	Spring Semester	Credits
ENGH 101	3	Quantitative Reasoning	3
MUSI 113	1	Western Civilization/ World History	3
MUSI 115	3	MUSI 114	1
MUSI 171	1	MUSI 217 or 216	3
MUSI 259	3	MUSI 172	1
MUSI 300	0	MUSI 251	3
MUSI 366	1	MUSI 300	0
MUSI 370	0	MUSI 370	0
Applied Music	2	Applied Music	2
Large Ensemble	1	Large Ensemble	1
	15		17

Second Year

Fall Semester	Credits	Spring Semester	Credits
Literature	3	ENGH 302	3
Natural Science	3	MUSI 214	2
MUSI 213	2	MUSI 216 or 217	3
MUSI 215 or 317	3	MUSI 300	0
MUSI 273	1	MUSI 331	3
MUSI 300	0	MUSI 367	1
MUSI 361	1	MUSI 370	0
MUSI 370	0	Secondary Applied Music	2
Applied Music	2	Applied Music	2
Large Ensemble	1	Large Ensemble	1
	16		17

Third Year

Fall Semester	Credits	Spring Semester	Credits
Social/ Behavioral Science	3	EDUC 301	3
MUSI 300	0	MUSI 363 or 365	1
MUSI 319	3	MUSI 370	0
MUSI 332	3	MUSI 396	2
MUSI 391	2	MUSI 431	3
MUSI 393	2	MUSI 463	3
Applied Music	2	Applied Music	2
Large Ensemble	1	Large Ensemble	1
	16		15

Fourth Year

Fall Semester	Credits	Spring Semester	Credits
EDRD 300	3	MUSI 495	6
EDUC 302	3		
MUSI 323	0		
MUSI 352	3		
MUSI 370	0		
MUSI 432	3		
MUSI 461	3		
Applied Music	2		
Large Ensemble	1		
	18		6

Total Credits 120

Detailed four year plans and degree planning checklists can be found at https://advising.gmu.edu/current-student/majors-at-mason/.

Composition Studies

First Year

Fall Semester	Credits	Spring Semester	Credits
ENGH 101	3	Quantitative Reasoning	3
MUSI 113	1	MUSI 114	1
MUSI 115	3	MUSI 217 or 216	3
MUSI 171	1	MUSI 172	1
MUSI 259	3	MUSI 251	3
MUSI 300	0	MUSI 300	0
MUSI 485	1	MUSI 361	1
Applied Music (Major Instrument)	2	Applied Music (Major Instrument)	2
Large Ensemble	1	Large Ensemble	1
	15		15

Second Year

Fall Semester	Credits	Spring Semester	Credits
Western Civilization/ World History	3	Natural Science	3
MUSI 213	2	MUSI 214	2
MUSI 215	3	MUSI 216 or 217	3
MUSI 273	1	MUSI 300	0
MUSI 300	0	MUSI 331	3
MUSI 363	1	MUSI 365 (MUSI Secondary Instrument)	1
Applied Music (Major Instrument)	2	Applied Music (Composition)	2
Large Ensemble	1	Large Ensemble	1
Elective	1	Elective	1
	14		16

Third Year

Fall Semester	Credits	Spring Semester	Credits
Literature	3	MUSI 324	1
MUSI 300	0	MUSI 396	2
MUSI 319	3	MUSI 419	3
MUSI 332	3	MUSI 438	3
MUSI 379	1	MUSI 454	3
MUSI 391	2	MUSI 485 (choose 1: NSC or Healing Arts Ensemble)	1
MUSI 485	1	Applied Music (Composition)	2
Applied Music (Composition)	2		
	15		15

Fourth Year

Fall Semester	Credits	Spring Semester	Credits
ENGH 302	3	Social/ Behavioral Science	3
MUSI 354	3	MUSI 315-353 Instrument, Keyboard or Vocal Pedagogy & Literature	3
MUSI 366	1	MUSI 424	1
MUSI 439	3	MUSI 431	3
MUSI 485	1	MUSI 485 (choose 1: NSC or Healing Arts Ensemble)	1
Applied Music (Composition)	2	MUSI 491	1
MUSI 317	3	Applied Music (Composition)	2
	16		14

Total Credits 120

Detailed four year plans and degree planning checklists can be found at https://advising.gmu.edu/current-student/majors-at-mason/.

Instrumental Education

First Year

Fall Semester	Credits	Spring Semester	Credits
ENGH 101	3	Quantitative Reasoning	3
MUSI 113	1	MUSI 114	1
MUSI 115	3	MUSI 217 or 216	3
MUSI 171	1	MUSI 172	1
MUSI 259	3	MUSI 251	3
MUSI 300	0	MUSI 300	0
MUSI 361	1	MUSI 363	1
MUSI 370	0	MUSI 365	1
Applied Music	2	MUSI 370	0
Large Ensemble	1	Applied Music	2
Elective	1	Large Ensemble	1
	16		16

Second Year

Fall Semester	Credits	Spring Semester	Credits
Literature	3	Western Civilization/ World History	3

Natural Science	3	ENGH 302	3
MUSI 213	2	MUSI 214	2
MUSI 215 or 317	3	MUSI 216 or 217	3
MUSI 273	1	MUSI 300	0
MUSI 300	0	MUSI 331	3
MUSI 363	1	Applied Music	2
MUSI 365	1	Large Ensemble	1
MUSI 370	0		
MUSI Applied Music	2		
MUSI Large Ensemble	1		
	17		17

Third Year

Fall Semester	Credits	Spring Semester	Credits
MUSI 300	0	EDRD 300	3
MUSI 319	3	EDUC 301	3
MUSI 332	3	MUSI 370	0
MUSI 366	1	MUSI 396	2
MUSI 368	1	MUSI 431	3
MUSI 370	0	MUSI 466	3
MUSI 391	2	Applied Music	2
MUSI 393	2	Large Ensemble	1
Applied Music	2		
Large Ensemble	1		
	15		17

Fourth Year

Fall Semester	Credits	Spring Semester	Credits
Social/ Behavioral Science	3	MUSI 495	6
EDUC 302	3		
MUSI 323	0		
MUSI 367	1		
MUSI 432	3		
MUSI 464 or 467	3		
Applied Music	2		
Large Ensemble	1		
	16		6

Total Credits 120

Detailed four year plans and degree planning checklists can be found at https://advising.gmu.edu/current-student/majors-at-mason/.

Jazz Studies

First Year

Fall Semester	Credits	Spring Semester	Credits
ENGH 101	3	Quantitative Reasoning	3
MUSI 107	3	Literature	3
MUSI 113	1	MUSI 114	1
MUSI 171	1	MUSI 217 or 216	3
MUSI 115	3	MUSI 172	1
MUSI 300	0	MUSI 300	0
MUSI 485	1	MUSI 485	1
Applied Music	2	Applied Music	2
Large Ensemble	1	Large Ensemble	1
	15		15

Second Year

Fall Semester	Credits	Spring Semester	Credits
Western Civilization/ World History	3	Social/ Behavioral Science	3
Natural Science	3	MUSI 214	2
MUSI 213	2	MUSI 216 or 217	3
MUSI 215	3	MUSI 300	0
MUSI 273	1	MUSI 450	2
MUSI 300	0	MUSI 274	1
MUSI 379	1	Applied Music	2
MUSI 485	1	Large Ensemble	1
Applied Music	2		
Large ENsemble	1		
	17		14

Third Year

Fall Semester	Credits	Spring Semester	Credits
MUSI 300	0	MUSI 251	3
MUSI 311	3	MUSI 324	1
MUSI 319	3	MUSI 438	3
MUSI 338	3	MUSI 452	2
MUSI 391	2	MUSI 454	3
Applied Music	2	MUSI 485	1
Jazz Chamber Ensemble	1	Applied Music	2
Large Ensemble	1	Large ENsemble	1
	15		16

Fourth Year

Fall Semester	Credits	Spring Semester	Credits
ENGH 302	3	MUSI 424	1
MUSI 259	3	MUSI 431	3
MUSI 439	3	MUSI 491	1

MUSI 485	1	MUSI 492	3
Applied Music	2	Applied Music	2
Large Ensemble	1	Large Ensemble	1
MUSI Elective	1	Elective	3
	14		14

Total Credits 120

Detailed four year plans and degree planning checklists can be found at https://advising.gmu.edu/current-student/majors-at-mason/.

Keyboard Performance

First Year

Fall Semester	Credits	Spring Semester	Credits
ENGH 101	3	Quantitative Reasoning	3
MUSI 113	1	MUSI 114	1
MUSI 115	3	MUSI 217 or 216	3
MUSI 251	3	MUSI 259	3
MUSI 273	1	MUSI 300	0
MUSI 300	0	MUSI 371	1
MUSI 485	1	MUSI 485	1
MUSI 242	2	MUSI 242	2
MUSI Large Ensemble	1	MUSI Large Ensemble	1
	15		15

Second Year

Fall Semester	Credits	Spring Semester	Credits
Western Civilization/ World History	3	Social/ Behavioral Science	3
Literature	3	MUSI 214	2
MUSI 213	2	MUSI 216 or 217	3
MUSI 215 or 317	3	MUSI 300	0
MUSI 300	0	MUSI 373	3
MUSI 372	1	MUSI 485	1
MUSI 485	1	MUSI 242	2
MUSI 242	2	MUSI Large Ensemble	1
MUSI Large Ensemble	1		
	16		15

Third Year

Fall Semester	Credits	Spring Semester	Credits
MUSI 300	0	ENGH 302	3
MUSI 319	3	MUSI 324	1
MUSI 331	3	MUSI 332	3
MUSI 351	3	MUSI 485	1
MUSI 379	1	MUSI 492 (Keyboard Literature)	3
MUSI 391	2	MUSI 442	2
MUSI 442	2	MUSI Large Ensemble	1
MUSI Large Ensemble	1		
	15		14

Fourth Year

Fall Semester	Credits	Spring Semester	Credits
Natural Science	3	MUSI 395	2
MUSI 431	3	MUSI 424	1
MUSI 485	1	MUSI 432	3
MUSI 442	2	MUSI 485	1
MUSI Large Ensemble	1	MUSI 491	1
MUSI Elective(s)	6	MUSI 442	2
		MUSI Large Ensemble	1
		MUSI Elective(s)	3
	16		14

Total Credits 120

Detailed four year plans and degree planning checklists can be found at https://advising.gmu.edu/current-student/majors-at-mason/.

Music Technology Engineering

First Year

Fall Semester	Credits	Spring Semester	Credits
ENGH 101	3	MATH 113 or 115	4
MUSI 113	1	MUSI 114	1
MUSI 115	3	MUSI 217 or 216	3
MUSI 171	1	MUSI 172	1
MUSI 254	3	MUSI 251	3
MUSI 300	0	MUSI 300	0
Applied Music (Major Instrument)	2	Applied Music (Major Instrument)	2
Ensemble	1	Ensemble	1
	14		15

Second Year

Fall Semester	Credits	Spring Semester	Credits
Western Civilization/ World History	3	Natural Science with or without lab	3
MUSI 213	2	MUSI 300	0
MUSI 215 or 317	3	MUSI 355	3

MUSI 273	1	Music Technology Elective	3
MUSI 300	0	Music Technology Elective	3
Applied Music (Major Instrument)	2	General Elective	3
Ensemble	1		
General Elective	3		
	15		15

Third Year

Fall Semester	Credits	Spring Semester	Credits
Literature	3	ENGH 302	3
Natural Science w/lab	4	MUSI 338	3
MUSI 300	0	MUSI 359	3
MUSI 354	3	MUSI 252	3
MUSI 431	3	300-400 level Music Technology Elective	3
300-400 level Music Technology Elective	3		
	16		15

Fourth Year

Fall Semester	Credits	Spring Semester	Credits
MUSI 358	3	Social/ Behavioral Science	3
MUSI 438	3	MUSI 359	3
MUSI 489	3	MUSI 397	2
Music Technology Elective	3	MUSI 431	3
Music Technology Elective	3	MUSI 439	3
		300-400 level Music Technology Elective	3
	15		17

Total Credits 122

Detailed four year plans and degree planning checklists can be found at https://advising.gmu.edu/current-student/majors-at-mason/.

Music Technology Recording

First Year

Fall Semester	Credits	Spring Semester	Credits
ENGH 101	3	MATH 106, 108, 113, 115, or 125	3-4
MUSI 113	1	MUSI 114	1
MUSI 115	3	MUSI 217 or 216	3
MUSI 171	1	MUSI 172	1
MUSI 254	3	MUSI 251	3
MUSI 300	0	MUSI 300	0
Applied Music (Major Instrument)	2	Applied Music (Major Instrument)	2
Ensemble	1	Ensemble	1
300-400 level Elective	1	300-400 level Elective	1
	15		15-16

Second Year

Fall Semester	Credits	Spring Semester	Credits
Western Civilization/ World History	3	BUS 100	3
Natural Science	3	MUSI 300	0
MUSI 213	2	MUSI 355	3
MUSI 215 or 317	3	Music Technology Elective	3
MUSI 273	1	Music Technology Elective	3
MUSI 300	0	Elective	3
Applied Music (Major Instrument)	2		
Ensemble	1		
	15		15

Third Year

Fall Semester	Credits	Spring Semester	Credits
Literature	3	ENGH 302	3
Natural Science w/lab	4	MUSI 252	3
MUSI 300	0	MUSI 359	3
MUSI 354	3	MUSI 397	2
MUSI 431	3	MUSI 338	3
300-400 level Music Technology Elective	3		
	16		14

Fourth Year

Fall Semester	Credits	Spring Semester	Credits
MUSI 358	3	Social/ Behavioral Science	3
MUSI 438	3	MUSI 359	3
MUSI 489	3	MUSI 397	2
Music Technology Elective	3	MUSI 431	3
Music Technology Elective	3	MUSI 439	3
	15		14

Total Credits 119-120

Detailed four year plans and degree planning checklists can be found at https://advising.gmu.edu/current-student/majors-at-mason/.

Vocal Performance

First Year

Fall Semester	Credits	Spring Semester	Credits
ENGH 101	3	Quantitative Reasoning	3
MUSI 113	1	MUSI 114	1
MUSI 115	3	MUSI 217 or 216	3
MUSI 171	1	MUSI 172	1
MUSI 325	2	MUSI 326	2
MUSI 341	2	MUSI 342	2
MUSI 300	0	MUSI 300	0
MUSI 243	2	MUSI 243	2
MUSI Large Ensemble	1	MUSI Large Ensemble	1
	15		15

Second Year

Fall Semester	Credits	Spring Semester	Credits
Literature	3	Western Civilization/ World History	3
MUSI 213	2	MUSI 214	2
MUSI 215 or 317	3	MUSI 216 or 217	3
MUSI 259	3	MUSI 251	3
MUSI 300	0	MUSI 300	0
MUSI 273	1	MUSI 243	2
MUSI 243	2	MUSI Large Ensemble	1
MUSI Large Ensemble	1		
	15		14

Third Year

Fall Semester	Credits	Spring Semester	Credits
MUSI 300	0	Natural Science	3
MUSI 319	3	Social/ Behavioral Science	3
MUSI 331	3	MUSI 324	1
MUSI 352	3	MUSI 332	3
MUSI 391	2	MUSI 396	2
MUSI 485	1	MUSI 485	1
MUSI 443	2	MUSI 443	2
MUSI Large Ensemble	1	MUSI Large Ensemble	1
	15		16

Fourth Year

Fall Semester	Credits	Spring Semester	Credits
THR 210	3	ENGH 302	3
MUSI 431	3	MUSI 424	1
Foreign Language (French, German or Italian)	6	MUSI 432	3
MUSI 485	1	MUSI 485	1
MUSI 443	2	MUSI 491	1
MUSI Large Ensemble	1	Foreign Language (continuation of French, German, or Italian)	3
		MUSI 443	2
		MUSI Large Ensemble	1
	16		15

Total Credits 121

Detailed four year plans and degree planning checklists can be found at https://advising.gmu.edu/current-student/majors-at-mason/.

Accelerated Master's

Music, BM (Performance)/Music, Accelerated MM (Performance)

Overview

Students in the Music, BM (Performance concentration) have the option of obtaining an accelerated Music, MM (Performance concentration).

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies.

Admissions Requirements

Applicants to accelerated master's programs must have completed at least 75 credits that apply to their undergraduate degree (with at least 24 credits at Mason) and no more than 100 credits. Applicants should submit the following:

- An Accelerated Master's Program Application, available from the College of Visual and Performing Arts (CVPA) Graduate Studies
- 1-2 page Goals Statement
- Two letters of recommendation
- In addition, all applicants must complete a live performance audition. Arrangements for an audition must be made in advance by contacting the School of Music before the scheduled audition date. Auditions are held approximately once per month. Audition dates and audition application forms are available through the School of Music website.

Interested students should contact the Senior Academic Advisor, School of Music, for more details about the application process.

Degree Requirements & Reserve Graduate Credit

After admission and having earned 90 undergraduate credits, accelerated master's students complete 6 credits of graduate coursework in their field of study (with a 3.00 GPA or better in each course), specified by their undergraduate and graduate advisors. These credits will apply to the undergraduate degree and provide the student advanced standing in the MM Performance program. All graduate course prerequisites must be completed prior to enrollment. While still in undergraduate status, a maximum of 6 additional graduate credits may be taken as reserve graduate credit and applied to the master's program. Reserve graduate credits do not apply to the undergraduate degree.

To apply these credits to the master's degree, students should use the Bachelor's/Accelerated Master's Transition Form.

Students in the BM (Performance)/MM (Performance) accelerated degree program must fulfill all university requirements for the master's degree, including a minimum of 18 applicable graduate credits taken after the bachelor's degree has been completed and posted to the student's academic record. Successful completion of the accelerated MM will require one summer of coursework between years 4 and 5.

As graduate students, accelerated master's students have an advanced standing. They must meet all master's degree requirements except for the two courses (6 credits) they completed as undergraduates. The regular designed timeframe would be a start in the Fall and completion of all coursework in the Summer five years later with the exception of Capstone, which is only offered in Fall and Spring. Students amy need a longer timeframe to complete requirements.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see Academic Policies.

Music, BM/Arts Management, Accelerated MA

Overview

Students choosing the accelerated option must fulfill all university requirements for the master's degree. The regular designed timeframe would be a start in the Fall and completion of all coursework in the Summer five years later with the exception of Capstone, which is only offered in Fall and Spring. Students may need a longer timeframe to complete all requirements.

This accelerated option is offered through joint cooperation between the School of Music and the Arts Management Program.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see the Academic Policies section of the catalog.

Admissions

Applicants to accelerated master's programs must have completed at least 75 credits that apply to their undergraduate degree (with at least 24 credits at Mason) and no more than 100 credits. Applicants should submit an Accelerated Master's Program Application, available from the College of Visual and Performing Arts (CVPA) Graduate Studies. It includes the proposed conferral date for the undergraduate degree and the two graduate courses that are to be applied to the undergraduate degree.

Interested students should contact the Arts Management Program Office for more details about the application process.

Accelerated Option Requirements

As an undergraduate, the accelerated master's student is to complete the two graduate courses indicated on their Accelerated Option Requirements.

As an undergraduate, the accelerated master's student is to complete the two graduate courses indicated on their Accelerated Master's Program application with a minimum grade of C in each course. Students must maintain a minimum GPA of 3.00 in all coursework and in coursework applied to their major. On completion and conferral of the undergraduate degree in the semester indicated in the application, they submit the Bachelor's/Accelerated Master's Transition Form (which shall incorporate all of the Graduate Admission requirements of the university) and are admitted to graduate status.

As graduate students, accelerated master's students have an advanced standing. They must meet all master's degree requirements except for the two courses (6 credits) they completed as undergraduates. Students will begin their master's program in the semester immediately following conferral of the undergraduate degree, and they may also begin in the summer term.

Reserve Graduate Credits

Students may take up to 6 additional graduate credits as reserve graduate credit. These credits do not apply to the undergraduate degree. The ability to take courses for reserve graduate credit is available to all high achieving undergraduates with permission of the School of Music. Permission to take a graduate course for reserve graduate credit is normally granted only to Mason seniors within 15 hours of graduation and must be approved by the Dean's Office.

To apply these credits to the master's degree, students must request that the credits be moved from the undergraduate degree to the graduate degree using the Bachelor's/Accelerated Master's Transition Form.

Music, MM

Banner Code: AR-MM-MUSI

Music Academic Advisor

A417 deLaski Performing Arts Building
Fairfax Campus

Phone: 703-993-1392
Email: music@gmu.edu
Website: music.gmu.edu/degree-programs/graduate/

The Music, MM degree is offered as an educational channel to meet the intellectual and career needs of qualified students. It is a comprehensive and advanced program of study with a choice of concentrations in performance, music education, composition, conducting, jazz studies, collaborative piano, and pedagogy. The Music, MM with a concentration in music education does not provide licensure to teach music in public or private schools.

Admissions & Policies

Admissions

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified on the Graduate Admissions policy page (https://catalog.gmu.edu/admissions/graduate-policies/). Specific graduate admissions requirements can be found on the College of Visual and Performing Arts Graduate Admissions requirements page (https://cvpa.gmu.edu/admissions/graduate-admissions/graduate-admission-requirements/).

Diagnostic Entrance Exam

All students except those enrolled in the MM in music education are required to complete diagnostic entrance examinations in music theory, music history, aural skills, and basic keyboard skills. These examinations must be taken prior to the beginning of the first semester of graduate study. A sufficient placement score can reduce or eliminate prerequisites for some of the 600-level and above courses in music theory and history.

Foreign Language Exams (Vocal Performance Emphasis)

Students in the MM degree program (emphasis in vocal performance) must take proficiency exams in French, German, Italian, and English to demonstrate diction competency. Students may be required to take MUSI 525 (https://catalog.gmu.edu/search/?P=MUSI%20525) Performance Seminar and Vocal Literature for Singers and Accompanists I and MUSI 526 (https://catalog.gmu.edu/search/?P=MUSI%20526) Performance Seminar and Vocal Literature for Singers and Accompanists II.

Comprehensive Exit Exam

All students are required to pass a comprehensive exit exam except those enrolled in the MM in music education (online and face-to-face modalities). This exam is normally administered during the graduation semester. August graduates should consult with the Director of Graduate Studies about the timing of their exit exams prior to their final spring semester. This exam is usually a three-hour written test, with questions based primarily on course work the student has taken toward the degree at Mason. Students enrolled in the MM in music education (online and face-to-face modalities) will be required to submit a comprehensive electronic portfolio in place of a comprehensive exit exam. For students in the music education concentration, the portfolio is normally submitted during the graduation semester or, in the case of students selecting the thesis option in the music education concentration, on completion of 24 credits of course work and immediately before beginning work on the thesis.

Policies

500- to 800-level music courses may be counted as electives except for the following classes: MUSI 501, MUSI 502, MUSI 516, MUSI 532, MUSI 533. These are review courses that cover undergraduate-level material and they may not be counted toward the MM, DMA, or Ph.D.

For policies governing all graduate degrees, see AP.6 Graduate Policies. See College of Visual and Performing Arts for policies specific to the college.

Program Requirements

A student must successfully complete the appropriate 30 credits in graduate music courses. With approval of the graduate advisor, 3 non-music graduate credits may be taken.

The student is admitted as concentrating in one of seven areas: performance, music education, composition, conducting, jazz studies, collaborative piano, or pedagogy. All students are required to complete the 11 credits described as General Requirements plus 19 credits in one of the six areas identified as Additional Requirements. There are some limited possibilities for double concentrations. For details, see the director of graduate studies.

Requirements

Degree Requirements

Total credits: 30

General Requirements for All Concentrations

Music Education students will have 9 credits of General Requirements and 21 credits of Concentration Requirements; all other concentrations will have 11 credits of General Requirements and 19 credits of Concentration Requirements.

Code	Title	Credits
Select 2 credits of Graduate Ensemble (all concentrations except Music Education) from the following:		2
MUSI 681	Graduate Choral Ensembles	
MUSI 682	Wind Symphony	
MUSI 683	Symphonic Band	
MUSI 685	Graduate Chamber Ensemble	
MUSI 687	Symphony Orchestra	
MUSI 688	Opera and Musical Theater Ensemble	
MUSI 689	Jazz Ensemble	
MUSI 611	Analytical Techniques	3
or MUSI 610	Topics in Music Theory	
or MUSI 710	Advanced Topics in Music Theory	
MUSI 630	Topics in Music History and Literature	3
or MUSI 640	Topics in World Musics	
or MUSI 730	Advanced Topics in Music History	
MUSI 662	Introduction to Research in Music	3
MUSI 698	Comprehensive Exit Exam/Portfolio	0

CVPA 600	CVPA Graduate ProSeminar [1]	0
Total Credits		11

[1] Must be taken within the student's first 2 semesters.

Concentration in Composition (CPO)

Code	Title	Credits
Nine credits of		9
MUSI 728	Applied Music in Composition	
MUSI 613	Graduate Orchestration [1]	3
Select one from the following:		3
MUSI 630	Topics in Music History and Literature	
or MUSI 640	Topics in World Musics	
MUSI 730	Advanced Topics in Music History	
MUSI 610	Topics in Music Theory	
MUSI 710	Advanced Topics in Music Theory	
MUSI 790	Graduate Recital	1
Graduate Electives		3
Total Credits		19

[1] Students may pass out of MUSI 613 Graduate Orchestration with a satisfactory score on the Graduate Orchestration Placement Exam. In this case, students will take an additional 3 credits of a theory or history elective chosen from: MUSI 610 Topics in Music Theory, MUSI 710 Advanced Topics in Music Theory, MUSI 630 Topics in Music History and Literature, or MUSI 730 Advanced Topics in Music History.

Concentration in Conducting (CDC)

The number of students accepted in the graduate conducting concentration is limited by the extent to which it is possible to provide students with practical experience.

Code	Title	Credits
Nine credits of		9
MUSI 729	Applied Music in Conducting	
MUSI 613	Graduate Orchestration	3
MUSI 790	Graduate Recital	1
Select 3 credits of graduate electives		3
Select 3 credits from the following:		3
MUSI 610	Topics in Music Theory	
or MUSI 710	Advanced Topics in Music Theory	
MUSI 630	Topics in Music History and Literature	
or MUSI 640	Topics in World Musics	
or MUSI 730	Advanced Topics in Music History	
MUSI 712	Composition for Conductors and Performers	
Total Credits		19

Concentration in Jazz Studies (JAZZ)

Code	Title	Credits
MUSI 615	Advanced Jazz Improvisation	3
MUSI 650	Topics in Jazz Studies	3
Select 9 credits of Graduate Applied Music from the following:		9
MUSI 721	Applied Music	
MUSI 722	Applied Music in Keyboard	
MUSI 723	Applied Music in Voice	
MUSI 724	Applied Music in Woodwind	
MUSI 725	Applied Music in Brass	
MUSI 726	Applied Music in String	
MUSI 727	Applied Music in Percussion	
MUSI 790	Graduate Recital	1
Select 3 credits of graduate electives		3
Total Credits		19

Concentration in Music Education (MUE)

Code	Title	Credits
Six credits of		6
MUSI 592	Topics in Music (or)	
MUSI 660	Topics in Music Education	
MUSI 661	Psychology of Music Teaching and Learning	3
MUSI 663	Philosophy of Music Education	3
Select 9 credits of 500 - 800 level MUSI courses [1]		9
Total Credits		21

[1] Must be approved by advisor.

Concentration in Performance (PFM)

Code	Title	Credits
Select 1 credit of Graduate Ensemble from the following:		1
MUSI 681	Graduate Choral Ensembles	
MUSI 682	Wind Symphony	
MUSI 683	Symphonic Band	
MUSI 685	Graduate Chamber Ensemble	
MUSI 687	Symphony Orchestra	
MUSI 688	Opera and Musical Theater Ensemble	
MUSI 689	Jazz Ensemble	
Select 8 credits of 500 - 800 level MUSI electives [1]		8
Select 9 credits of Graduate Applied Music from the following:		9
MUSI 721	Applied Music	
MUSI 722	Applied Music in Keyboard	
MUSI 723	Applied Music in Voice	
MUSI 724	Applied Music in Woodwind	
MUSI 725	Applied Music in Brass	
MUSI 726	Applied Music in String	
MUSI 727	Applied Music in Percussion	
MUSI 790	Graduate Recital	1
Total Credits		19

[1] Piano Performance requires 3 credits of MUSI 573 Accompanying and Musicianship III and 5 credits of 500 - 800 level MUSIC electives.

Concentration in Pedagogy (PDGY)

Code	Title	Credits
MUSI 573	Accompanying and Musicianship III (piano pedagogy only; all other areas take 3 elective credits)	3
Select 3 credits from the following:		3

MUSI 551	Keyboard Pedagogy	
MUSI 552	Vocal Pedagogy and Lab	
MUSI 553	Instrumental Pedagogy and Literature	
Select 3 credits from the following:		3
MUSI 651	Keyboard Pedagogy II (piano pedagogy only)	
MUSI 652	Vocal Pedagogy II (vocal pedagogy only)	
MUSI 653	Instrumental Pedagogy II (instrumental pedagogy only)	
One credit of		1
MUSI 690	Graduate Lecture Recital	
Select 6 credits from the following:		6
MUSI 721	Applied Music	
MUSI 722	Applied Music in Keyboard	
MUSI 723	Applied Music in Voice	
MUSI 724	Applied Music in Woodwind	
MUSI 725	Applied Music in Brass	
MUSI 726	Applied Music in String	
MUSI 727	Applied Music in Percussion	
MUSI 695	Teaching Internship	2
MUSI 790	Graduate Recital	1
Total Credits		19

Concentration in Collaborative Piano (COLP)

Code	Title	Credits
MUSI 573	Accompanying and Musicianship III	3
MUSI 695	Teaching Internship	2
8 credits of:		8
MUSI 722	Applied Music in Keyboard	
2 credits of:		2
MUSI 790	Graduate Recital	
Select 4 credits of electives from the following:		4
MUSI 525	Performance Seminar and Vocal Literature for Singers and Accompanists I	
MUSI 526	Performance Seminar and Vocal Literature for Singers and Accompanists II	
MUSI 541	Diction for Singers I: Italian Diction and English Diction	
MUSI 542	Diction for Singers II: German Diction and French Diction	
MUSI 572	Techniques of Accompanying II	
MUSI 610	Topics in Music Theory	
MUSI 630	Topics in Music History and Literature	
or MUSI 640	Topics in World Musics	
MUSI 685	Graduate Chamber Ensemble	
MUSI 695	Teaching Internship	
MUSI 710	Advanced Topics in Music Theory	
MUSI 730	Advanced Topics in Music History	
Total Credits		19

Accelerated Master's

Music, BM (Performance)/Music, Accelerated MM (Performance)

Overview

Students in the Music, BM (Performance concentration) have the option of obtaining an accelerated Music, MM (Performance concentration).

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies.

Admissions Requirements

Applicants to accelerated master's programs must have completed at least 75 credits that apply to their undergraduate degree (with at least 24 credits at Mason) and no more than 100 credits. Applicants should submit the following:

- An Accelerated Master's Program Application, available from the College of Visual and Performing Arts (CVPA) Graduate Studies
- 1-2 page Goals Statement
- Two letters of recommendation
- In addition, all applicants must complete a live performance audition. Arrangements for an audition must be made in advance by contacting the School of Music before the scheduled audition date. Auditions are held approximately once per month. Audition dates and audition application forms are available through the School of Music website.

Interested students should contact the Senior Academic Advisor, School of Music, for more details about the application process.

Degree Requirements & Reserve Graduate Credit

After admission and having earned 90 undergraduate credits, accelerated master's students complete 6 credits of graduate coursework in their field of study (with a 3.00 GPA or better in each course), specified by their undergraduate and graduate advisors. These credits will apply to the undergraduate degree and provide the student advanced standing in the MM Performance program. All graduate course prerequisites must be completed prior to enrollment. While still in undergraduate status, a maximum of 6 additional graduate credits may be taken as reserve graduate credit and applied to the master's program. Reserve graduate credits do not apply to the undergraduate degree.

To apply these credits to the master's degree, students should use the Bachelor's/Accelerated Master's Transition Form.

Students in the BM (Performance)/MM (Performance) accelerated degree program must fulfill all university requirements for the master's degree, including a minimum of 18 applicable graduate credits taken after the bachelor's degree has been completed and posted to the student's academic record. Successful completion of the accelerated MM will require one summer of coursework between years 4 and 5.

As graduate students, accelerated master's students have an advanced standing. They must meet all master's degree requirements except for the two courses (6 credits) they completed as undergraduates. The regular designed timeframe would be a start in the Fall and completion of all coursework in the Summer five years later with the exception of

Capstone, which is only offered in Fall and Spring. Students amy need a longer timeframe to complete requirements.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see Academic Policies.

Musical Arts, DMA

Banner Code: AR-DMA-MUAR

Music Academic Advisor

A417 deLaski Performing Arts Building
Fairfax Campus

Phone: 703-993-1392
Email: music@gmu.edu
Website: music.gmu.edu/degree-programs/graduate/

The Doctor of Musical Arts (DMA) requires 90 credits, 60 credits beyond the Master's degree in music. The doctor of musical arts concentrations are composition, conducting, and performance. While these concentrations share some of the required coursework, each is also distinct in course requirements. Professional musicians earn the DMA to enhance and extend their knowledge and practice within their area of specialization. The DMA student focuses on the profession of music performance, as well as the theory and practice of the discipline.

Admissions & Policies

Admissions

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified on the Graduate Admissions policy page (https://catalog.gmu.edu/admissions/graduate-policies/). Specific graduate admissions requirements can be found on the College of Visual and Performing Arts Graduate Admissions requirements page (https://cvpa.gmu.edu/admissions/graduate-admissions/graduate-admission-requirements/).

Policies

500- to 800-level music courses may be counted as electives except for the following classes: MUSI 501, MUSI 502, MUSI 516, MUSI 532, MUSI 533. These are review courses that cover undergraduate-level material and they may not be counted toward the MM, DMA, or Ph.D.

For policies governing all graduate degrees, see AP .6 Graduate Policies. See College of Visual and Performing Arts for policies specific to the college.

Reduction of Credit

Students must have a master's degree before being admitted to the Doctor of Musical Arts Program. Most students receive a reduction of study of 30 credits based on their previous master's degree.

Requirements

Degree Requirements

Total credits: 90

The following degree plan is based on a student who receives a full 30 credit reduction. Students who do not receive a full credit reduction should choose additional credits in consultation with their advisor.

Placement Examinations

Prior to the beginning of the first semester of doctoral studies, the student must complete placement examinations in music theory, music history, and musicianship (including aural skills and keyboard skills). Positive scores on the placement exams may reduce or eliminate prerequisites for courses in music history and music theory. Recitals can be scheduled only after completion of any necessary prerequisites in music theory, music history, and musicianship.

Doctoral Coursework

The doctoral student must maintain a minimum of 3.00 GPA in courses presented on the degree plan, which may include no more than 6 credits with a grade of C. The GPA calculation excludes all transfer courses and Mason extended studies or non-degree credits not formally approved for the degree.

Students must complete the following required courses as well as those in their chosen concentration:

Code	Title	Credits
Select 3 credits of Music Theory elective from the following:		3
MUSI 610	Topics in Music Theory	
MUSI 613	Graduate Orchestration	
MUSI 614	Music Theory Pedagogy	
MUSI 640	Topics in World Musics	
MUSI 710	Advanced Topics in Music Theory	
MUSI 780	Doctoral Research Methods in Music	
MUSI 810	Doctoral Seminar in Analysis	
MUSI 830	Doctoral Seminar in Music History	3
Two credits of		2
MUSI 890	Doctoral Recital	
CVPA 600	CVPA Graduate ProSeminar [1]	0
Total Credits		8

[1] Must be taken within the student's first 2 semesters.

Concentration in Composition (CPO)

Code	Title	Credits
Select 1 credit of approved graduate electives [1]		1
MUSI 610	Topics in Music Theory	3
or MUSI 710	Advanced Topics in Music Theory	
or MUSI 810	Doctoral Seminar in Analysis	
MUSI 614	Music Theory Pedagogy	3
Four credits of		4
MUSI 685	Graduate Chamber Ensemble	
Six credits of		6
MUSI 810	Doctoral Seminar in Analysis	

Fifteen credits of		15
MUSI 828	Doctoral Applied Music in Composition	
MUSI 880	Doctoral Major Ensemble	1
Select 6 credits from the following:		6
MUSI 630	Topics in Music History and Literature	
MUSI 640	Topics in World Musics	
MUSI 730	Advanced Topics in Music History	
MUSI 830	Doctoral Seminar in Music History	
Total Credits		39

[1] Approved electives could be from music history, music literature, world music, music theory, conducting, music education, secondary Applied Music, ensemble (including chamber music), or relevant nonmusic courses.

Concentration in Conducting (CDC)

Code	Title	Credits
Select 5 credits of approved graduate electives [1]		5
Select 6 credits from the following:		6
MUSI 630	Topics in Music History and Literature	
MUSI 730	Advanced Topics in Music History	
MUSI 830	Doctoral Seminar in Music History	
MUSI 770	Advanced Topics in Pedagogy	3
MUSI 810	Doctoral Seminar in Analysis	3
Fifteen credits of		15
MUSI 829	Doctoral Applied Music in Conducting	
Four credits of		4
MUSI 880	Doctoral Major Ensemble	
Select 3 credits from the following:		3
MUSI 610	Topics in Music Theory	
MUSI 710	Advanced Topics in Music Theory	
MUSI 712	Composition for Conductors and Performers	
MUSI 810	Doctoral Seminar in Analysis	
Total Credits		39

[1] Approved electives could be from music history, music literature, world music, music theory, conducting, music education, secondary Applied Music, ensemble (including chamber music), or relevant nonmusic courses.

Concentration in Performance (PFM)

Code	Title	Credits
Select 15 credits of Graduate Applied Music from the following:		15
MUSI 822	Doctoral Applied Music in Keyboard	
MUSI 823	Doctoral Applied Music in Voice	
MUSI 824	Doctoral Applied Music in Woodwind	
MUSI 825	Doctoral Applied Music in Brass	
MUSI 826	Doctoral Applied Music in String	
MUSI 827	Doctoral Applied Music in Percussion	
Select 3 credits of approved graduate electives [1]		3
Select 6 credits from the following:		6
MUSI 630	Topics in Music History and Literature	
MUSI 730	Advanced Topics in Music History	
MUSI 830	Doctoral Seminar in Music History	
Select 2 credits from the following:		2
MUSI 685	Graduate Chamber Ensemble	
MUSI 720	Advanced Topics in Applied Music	
MUSI 770	Advanced Topics in Pedagogy	3
MUSI 810	Doctoral Seminar in Analysis	3
Select 4 credits from the following:		4
MUSI 880 & MUSI 720	Doctoral Major Ensemble and Advanced Topics in Applied Music	
MUSI 880 or MUSI 720	Doctoral Major Ensemble Advanced Topics in Applied Music	
Select 3 credits from the following:		3
MUSI 610	Topics in Music Theory	
MUSI 710	Advanced Topics in Music Theory	
MUSI 712	Composition for Conductors and Performers	
MUSI 810	Doctoral Seminar in Analysis	
Total Credits		39

[1] Approved electives could be from music history, music literature, world music, music theory, conducting, music education, secondary Applied Music, ensemble (including chamber music), or relevant nonmusic courses.

Residency

More than half of all credits (minimum 72) must be taken in doctoral degree status, after admission to the degree program. One year (fall and spring) of consecutive full-time study (9 credits per semester; 18 credits per year) is recommended. Or, the academic residency requirement may be fulfilled by earning 21 credits within 12 months (fall and spring semesters and summer term). Academic residency should be completed during the first year of study. Any necessary prerequisite courses at the 500 level can be included to meet the residency requirement. Language courses at the undergraduate level may not. Note: The academic residency does not imply meeting the standards of Virginia residency for tuition purposes.

Language Requirements

Reading proficiency is required in a language appropriate to the student's major area of study. Normally, this will be German, French, or Italian. The director of graduate studies and the Graduate Committee will determine the appropriate area of study. Reading proficiency may be accomplished by completing a reading examination provided by the music faculty. The reading examination provided by the faculty will normally consist of translation (with dictionary) of appropriate technical passages relevant to the student's area of study within a two-hour period. The language reading proficiency should be completed prior to earning 12 credits of courses at the 600 level or above.

Graduate Committee

The Graduate Committee will evaluate the progress of the student annually. Continuation in the program is subject to the endorsement of this group.

Comprehensive Exams

After the completion of required courses (excluding dissertation credits) or during the semester when completion of those courses is anticipated,

the student will take comprehensive examinations. The written exams will be followed by a one-hour oral exam to clarify issues included in the written exams.

Doctoral Research

Code	Title	Credits
Select 13 credits from the following:		13
MUSI 998	Dissertation Proposal (a minimum of 3 credits)	
MUSI 999	Dissertation (a minimum of 7 credits)	
Total Credits		13

Advancement to Candidacy

Before doctoral students may be advanced to candidacy by the dean of the College of Visual and Performing Arts, they must complete all coursework required by the program faculty, be certified in all relevant doctoral research skills, pass the comprehensive exams, and be recommended by the Graduate Committee, the director of graduate studies, and the director of the School of Music. Students advanced to candidacy after the add period for a given semester must wait until the following semester to register for MUSI 999 Dissertation.

Dissertation Committee

The dissertation is the capstone experience of doctoral study. The dissertation will be guided by the Dissertation Committee consisting of at least three members of the music faculty. The student's major professor will chair the committee. The director of graduate studies of the School of Music may be part of the committee; if not, he or she will serve exofficio. All Dissertation Committee members will be appointed by the dean of the College of Visual and Performing Arts and have graduate faculty status, as approved by the university provost. Performance and composition recitals are also subject to the approval of the Dissertation Committee.

Final Defense and Graduation

When all degree requirements have been satisfied, including completion of the doctoral dissertation, the doctoral candidate may request a doctoral defense. Approval for the defense must be obtained from the Dissertation Committee, the director of graduate studies and the director of the School of Music, and the dean of the College of Visual and Performing Arts. Notice of a defense must be circulated to the university community two weeks before the defense date.

All relevant rules regarding schedule, fees, and other matters as described in the catalog must be followed. All copies of the dissertation materials and fees must be paid before the doctoral degree is awarded.

School of Theater

Kevin Murray, Associate Director

A407 deLaski Performing Arts Building
Fairfax Campus

Phone: 703-993-1120
Email: theater@gmu.edu
Website: theater.gmu.edu

Undergraduate Programs

Theater BA and BFA

The School of Theater offers Bachelor of Arts (BA) and Bachelor of Fine Arts (BFA) degrees and prepares students for graduate study or entry into the profession through rigorous, concentrated, and individualized training; however, students are encouraged to maintain wide-ranging interests within the school and throughout the university's extensive offerings. Theater majors organize their advanced work within the major to include classes in areas of emphasis including performance, design and technical theater, and other theater studies.

Theater BA Concentrations

Theater majors must complete their Bachelor of Arts degree with a concentration in one of the following areas: Design and Technical Theater, Performance (Acting and Directing), Theater Education for Theater Arts PK-12, or Theater Studies. Students must earn a minimum 2.5 cumulative GPA to complete a BA. Bachelor of Arts students must use some/all general electives to complete a minor, double major, double degree or intermediate-level proficiency in one foreign language.

Certification for Theater Education for Theater Arts PK-12

The Theater Education for Theater Arts PK-12 concentration is approved by the Virginia State Department of Education and administered through the College of Education and Human Development, which is accredited by the National Council for the Accreditation of Teacher Education (NCATE). Upon degree conferral and completion of all requirements, students will be eligible to apply for Virginia state licensure. Minimum scores on the Praxis Core and VCLA tests must be achieved before state licensure is granted.

Students must be formally accepted into the Theater Education for Theater Arts PK-12 concentration.

Theater BFA Concentrations

Theater majors must complete their Bachelor of Fine Arts degree with a concentration in one of the following areas: Design for Stage and Screen, Performance for Stage and Screen (Acting and Directing), or Musical Theater Performance. Students must earn a minimum 2.5 cumulative GPA to complete a BFA.

Graduate Programs

Accelerated Master's Program

The School of Theater offers a Theater, BA/Arts Management, Accelerated MA option which allows undergraduate students to take graduate classes that can be used towards a designated Master's degree. Undergraduates who wish to pursue the accelerated Master's route should talk to their academic advisor first to see if they qualify. Students must be within 75-90 credits of their Bachelor's program to be eligible to apply; those who have earned more than 100 credits will not be considered. Students must be approved by their academic advisor and formally apply and be accepted to the Master's program through an Accelerated Master's application. For more information about admissions requirements and the application process, students should visit the college website (http://cvpa.gmu.edu).

Visual and Performing Arts, MFA

The School of Theater offers one concentration under the Master of Fine Arts, Visual and Performing Arts degree: Theater. Applicants to the program must designate which concentration they intend to apply for on

the application. Each concentration has its own unique set of admissions requirements and program requirements.

Graduate Certificate

Teaching Theatre PK-12 Graduate Certificate

The Teaching Theater PK–12 Graduate Certificate is a pre-service program that prepares students for Theatre Arts licensure by the Commonwealth of Virginia. In conjunction with the College of Education and Human Development, the Certificate curriculum consists of graduate-level Theater and Education courses, field experience observation and pre-service teaching internship.

Faculty

School Faculty

Professors

Davis, McDonald

Associate Professors

Gero, Johnsen-Neshati

Assistant Professor

Dunayer, Gardiner, Janis, Moijgani, Sivigny, Walsh

Administrative Faculty (Instructional)

Lechter, Murray

Adjunct Faculty

Alman, Armstrong, Cox, Gaines, Goldstein, Hobson, Kessinger, Lee, Lennon, Maaty, Ohanian, Robinson Jr., Sittig, Yamamoto

Requirements & Policies

Requirements

Admission Requirements

Entrance to the program is by audition/interview or portfolio review. Information about the audition process, including dates, can be found on the School of Theater website. Admission to the university is determined by the Office of Admissions (https://www2.gmu.edu/admissions-aid/).

Program Audition, Portfolio Requirements

Students interview with a faculty panel in order to apply to become a Theater major. Additionally, actors audition for the program; designers and technicians undergo a portfolio review (B.A. candidates may opt to submit an essay); generalists, theater educators, and writers provide written statements as described on the School of Theater website (https://theater.gmu.edu/). See additional details on the College of Visual & Performing Arts Admissions page (https://cvpa.gmu.edu/admissions/undergraduate-admissions/school-theater-admissions/).

We are looking for:

- An appropriate level of craft and artistry.
- Commitment to the work as demonstrated by preparation for the interview, audition, and/or portfolio review.
- A willingness to accept direction, criticism and mentoring.
- A willingness and ability to collaborate with students, faculty, and professionals.

Students must schedule their audition or interview through SlideRoom **(**https://gmucvpa.slideroom.com/#/login/program/43722**)**. Additional details can be found on the College of Visual & Performing Arts Admissions page (https://cvpa.gmu.edu/admissions/undergraduate-admissions/school-theater-admissions/). You will receive an email confirmation of your program audition or portfolio review date.

If you have any questions, please contact the School of Theater (https://theater.gmu.edu/). An applicant may request a virtual appointment during business hours. In person Theater major program auditions, portfolio reviews, and interviews will take place within the School of Theater on the Fairfax Campus.

Writing-Intensive Requirement

The university requires all students to complete at least one course designated writing-intensive in their major at the 300 level or above. Students seeking a BA or BFA in Theater fulfill this requirement by successfully completing THR 350 Script Analysis or THR 482 Advanced Screenplay Workshop.

Production Requirements

Participation in Theater at Mason productions is expected of all declared majors. Students must have a minimum 2.5 cumulative GPA to participate in Theater at Mason productions.

Theater Honors Program

See the Theater, BA or Theater, BFA for specific details.

BA/BFA Policies

Students seeking to earn a BA or BFA as a second bachelor's degree, either concurrently or sequentially, must complete all Theater degree requirements. Students must earn a minimum 2.00 cumulative GPA in their major. A student must earn a minimum cumulative GPA of 2.5 to complete a BA with a concentration or a BFA.

Programs

- Audio Production Minor
- Design and Technical Theater Minor
- Event Technical Production Minor (CVPA)
- Teaching Theatre PK-12 Graduate Certificate
- Theater Minor
- Theater Performance Minor
- Theater, BA
- Theater, BFA

Audio Production Minor

Banner Code: AUPD

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Website: https://catalog.gmu.edu/colleges-schools/visual-performing-arts/theater/#programstext

Those students interested in exploring audio production in a purely music-based experience should consider the minor in Music Technology.

Admissions & Policies

Policies

University policy states that students must earn 8 distinct credits that are not used for their major toward their minor, with a minimum grade of 2.00 earned in all courses applied to the minor. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 18

Required Courses

Code	Title	Credits
MUSI 254	Music and Technology	3
THR 315	Sound Engineering	3
THR 337	Sound Design	3
Total Credits		9

Other Courses

Code	Title	Credits
Select 9 credits from the following:		9
AVT 374	Sound Art I	
FAVS 333	Sound Editing and Recording	
FAVS 433	Advanced Sound	
GAME 250	Music for Film and Video	
MUSI 354	Electronic Composition	
MUSI 355	Recording Techniques	
THR 313	Event Technical Production	
THR 415	Advanced Sound Engineering	
THR 437	Advanced Sound Design	
or courses as approved by Director		
Total Credits		9

Design and Technical Theater Minor

Banner Code: DATT

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Admissions & Policies

Policies

University policy states that students must earn 8 distinct credits that are not used for their major toward their minor, with a minimum grade of 2.00 earned in all courses applied to the minor. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 18

Required Courses

Code	Title	Credits
THR 201	Stage Management	3
THR 230	Fundamentals of Production (Mason Core)	3
THR 350	Script Analysis	3
Total Credits		9

Other Courses

Code	Title	Credits
Select 9 credits from the following:		9
THR 198	Theatrical Construction Practicum	
THR 240	Introduction to Theatrical Design	
THR 313	Event Technical Production	
THR 314	Lighting Stagecraft	
THR 315	Sound Engineering	
THR 316	Scene Painting	
THR 330	Seminar in Technical Theater	
THR 331	Drafting and Model Making	
THR 332	History of Fashion and Dress	
THR 333	Scenic Design	
THR 334	Lighting Design	
THR 335	Costume Design	
THR 336	Technical Direction	
THR 337	Sound Design	
THR 339	Principles of Design	
THR 342	Makeup Design	
THR 343	Costume Technology	
THR 415	Advanced Sound Engineering	
THR 434	Advanced Lighting Design	
THR 437	Advanced Sound Design	
THR 492	Advanced Practicum	
or permission of Director		
Total Credits		9

Event Technical Production Minor (CVPA)

Banner Code: EVTP

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This minor is offered jointly with the College of Education and Human Development (School of Recreation, Health, and Tourism). This minor, available to all Mason undergraduate students, offers the opportunity to study special event management and event technologies, design and production for installations and special events. Students will gain insights into industry standards and practices regarding planning, managing, and executing live events and presentations. The required courses in this minor provide students with a foundational overview of management and production. Students can complement that knowledge with specific electives that meet their individual interests in events and areas of design and technology.

Admissions & Policies

Policies

University policy states that students must earn 8 distinct credits that are not used for their major toward their minor, with a minimum grade of 2.00 earned in all courses applied to the minor. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 18

Coursework

Code	Title	Credits
THR 230	Fundamentals of Production (Mason Core)	3
THR 313	Event Technical Production	3
or TOUR 313	Event Technical Production	
TOUR 220	Introduction to Event Management	3
TOUR 355	Event Logistics	3
Select 6 credits from the following:		6
THR 201	Stage Management	
THR 314	Lighting Stagecraft	
THR 315	Sound Engineering	
THR 333	Scenic Design	
THR 336	Technical Direction	
THR 343	Costume Technology	
TOUR 221	Event Implementation and Evaluation	
PRLS 310	Program Planning and Evaluation	
THR 490	Special Topics in Theater	
Or other course by permission of Director.		
Total Credits		18

Teaching Theatre PK-12 Graduate Certificate

Banner Code: AR-CERG-THRP

Mimsi Janis, Head of Theater Education

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The Teaching Theater PK–12 Graduate Certificate is a pre-service program that prepares students for Theatre Arts licensure by the Commonwealth of Virginia. In conjunction with the College of Education and Human Development, the certificate curriculum consists of graduate-level theater and education courses, field experience observation and pre-service teaching internship.

This certificate can be earned on a full-time or part-time basis.

This certificate program qualifies for Title IV Federal Financial Aid.

For more information about this program please visit Graduate Admissions FAQ (https://cvpa.gmu.edu/admissions/graduate-admissions/grad-admissions-faqs/) or the School of Theater website (https://theater.gmu.edu/)

Admissions & Policies

Admissions

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified on the Graduate Admissions policy page (https://catalog.gmu.edu/admissions/graduate-policies/). Specific graduate admissions requirements can be found on the College of Visual and Performing Arts Graduate Admissions requirements page (https://cvpa.gmu.edu/admissions/graduate-admissions/graduate-admission-requirements/).

Policies

Students must earn a B- or higher in all coursework. For policies governing all graduate programs see AP.6 Graduate Policies.

Requirements

Certificate Requirements (Licensure)

Total credits: 21

This certificate may be pursued on a full-or part-time basis.

Coursework

Code	Title	Credits
THR 548	Advanced Foundations of Theater Education	3
EDRD 501	Literacy and Curriculum Integration	3
EDUC 511	Child and Adolescent Development in Global Contexts	3
THR 549	Advanced Elementary Theater Ed	3
THR 550	Advanced Secondary Education	3
Six credits of		6
THR 555	Theater Education Internship [1]	
CVPA 600	CVPA Graduate ProSeminar [2]	0
Total Credits		21

[1] Prior to internship, must pass: VCLA, technology & child abuse standards.

[2] Must be taken within the student's first two semesters.

Theater Minor

Banner Code: THR

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Admissions & Policies

Policies

University policy states that students must earn 8 distinct credits that are not used for their major toward their minor. Students must complete all coursework with a minimum GPA of 2.00. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 18

Coursework

Code	Title	Credits
THR 210	Acting I (Mason Core)	3
THR 350	Script Analysis	3
Select one from the following:		3
THR 201	Stage Management	
THR 230	Fundamentals of Production (Mason Core)	
THR 240	Introduction to Theatrical Design	
Select 9 credits of 100-400 level THR coursework		9
Total Credits		18

Theater, BA

Banner Code: AR-BA-THR

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The BA degree stresses the breadth of a liberal arts education in the belief that such study, combined with serious practical training and experience, offers the best preparation for a life in theater and screen.

Students complete the theater core. To organize their advance work within the major, students elect a course of study from four concentrations:

- Performance (Acting and Directing)
- Design and Technical Theater
- Theater Education for Theater Arts PK-12
- Theater Studies

Admissions & Policies

Admissions

Entrance to the program is by audition/interview or portfolio review. Information about the audition process, including dates, can be found on the School of Theater website (https://theater.gmu.edu).

Admission to the university is determined by the Admissions Office. University-wide admissions policies can be found in the Undergraduate Admissions Policies section of this catalog.

Policies

For policies governing all undergraduate degrees, see AP.5 Undergraduate Policies (https://catalog.gmu.edu/policies/academic/undergraduate-policies/).

Requirements

Degree Requirements

Total credits: 120

Mason Core

Code	Title	Credits
Foundation Requirements		
Oral Communication		3
Information Technology		3
Quantitative Reasoning		3
ENGH 101	Composition (Mason Core) [1]	3

ENGH 302	Advanced Composition (Mason Core) [1]	3
Core Requirements		
Literature		3
Arts [2]		3
Natural Science [3]		7
Western Civilization/World History		3
Global Understanding		3
Social and Behavioral Sciences		3
Total Credits		37

1. Nonnative speakers of English with limited proficiency in the language may substitute ENGH 100 Composition for Multilingual Writers (Mason Core) for ENGH 101 Composition (Mason Core). Students must attain a minimum grade of C in ENGH 100 Composition for Multilingual Writers (Mason Core) or ENGH 101 Composition (Mason Core), as well as in ENGH 302 Advanced Composition (Mason Core), to fulfill degree requirements.
2. Course must fall outside the major.
3. Must include at least one laboratory science course.

Major

Theater Core Requirements

Note: All THR majors may not double count THR courses within the major. All THR courses count either towards the degree core or the concentration, but not both.

Code	Title	Credits
THR 150	Greeks to Restoration (Mason Core)	3
THR 151	Romanticism to Present (Mason Core)	3
THR 198	Theatrical Construction Practicum	1
THR 201	Stage Management	3
THR 210	Acting I (Mason Core)	3
THR 230	Fundamentals of Production (Mason Core)	3
THR 300	Voice and Speech	3
THR 329	Directing	3
THR 350	Script Analysis	3
THR 411	Great Film Directors (Mason Core)	3
or THR 412	Great Film Performances (Mason Core)	
Movement		**3**
Select one course from the following:		
THR 303	Movement for Actors	
THR 304	Advanced Movement for Actors	
THR 305	Unarmed Stage Combat	
THR 306	Movement in Musical Theater	
Synthesis		**3**
THR 440	Advanced Studies in Directing/ Dramaturgy (Mason Core)	
or THR 496	Text in Production (Mason Core)	
Design/Tech in the Discipline		**3**
Select one course from the following: [3]		
THR 240	Introduction to Theatrical Design [2]	
THR 313	Event Technical Production	
THR 314	Lighting Stagecraft	
THR 315	Sound Engineering	
THR 316	Scene Painting	
THR 330	Seminar in Technical Theater	
THR 342	Makeup Design	
Writing in the Discipline		**3**
Select one course from the following: [3]		
THR 351	Dramatic Theory and Criticism	
THR 380	Playwriting I	
THR 382	Screenplay Workshop	
THR 484	Translation Adaptation for Stage Screen	
Dramatic Literature		**3**
Select one course from the following: [3]		
THR 352	Dramatic Literature Seminar	
THR 353	Advanced Studies in Theater History	
THR 354	American Voices	
THR 359	World Stages (Mason Core) [1]	
THR 424	Contemporary Women Playwrights	
Total Credits		43

1. May fulfill either Mason Core Global Understanding requirement or dramatic literature requirement but not both.
2. Design & Tech concentration students must complete THR 240 for the Design/Tech in the Discipline requirement.
3. or with permission of Director

Concentrations

Theater majors earning a BA in Theater must select one of the following concentrations:

Concentrations

- Concentration in Design and Technical Theater (DTT)
- Concentration in Performance (PFM)
- Concentration in Theater Education for Theater Arts PK-12 (THEA)
- Concentration in Theater Studies (THST)

Concentration in Design and Technical Theater (DTT)

Provides a foundation of knowledge, technique, and experience in one or more areas of theater design and technology in preparation for advanced study and professional work in the field.

Code	Title	Credits
THR 339	Principles of Design	3
THR 492	Advanced Practicum	3
Select three courses from the following: [1]		9
THR 313	Event Technical Production	
THR 314	Lighting Stagecraft	
THR 315	Sound Engineering	
THR 316	Scene Painting	
THR 330	Seminar in Technical Theater	
THR 331	Drafting and Model Making	
THR 332	History of Fashion and Dress	
THR 333	Scenic Design	
THR 334	Lighting Design	
THR 335	Costume Design	
THR 337	Sound Design	

THR 342	Makeup Design	
THR 343	Costume Technology	
THR 428	Musical Theater Ensemble [2]	
THR 434	Advanced Lighting Design	
THR 437	Advanced Sound Design	
Upper-Level Theater Electives		12
12 credits of 300-400 level THR coursework		
Total Credits		27

1 or with permission of Director

2 Registration by audition/interview only. Students completing THR 428 for the first time must register for 3 credits. Students repeating the course may elect to register for 1-3 credits.

Concentration in Performance (PFM)

Designed for the serious student of acting and directing with professional aspirations. Solid grounding in the fundamentals of performance analysis and basic training of the actor's instrument are complemented by a rigorous, sequential instruction in the various facets of the actor's craft.

At its core, the Performance Concentration is a blend of Modern and Classical actor training using a Stanislavski-grounded approach balanced with techniques for understanding texts written two hundred years before "motivation" and "characterization" entered the critical vocabulary. Rounding out the curriculum is specialized study in vocal production and movement technique. Matriculation in this program expresses a profound commitment to a rigorous intellectual, physical and emotional investigation of the discipline of performance over a two-year period. Professional development is enhanced with ongoing student progress reviews, support and advising from Performance Concentration faculty.

Code	Title	Credits
THR 301	Advanced Study in Voice	3
THR 310	Acting II	3
Select two courses from the following: [1]		6
THR 320	Performance Studio	
THR 321	Acting Shakespeare	
THR 340	Advanced Studies in Directing	
THR 410	Acting for the Camera	
THR 420	Advanced Performance Studio	
THR 423	Audition Techniques: Stage and Camera	
THR 422	Performance: Process and Portfolio	
THR 428	Musical Theater Ensemble [2]	
THR 492	Advanced Practicum	
Select one course from the following: [1]		3
THR 304	Advanced Movement for Actors	
THR 305	Unarmed Stage Combat	
THR 306	Movement in Musical Theater	
THR 365	Characterization	
THR 405	Advanced Stage Combat	
THR 421	One-Person Show	
THR 427	Musical Theater Workshop	
Upper-Level Theater Electives		12
12 credits of 300-400 level THR coursework		
Total Credits		27

1 or with permission of Director

2 Registration by audition/interview only. Students completing THR 428 for the first time must register for 3 credits. Students repeating the course may elect to register for 1-3 credits.

Concentration in Theater Education for Theater Arts PK-12 (THEA)

Designed for students interested in pursuing theater education. Students pursuing a concentration in Theater Education for Theater Arts PK-12 must:

- Maintain an overall GPA of 2.80 in all coursework completed at Mason and in course work at all institutions of higher learning combined.
- Earn no grade lower than a C in theater and professional education courses needed for graduation.

Upon completion of all required coursework students must complete 15 weeks of a full-time student teaching internship (THR 455 Theater Education Internship). Applications for placement, subject to approval of the unit, are submitted to the Field Placement Specialist in the College of Education and Human Development at the beginning of the previous semester. In addition, students must pass the VCLA before student teaching.

Code	Title	Credits
Required Core Courses		
THR 448	Foundations of Theater Education	3
THR 449	Elementary Theater Education	3
THR 450	Secondary Theater Education	3
THR 422	Performance: Process and Portfolio	3
or THR 492	Advanced Practicum	
EDRD 300	Literacy and Curriculum Integration	3
EDUC 301	Educating Diverse and Exceptional Learners	3
EDUC 302	Human Growth and Development	3
Six credits of		6
THR 455	Theater Education Internship	
Total Credits		27

Concentration in Theater Studies (THST)

Designed for the Theater generalist or the writer specializing in playwriting, screenwriting, production dramaturgy, season planning, theater criticism, and translation/adaptation for the stage. The Concentration in Theater Studies requires each student to work with a faculty advisor to craft an individualized course of study that challenges their development conceptually and creatively for a total of 27 credits of upper-division (300-400 level) THR courses. Concentration curriculum must include a minimum of three credits of THR 422 Performance: Process and Portfolio or THR 492 Advanced Practicum.

General Electives

Code	Title	Credits
BA students must use some/all general electives to complete a		13
Minor		
Double Major [1]		
Double Degree [1]		

Intermediate-level proficiency in one foreign language	
Remaining electives [2]	

1 Must be outside student's primary major field of study.

2 May be taken inside or outside of the department. All students are required to take a minimum of 45 credits of upper-division courses (300 and 400 level).

4-Year Plan

Bachelors of Arts in Theatre Sample Plan of Study

The sample plan below is a recommended sequencing of courses based on pre-requisites and scheduling. This may not fit every student's needs and is a guideline, not a requirement. Students should confirm major requirements with their academic advisor and with PatriotWeb Degree Evaluation to ensure they enroll in the proper courses and are on track to graduate.

First Year

Fall Semester	Credits	Spring Semester	Credits
THR 150	3	THR 151	3
THR 201 or 210	3	THR 201 or 210	3
THR 230	3	THR Concentration Course	3
Mason Core (typically ENGH 101)	3	Mason Core (typically COMM 100 or 101)	3
Mason Core (typically Quantitative Reasoning)	3	Mason Core (typically Literature)	3
	15		15

Second Year

Fall Semester	Credits	Spring Semester	Credits
THR 350	3	THR 329	3
Movement or Design/Tech in the Discipline	3	THR Concentration Course	3
THR 300 or THR Concentration course	3	Movement or Design/Tech in the Discipline	3
Foreign Language or Minor	3	Foreign Language or Minor	3
Mason Core (typically Arts - outside the major)	3	Mason Core (typically HIST 100 or 125)	3
THR 198	1		
	16		15

Third Year

Fall Semester	Credits	Spring Semester	Credits
Dramatic Literature or Writing in the Discipline	3	Dramatic Literature or Writing in the Discipline	3
THR 300 or THR Concentration Course	3	Film Study or THR Concentration Course	3
Mason Core (typically Lab science)	4	THR Concentration Course	3
Foreign language or Minor	3	Foreign Language or Minor	3
Mason Core (typically Information Technology)	3	Mason Core (typically Global Understanding)	3
	16		15

Fourth Year

Fall Semester	Credits	Spring Semester	Credits
Synthesis or THR Concentration Course	3	Synthesis or THR Concentration Course	3
Film Study or THR Concentration Course	3	THR Concentration Course	3
THR Concentration Course	3	THR Concentration Course	3
Mason Core (typically Non-lab Science)	3	Mason Core (typically ENGH 302)	3
Mason Core (typically Social & Behavioral Sciences)	3	Elective (or credits toward Minor)	1
	15		13

Total Credits 120

Detailed four year plans and degree planning checklists can be found at https://advising.gmu.edu/current-student/majors-at-mason/.

Concentration in Theater Education for Theater Arts PK-12

First Year

Fall Semester	Credits	Spring Semester	Credits
THR 150	3	THR 151	3
THR 201 or 210	3	THR 201 or 210	3

THR 230	3	Mason Core (typically COMM 100 or 101)	3
Mason Core (typically ENGH 101)	3	Mason Core (typically Arts - outside the major)	3
Mason Core (typically Quantitative Reasoning)	3	Mason Core (typically Literature)	3
	15		15

Second Year

Fall Semester	Credits	Spring Semester	Credits
Movement or Design/Tech in the Discipline	3	EDRD 300	3
THR 300	3	Movement or Design/Tech in the Discipline	3
THR 350	3	THR 329	3
Foreign Language or Minor	3	Foreign Language or Minor	3
Mason Core (typically HIST 100 or 125)	3	Mason Core (typically Information Technology)	3
	15		15

Third Year

Fall Semester	Credits	Spring Semester	Credits
Dramatic Literature or Writing in the Discipline	3	Film Study or Synthesis	3
EDUC 301	3	Dramatic Literature or Writing in the Discipline	3
Foreign Language or Minor	3	THR 448	3
Mason Core (typically Lab Science)	4	Foreign Language or Minor	3
THR 198	1	Mason Core (typically Non-Lab Science)	3
	14		15

Fourth Year

Fall Semester	Credits	Spring Semester	Credits
Film Study or Synthesis	3	THR 450	3
THR 449	3	THR 422 or 492	3
EDUC 302	3	Mason Core (typically ENGH 302)	3
Mason Core (typically Global Understanding)	3	Elective (or credits toward Minor)	1-3
Mason Core (typically Social & Behavioral Sciences)	3	THR 455 (Note: All coursework must be completed before registering for THR 455, which is typically taken in the ninth semester)	6-12
	15		16-24

Total Credits 120-128

Detailed four year plans and degree planning checklists can be found at https://advising.gmu.edu/current-student/majors-at-mason/.

Honors

Honors in the Major

Highly-qualified students who have completed 75 credits may pursue advanced work leading to graduation with honors in the major. Students apply for Honors in Theater by submitting to the Director (by November 15 or April 15) a two-page written statement outlining their reasons for pursuing advanced coursework and specific professional goals, along with the names of two Mason theater faculty members who have agreed to serve as references.

Students satisfy the honors course sequence by taking three honors-specific courses from their chosen concentration. They must also maintain an overall GPA of 3.50 and a GPA of 3.75 within the major.

Accelerated Master's

Theater, BA/Arts Management, Accelerated MA

Overview

Undergraduates in Theater may apply to the accelerated master's degree in Arts Management. If accepted, students will be able to earn a BA in Theater and an MA in Arts Management after satisfactory completion of 150 credits.

Students choosing the accelerated option must fulfill all university requirements for the master's degree. The regular designed timeframe would be a start in the Fall and the completion in the Summer five years later, but longer time frames may also be available.

See AP.6.7 Bachelor's/Accelerated Master's Degree for policies related to this program. For policies governing all graduate degrees, see AP.6 Graduate Policies.

Admission Requirements

Applicants to accelerated master's programs must have completed at least 75 credits that apply to their undergraduate degree (with at least 24 credits at Mason) and no more than 90 credits. Applicants should submit an Accelerated Master's Program Application, available from the College of Visual and Performing Arts (CVPA) Graduate Studies. It includes the proposed conferral date for the undergraduate degree and the two graduate courses that are to be applied to the undergraduate degree.

Interested students should contact the Arts Management Program Office for more details about the application process.

Accelerated Option Requirements

As an undergraduate, the accelerated master's student is to complete the two graduate courses indicated on their Accelerated Master's Program application with a minimum grade of 3.00 in each course. Students must maintain a minimum GPA of 3.00 in all coursework and in coursework applied to their major. On completion and conferral of the undergraduate degree in the semester indicated in the application, they submit the Bachelor's/Accelerated Master's Transition Form (which shall incorporate all of the Graduate Admission requirements of the university) and are admitted to graduate status.

As graduate students, accelerated master's students have an advanced standing. They must meet all master's degree requirements except for the two courses (6 credits) they completed as undergraduates. The Internal Internship (AMGT 742 Internship I) will be within Theater at Mason (generally with the School of Theater). Students will begin their master's program in the semester immediately following conferral of the undergraduate degree, and they may also begin in the summer term.

Reserve Graduate Credit

Students may take up to 6 additional graduate credits as reserve graduate credit. These credits do not apply to the undergraduate degree. The ability to take courses for reserve graduate credit is available to all high achieving undergraduates with permission of the School of Theater. Permission to take a graduate course for reserve graduate credit is normally granted only to Mason seniors within 15 hours of graduation and must be approved by the Dean's Office.

To apply these credits to the master's degree, students must request that the credits be moved from the undergraduate degree to the graduate degree using the Bachelor's/Accelerated Master's Transition Form.

Theater, BFA

Banner Code: AR-BFA-THR

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Admissions & Policies

Admissions

Entrance to the program is by audition/interview or portfolio review. Information about the audition process, including dates on the School of Theater website (https://theater.gmu.edu). Admission to the university is determined by the Admissions Office.

Policies

For policies governing all undergraduate degrees, see AP.5 Undergraduate Policies (https://catalog.gmu.edu/policies/academic/undergraduate-policies/).

Requirements

Degree Requirements

Total credits: 120

Mason Core

Code	Title	Credits
Foundation Requirements		
Oral Communication		3
Information Technology		3
Quantitative Reasoning		3
ENGH 101	Composition (Mason Core) [1]	3
ENGH 302	Advanced Composition (Mason Core) [1]	3
Core Requirements		
Literature		3
Arts [2]		3
Natural Science [3]		7
Western Civilization/World History		3
Global Understanding		3
Social and Behavioral Sciences		3
Total Credits		37

1. Nonnative speakers of English with limited proficiency in the language may substitute ENGH 100 Composition for Multilingual Writers (Mason Core) for ENGH 101 Composition (Mason Core). Students must attain a minimum grade of C in ENGH 100 Composition for Multilingual Writers (Mason Core) or ENGH 101 Composition (Mason Core), as well as in ENGH 302 Advanced Composition (Mason Core), to fulfill degree requirements.
2. Outside the major. Students earning a concentration in Musical Theater Performance must take DANC 125 Modern/Contemporary Dance I (Mason Core), DANC 131 Beginning Jazz Technique (Mason Core), DANC 145 Ballet I (Mason Core), DANC 161 Beginning Tap Dance (Mason Core), DANC 225 Modern/Contemporary Dance II (Mason Core), DANC 231 Intermediate Jazz Technique (Mason Core), DANC 245 Ballet II (Mason Core), or DANC 331 Advanced Jazz Dance (Mason Core).
3. Including one laboratory science

Major

Code	Title	Credits
Theater Core Requirements		
Note: All THR majors may not double count THR courses within the major. All THR courses count either towards the degree core or the concentration, but not both.		
THR 150	Greeks to Restoration (Mason Core)	3
THR 151	Romanticism to Present (Mason Core)	3
THR 198	Theatrical Construction Practicum	1
THR 201	Stage Management	3
THR 210	Acting I (Mason Core)	3
THR 230	Fundamentals of Production (Mason Core)	3
THR 300	Voice and Speech	3
THR 329	Directing	3
THR 350	Script Analysis	3
THR 411	Great Film Directors (Mason Core)	3
or THR 412	Great Film Performances (Mason Core)	
Movement		**3**
Select one course from the following:		
THR 303	Movement for Actors	
THR 304	Advanced Movement for Actors	
THR 305	Unarmed Stage Combat	
THR 306	Movement in Musical Theater	
Synthesis		**3**
Select one course from the following:		
THR 440	Advanced Studies in Directing/ Dramaturgy (Mason Core)	
THR 496	Text in Production (Mason Core)	
Design/Tech in the Discipline		**3**
Select one course from the following: [3]		
THR 240	Introduction to Theatrical Design [2]	
THR 313	Event Technical Production	
THR 314	Lighting Stagecraft	
THR 315	Sound Engineering	
THR 316	Scene Painting	
THR 330	Seminar in Technical Theater	
THR 342	Makeup Design	
Writing in the Discipline		**3**
Select one course from the following: [3]		
THR 351	Dramatic Theory and Criticism	
THR 380	Playwriting I	
THR 382	Screenplay Workshop	
THR 484	Translation Adaptation for Stage Screen	
Dramatic Literature		
Select one course from the following: [3]		3
THR 352	Dramatic Literature Seminar	
THR 353	Advanced Studies in Theater History	
THR 354	American Voices	
THR 359	World Stages (Mason Core) [1]	
THR 424	Contemporary Women Playwrights	
Total Credits		43

[1] May fulfill Mason Core global understanding or the upper-level dramatic literature requirement but not both.

[2] Design & Tech concentration students must complete THR 240 for the Design/Tech in the Discipline requirement.

[3] or with permission of Director

Concentrations

Theater majors earning a BFA in Theater must select one of the following concentrations:

Concentrations

- Design for Stage and Screen Concentration (DSS)
- Musical Theater Performance Concentration (MTPF)
- Performance for Stage and Screen (Acting and Directing) Concentration (PSS)

Design for Stage and Screen Concentration (DSS)

Code	Title	Credits
THR 339	Principles of Design	3
THR 492	Advanced Practicum	3
Select 9 courses from the following: [1]		27
THR 313	Event Technical Production	
THR 314	Lighting Stagecraft	
THR 315	Sound Engineering	
THR 316	Scene Painting	
THR 330	Seminar in Technical Theater	
THR 331	Drafting and Model Making	
THR 332	History of Fashion and Dress	
THR 333	Scenic Design	
THR 334	Lighting Design	
THR 335	Costume Design	
THR 336	Technical Direction	
THR 337	Sound Design	
THR 340	Advanced Studies in Directing	
THR 342	Makeup Design	
THR 343	Costume Technology	
THR 345	Puppetry	
THR 415	Advanced Sound Engineering	
THR 428	Musical Theater Ensemble [2]	
THR 434	Advanced Lighting Design	
THR 437	Advanced Sound Design	
THR 490	Special Topics in Theater	
THR 491	Seminar on the Profession	
THR 494	Field Experience	
Total Credits		33

[1] or with permission of Director

[2] Registration by audition/interview only. Students completing THR 428 for the first time must register for 3 credits. Students repeating the course may elect to register for 1-3 credits.

Musical Theater Performance Concentration (MTPF)

Code	Title	Credits
Required Core Courses		
MUSI 113	Aural Skills I [1]	1

MUSI 114	Aural Skills II [1]	1
MUSI 115	Introduction to Music Theory [1]	3
MUSI 171	Keyboard Skills I [1]	1
MUSI 172	Keyboard Skills II [1]	1
MUSI 381	University Chorale (Mason Core)	1
or THR 211	Mason Cabaret	
MUSI 223	Applied Music in Voice	8
or MUSI 243	Applied Music in Voice	
THR 306	Movement in Musical Theater	3
THR 310	Acting II	3
THR 320	Performance Studio	3
THR 365	Characterization	3
or THR 422	Performance: Process and Portfolio	
THR 410	Acting for the Camera	3
or THR 420	Advanced Performance Studio	
THR 427	Musical Theater Workshop	3
Ensemble		**3**
Select one course from:		
THR 428	Musical Theater Ensemble [2]	
THR 494	Field Experience	
THR 495	Senior Capstone Project	
Movement Elective		**3**
Select one course from: [3]		
DANC 231	Intermediate Jazz Technique (Mason Core)	
DANC 331	Advanced Jazz Dance (Mason Core) (200 level pre-requisite must be met)	
THR 304	Advanced Movement for Actors	
THR 305	Unarmed Stage Combat	
THR 405	Advanced Stage Combat	
Total Credits		40

1 The School of Music offers placement tests in Theory, Sight Singing, Ear Training and Keyboard Skills for students with an exceptional level of competency or prior academic experience in these areas. Placement tests are optional. However, students must pass the specific placement tests in order to receive "credit-by-examination" to be applied for credit to the concentration. These exams are only available the semester you begin coursework at Mason and cannot be scheduled for a later time. Opportunities to take the placement exams and additional exam details are posted on the School of Music website: music.gmu.edu (https://music.gmu.edu)

2 Registration by audition/interview only. Students completing THR 428 for the first time must register for 3 credits. Students repeating the course may elect to register for 1-3 credits.

3 or with permission of Director

Performance for Stage and Screen (Acting and Directing) Concentration (PSS)

Code	Title	Credits
THR 301	Advanced Study in Voice	3
THR 310	Acting II	3
THR 365	Characterization	3
or THR 421	One-Person Show	
THR 410	Acting for the Camera	3
THR 422	Performance: Process and Portfolio	3
or THR 492	Advanced Practicum	
Select 4 courses from the following: [1]		12
THR 320	Performance Studio	
THR 321	Acting Shakespeare	
THR 340	Advanced Studies in Directing	
THR 342	Makeup Design	
THR 420	Advanced Performance Studio	
THR 422	Performance: Process and Portfolio	
THR 423	Audition Techniques: Stage and Camera	
THR 428	Musical Theater Ensemble [2]	
THR 490	Special Topics in Theater	
THR 491	Seminar on the Profession	
THR 494	Field Experience	
Select 2 courses from the following: [1]		6
THR 304	Advanced Movement for Actors	
THR 305	Unarmed Stage Combat	
THR 306	Movement in Musical Theater	
THR 405	Advanced Stage Combat	
THR 427	Musical Theater Workshop	
Total Credits		33

1 or with permission of Director

2 Registration by audition/interview only. Students completing THR 428 for the first time must register for 3 credits. Students repeating the course may elect to register for 1-3 credits.

General Electives

Code	Title	Credits
After fulfilling degree requirements, BFA students may use remaining general electives credits inside or outside of the department. All students are required to take a minimum of 45 credits of upper-division courses (300-400 level).		0-7
Total Credits		0-7

4-Year Plan

Bachelor of Fine Arts in Theater Sample Plan of Study

The sample plan below is a recommended sequencing of courses based on pre-requisites and scheduling. This may not fit every student's needs and is a guideline, not a requirement. Students should confirm major requirements with their academic advisor and with PatriotWeb Degree Evaluation to ensure they enroll in the proper courses and are on track to graduate.

First Year

Fall Semester	Credits	Spring Semester	Credits
THR 150	3	THR 151	3
THR 201 or 210	3	THR Concentration Course	3

THR 230	3	Mason Core (typically COMM 100 or 101)	3
Mason Core (typically ENGH 101)	3	Mason Core (typically Arts - outside the major)	3
Mason Core (typically Quantitative Reasoning)	3	Mason Core (typically Literature)	3
	15		15

Second Year

Fall Semester	Credits	Spring Semester	Credits
THR 201 or 210	3	THR 329	3
THR 350	3	Movement or Design/Tech in the Discipline	3
Movement or Design/Tech in the Discipline	3	THR Concentration Course	3
THR 300 or THR Concentration Course	3	Mason Core (typically HIST 100 or 125)	3
Mason Core (typically Information Technology) or THR Concentration Course	3	Mason Core (typically Information Technology) or THR Concentration Course	3
	15		15

Third Year

Fall Semester	Credits	Spring Semester	Credits
Dramatic Literature or Writing in the Discipline	3	Dramatic Literature or Writing in the Discipline	3
THR 300 or THR Concentration Course	3	Film Study or THR Concentration Course	3
THR Concentration Course	3	THR Concentration Course	3
Mason Core (typically Lab Science)	4	Mason Core (typically ENGH 302)	3
THR 198	1	Mason Core (typically Social & Behavioral Sciences)	3
	14		15

Fourth Year

Fall Semester	Credits	Spring Semester	Credits
Synthesis or THR Concentration Course	3	Synthesis or THR Concentration Course	3
Film Study or THR Concentration Course	3	THR Concentration Course	3
THR Concentration Course	3	THR Concentration Course	3
Mason Core (typically Non-Lab Science)	3	General Elective	3
Mason Core (typically Global Understanding)	3	General Elective	3
		General Elective	1
	15		16

Total Credits 120

Detailed four year plans and degree planning checklists can be found at https://advising.gmu.edu/current-student/majors-at-mason/.

Concentration in Musical Theater Performance

First Year

Fall Semester	Credits	Spring Semester	Credits
THR 150	3	THR 151	3
THR 210	3	THR 230	3
Mason Core (typically ENGH 101)	3	THR 310	3
Mason Core (typically Quantitative Reasoning)	3	Mason Core (typically COMM 100 or 101)	3
DANC Course (Chosen from Mason Core Arts list)	3	Mason Core (typically Literature)	3
MUSI 223	1	MUSI 223	1
	16		16

Second Year

Fall Semester	Credits	Spring Semester	Credits
Mason Core (typically Information Technology)	3	Mason Core (typically Social & Behavioral Sciences)	3
Mason Core (typically HIST 100 or 125)	3	Mason Core (Typically Global Understanding)	3

Movement (THR 303, 304, or 305) or THR 300	3	THR 350	3
THR 427	3	THR 306 or 201	3
MUSI 115	3	MUSI 171	1
MUSI 223	1	MUSI 381	1
		MUSI 223	1
	16		15

Third Year

Fall Semester	Credits	Spring Semester	Credits
Mason Core (typically Lab Science)	4	Mason Core (typically Non-Lab Science)	3
THR 329	3	THR 306 or 201	3
Movement (THR 303, 304, or 305) or THR 300	3	THR 411 or 412	3
THR 320	3	Dramatic Literature or THR 420	3
MUSI 113	1	MUSI 172	1
MUSI 223	1	THR 198	1
		MUSI 223	1
	15		15

Fourth Year

Fall Semester	Credits	Spring Semester	Credits
Mason Core (typically ENGH 302)	3	Synthesis (THR 440 or 496)	3
Dramatic Lit or THR 410	3	Writing in the Discipline or Design/Tech in the Discipline	3
Writing in the Discipline or Design/Tech in the Discipline	3	THR 303, 304, 305, DANC 231, or DANC 331	3
MUSI 114	1-2	THR 428, 494, or 495	3
MUSI 223	1	MUSI 223	1
THR 422 or 365	3		
	14-15		13

Total Credits 120-121

Detailed four year plans and degree planning checklists can be found at https://advising.gmu.edu/current-student/majors-at-mason/.

Honors

Honors in the Major

Highly-qualified students who have completed 75 credits may pursue advanced work leading to graduation with honors in the major. Students apply for Honors in Theater by submitting to the Director (by November 15 or April 15) a two-page written statement outlining their reasons for pursuing advanced coursework and specific professional goals, along with the names of two Mason theater faculty members who have agreed to serve as references.

Students satisfy the honors course sequence by taking three honors-specific courses from their chosen concentration. They must also maintain an overall GPA of 3.50 and a GPA of 3.75 within the major.

Theater Performance Minor

Banner Code: THP

Sara Simanski, Academic Advisor

A407 deLaski Performing Arts Building
Fairfax Campus

Phone: 703-993-6079
Email: ssimansk@gmu.edu
Website: https://theater.gmu.edu/academics

Admissions & Policies

University policy states that students must earn 8 distinct credits that are not used for their major toward their minor, with a minimum grade of 2.00 earned in all courses applied to the minor. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 18

Coursework

Code	Title	Credits
THR 210	Acting I (Mason Core)	3
THR 300	Voice and Speech	3
THR 310	Acting II	3
THR 350	Script Analysis	3
Select six credits from the following:		6
THR 301	Advanced Study in Voice	
THR 303	Movement for Actors	
THR 304	Advanced Movement for Actors	
THR 305	Unarmed Stage Combat	
THR 320	Performance Studio	
THR 321	Acting Shakespeare	
THR 329	Directing	
THR 410	Acting for the Camera	
THR 420	Advanced Performance Studio	

THR 423	Audition Techniques: Stage and Camera	
THR 427	Musical Theater Workshop	
or other courses with permission of Director		
Total Credits		18

Interdisciplinary Programs and Courses

College Code: UN

Academic Units

- Smithsonian-Mason School of Conservation

Programs

- Applied Science, BAS
- Design Thinking Minor

Applied Science, BAS

Banner Code: UN-BAS-APLS

Administration

- Janette Kenner Muir, Academic Director and Associate Provost for Academic Initiatives and Services
- Marcy R. L. Glover, Curriculum Coordinator
- Krystal Dains, Coordinator, Volgenau School of Engineering concentrations
- Jane Walker, Coordinator, School of Conflict Analysis and Resolution concentration

The Bachelor of Applied Science (BAS) is an undergraduate liberal arts degree program for adult learners. It is designed primarily to deepen student knowledge in an academic area and foster critical thinking, analytic reasoning, and an ability to synthesize information.

The BAS articulates well with specialized Applied Associate Science (AAS) degree programs, providing a streamlined path to completion of traditional academic requirements leading to the baccalaureate degree. It meets students' professional and personal goals while developing a depth of knowledge and proficiency of skill that translates well to the workplace. However, it is not organized in the same way as a traditional baccalaureate degree. Students planning graduate study should consult with an academic advisor prior to undertaking this degree program.

Admissions & Policies

Admissions

As a prerequisite to enrollment in the BAS, students must have received an Associate of Applied Science (AAS) degree from an accredited two-year institution in an approved area of specialization. Students should review specific Admissions details on the program's website. (http://bas.gmu.edu)

Policies

For policies governing all undergraduate degrees, see AP.5 Undergraduate Policies.

Program Requirements

BAS students must fulfill all requirements for bachelor's degrees including Mason Core requirements, to include 45 credits of upper-level coursework. All Mason Core requirements must be met with either George Mason courses or transferrable equivalents.

The minimum credit requirement for a bachelor's degree is 120 credits; however, while there is some variation between concentration areas, fulfilling all Mason Core requirements and an academic concentration is likely to require most BAS students to complete at least 63-66 credits at George Mason, which may lead to over 120 credits of coursework in order to receive the degree.

Admitted BAS students will be academically advised by the appropriate BAS Program concentration advisor to plan their course of study including completion of the Mason Core, the BAS concentration, and any remaining requirements. See t (http://bas.gmu.edu)he website (http://bas.gmu.edu) for more information.

The degree plan outlined is based on a student who transfers in a minimum of 30 credits from a completed AAS degree. Some of these credits may count only towards the elective requirement within the BAS degree.

Specific concentrations may have additional policies indicated in the Requirements tab.

Requirements

Degree Requirements

Total credits: 120-126

Concentrations are intended to provide focus for the BAS curriculum in an area relevant to the student's AAS degree while allowing for the breadth of study associated with a liberal arts baccalaureate degree. Please note that determination of current transfer work for these concentrations may impact course requirements.

In addition to satisfying all Mason Core requirements, students must satisfy the requirements for one of the eight concentrations.

Concentrations

- Concentration in Applied Conflict Analysis and Resolution (ACAR)
- Concentration in Cyber Security (CYBS)
- Concentration in Cloud Computing (CCG)
- Concentration in Data Analytics (DNIC)
- Concentration in Health, Wellness and Social Services (HWSS)
- Concentration in Human Development and Family Science (HDFS)
- Concentration in Legal Studies (LGLS)
- Concentration in Managerial Leadership (MGL)
- Concentration in Technology and Innovation (TCNV)

Concentration in Applied Conflict Analysis and Resolution (ACAR)

This concentration is in collaboration with the Jimmy and Rosalynn Carter School for Peace and Conflict Resolution.

Code	Title	Credits
Core Requirement		
BAS 300	Building Professional Competencies	3
CONF 101	Conflict and Our World (Mason Core)	3
CONF 301	Research and Inquiry in Conflict Resolution	3
CONF 302	Culture, Identity, and Conflict	3
Select one of the following		3
CONF 320	Interpersonal Conflict Analysis and Resolution	
CONF 330	Community, Group, and Organizational Conflict Analysis and Resolution	
CONF 340	Global Conflict Analysis and Resolution (Mason Core)	
Applied Coursework		
CONF 300	Conflict Resolution Techniques and Practice	3
Choose three credits of Skills Coursework from:		3
CONF 325	Dialogue and Difference	
CONF 370	Internship Field Experience	
CONF 385	International Field Experience	
CONF 398	Special Topics in Advanced Techniques and Practices	
CONF 425	Mediating Conflict	
or foreign language completed at the 202 level.		
CONF 490	RS: Integration (Mason Core)	3
Electives		
In consultation with their advisor, students are required to take 18 credits of concentration coursework; at least 9 credits must be from the CONF department. The concentration list can be found in the catalog or on our website.		18
Total Credits		42

Electives (variable)

All BAS students are required to complete a minimum of 120 credit hours of coursework. Students will work with their advisor to determine how to fulfill their outstanding credit hours to ensure they have met all major and university requirements. The number of elective credits that a BAS student may have available will vary by concentration and the amount of applicable transfer coursework the student has been awarded.

Concentration in Cyber Security (CYBS)

This concentration is in collaboration with the Volgenau School of Engineering and is only available to students who graduate with an AAS degree in Cyber Security from a partner school. Full admissions requirements can be viewed on the program website (http://bas.gmu.edu).

Students must have a C or better in any course that satisfies a prerequisite for an IT course. To graduate with the BAS with a Cyber Security concentration, students must have a C or better in their core, concentration, and technical focus courses.

Code	Title	Credits
Core Requirements		
BAS 300	Building Professional Competencies	3
BAS 490	Introduction to Research Methods	3
BAS 491	Applied Sciences Capstone (Mason Core)	3
Concentration Requirements		
IT 104	Introduction to Computing	3
IT 105	IT Architecture Fundamentals	3
IT 223	Information Security Fundamentals	3
IT 304	IT in the Global Economy	3
IT 343	IT Project Management (Fulfills writing intensive requirement)	3
IT 353	Information Defense Technologies	3
IT 357	Computer Crime, Forensics, and Auditing	3
IT 429	Security Accreditation of Information Systems	3
IT Cyber Security		
Specific courses must be taken at the community college to fulfill this requirement (15 credits met via transfer). Students should consult with their advisor.		15
IT Elective Transfer Courses		
Specific courses must be taken at the community college to fulfill this requirement (15 credits met via transfer). Students should consult with an advisor.		15
Technical Focus		
Select 15 credit hours of required IT, MBUS, MIS, or other approved coursework from the following. Courses not listed here may be selected in consultation with the advisor. Not all Technical Focus courses listed here are offered online. Students pursuing CYBS online should meet with their advisor to select courses that are offered online. Note: Enrolled undergraduate students who are not declared in a School of Business major are limited to 9 credits of MIS courses.		15
IT 369	Data and Application Security	
IT 442	Cloud Infrastructure	
IT 451	Cloud Services Management	
IT 462	Applied Cyber Threat Analysis	
IT 481	Cloud Security	
IT 499	Special Topics in Information Technology	
MBUS 300	Accounting in a Global Economy	
MBUS 301	Managing People and Organizations in a Global Economy	
MBUS 303	Marketing in a Global Economy	
MBUS 304	Entrepreneurship: Starting and Managing a New Enterprise	
MBUS 305	Introduction to International Business (Mason Core)	
MBUS 306	Managing Projects and Operations	
MBUS 308	Corporate Finance and Investments in a Global Economy	
MIS 303	Introduction to Business Information Systems	
MIS 310	Database Management Systems	
MIS 320	Networks and Security	
MIS 330	Systems Analysis and Design	

MIS 341	Cloud Computing Essentials	
MIS 441	Cloud System Management	
HAP 318	Introduction to IT Methods for Healthcare	
HAP 360	Introduction to Health Information Systems	
COMM 320	Business and Professional Communication	
CRIM 310	Introduction to the Intelligence Community	
CRIM 312	Intelligence Analysis Techniques	
CRIM 350	Counterintelligence	
Total Credits		78

Electives (variable)

All BAS students are required to complete a minimum of 120 credit hours of coursework. Students will work with their advisor to determine how to fulfill their outstanding credit hours to ensure they have met all major and university requirements. The number of elective credits that a BAS student may have available will vary by concentration and the amount of applicable transfer coursework the student has been awarded.

Concentration in Cloud Computing (CCG)

This concentration is in collaboration with the School of Business and the Volgenau School of Engineering and is only available to students who graduate with an AAS degree in a related field from a partner school. Full admissions requirements can be viewed on the program website (http://bas.gmu.edu).

To graduate with the BAS with a Cloud Computing concentration, students must have a C or better in their core and concentration courses.

Code	Title	Credits
Core Requirements		
BAS 300	Building Professional Competencies	3
BAS 490	Introduction to Research Methods	3
BAS 491	Applied Sciences Capstone (Mason Core)	3
Total Credits		9

Additional Concentration Requirements

In order to complete the Cloud Computing Concentration, students complete one of the two following areas:

Code	Title	Credits
Cloud Technology		
MATH 108	Introductory Calculus with Business Applications (Mason Core)	3
or MATH 113	Analytic Geometry and Calculus I (Mason Core)	
IT 102	Discrete Structures	3
or MATH 125	Discrete Mathematics I (Mason Core)	
IT 104	Introduction to Computing	3
IT 105	IT Architecture Fundamentals	3
IT 106	Introduction to IT Problem Solving Using Computer Programming	3
or IT 109	Introduction to Computer Programming	
IT 300	Modern Telecommunications	3
IT 341	Data Communications and Network Principles	3
IT 343	IT Project Management	3
IT 442	Cloud Infrastructure	3
IT 451	Cloud Services Management	3
IT 461	Application Development in Cloud	3
IT 481	Cloud Security	3
Total Credits		36

Code	Title	Credits
Cloud System Management		
MIS 303	Introduction to Business Information Systems	3
MIS 310	Database Management Systems	3
MIS 330	Systems Analysis and Design	3
MIS 341	Cloud Computing Essentials	3
MIS 441	Cloud System Management	3
Applied Coursework		
Students pursuing Cloud System Management must select 15 credit hours of upper-level coursework from the following. Courses not listed here may be selected in consultation with the advisor.		15
MBUS 300	Accounting in a Global Economy	
MBUS 301	Managing People and Organizations in a Global Economy	
MBUS 303	Marketing in a Global Economy	
MBUS 304	Entrepreneurship: Starting and Managing a New Enterprise	
MBUS 305	Introduction to International Business (Mason Core)	
MBUS 306	Managing Projects and Operations	
MBUS 308	Corporate Finance and Investments in a Global Economy	
MIS 320	Networks and Security	
MIS 410	Advanced Database Systems	
MIS 415	Information Systems Audit and Control	
MIS 420	Information Security and Assurance	
MIS 430	Data Warehousing	
MIS 431	Data Mining for Business Applications	
MIS 432	Advanced Data Mining	
MIS 433	Programming for Analytics	
Total Credits		30

Electives (variable)

All BAS students are required to complete a minimum of 120 credit hours of coursework. Students will work with their advisor to determine how to fulfill their outstanding credit hours to ensure they have met all major and university requirements. The number of elective credits that a BAS student may have available will vary by concentration and the amount of applicable transfer coursework the student has been awarded.

Concentration in Data Analytics (DNIC)

This concentration is in collaboration with the Volgenau School of Engineering. Full admissions requirements can be viewed on the program website (http://bas.gmu.edu).

Students must have a C or better in any course that satisfies a prerequisite for an IT course. To graduate with the BAS with a Data

Analytics concentration, students must have a C or better in their core, concentration, and applied coursework courses.

Code	Title	Credits
Core Requirements		
BAS 300	Building Professional Competencies	3
BAS 490	Introduction to Research Methods	3
BAS 491	Applied Sciences Capstone (Mason Core)	3
Concentration Requirements		
MATH 108	Introductory Calculus with Business Applications (Mason Core)	3
or MATH 113	Analytic Geometry and Calculus I (Mason Core)	
STAT 250	Introductory Statistics I (Mason Core)	3
STAT 350	Introductory Statistics II	3
STAT 362	Introduction to Computer Statistical Packages	3
STAT 463	Introduction to Exploratory Data Analysis	3
IT 102	Discrete Structures	3
IT 109	Introduction to Computer Programming	3
or IT 106	Introduction to IT Problem Solving Using Computer Programming	
IT 209	Introduction to Object Oriented Programming	3
or IT 206	Object Oriented Techniques for IT Problem Solving	
IT 309	Data Structures and Algorithms in Python	3
or IT 306	Data Structures and Algorithms in Java	
IT 343	IT Project Management	3
Applied Coursework		
Select 9 credit hours of applied coursework from the following. Courses not listed may be selected in consultation with the advisor.		
CDS 301	Scientific Information and Data Visualization	
CDS 302	Scientific Data and Databases	
CDS 303	Scientific Data Mining	
STAT 455	Experimental Design	
STAT 456	Applied Regression Analysis	
STAT 460	Introduction to Biostatistics	
STAT 462	Applied Multivariate Statistics	
STAT 465	Nonparametric Statistics and Categorical Data Analysis	
STAT 474	Introduction to Survey Sampling	
SYST 469	Human Computer Interaction	

Concentration in Health, Wellness and Social Services (HWSS)

This concentration is in collaboration with the College of Health and Human Services.

To enroll in this concentration, students must have an AAS in one of the following areas:

- Health Information Management
- Hospitality Management, Nutrition Management specialization
- Nursing
- Physical Therapist Assistant
- Respiratory Therapy

Code	Title	Credits
Core Requirements		
BAS 300	Building Professional Competencies	3
SOCW 200	Introduction to Social Work (Mason Core)	3
GCH 205	Global Health (Mason Core)	3
NURS 434	Vulnerable Populations	3
BAS 490	Introduction to Research Methods	3
BAS 491	Applied Sciences Capstone (Mason Core)	3
Total Credits		18

Additional Concentration Requirements

To complete the Health, Wellness and Social Services concentration, students must complete one of the two following areas:

Code	Title	Credits
Health Care Administration		
HAP 301	Health Care Delivery in the United States	3
HAP 360	Introduction to Health Information Systems	3
HAP 442	Introduction to Health Care Politics and Policy	3
SOCW 380	Changing Social Policies and Systems	3
Total Credits		12

Code	Title	Credits
Physical and Mental Health Care Delivery		
HAP 301	Health Care Delivery in the United States	3
NUTR 295	Introduction to Nutrition (Mason Core)	3
Select one from the following:		3
GCH 360	Health and Environment	
HHS 432	Healthy Aging	
SOCW 375	Human Behavior and the Family Life Course (Mason Core)	
SOCW 435	Introduction to Gerontology	
SOCW 483	Selected Topics in Social Work Intervention	
Total Credits		9

Electives (variable)

All BAS students are required to complete a minimum of 120 credit hours of coursework. Students will work with their advisor to determine how to fulfill their outstanding credit hours to ensure they have met all major and university requirements. The number of elective credits that a BAS student may have available will vary by concentration and the amount of applicable transfer coursework the student has been awarded.

Concentration in Human Development and Family Science (HDFS)

This concentration is in collaboration with the College of Humanities and Social Sciences and the College of Education and Human Development.

Code	Title	Credits
Requirements		
BAS 300	Building Professional Competencies	3

HDFS 200	Individual and Family Development (Mason Core)	3
PSYC 211	Developmental Psychology (Mason Core)	3
PSYC 301	Research Methods in Psychology (Fulfills writing intensive requirement)	3
or SOCI 303	Methods and Logic of Inquiry	
INTS 321	Parent-Child Relations (Mason Core)	3
HDFS 300	Individual and Family Services Delivery	3
HDFS 400	Advanced Family Processes (Mason Core) (Fulfills synthesis requirement)	3
HDFS 401	Family Law and Public Policy (Fulfills writing intensive requirement)	3
HDFS 498	Internship and Analysis in Human Development and Family Science	3
HDFS 499	Advanced Internship and Analysis in Human Development and Family Science	3
Total Credits		30

Electives (variable)

All BAS students are required to complete a minimum of 120 credit hours of coursework. Students will work with their advisor to determine how to fulfill their outstanding credit hours to ensure they have met all major and university requirements. The number of elective credits that a BAS student may have available will vary by concentration and the amount of applicable transfer coursework the student has been awarded.

Concentration in Legal Studies (LGLS)

This concentration is in collaboration with School of Integrative Studies, College of Humanities and Social Sciences, and Schar School of Policy and Government.

Code	Title	Credits
Core Requirements		
BAS 300	Building Professional Competencies	3
BAS 490	Introduction to Research Methods	3
BAS 491	Applied Sciences Capstone (Mason Core)	3
Concentration Requirements		
Required Courses:		
INTS 300	Law and Justice (Mason Core)	3
Additional Courses (minimum 18 credits): [1]		18
BULE 303	Legal Environment of Business	
CLAS 330	Roman Law and Society	
COMM 230	Case Studies in Persuasion	
COMM 430	Persuasion	
COMM 475	Journalism Law	
CONF 425	Mediating Conflict	
CRIM 100	Introduction to Criminal Justice (Mason Core)	
CRIM 220	Introduction to Law and Society	
CRIM 301	Public Law and the Judicial Process	3
or GOVT 301	Public Law and the Judicial Process	
CRIM 405	Law and Justice around the World (Mason Core)	
CRIM 406	Family Law and the Justice System	
CRIM 407	Advanced Topics in Law and Society	
CRIM 422	Controversial Legal Issues	
CRIM 423	Constitutional Law: Civil Rights and Liberties	
or GOVT 423	Constitutional Law: Civil Rights and Liberties	
CRIM 424	Constitutional Law: Criminal Process and Rights	
CRIM 430	Criminal Law	
ECON 415	Law and Economics	
GOVT 103	Introduction to American Government (Mason Core)	
GOVT 407	Law and Society	
GOVT 443	Law and Ethics of War	
GOVT 446	International Law and Organization	
GOVT 452	Administrative Law and Procedures	
HAP 312	Healthcare Law	
HDFS 401	Family Law and Public Policy	
INTS 202	Public Speaking and Critical Thinking Skills (Mason Core)	
INTS 304	Social Movements and Community Activism (Mason Core)	
INTS 305	Conflict Resolution and Transformation	
INTS 336	Poverty, Wealth and Inequality in the US (Mason Core)	
INTS 362	Social Justice and Human Rights (Mason Core)	
INTS 416	Refugee and Internal Displacement (Mason Core)	
INTS 417	Human Trafficking and Smuggling	
PRLS 460	Sport and Recreation Law	
PHIL 311	Philosophy of Law	
RELI 364	Religion and Law in the United States	
SOCI 301	Criminology	
SOCI 302	Sociology of Delinquency	
Total Credits		33

[1] Other relevant courses may be selected with advisor approval.

Electives (variable)

All BAS students are required to complete a minimum of 120 credit hours of coursework. Students will work with their advisor to determine how to fulfill their outstanding credit hours to ensure they have met all major and university requirements. The number of elective credits that a BAS student may have available will vary by concentration and the amount of applicable transfer coursework the student has been awarded.

Concentration in Managerial Leadership (MGL)

This concentration is in collaboration with School of Business, College of Humanities and Social Sciences, and Jimmy and Rosalynn Carter School for Peace and Conflict Resolution.

Code	Title	Credits
Core Requirements		
BAS 300	Building Professional Competencies	3
BAS 490	Introduction to Research Methods	3
BAS 491	Applied Sciences Capstone (Mason Core)	3
Concentration Requirements		

MBUS 301	Managing People and Organizations in a Global Economy	3
MBUS 306	Managing Projects and Operations	3
INTS 404	Ethics and Leadership	4
INTS 435	Leadership in a Changing Environment	4
CONF 300	Conflict Resolution Techniques and Practice	3
CONF 302	Culture, Identity, and Conflict	3
CONF 320	Interpersonal Conflict Analysis and Resolution	3
COMM 320	Business and Professional Communication	3
COMM 401	Interpersonal Communication in the Workplace	3
Total Credits		38

Electives (variable)

All BAS students are required to complete a minimum of 120 credit hours of coursework. Students will work with their advisor to determine how to fulfill their outstanding credit hours to ensure they have met all major and university requirements. The number of elective credits that a BAS student may have available will vary by concentration and the amount of applicable transfer coursework the student has been awarded.

Concentration in Technology and Innovation (TCNV)

This concentration is in collaboration with School of Business and Volgenau School of Engineering.

Code	Title	Credits
Core Requirements		
BAS 300	Building Professional Competencies	3
BAS 490	Introduction to Research Methods	3
BAS 491	Applied Sciences Capstone (Mason Core)	3
Concentration Requirements [1]		
IT 105	IT Architecture Fundamentals	3
IT 213	Multimedia and Web Design [2]	3
IT 214	Database Fundamentals [2]	3
IT 223	Information Security Fundamentals	3
IT 304	IT in the Global Economy	3
IT 343	IT Project Management	3
MBUS 300	Accounting in a Global Economy	3
MBUS 301	Managing People and Organizations in a Global Economy	3
MBUS 303	Marketing in a Global Economy	3
MBUS 305	Introduction to International Business (Mason Core)	3
MIS 303	Introduction to Business Information Systems	3
Total Credits		42

[1] All courses for this concentration are available in an online format with most offered as asynchronous delivery.

[2] The Information Sciences and Technology department offers 1-credit, self-paced, online review courses; ending with an in-class final exam. Students who register for a 1-credit course and successfully pass will receive credit (not a waiver) for the corresponding 3-credit course. Students who are not successful must take the respective course at Mason to meet their degree requirements.
Review courses are available as follows:

- for IT 213 Multimedia and Web Design: IT 193 Review of Multimedia and Web Design
- for IT 214 Database Fundamentals: IT 194 Review of Database Fundamentals

Electives (variable)

All BAS students are required to complete a minimum of 120 credit hours of coursework. Students will work with their advisor to determine how to fulfill their outstanding credit hours to ensure they have met all major and university requirements. The number of elective credits that a BAS student may have available will vary by concentration and the amount of applicable transfer coursework the student has been awarded.

Accelerated Master's

Applied Science, BAS Cyber Security Concentration/Applied Information Technology, Accelerated MS

Overview

Highly-qualified students in the Applied Science, BAS, Cyber Security Concentration (https://catalog.gmu.edu/colleges-schools/interdisciplinary-programs-courses/applied-science-bas/#cybs) have the option of obtaining an accelerated Applied Information Technology, MS (https://catalog.gmu.edu/colleges-schools/engineering/information-sciences-technology/applied-information-technology-ms/).

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7). For policies governing all graduate degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/).

Admission Requirements

Students in the Applied Science, BAS, Cyber Security Concentration (https://catalog.gmu.edu/colleges-schools/interdisciplinary-programs-courses/applied-science-bas/#cybs) program may apply to this option if they have earned 60 undergraduate credits with an overall GPA of at least 3.30. They may begin taking graduate-level courses once they have earned 75 undergraduate credits. Criteria for admission are identical to criteria for admission to the Applied Information Technology, MS program.

Accelerated Option Requirements

Students must complete all credits that satisfy requirements for the BAS and MS programs, with up to 12 credits overlapping from the following courses:

Code	Title	Credits
AIT 512	Algorithms and Data Structures Essentials	3
or AIT 580	Analytics: Big Data to Information	

AIT 524	Database Management Systems	3
AIT 542	Fundamentals of Computing Platforms	3
AIT 660	Cyber Security Fundamentals [1]	3
AIT 664	Information: Representation, Processing and Visualization	3

[1] This course is only applicable to the CYBR and ITMG concentrations in the MSAIT. Students planning to pursue CBHS or DAIN should select a different course.

Note: When selecting between AIT 512 and AIT 580, students should select the course that aligns with the MSAIT concentration they intend to pursue.

Degree Conferral

Students must apply the semester before they expect to complete the BAS requirements to have the BAS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and the VSE Graduate Admissions Office. At the completion of MS requirements, a master's degree is conferred.

Applied Science, BAS Cyber Security Concentration/Digital Forensics, Accelerated MS

Overview

Highly-qualified students in the Applied Science, BAS, Cyber Security Concentration have the option of obtaining an accelerated Digital Forensics, MS.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies.

Admission Requirements

Students in the Applied Science, BAS, Cyber Security Concentration (https://catalog.gmu.edu/colleges-schools/interdisciplinary-programs-courses/applied-science-bas/#cybs) program may apply for this option if they have earned 60 undergraduate credits with an overall GPA of at least 3.25. Criteria for admission are identical to criteria for admission to the Digital Forensics, MS program.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Option Requirements

Students must complete all credits that satisfy requirements for the BAS and MS programs, with up to 12 credits overlapping from the following courses:

Code	Title	Credits
DFOR 510	Digital Forensics Analysis	3
DFOR 660	Network Forensics	3
DFOR 661	Digital Media Forensics	3
DFOR 663	Operations of Intrusion Detection for Forensics	3
DFOR 664	Incident Response Forensics	3

Degree Conferral

Students must apply the semester before they expect to complete the BAS requirements to have the BAS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and the VSE Graduate Admissions Office. At the completion of MS requirements, a master's degree is conferred.

Applied Science, BAS Data Analytics Concentration/Applied Information Technology, Accelerated MS

Overview

Highly-qualified students in the Applied Science, BAS, Data Analytics Concentration (https://catalog.gmu.edu/colleges-schools/interdisciplinary-programs-courses/applied-science-bas/) have the option of obtaining an accelerated Applied Information Technology, MS (https://catalog.gmu.edu/colleges-schools/engineering/information-sciences-technology/applied-information-technology-ms/).

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies.

Admission Requirements

Students in the Applied Science, BAS Data Analytics concentration may apply to this option if they have earned 60 undergraduate credits with an overall GPA of at least 3.30. Students may begin taking the master's level courses once they have earned 75 undergraduate credits.

Accelerated Option Requirements

Students must complete all credits that satisfy requirements for the BAS and MS programs. Students may select up to 12 credits to overlap from the following options. Students should consult with both the BAS and MSAIT advisors.

Code	Title	Credits
AIT 512	Algorithms and Data Structures Essentials [1]	3
or AIT 580	Analytics: Big Data to Information	
AIT 524	Database Management Systems	3
AIT 542	Fundamentals of Computing Platforms	3
AIT 664	Information: Representation, Processing and Visualization	3

[1] When selecting between AIT 512 and AIT 580, students should select the course that aligns with the MSAIT concentration they intend to pursue.

Applied Science, BAS Data Analytics Concentration/Data Analytics Engineering, Accelerated MS

Overview

Highly-qualified students in the Applied Science, BAS, Data Analytics Concentration (https://catalog.gmu.edu/colleges-schools/interdisciplinary-programs-courses/applied-science-bas/) have the option of obtaining an accelerated Data Analytics Engineering, MS. (https://catalog.gmu.edu/colleges-schools/engineering/data-analytics-engineering-ms/#text)

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7). For policies governing all graduate degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/).

Admission Requirements

Students in the Applied Science, BAS Data Analytics (https://catalog.gmu.edu/colleges-schools/interdisciplinary-programs-courses/applied-science-bas/#text) concentration may apply to this option if they have earned 60 undergraduate credits with an overall GPA of at least 3.30. Students may begin taking the master's level courses once they have earned 75 undergraduate credits.

Accelerated Option Requirements

Students must complete all credits that satisfy requirements for the BAS and MS programs. The following six credits may overlap:

Code	Title	Credits
AIT 580	Analytics: Big Data to Information	3
CS 504	Principles of Data Management and Mining	3
or CS 584	Theory and Applications of Data Mining	
OR 531	Analytics and Decision Analysis	3
or OR 541	Operations Research: Deterministic Models	
STAT 515	Applied Statistics and Visualization for Analytics	3
or STAT 554	Applied Statistics I	

In addition to the six credits above, students may select up to 6 additional credits to overlap. These credits must be selected in consultation with both the BAS and DAEN advisors. Credits selected will depend on which DAEN concentration the student intends to pursue.

Design Thinking Minor

Banner Code: DSTH

The design thinking minor is designed flexibly to include courses that may already be in a student's major. It culminates in a capstone course with a studio format in which students with multi-disciplinary backgrounds collaborate and learn by using the design thinking process to explore problems, prototype solutions, and convey their ideas through effective visual, written, and oral presentations.

Admissions & Policies

Policies

In addition to the required coursework, three courses should be selected from either the list of electives under the Design in the Built Environment Track or the User Experience Design (UXD) Track. Note that the three electives must all belong to one of these two groups.

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. For policies governing all minors, see AP.5.3.4 Minors.

For policies governing all undergraduate programs, see AP.5 Undergraduate Policies.

Requirements

Minor Requirements

Total credits: 18

Required Courses

Code	Title	Credits
DSGN 101	Introduction to Design Thinking	3
DSGN 102	Design in the Modern World (Mason Core)	3
DSGN 401	Design Thinking Capstone	3
Total Credits		9

Design in the Built Environment Track

Code	Title	Credits
Select 9 elective credits from the following:		9
ARTH 103	Introduction to Architecture (Mason Core)	
ARTH 311	Design of Cities (Mason Core)	
ARTH 315	Modern Architecture	
AVT 104	Two-Dimensional Design and Color (Mason Core)	
AVT 105	Three-Dimensional Design and Beyond	
AVT 204	Visual Thinking	
AVT 215	Typography (Mason Core)	
AVT 305	Creative Processes	
AVT 307	Aesthetics	
AVT 309	Art as Social Action	
AVT 311	Graphic Design Methods and Principles	
AVT 318	History of Graphic Design	
CDS 205	Introduction to Agent-based Modeling and Simulation	
GGS 310	Cartographic Design	
EVPP 336	Human Dimensions of the Environment	
EVPP 355	Ecological Engineering and Ecosystem Restoration	
Total Credits		9

User Experience Design (USD) Track

Code	Title	Credits
Select 9 elective credits from the following:		9
AVT 217	Introduction to Web Design	
AVT 408	Visual Communication Theories	
COS 400	Problem Solving and Leadership in STEAM	
EDIT 401	Introduction to Learning Technologies	
EDIT 426	Web Accessibility and Design	
ENGH 388	Professional and Technical Writing	
ENGH 389	Peer Tutoring in Writing across the Disciplines	
GAME 101	Introduction to Game Design (Mason Core)	
IT 216	Systems Analysis and Design	
MGMT 451	Introduction to Entrepreneurship	
MGMT 452	Experiential Entrepreneurship	
PSYC 340	Human Factors Psychology	
SWE 205	Software Usability Analysis and Design	
SYST 469	Human Computer Interaction	
Total Credits		9

Smithsonian-Mason School of Conservation

Smithsonian-Mason School of Conservation

1500 Remount Road
Front Royal, VA 22630

Phone: 540-635-0115 (direct)
Website: smconservation.gmu.edu

Administration

- Cody W. Edwards, Executive Director
- Robert Barrett, Assistant Director of Recruitment and Outreach
- Anastasia Triplett, Assistant Director of Budget and Administration

The Smithsonian Institution and George Mason University partnered to establish the Smithsonian-Mason School of Conservation (SMSC) to provide innovative education for current and future generations of global conservation professionals, leaders, and practitioners.

SMSC offers a range of residential, hands-on, interdisciplinary programs in conservation biology for undergraduate and graduate students and professionals on the grounds of SCBI in Front Royal, Virginia. Highly qualified world experts, including Smithsonian scientists, Mason faculty, and colleagues from other U.S. and international conservation organizations, provide students with direct connections to the most current teaching, research techniques, and work in the field.

Undergraduate Program

The Smithsonian-Mason Semester offers undergraduate programs in which students can earn a Conservation Studies Minor (CHSS), or apply credits to certain Mason degrees. There are currently three 16 credit programs: “Conservation, Biodiversity and Society”, “Wildlife Ecology and Conservation”, and "Endangered Species Conservation". See the Programs of Study section of this catalog for details on the minor and the Courses section for details on the courses (select the course prefix CONS). Grounded in natural science, this interdisciplinary semester brings public policy, sociology, conflict resolution, and global awareness to the learning environment. Students majoring in the Integrative Studies, BS, Biology, BS, Environmental Science, BS, Environmental and Sustainability Studies, BA (CHSS), Applied Science, BAS, and Global Affairs, BA can fulfill major requirements and/or Mason Core requirements with Smithsonian-Mason Semester (CONS) credits subject to college approval.

Graduate Program

Smithsonian-Mason School of Conservation graduate courses offer in-depth explorations of advanced and highly specialized topics in applied conservation studies. Courses cover a diverse selection of topics focusing on biodiversity conservation, ranging from adaptive management to statistics in ecology and conservation, to non-invasive genetic techniques. All current courses take place as intensive one or two-week sessions and participants are in residence on the SMSC grounds in Front Royal, VA.

Although the Smithsonian-Mason School of Conservation does not presently offer a graduate degree, coursework may be applied to George Mason University’s Environmental Science and Policy, MS concentration in Conservation Science and Policy. In many cases, graduate students will have the unique opportunity to learn alongside conservation professionals currently working in the field. The unparalleled resources at the facilities draw researchers and practitioners from around the world, and this offers a rare opportunity for students and professionals to interact to mutual benefit in a hands-on situation and to receive informal mentoring from experienced practitioners.

Faculty

Faculty

Assistant Professors

Hunt

Associate Professors

DeLuycker, Lessard-Pilon, McNeil

Term Assistant Professors

Davis

Affiliate Faculty

Akre, Anderson-Teixeira, Crosier, Dikow, Evans, Fernandez, Frances, Freeman, Hamilton, Huang, Koepfli, Kolowski, Leimgruber, Luther, Miller, O'Brien, Polisar, Pukazhenthi, Sillett, Songsasen, Stabach

Schar School of Policy and Government

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Arlington, VA 22201

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Administration

- Mark J. Rozell, Dean
- Doug Goldstein, Senior Associate Dean for Administration
- Matthys van Schaik, Associate Dean for Academic Affairs
- Ming Wan, Associate Dean
- Jill V. Deering, Assistant Dean of Student Affairs
- Ann M. Ludwick, Assistant Dean for Undergraduate Academic Affairs
- Elizabeth Eck Olchowski, Assistant Dean for Graduate Program Management

College Code: PP

The Schar School of Policy and Government prepares undergraduate and graduate students to be leaders who advance the public good in the private, public, and nonprofit sectors. Through research and education in policy, government, and international affairs, Schar allows Mason to more effectively serve the region, Commonwealth, nation, and world.

The Schar faculty combines original research with real-world experience to connect theory and practice for the benefit of students and wider constituencies. The School employs approximately 80 full-time faculty members across a wide range of disciplines, including political science, public administration, international relations, economics, management, geography, engineering, sociology, anthropology, and law. Schar is a major research unit of the University, with approximately $25 million per year in sponsored funding. Schar faculty members frequently advise governments, companies, and non-profit organizations, appear in the national and international media, and participate in public debates on critical issues of the day.

Schar offers two undergraduate majors, eight master's degree programs, three doctoral programs, and a range of undergraduate minors and graduate certificates. Collectively, these programs enroll approximately 2,000 students. Schar offers classes on Mason's Fairfax and Arlington campuses, and its faculty members have offices on both campuses.

Undergraduate Programs

Schar offers two degrees for students interested in political science, government, and international relations: a BA in Government and International Politics and a BS in Public Administration. Majors in Government and International Politics take core courses in American political institutions, the political systems of other countries, and international relations. Students can focus their electives to earn a concentration in American institutions and processes, comparative politics, international political economy, international relations, law, philosophy and governance, political analysis, political behavior and identity politics, public policy, or a higher credit concentration in Philosophy, Politics, and Economics (https://ppe.gmu.edu). Majors in public administration and policy take courses in government, management, policy, and administration. Concentrations are offered in administration and management, economic policy analysis, international political economy, nonprofit management, public policy, and US government institutions.

Students have an opportunity to do internships as part of their degree programs, gaining valuable work experience while earning academic credit.

Minors

Schar offers minors in American government, international/comparative studies, international security, legal studies, and public policy and management. In addition, faculty from the School coordinate or participate in the Asia-Pacific and Northeast Asian Studies Minor, Global Systems Minor, Latin American Studies Minor, Middle East Studies Minor, Islamic Studies Minor, and Urban and Suburban Studies Minor. It participates with the Philosophy Department in the Political Philosophy Minor and with the Communications Department in the Political Communication Minor (CHSS).

Bachelor's/Accelerated Master's Programs

The School offers qualified undergraduates in any major the opportunity to apply to several accelerated master's degree programs. If accepted, students may earn both an undergraduate and a graduate degree, sometimes within five years. More information about the degree options and application process may be found here (http://schar.gmu.edu/programs/undergraduate-degrees/accelerated-masters-programs/).

Graduate Programs

Schar offers three doctoral degree programs and eight master's degree programs, as well as numerous graduate certificate programs. Specific information on each program may be found by clicking the "Programs" tab at the top of this page.

The Schar School of Policy and Government and the Antonin Scalia Law School offer a joint JD/MPP degree program in law and public policy studies. For more information, go to the website (http://www.law.gmu.edu/academics/degrees/jd_mpp/).

Research Centers

The Schar School of Policy and Government's research centers focus on a wide range of issues and areas.

Center for Advancing Correctional Excellence

Director: Faye Taxman, PhD

This center conducts public policy research to improve outcomes from the justice and health systems while advancing scientific knowledge about effective interventions, successful implementation and high performing organizations. Center faculty and students design and conduct original research that addresses key policy questions, and improves methodologies for conducting studies in justice and health settings and translating evidence into practice. ACE! is an active, engaged research center serving Virginia, the nation, and the world.

Center for Business Civic Engagement

Director: David Rehr, PhD

This center conducts research on a wide range of topics revolving on how public institutions can utilize private sector tools to be more effective and efficient in their missions. The focus of the center revolves around government financial transparency, government accountability, civic engagement, and best practices in business advocacy so government can make informed decisions on public policy.

Center for Energy Science and Policy

Co-Directors: Richard Kauzlarich, PhD and Paul R. Houser, PhD

This center, a joint initiative of the School of Business and the Schar School, provides objective analysis of key issues in the energy field that is grounded in original research. It serves as a center of gravity for the many researchers at George Mason whose work engages them with these issues and connects them with decision-makers in the economy, society, and government.

Center for Microeconomic Policy Research
Director: John Earle, PhD

This center is a forum for policy-relevant research using micro-economic and micro-econometric methods.

Center for Regional Analysis
Director: Terry Clower, PhD

This center is the clearinghouse for economic data and forecasts specific to the Washington, D.C. region. Its fiscal analyses, economic indicators, demographic studies, information services, and data products are relied on by business and government executives as they seek to stimulate investment and development and spur enterprise in Northern Virginia, Washington, D.C., and suburban Maryland.

Center for Science, Technology and Innovation Policy
Co-Directors: David M. Hart, PhD and Connie McNeely, PhD

This center is dedicated to better understanding how public policy shapes scientific discovery and technological innovation. Science and technology are complex social phenomena that arise from the interactions of individuals and organizations, public and private institutions, and markets, cultures, and politics.

Center for Security Policy Studies
Director: Ellen Laipson, MA

Today's security challenges--from proliferation and terrorism to climate change and cyber security-- are beyond the scope of any one nation-state to address. Finding solutions requires international and multi-lateral cooperation among regional and global leaders, both state-based and outside the state, including corporate and non-governmental actors. The purpose of the Center for Security Policy Studies is to strengthen global strategic thinking by current and future policy-makers, so as to improve US and global security in the 21st century.

Center the Study of Social Change, Institutions, and Policy (SCIP)
Director: Jack Goldstone, PhD

This center conducts research on a wide range of global policy issues. Center faculty undertake basic academic research on such topics as foreign trade, democratization and state-building, and transnational networks, and analyze specific policy issues for a variety of government agencies.

Center for Transportation Public-Private Partnership Policy
Director: Jonathan L. Gifford, PhD

The Center is devoted to advancing the objective consideration of public-private partnerships for transportation system renewal and expansion through research, education and public service. The Center supports development of U.S. and international case studies of P3 projects and programs, analyses of the impact of P3s, sponsors workshops and conferences, and supports graduate students and faculty.

Gender and Policy Center
Director: Bonnie Stabile, PhD

This center addresses a compelling area of interest in the fields of public policy and politics, and offers the opportunity for the Schar School to develop and promote its expertise in a field where scholarship, like its subject, is underrepresented and sorely needed.

Michael V. Hayden Center for Intelligence, Policy, and International Security
Director: Larry Pfeiffer, M.A.

The threats to global security have rarely ever been so great in scope and number—in such a complex, complicated world, intelligence has never been more vital. The Michael V. Hayden Center for Intelligence, Policy, and International Security at the Schar School for Policy and Government provides for the full examination of intelligence and its interplay with US national security.

Stephen S. Fuller Institute for Research on the Washington Region's Economic Future
Director: Jeanette Chapman, MPP

Through consistent monitoring of regional issues and the economy, the institute is able to identify critical conditions and trends impacting the future vitality of the Washington region's economy. Regularly communicating these findings and producing timely research on short- and long-term regional policy options ensure local business and government leaders are equipped with the data needed to make informed decisions regarding the region's future.

Terrorism, Transnational Crime and Corruption Center
Director: Louise I. Shelley, PhD

The Terrorism, Transnational Crime and Corruption Center (TraCCC) is the first center in the United States devoted to understanding the links among terrorism, transnational crime and corruption. The center teaches, researches and formulates policy on these critical issues. TraCCC accomplishes its mission through international research partnerships engaging in fundamental and applied research projects. Research addresses such diverse concerns as national security, economic development and human rights.

Faculty

School Faculty

Professors

Abramson, Acs, Button, Clower, Conlan, Dinan, Dudley, Dueck, Earle, Gifford, Goldstone, Hart, Katz, Malawer, Mandaville, McNeely, Olds, Pfiffner, Regan, Reinert, Rhodes, Root, Rozell, Ruth, Shelley, Singh, Slavov, Thatchenkery, Wan, Wedel

Associate Professors

Anacker, Auerswald, Burt, Butt, Gest, Haddad, Koblenz, Koizumi, Listokin, Lopez-Santana, Marvel, Mayer, McGlinchey, McGrath, Miller, Ouagrham-Gormley, Scherer, Schintler, Sommer, Thrall, Toepler, Victor, Zolnik

Assistant Professors

Berk, Hunzeker, Pham, Terman, Zhang

Research and Term Faculty

Burroughs, Daigle, Deitz, Edner, El Shazli, Hayden, Kauzlarich, Laipson, LaPorte, Martin, Neaves, Nicogossian, Schneider, Shafroth, Srikantia, Stabile, Walker, Wilde

Requirements & Policies

Policies for Undergraduate Students

Students should become familiar with the university's Academic Policies in addition to those specific to each academic unit.

The undergraduate degree consists of coursework in four areas: (a) Mason Core requirements, (b) School requirements for the Schar school, (c) requirements specified for the chosen major, and (d) electives. All students must complete 120 credits, of which at least 45 must be in upper-level courses (numbered 300 and above). At least one course at the 300 or 400 level must be designated "writing intensive." In Schar, GOVT 490 Synthesis Seminar (Mason Core)or GOVT 491 Honors Seminar (Mason Core) will satisfy this requirement.

The School requirements, (b) above, are the same as the additional requirements for the College of Humanities and Social Sciences. For the BA in Government and International Politics, there is one class in Philosophy or Religion, one additional class in social and behavioral science, one class in non-Western culture, and demonstrated foreign language proficiency at the intermediate level. Students should consult the Mason Core and CHSS requirements page (http://chss.gmu.edu/general-education/all-requirements/) for more detailed information.

All students are responsible for meeting with their academic advisor, and reviewing their transcripts and degree audits regularly to ensure that they are correct and meet all their requirements. Transfer students are encouraged to meet with their academic advisor prior to registering for classes to review their transcripts and course equivalencies. In some cases, students may need to earn more than 120 credits to complete all of their requirements.

Students with questions about exceptions to academic policies and about School requirements should contact Schar Undergraduate Student Services (Research Hall, Room 359; 703-993-1400; gvip@gmu.edu or puad@gmu.edu).

Additional policy information and forms are available on the Schar website (http://schar.gmu.edu/).

Registration

Students are personally responsible for correctly registering for courses and paying all tuition and fees by the official university registration and payment deadlines. All students should verify the accuracy of their enrollment before the end of the official add period.

Academic Load

Students should review AP.1.2 Academic Load.

In order to be considered for a credit overload, students must fulfill all of the following criteria:

- Be in good academic standing
- Have completed the prior semester with a GPA of 2.33 or higher
- Have a cumulative GPA of 2.33 or higher
- Have demonstrated in prior semesters at Mason the ability to handle an increased and demanding courseload while maintaining high performance
- Have no remaining incompletes (INs) from a previous semester

Freshmen and transfer students in their first semesters are not given permission for overloads as they have yet to establish an academic record at George Mason University.

If approved for an overload, the student is responsible for adding the additional class(es) and paying for the related tuition by the official university deadlines.

Excluded Courses and Credits

At most 3 credits of 100-level Recreation (RECR) activity courses may be taken for general elective credit for an undergraduate degree in the Schar School of Policy and Government.

Only Military Science (MLSC) courses at the 400-level can be used for credit for a degree in the School; credit for other MLSC courses may not be applied toward a degree in the School.

Once matriculated at Mason, students may not take CLEP exams and apply credits from those exams to degrees in the School. Students may apply credits from CLEP exams to degrees in the School only if those credits were awarded and reported prior to admission.

University Consortium

Students should review university policies regarding the University Consortium under Special Registration Procedures in the Academic Policies section of this catalog. Students who have attempted or failed a course at Mason are not permitted to take the equivalent course through the consortium under any circumstances. All consortium registration requests must be submitted to the Schar Undergraduate Student Services office at least 3 weeks prior to the first day of classes for the relevant semester at Mason.

Permission to Study at Another Regionally-Accredited U.S. Institution

Once enrolled in degree status at Mason, students with fewer than 60 hours of transfer coursework (not including registration through the Consortium of Universities of the Washington Metropolitan Area or coursework completed through Mason Study Abroad) may take up to 8 hours of coursework in Schar disciplines at another institution. See the university Permission to Study Elsewhere policy for additional information.

Study Abroad

In order to be considered for study through Mason Study Abroad, students must plan well in advance and receive prior, written permission from the Assistant Dean. Students must also meet all of the following criteria:

- Meet all eligibility requirements for their program as specified by Mason Study Abroad including course prerequisites and minimum GPA.
- Have completed the immediately preceding semester at Mason with a minimum GPA of 2.00.
- Have completed the necessary forms and have obtained all required signatures and course equivalencies.

Students in danger of probation, suspension, or dismissal should plan very carefully before requesting to study abroad. Students who are not in good academic standing will not be permitted to study abroad.

Leave of Absence

All undergraduate students who are planning an absence from George Mason must submit a formal request for Leave of Absence to the Office of the University Registrar. Students do not need to complete the Leave of Absence form if they are participating in a George Mason University sponsored study abroad program or have received permission to study elsewhere.

The maximum time allowed for a Leave of Absence is two years. A new admission application will be required if a Leave of Absence extends beyond two years. If a Leave of Absence form was not submitted, a new admission application will be required if a student misses two graded semesters, excluding the summer term. Re-admission is not guaranteed. See Academic Policies for full university policy.

Withdrawals

Students should review the Withdrawal section in the Academic Policies section of this catalog. Courses for which a withdrawal is approved receive a grade of "W."

Students should be aware of the potential consequences of withdrawing on their academic standing. Although credits graded "W" do not affect a student's GPA, they do count towards the total attempted hours. The total attempted hours and cumulative GPA together determine a student's academic standing. These are explained in the Academic Standing section of Academic Policies.

Academic Clemency

Students should review the university policies regarding academic clemency in the Academic Standing section of Academic Policies.

To be considered for clemency, students must meet all of the following criteria:

- Be absent from George Mason for a minimum of three consecutive calendar years.
- Provide a detailed explanation for why they were unsuccessful in those courses and how they have made changes to ensure their academic progress upon their return.
- Submit their request within 12 months of the first day of the re-enrollment term.
- Complete at least 6 credits during their first 12 months back at George Mason.
- Earn a minimum GPA of 2.50 each semester back prior to making the clemency request with no individual grade below 2.00.

If the last three minimum academic requirements are not met, clemency will not be allowed under any circumstances.

Appeals Process

Undergraduate students may appeal decisions concerning academic actions to the Schar Office of Undergraduate Student Services. They may appeal decisions of the Office of Undergraduate Student Services to the Associate Dean. Students may appeal decisions of the Associate Dean to the Associate Provost, Undergraduate Academic Affairs and Programs. Students who feel that the School's appeal process was conducted unfairly may appeal to the Provost's Office as specified in the Academic Policies section of this catalog.

The grade appeal process occurs at the Dean's Council level as discussed above.

Students should file all appeals in a timely manner, usually within the semester in which the original decision is rendered, but no later than the final day of classes of the following semester.

Second Bachelor's Degree

Students should review the university policies regarding second bachelor's degrees in the Undergraduate Admission Policies and in Academic Policies/ Requirements for Undergraduate Programs sections of the catalog. Students pursuing a second bachelor's degree concurrently with their first bachelor's degree at Mason must meet all the additional requirements for the School (see second paragraph of the Policies for Undergraduate Students section) if they differ from the requirements in the School or College of their first major.

Students pursuing a second bachelor's degree in the School after already having received one or more bachelor's degrees are considered to have met all of the Mason Core requirements. Students pursuing a Bachelor of Science degree do not have additional School-level requirements. Students pursuing a Bachelor of Arts degree in the School must complete these additional School-level requirements: one additional 3-credit course each in philosophy or religious studies, in social and behavioral science, and in non-western culture (for a total of 9 credits). They must also demonstrate proficiency in a foreign language through the intermediate level

Minors

Students may elect to take up to two minors in addition to their major field of study. For policies governing all minors, see the AP.5.3.4 Minors section of this catalog. Students interested in earning a minor should complete the appropriate section of the Change/Declaration of Academic Program form and submit it to the Office of the University Registrar. See All about Minors for more information.

Concentration Courses and Minors

Students may elect to declare a concentration, which requires four of their major field electives to be from the same designated field. Students should be aware that minors usually require between 15 and 21 credits of study, at least 8 of which must be applied only to that minor and may not be used to fulfill requirements of the student's major, concentration, an undergraduate certificate, or another minor.

Honors in the Major

Highly qualified students majoring in Government and International Politics and Public Administration may pursue advanced work leading to graduation with honors in the major. Those students selected for participation in this program take a two-course sequence: GOVT 491 Honors Seminar (Mason Core) and GOVT 496 Directed Readings and Research. To graduate with honors in the major, students must complete these courses with a minimum GPA of 3.50.

Policies for Graduate Students

Students should become familiar with the university's Academic Policies in addition to those specific to each academic unit.

Graduate Student Appeal and Grievance Procedures

Graduate student appeal and grievance procedures are based on George Mason University's honor system. Students are responsible for understanding the provisions of the code described in detail in the Academic Policies section of this catalog and in Schar's graduate student guides.

Students with grievances should direct them in writing to the Assistant Dean of Admissions and Student Services, who will provide guidance on how to resolve their concerns in accordance with established procedures.

Students may appeal decisions concerning academic actions, including termination. Written appeals must be submitted to the Assistant Dean of Admissions and Student Services. The merit of these appeals will be reviewed by the Dean or Dean's designate.

Grade appeals are made to the Dean. Students should contact the Associate Dean for Academic Affairs in writing to initiate the process. The Dean's decision is final.

A student who is facing termination from the program for non-academic reasons may appeal the decision to the Dean. This appeal must be in writing and must be received within 30 calendar days of the date on the notice of dismissal or termination. The Dean or Dean's designate will make a final determination. This determination may not be appealed.

Programs

- American Government Minor
- Biodefense Graduate Certificate
- Biodefense, MS
- Biodefense, PhD
- Emergency Management and Homeland Security Graduate Certificate
- Global Health and Security Graduate Certificate
- Global Systems Minor
- Government Analytics Minor (Schar)
- Government and International Politics, BA
- Illicit Trade Analysis Graduate Certificate
- International Commerce and Policy, MA
- International Security Minor
- International Security, MA
- International / Comparative Studies Minor
- Legal Studies Minor
- National Security and Public Policy Graduate Certificate
- Nonprofit Management Graduate Certificate
- Organization Development and Knowledge Management, MS
- Political Communication Minor (Schar)
- Political Science, MA
- Political Science, PhD
- Public Administration, BS
- Public Administration, MPA
- Public Management Graduate Certificate
- Public Policy and Management Minor
- Public Policy, MPP
- Public Policy, PhD
- Science, Technology, and Security Graduate Certificate
- Strategic Trade Graduate Certificate
- Terrorism and Homeland Security Graduate Certificate
- Transportation Policy, Operations, and Logistics, MA
- Urban and Suburban Studies Minor

American Government Minor

Banner Code: AMGV

Robert J. McGrath, Associate Professor & Minor Advisor

359 Research Hall
Fairfax Campus

The minor in American government provides students the opportunity to focus on the most relevant features of American government, its institutions, the political behavior of its citizens and leaders, and the defining political questions of our time.

Admissions & Policies

Policies

Students pursuing this minor must complete 18 credits in government with a minimum grade of C in each course. Eight credits of coursework must be unique to the minor. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 18

Core Course

Code	Title	Credits
GOVT 103	Introduction to American Government (Mason Core)	3
Total Credits		3

Electives

Code	Title	Credits
Select five electives from the following:		15
Any course on political institutions: GOVT 301–GOVT 309		
Any course on political behavior GOVT 310–GOVT 319		
Any course from GOVT 409–GOVT 420		
GOVT 344	American Foreign Policy	
GOVT 480	Internship [1]	
Total Credits		15

[1] When topic is relevant, 3 credits of GOVT 480 may be applied to the minor with approval of the minor advisor.

Biodefense Graduate Certificate

Banner Code: PP-CERG-BIOD

Academic Advising

560 Founders Hall
Arlington Campus

359 Research Hall
Fairfax Campus

Website: schar.gmu.edu

The certificate provides an interdisciplinary introduction to man-made and natural biological threats, including a background in the science and technology of biodefense and the specialized areas of threat assessment, non-proliferation, and medical and public health preparedness. Students already pursuing a master's degree in the school may, after admission to a certificate program, in most cases, earn an additional six credits (two courses) in the Schar School to receive a certificate in addition to the master's degree.

The graduate certificate may be pursued on a part-time or full-time basis.

Admissions & Policies

Admissions

Applicants to all graduate programs must meet the admission standards and application requirements for graduate study as specified in Graduate Admission Policies. Participants must be admitted to a certificate program. Admission requirements are the same as those for the master's programs and may be found on the Schar admissions website (http://schar.gmu.edu/admissions/).

Policies

For policies governing all graduate certificates, see AP.6.8 Requirements for Graduate Certificates.

Termination from Program

Students admitted to a Schar program will be terminated from the program upon receiving one grade of F and are no longer eligible to take courses in the school. Per university regulation, students are terminated from the university after accumulating grades of F in two courses or 9 credits of unsatisfactory grades in graduate courses. See AP.6.6.2 Academic Termination.

Requirements

Certificate Requirements

Total credits: 15

This certificate may be pursued on a full-or part-time basis.

Required Courses

Code	Title	Credits
BIOD 604	Emerging Infectious Diseases I: Bacteria and Toxins	3
BIOD 609	Biodefense Strategy	3
Total Credits		6

Electives

Code	Title	Credits
Select three electives from the following:		9
BIOD 605	Emerging Infectious Diseases II: Viral Agents	
BIOD 610	Advanced Topics in Global Health Security	
BIOD 620	Global Health Security Policy	
BIOD 706	Nuclear, Biological, and Chemical Weapons Policy and Security	
BIOD 709	Nonproliferation and Arms Control	
BIOD 725	Terrorism and Weapons of Mass Destruction	
BIOD 751	Biosurveillance	
BIOD 766	Development of Vaccines and Therapeutics	
Other course with prior written approval of program director		
Total Credits		9

Biodefense, MS

Banner Code: PP-MS-BIOD

Academic Advising

560 Founders Hall
Arlington Campus

359 Research Hall
Fairfax Campus

Website: schar.gmu.edu

The Master of Science in Biodefense prepares students to become the next generation of biodefense and biosecurity professionals and scholars. This program provides students with a foundation in microbiology and biotechnology combined with a broader security and organizational context.

Admissions & Policies

Admissions

Admission Requirements

Please see Graduate Admissions for information on graduate admission to George Mason University. Specific information on application requirements and deadlines for the Biodefense master's program may be found on the Schar admissions website (http://schar.gmu.edu/admissions/).

Completed applications for fall and spring semesters are reviewed on a rolling basis, with late applications considered on a space-available basis. Students may be admitted for nondegree study and apply a limited number of credits toward the master's degree should they choose to apply to the degree program later, in accordance AP.6.4.1 Change from Nondegree Status.

Policies

Academic Policies

Students admitted to a Schar program will be terminated from the Schar school upon receiving one grade of F and are no longer eligible to take courses in the school. Per university regulation, students are terminated from the university after accumulating grades of F in two courses or 9 credits of unsatisfactory grades in graduate courses.

For policies governing all graduate degrees, see AP.6 Graduate Policies.

Requirements

Degree Requirements

Total credits: 36

The schedule of courses that students plan on taking should be approved in an education plan designed by the students and their advisor during the student's first semester. Students must receive the permission of their advisor to take courses outside of the Biodefense Program.

Core Courses

Students are strongly encouraged to take the core courses as early as possible because they provide the foundation for the rest of the program.

Code	Title	Credits
BIOD 604	Emerging Infectious Diseases I: Bacteria and Toxins	3
BIOD 605	Emerging Infectious Diseases II: Viral Agents	3
BIOD 609	Biodefense Strategy	3
BIOD 620	Global Health Security Policy	3
BIOD 710	Health Security Preparedness	3
GOVT 500	The Scientific Method and Research Design	3
Total Credits		18

Electives

Code	Title	Credits
Select 15 credits from the following: [1]		15
POGO 511	Introductory Data Analysis for Policy and Government	
PUBP 710	Topics in Public Policy	
PUBP 756	Global Medical Systems Policy Analysis	
PUBP 757	Public Policy in Global Health and Medical Practice	
PUBP 758	Global Threats and Medical Policies	
PUBP 765	Human Smuggling and Trafficking	
PUBP 767	Ethics in Health Policy	
PUBP 770	Health Policy Analysis	
PUBP 783	Global Governance	
GOVT 540	International Relations	
GOVT 641		
GOVT 742	International Negotiation	
GOVT 744	Foundations of Security Studies	
GOVT 745	International Security	
PUAD 630	Emergency Planning and Preparedness	
PUAD 631	Disaster Response Operations and Recovery	
PUAD 635	Emergency Preparedness: Interagency Communication and Coordination	
PUAD 637	Managing Homeland Security	
ANTH 631	Refugees in the Contemporary World	
GCH 543	Global Health	
POGO 750	Topics in Policy and Government	
Any BIOD course		
Total Credits		15

[1] Other courses must be approved by the program advisor. Up to six elective credits may be taken outside of Schar.

Capstone

Code	Title	Credits
BIOD 790	Global Health Security Capstone	3
Total Credits		3

Accelerated Master's

Bachelor's Degree (any)/Biodefense, Accelerated MS

Overview

Highly qualified undergraduates in any major may apply to the accelerated Biodefense, MS. If accepted, students will be able to earn a bachelor's degree in their chosen major and a Biodefense, MS with a reduced number of overall credits and within a reduced time frame, sometimes within five years.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies.

Admission

Please see the Graduate Admissions for general information on graduate admission to George Mason University. Information specific to the accelerated MS program may be found on the Schar website (http://schar.gmu.edu/programs/undergraduate-degrees/accelerated-masters-programs/).

To be considered for this accelerated master's program, applicants must have completed a minimum of 60 credits and have a minimum GPA of 3.50 in all coursework applied to the degree.

Accelerated Option Requirements

While undergraduate students, accelerated master's students may complete up to fifteen graduate credits of which twelve may be counted toward both the bachelor's and master's degrees. Remaining credits may be held as reserve graduate credit and count only toward the master's degree. The courses include BIOD 604 Emerging Infectious Diseases I: Bacteria and Toxins, GOVT 500 The Scientific Method and Research Design, BIOD 605 Emerging Infectious Diseases II: Viral Agents and BIOD 620 Global Health Security Policy. Students must maintain a minimum GPA of 3.00 in these courses and in coursework applied to their major.

Upon completion and conferral of the undergraduate degree in the semester indicated in the application, students must submit the Bachelor's/Accelerated Master's Transition Form to apply credits to the master's degree. Students must begin their master's program the semester immediately following conferral of the undergraduate degree (excluding summer).

Biodefense, PhD

Banner Code: PP-PHD-BIOD

Academic Advising

560 Founders Hall
Arlington Campus

359 Research Hall
Fairfax Campus

Website: schar.gmu.edu

This program is designed to prepare students to serve as scholars and professionals in the fields of biodefense and biosecurity. The program integrates knowledge of natural and man-made biological threats with the skills to develop and analyze policies and strategies for enhancing biosecurity. Other areas of biodefense, including nonproliferation, intelligence and threat assessment, and medical and public health preparedness are integral parts of the program.

Admissions & Policies

Admissions

See Graduate Admissions for general information on graduate admission to George Mason University. See the Schar School of Policy and Government Admissions website (http://schar.gmu.edu/admissions/doctorate-admissions/) for application requirements and deadlines. Students are considered for admission for the Fall term only.

Policies

For policies governing all graduate degrees, see AP.6.10 Requirements for Doctoral Degrees.

Reduction of Credit

Students who enter the doctoral program with a master's degree or other graduate credit may have their credit reduced by up to 30 credits, subject to the approval of the program director.

Requirements

Degree Requirements

Total credits: 72

Students are strongly encouraged to take the core courses as early as possible because they provide the foundation for the rest of the program. The courses which students plan to take should be approved in a program of study designed by the student and their advisor during the student's first semester. Students may take up to 12 credits of courses outside of the Biodefense Program with prior written approval of their advisor. Consult with the graduate program director or coordinator for a list of BIOD electives and approved non-BIOD electives that may be used to fulfill some of the requirements below.

A complete description of the program policies, procedures, and requirements is in the PhD student and faculty handbook (https://schar.gmu.edu/current-students/phd-student-services/phd-handbook-forms/), which is published annually.

Core Courses

Code	Title	Credits
BIOD 604	Emerging Infectious Diseases I: Bacteria and Toxins	3
BIOD 605	Emerging Infectious Diseases II: Viral Agents	3
BIOD 609	Biodefense Strategy	3
BIOD 620	Global Health Security Policy	3
GOVT 500	The Scientific Method and Research Design	3
GOVT 540	International Relations	3
Select one of the following advanced research courses:		3
GOVT 717	Qualitative Methods	
POGO 611	Advanced Data Analysis for Policy and Government	
POGO 646	Policy and Program Evaluation	
An alternative research course approved by the program director		
Total Credits		21

Field of Specialization

Select one field of specialization and complete the requirements therein.

International Security

Code	Title	Credits
GOVT 744	Foundations of Security Studies	3
GOVT 745	International Security	3
Select six credits of electives (courses may be chosen from the electives list below)		6
Total Credits		12

Terrorism and Homeland Security

Code	Title	Credits
BIOD 722	Examining Terrorist Groups	3
BIOD 725	Terrorism and Weapons of Mass Destruction	3
Select six credits of electives (courses may be chosen from the electives list below)		6
Total Credits		12

Technology and Weapons of Mass Destruction

Code	Title	Credits
BIOD 706	Nuclear, Biological, and Chemical Weapons Policy and Security	3
BIOD 760	National Security Technology and Policy	3
Select six credits of electives (courses may be chosen from the electives list below)		6
Total Credits		12

Additional Specialization Courses

Code	Title	Credits
Of the courses listed for the preceding fields of specialization, students must select two courses from those that are not in their chosen field.		6
Total Credits		6

Electives

Code	Title	Credits
Select 9 to 21 credits of additional electives in consultation with advisor.		9-21
Courses may be offered by Schar or by other units. Schar courses include the following:		
BIOD 610	Advanced Topics in Global Health Security	
BIOD 620	Global Health Security Policy	
BIOD 621	Ethics and International Security	
BIOD 622	Negotiating in the International Arena	
BIOD 705	Intelligence: Theory and Practice	
BIOD 706	Nuclear, Biological, and Chemical Weapons Policy and Security	
BIOD 709	Nonproliferation and Arms Control	
BIOD 710	Health Security Preparedness	
BIOD 722	Examining Terrorist Groups	
BIOD 723	Legal Dimensions of Homeland Security	
BIOD 725	Terrorism and Weapons of Mass Destruction	
BIOD 726	Food Security	
BIOD 751	Biosurveillance	
BIOD 752		
BIOD 760	National Security Technology and Policy	
BIOD 762	Biotechnology and Society	
BIOD 766	Development of Vaccines and Therapeutics	
BIOD 793	Directed Studies in Biodefense	
BIOD 810	Advanced Seminar in Biodefense	
BIOD 890	Doctoral Supervised Internship	
BIOD 899	Directed Research in Biodefense	
GOVT 510	American Government and Politics	
GOVT 641		
GOVT 706	Federalism and Intergovernmental Relations	
GOVT 739	Issues in Comparative and International Politics	
GOVT 741	Advanced Seminar in International Politics	
GOVT 745	International Security	
GOVT 755	Seminar in Politics and Bureaucracy	
GOVT 843		
PUAD 504	Managing in the International Arena: Theory and Practice	
PUAD 630	Emergency Planning and Preparedness	
PUAD 631	Disaster Response Operations and Recovery	
PUAD 632	Terrorism: Theory and Practice	
PUAD 635	Emergency Preparedness: Interagency Communication and Coordination	
PUAD 701	Cross-Cultural and Ethical Dimensions of International Management	
PUAD 727	Seminar in Risk Assessment and Decision Making	
PUAD 731	Homeland/Transportation Security Administration	
PUAD 738	Issues in International Security	
PUAD 750	Federalism and Intergovernmental Relations	
PHIL 642	Biomedical Ethics	
PUBP 757	Public Policy in Global Health and Medical Practice	
PUBP 758	Global Threats and Medical Policies	
Total Credits		9-21

Qualifying Exam

The purpose of the qualifying exam is to determine if the student is ready to engage in dissertation research. Doctoral students are eligible to take the exam at the conclusion of coursework, provided an approved Degree Plan is on file with Schar. The exam must be completed before the student takes dissertation proposal (BIOD 998 Doctoral Dissertation Proposal).

Advancement to Candidacy

Advancement to candidacy for the doctoral degree occurs when a student has met the coursework requirements, passed the comprehensive qualifying examination, presented and successfully defended a dissertation proposal, and has an approved dissertation committee.

Dissertation Research

Once enrolled in BIOD 998, students in this degree program must maintain continuous registration in BIOD 998 or BIOD 999 each semester (excluding summers) until the dissertation is submitted to and accepted by the University Libraries. Once enrolled in BIOD 999, students must follow the university's continuous registration policy as specified in AP.6.10.6 Dissertation Registration. Students who defend in the summer must be registered for at least 1 credit of BIOD 999.

Students may apply to this degree a minimum of 3 and a maximum of 6 credits of BIOD 998 and a minimum of 6 and a maximum of 18 credits of BIOD 999. They apply a minimum of 12 and a maximum of 24 dissertation credits (BIOD 998 and BIOD 999 combined) to the degree. Because of the continuous registration policy, students may be required to register for additional credits of these courses.

Before registering in BIOD 999, students must offer a successful public defense of the dissertation proposal. Students must present the results of the dissertation research to their dissertation committee in a seminar and defend their dissertation to the university community. Successful completion of a dissertation is contingent on approval of the dissertation committee and the dean.

Code	Title	Credits
Research credits		12-24
BIOD 998	Doctoral Dissertation Proposal (minimum of 3 credits)	
BIOD 999	Doctoral Dissertation (minimum of 6 credits)	
Total Credits		12-24

Emergency Management and Homeland Security Graduate Certificate

Banner Code: PP-CERG-EMHS

Academic Advising

560 Founders Hall
Arlington Campus

359 Research Hall
Fairfax Campus

Website: schar.gmu.edu

The Schar School of Policy and Government offers certificates in conjunction with its master's programs. Students already pursuing a master's degree in the school may, in most cases, after admission to a certificate, earn an additional six credits (two courses) in Schar to receive a certificate in addition to the master's degree.

The graduate certificate in emergency management and homeland security may only be pursued on a part-time basis.

Admissions & Policies

Admissions

Applicants to all graduate programs must meet the admission standards and application requirements for graduate study as specified in the Graduate Admission Policies section of this catalog. Participants must be admitted to a certificate program. Admission requirements are the same as those for the master's programs and may be found on the Schar admissions web site (http://spgia.gmu.edu/admissions/).

Policies

For policies governing all graduate certificates, see AP.6.8 Requirements for Graduate Certificates.

Termination from Program

Students admitted to a Schar program will be terminated from the program upon receiving one grade of F and are no longer eligible to take courses in the school. Per university regulation, students are terminated from the university after accumulating grades of F in two courses or 9 credits of unsatisfactory grades in graduate courses. See the Academic Policies section of the catalog for additional policies pertaining to graduate students.

Requirements

Certificate Requirements

Total credits: 15

This certificate may be pursued on a part-time basis only.

Required Courses

Code	Title	Credits
PUAD 502	Administration in Public and Nonprofit Organizations	3
PUAD 630	Emergency Planning and Preparedness	3
PUAD 637	Managing Homeland Security	3
Total Credits		9

Electives

Students choose electives in the emergency management and homeland security area. A list of relevant electives is available under the concentration in emergency management and homeland security in the MPA (master of public administration).

Code	Title	Credits
Select two electives		6
Total Credits		6

Global Health and Security Graduate Certificate

Banner Code: PP-CERG-GHS

Academic Advising

560 Founders Hall
Arlington Campus

359 Research Hall
Fairfax Campus

Website: schar.gmu.edu

The Schar School of Policy and Government offers certificate programs in conjunction with its master's programs. The certificate in global health and security provides an introduction to the intersection of global public health and security, covering topics such as emerging infectious diseases, biosurveillance, the development of vaccines, and emergency response to public health disasters. Students already pursuing a master's degree in the school may, in most cases, after admission to a certificate program, earn an additional six credits (two courses) in Schar to receive a certificate in addition to the master's degree.

The graduate certificate in global health and security may be pursued on a part-time or full-time basis.

Admissions & Policies

Admissions

Applicants to all graduate programs must meet the admission standards and application requirements for graduate study as specified in the Graduate Admission Policies section of this catalog. Participants must be admitted to a certificate program. Admission requirements are the same as those for the master's programs and may be found on the Schar admissions web site (http://spgia.gmu.edu/admissions/).

Policies

For policies governing all graduate certificates, see AP.6.8 Requirements for Graduate Certificates.

Termination from Program

Students admitted to a Schar program will be terminated from the program upon receiving one grade of F and are no longer eligible to take courses in the school. Per university regulation, students are terminated from the university after accumulating grades of F in two courses or 9 credits of unsatisfactory grades in graduate courses. See the Academic Policies section of the catalog for additional policies pertaining to graduate students.

Requirements

Certificate Requirements

Total credits: 15

This certificate may be pursued on a full-or part-time basis.

Required Courses

Code	Title	Credits
BIOD 620	Global Health Security Policy	3
GCH 543	Global Health	3
Total Credits		6

Electives

Code	Title	Credits
Select three (9 credits) from the following:		9
COMM 620	Health Communication	
GCH 560	Environmental Health	
GCH 640	Global Infectious Diseases	
GCH 645	U.S. and Global Public Health Systems	
GCH 712	Introduction to Epidemiology	
GCH 726	Advanced Methods in Epidemiology I	
GCH 772	Social Epidemiology	
PUAD 630	Emergency Planning and Preparedness	
PUAD 631	Disaster Response Operations and Recovery	
Other course with prior written approval of program director		
Total Credits		9

Global Systems Minor

Banner Code: GLOS

Academic Advising

359 Research Hall
Fairfax Campus

Global systems have become increasingly important to the way we live and work, and a global perspective makes us more aware of how we are connected to others around the world and to the whole of nature.

The interdisciplinary minor in global systems is designed to complement virtually any undergraduate major. It works well for majors in business disciplines, economics, languages, geography, government and international politics, history, and other disciplines that take a global view. Students in professional programs learn to connect their professional concerns to global issues of health care, trade and finance, or technology. Students in the liberal arts gain insights into their disciplines as they learn how the arts, humanities, sciences, and social sciences are affected by global issues such as demographic change, telecommunications, and environmental protection.

Other globally oriented courses may also fulfill or substitute for the requirements of this program with written permission of the coordinator prior to registration.

This is an interdisciplinary minor offered by the Schar School of Policy and Government and the College of Humanities and Social Sciences.

Faculty

Lopez-Santana (minor advisor)

Admissions & Policies

Policies

Students must complete all coursework with a minimum GPA of 2.00. At least 9 credits must be at the 300 level or above. Eight credits of coursework must be unique to the minor.

For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 18

Required Course

Code	Title	Credits
Select one course from the following:		3
GLOA 101	Introduction to Global Affairs (Mason Core)	
GOVT 132	Introduction to International Politics (Mason Core)	
HIST 125	Introduction to World History (Mason Core)	
Total Credits		3

Electives

Code	Title	Credits
Select five electives from at least two of the following fields: [1]		15
Field A: Government, geography, and administration of justice		
GOVT 132	Introduction to International Politics (Mason Core)	
GOVT 444	Issues in International Studies	
CRIM 405	Law and Justice around the World (Mason Core)	
GGS 101	Major World Regions (Mason Core)	

GGS 301	Political Geography (Mason Core)
GGS 303	Geography of Resource Conservation (Mason Core)
GGS 304	Population Geography (Mason Core)
GGS 305	Economic Geography
Field B: Economics, anthropology, marketing, history, and sociology	
ANTH 300	Civilizations
ANTH 312	Political Anthropology (Mason Core)
ANTH 331	Refugees (Mason Core)
ANTH 375	Culture, Power, History
ECON 360	Economics of Developing Areas (Mason Core)
ECON 361	Economic Development of Latin America (Mason Core)
ECON 380	Economies in Transition (Mason Core)
ECON 390	International Economics
HIST 387	Topics in Global History (Mason Core)
MKTG 407	Global Marketing
SOCI 332	The Urban World (Mason Core)
Field C: Environmental science, global health, systems engineering, urban and suburban studies, civil and infrastructure engineering	
BIOL 377	Applied Ecology
CEIE 100	Environmental Engineering around the World (Mason Core)
CEIE 450	Environmental Engineering Systems
GCH 543	Global Health
USST 301	Urban Growth in a Shrinking World
Field D: Modes of communication	
COMM 305	Foundations of Intercultural Communication (Mason Core)
COMM 456	Comparative Mass Media (Mason Core)
DANC 118	World Dance (Mason Core)
MUSI 103	Musics of the World (Mason Core)
MUSI 431	Music History in Society III (Mason Core)
THR 359	World Stages (Mason Core)
Total Credits	15

[1] Other globally-oriented courses may also be applied to this requirement with written approval of the director.

Government Analytics Minor (Schar)

Banner Code: GVAN

Dr. Robert McGrath

344 Research Hall

Fairfax Campus

Phone: 703-993-4567
Email: rmcgrat2@gmu.edu

Government analytics involves the use of cutting-edge tools of data science and analysis to address political, policy, and governance problems at federal, state, local, and organizational levels. This minor introduces students to the tools and context that are now commonly employed by government entities and agencies, as well as by the non-profit and private sectors. In particular, students will work with canonical programming languages (R and Python) and apply these tools to substantive issues in political science, public administration, and international relations. The minor integrates a technical curriculum with real-world applicability and gives students the flexibility and independence to develop unique expertise and hone research skills. The curriculum also introduces students to issues of copyright and privacy that are integral to ethical government analytics.

Admissions & Policies

Admissions

This minor is available to all Mason undergraduate students.

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 19-20

Of the total of 19 credits, 9 credits must be unique to minor

Required Courses

Code	Title	Credits
CDS 101	Introduction to Computational and Data Sciences (Mason Core)	3
CDS 102	Introduction to Computational and Data Sciences Lab (Mason Core)	1
CDS 230	Modeling and Simulation I	3
Select one of the following:		**3**
CDS 301	Scientific Information and Data Visualization	
CDS 302	Scientific Data and Databases	
CDS 303	Scientific Data Mining	
STAT 463	Introduction to Exploratory Data Analysis	
Select two of the following: [1]		**6-7**
GOVT 300	Research Methods and Analysis	
GOVT 307	Legislative Behavior	
GOVT 308	The American Presidency	
GOVT 311	Public Opinion and Electoral Behavior	
GOVT 312	Political Parties and Campaigns	
GOVT 313	Political Psychology	
GOVT 318	Interest Groups, Lobbying, and the Political Process	
GOVT 343	International Political Economy	
GOVT 351	Administration in the Political System	
GOVT 354	Nonprofit Sector in Society	
GOVT 355	Public Personnel Administration	
GOVT 356	Public Budgeting and Finance	

GOVT 357	Urban Planning	
GOVT 358	Nonprofit Financial Planning	
GOVT 361	Introduction to Environmental Policy	
GOVT 362	Intermediate Environmental Policy	
GOVT 364	Public Policy Making	
GOVT 365	State and Regional Public Policy	
GOVT 366	Public Policy Analysis	
GOVT 367	Money, Markets and Economic Policy (Mason Core)	
GOVT 368	Tools for Economic Policy Analysis	
GOVT 400	Issues in Political Analysis	
Seminar Requirement		
GOVT 490	Synthesis Seminar (Mason Core) [2]	3
Total Credits		19-20

[1] An alternative 300-level GOVT course, especially including GOVT 319, or any 400-level GOVT course, may be substituted for any other GOVT course with the permission of the minor director, depending on the topic.

[2] This Government Analytics capstone seminar will be offered annually and covers:
i) Open Government Data, in theory and practice
ii) Supervision of individual capstone projects
Enrollment in the capstone section is limited to Government Analytics minors and requires permission of the instructor.

Government and International Politics, BA

Banner Code: PP-BA-GVIP

Academic Advising

359 Research Hall
Fairfax Campus

Phone: 703-993-1400
Email: gvip@gmu.edu
Website: schar.gmu.edu

Admissions & Policies

Policies

For policies governing all undergraduate degrees, see AP.5 Undergraduate Policies.

Program Requirements

Students must fulfill all Requirements for Bachelor's Degrees including the Mason Core. Students pursuing a BA in Government and International Politics must complete additional requirements for the BA degree in the Schar School of Policy and Government.

Students pursuing this degree must complete 43 credits in GOVT and earn a minimum grade of 2.00 in each course applied to the major.

Requirements

Degree Requirements

Total credits: minimum 120

Students pursuing a BA in Government and International Politics and wishing to narrow their focus may choose to concentrate in one of eight government fields or complete a higher credit concentration in Philosophy, Politics, and Economics.

BA with or without Government Concentration

Code	Title	Credits
Core Courses		
GOVT 101	Democratic Theory and Practice (Mason Core)	3
GOVT 103	Introduction to American Government (Mason Core)	3
GOVT 132	Introduction to International Politics (Mason Core)	3
GOVT 133	Introduction to Comparative Politics (Mason Core)	3
GOVT 300	Research Methods and Analysis	4
Senior Seminar		
Select one seminar from the following:		3
GOVT 490	Synthesis Seminar (Mason Core)	
GOVT 491	Honors Seminar (Mason Core) [1]	
Total Credits		19

[1] This option is for students who have been accepted to pursue honors in the major.

Government Field Study

Code	Title	Credits
Select any eight advanced government field courses, with or without a government concentration		24
Total Credits		24

Students may complete a government concentration (four courses) in one field, then complete any four more advanced government field courses to satisfy this requirement. Students who do not pursue a government concentration may choose 24 credits from the advanced government field courses listed below (with restriction) for a broader learning experience.

Up to three credits of GOVT 399 Research Practicum and GOVT 480 Internship may be used to fulfill the field course requirement with prior advisor approval. Up to six credits of GOVT 496 Directed Readings and Research may be used to fulfill this requirement with prior advisor approval. GOVT 490 Synthesis Seminar (Mason Core) or GOVT 491 Honors Seminar (Mason Core) may not be used to fulfill this requirement.

Advanced government field courses include courses numbered GOVT 301 - GOVT 499

Concentrations

- Concentration in American Institutions and Processes (AMIP)
- Concentration in Comparative Politics (CPOL)
- Concentration in International Political Economy (IPE)

- Concentration in International Relations (INTR)
- Concentration in Law, Philosophy and Governance (LPGV)
- Concentration in Political Analysis (PA)
- Concentration in Political Behavior and Identity Politics (PBIP)
- Concentration in Public Policy and Administration (PPA)
- Individualized Concentration (IND)
- Concentration in Philosophy, Politics, and Economics (PPE)

Code	Title	Credits
Select 0-12 credits in any one concentration		0-12
Total Credits		0-12

Students may partially satisfy the field study requirement by completing four courses (minimum 12 credits) in any one approved concentration.

Concentration in American Institutions and Processes (AMIP)

Code	Title	Credits
GOVT 301	Public Law and the Judicial Process	3
GOVT 302	American Political Development	3
GOVT 304	American State and Local Government	3
GOVT 305	Contemporary American Federalism	3
GOVT 307	Legislative Behavior	3
GOVT 308	The American Presidency	3
GOVT 309	Government and Politics of Metropolitan Areas	3
GOVT 311	Public Opinion and Electoral Behavior	3
GOVT 319	Issues in Government and Politics	1-3
GOVT 344	American Foreign Policy	3
GOVT 357	Urban Planning	3
GOVT 364	Public Policy Making	3
GOVT 365	State and Regional Public Policy	3
GOVT 400	Issues in Political Analysis	1-3
GOVT 409	Virginia Government and Politics	3
GOVT 422	Constitutional Interpretation	3
GOVT 423	Constitutional Law: Civil Rights and Liberties	3

Concentration in Comparative Politics (CPOL)

Code	Title	Credits
GOVT 331	Government and Politics of Latin America	3
GOVT 332	Government and Politics of the Middle East and North Africa	3
GOVT 333	Government and Politics of Asia	3
GOVT 334	Government and Politics of Europe	3
GOVT 337	Ethnic Politics in Western Europe and North America	3
GOVT 338	Government and Politics of Russia	3
GOVT 339	Issues in the Politics of Advanced Industrial Societies	1-3
GOVT 340	Central Asian Politics	3
GOVT 341	Chinese Foreign Policy	3
GOVT 342	Diplomacy	3
GOVT 344	American Foreign Policy	3
GOVT 345	Islam and Politics	3
GOVT 430	Comparative Political Leadership	3
GOVT 433	Political Economy of East Asia	3
GOVT 434	Democracy in Global Perspective	3
GOVT 443	Law and Ethics of War	3
GOVT 444	Issues in International Studies	1-3
GOVT 445	Human Rights	3
GOVT 447	Revolution and International Politics	3
GOVT 448	Ethics and International Politics	3

Concentration in International Political Economy (IPE)

Code	Title	Credits
GOVT 322	International Relations Theory	3
GOVT 339	Issues in the Politics of Advanced Industrial Societies	1-3
GOVT 343	International Political Economy	3
GOVT 366	Public Policy Analysis	3
GOVT 367	Money, Markets and Economic Policy (Mason Core)	3
GOVT 368	Tools for Economic Policy Analysis	3
GOVT 433	Political Economy of East Asia	3
GOVT 444	Issues in International Studies	1-3
GOVT 446	International Law and Organization	3
GOVT 469	Philosophy, Politics, and Economics	3
ECON 385	International Economic Policy	3

Concentration in International Relations (INTR)

Code	Title	Credits
GOVT 322	International Relations Theory	3
GOVT 341	Chinese Foreign Policy	3
GOVT 342	Diplomacy	3
GOVT 344	American Foreign Policy	3
GOVT 345	Islam and Politics	3
GOVT 346	American Security Policy	3
GOVT 347	International Security	3
GOVT 443	Law and Ethics of War	3
GOVT 444	Issues in International Studies	1-3
GOVT 445	Human Rights	3
GOVT 446	International Law and Organization	3
GOVT 447	Revolution and International Politics	3
GOVT 448	Ethics and International Politics	3

Concentration in Law, Philosophy and Governance (LPGV)

Code	Title	Credits
GOVT 301	Public Law and the Judicial Process	3
GOVT 302	American Political Development	3
GOVT 307	Legislative Behavior	3
GOVT 322	International Relations Theory	3
GOVT 323	Classical Western Political Theory	3
GOVT 324	Modern Western Political Theory	3
GOVT 327	Contemporary Western Political Theory	3
GOVT 328	Global Political Theory	3
GOVT 329	Issues in Political Theories and Values	1-3
GOVT 334	Government and Politics of Europe	3
GOVT 407	Law and Society	3
GOVT 420	American Political Thought	3

GOVT 422	Constitutional Interpretation	3
GOVT 423	Constitutional Law: Civil Rights and Liberties	3
GOVT 427	Feminist Political Thought	3
GOVT 428	Advanced Democratic Theory	3
GOVT 443	Law and Ethics of War	3
GOVT 445	Human Rights	3
GOVT 446	International Law and Organization	3
GOVT 448	Ethics and International Politics	3
GOVT 452	Administrative Law and Procedures	3
GOVT 460	Surveillance and Privacy in Contemporary Society	3
GOVT 469	Philosophy, Politics, and Economics	3

Concentration in Political Analysis (PA)

Code	Title	Credits
GOVT 307	Legislative Behavior	3
GOVT 343	International Political Economy	3
GOVT 356	Public Budgeting and Finance	3
GOVT 357	Urban Planning	3
GOVT 358	Nonprofit Financial Planning	4
GOVT 366	Public Policy Analysis	3
GOVT 367	Money, Markets and Economic Policy (Mason Core)	3
GOVT 368	Tools for Economic Policy Analysis	3
GOVT 400	Issues in Political Analysis	1-3
GOVT 433	Political Economy of East Asia	3
GOVT 469	Philosophy, Politics, and Economics	3
STAT 350	Introductory Statistics II	3

Any 400-level STAT course

Concentration in Political Behavior and Identity Politics (PBIP)

Code	Title	Credits
GOVT 311	Public Opinion and Electoral Behavior	3
GOVT 312	Political Parties and Campaigns	3
GOVT 313	Political Psychology	3
GOVT 318	Interest Groups, Lobbying, and the Political Process	3
GOVT 319	Issues in Government and Politics	1-3
GOVT 345	Islam and Politics	3
GOVT 353	Social Entrepreneurship	3
GOVT 400	Issues in Political Analysis	1-3
GOVT 412	Politics and the Mass Media	3
GOVT 414	Politics of Race and Gender	3
GOVT 423	Constitutional Law: Civil Rights and Liberties	3

Concentration in Public Policy and Administration (PPA)

Code	Title	Credits
GOVT 304	American State and Local Government	3
GOVT 329	Issues in Political Theories and Values	1-3
GOVT 351	Administration in the Political System	3
GOVT 353	Social Entrepreneurship	3
GOVT 354	Nonprofit Sector in Society	3
GOVT 355	Public Personnel Administration	3
GOVT 356	Public Budgeting and Finance	3
GOVT 357	Urban Planning	3
GOVT 358	Nonprofit Financial Planning	4
GOVT 361	Introduction to Environmental Policy	3
GOVT 362	Intermediate Environmental Policy	3
GOVT 364	Public Policy Making	3
GOVT 365	State and Regional Public Policy	3
GOVT 366	Public Policy Analysis	3
GOVT 367	Money, Markets and Economic Policy (Mason Core)	3
GOVT 368	Tools for Economic Policy Analysis	3
GOVT 400	Issues in Political Analysis	1-3
GOVT 452	Administrative Law and Procedures	3
GOVT 460	Surveillance and Privacy in Contemporary Society	3
GOVT 464	Issues in Public Policy and Administration	1-3
GOVT 467	Current Issues in Economic Policy	3
GOVT 469	Philosophy, Politics, and Economics	3

Individualized Concentration (IND)

Create your own concentration consisting of four upper level courses with Director approval. A minimum of two courses in this concentration must be GOVT.

BA with Non-Government Concentration

Concentration in Philosophy, Politics, and Economics (PPE)

Core Courses

Code	Title	Credits
GOVT 101	Democratic Theory and Practice (Mason Core)	3
GOVT 103	Introduction to American Government (Mason Core)	3
GOVT 132	Introduction to International Politics (Mason Core)	3
GOVT 133	Introduction to Comparative Politics (Mason Core)	3
GOVT 300	Research Methods and Analysis	4
Total Credits		16

Senior Seminar

Code	Title	Credits
Select one from the following:		3
GOVT 490	Synthesis Seminar (Mason Core)	
GOVT 491	Honors Seminar (Mason Core) [1]	
Total Credits		3

[1] This option is for students who have been accepted to pursue honors in the major.

Government Field Study

Students complete the following coursework:

Code	Title	Credits
American Politics		
Select one course from the following:		3
GOVT 301 - GOVT 319		
GOVT 401 - GOVT 419		

Political Theory and Law		
GOVT 323	Classical Western Political Theory	3
International and Comparative Politics		
Select one course from the following:		3
GOVT 330 - GOVT 349		
GOVT 430 - GOVT 449		
Public Policy and Administration		
GOVT 467	Current Issues in Economic Policy	3
GOVT 469	Philosophy, Politics, and Economics	3
Additional Upper Level GOVT Courses		
GOVT 422	Constitutional Interpretation	3
Two additional upper division GOVT courses		6
Total Credits		24

Additional Concentration Courses

Code	Title	Credits
GOVT 324	Modern Western Political Theory	3
or PHIL 324	Modern Western Political Theory	
GOVT 327	Contemporary Western Political Theory	3
or PHIL 327	Contemporary Western Political Theory	
PHIL 357	Philosophy of the Social Sciences	3
or PHIL 371	Philosophy of Natural Sciences	
PHIL 358	Ethics and Economics	3
or PHIL 311	Philosophy of Law	
PHIL 429	Advanced Topics in Social and Political Philosophy	3
ECON 103	Contemporary Microeconomic Principles (Mason Core)	3
ECON 104	Contemporary Macroeconomic Principles (Mason Core)	3
ECON 306	Intermediate Microeconomics	3
Select one course from the following:		3
ECON 403	Austrian Economics	
ECON 410	Public Choice	
ECON 412	Game Theory and Economics of Institutions (Choose one of the following:)	
ECON 415	Law and Economics	
Total Credits		27

Writing-Intensive Requirement

The university requires all students to complete at least one course designated "writing intensive" in their majors. Students majoring in government and international politics may fulfill this requirement by successfully completing GOVT 490 Synthesis Seminar (Mason Core) or GOVT 491 Honors Seminar (Mason Core) in their major programs.

Schar Requirements in Addition to Mason Core Below

Code	Title	Credits
One course in Philosophy or Religion		
One additional course in Social and Behavioral Sciences		
One course in Non-Western Culture		
Proficiency in a foreign language through the intermediate level		

Mason Core

Some Mason Core requirements may already be fulfilled by the major requirements listed above. Students are strongly encouraged to consult their advisors to ensure they fulfill all remaining Mason Core requirements.

Code	Title	Credits
Foundation Requirements		
Written Communication (ENGH 101)		3
Oral Communication		3
Quantitative Reasoning		3
Information Technology and Computing		3
Exploration Requirements		
Arts		3
Global Understanding		3
Literature		3
Natural Science		7
Social and Behavioral Sciences		3
Western Civilization/World History		3
Integration Requirements		
Written Communications (ENGH 302)		3
Writing-Intensive [1]		3
Synthesis/Capstone [2]		3
Total Credits		40

1 Most programs include the writing-intensive course designated for the major as part of the major requirements; this course is therefore not counted towards the total required for Mason Core.

2 Minimum 3 credits required.

Honors

Honors in the Major

Highly qualified students majoring in Government and International Politics and Public Administration may pursue advanced work leading to graduation with honors in the major. Those students selected for participation in this program take a two-course sequence: GOVT 491 Honors Seminar (Mason Core) and GOVT 496 Directed Readings and Research. To graduate with honors in the major, students must complete these courses with a minimum GPA of 3.50.

Accelerated Master's

Bachelor's Degree (any)/Biodefense, Accelerated MS

Overview

Highly qualified undergraduates in any major may apply to the accelerated Biodefense, MS. If accepted, students will be able to earn a bachelor's degree in their chosen major and a Biodefense, MS with a reduced number of overall credits and within a reduced time frame, sometimes within five years.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies.

Admission

Please see the Graduate Admissions for general information on graduate admission to George Mason University. Information specific to the accelerated MS program may be found on the Schar website (http://schar.gmu.edu/programs/undergraduate-degrees/accelerated-masters-programs/).

To be considered for this accelerated master's program, applicants must have completed a minimum of 60 credits and have a minimum GPA of 3.50 in all coursework applied to the degree.

Accelerated Option Requirements

While undergraduate students, accelerated master's students may complete up to fifteen graduate credits of which twelve may be counted toward both the bachelor's and master's degrees. Remaining credits may be held as reserve graduate credit and count only toward the master's degree. The courses include BIOD 604 Emerging Infectious Diseases I: Bacteria and Toxins, GOVT 500 The Scientific Method and Research Design, BIOD 605 Emerging Infectious Diseases II: Viral Agents and BIOD 620 Global Health Security Policy. Students must maintain a minimum GPA of 3.00 in these courses and in coursework applied to their major.

Upon completion and conferral of the undergraduate degree in the semester indicated in the application, students must submit the Bachelor's/Accelerated Master's Transition Form to apply credits to the master's degree. Students must begin their master's program the semester immediately following conferral of the undergraduate degree (excluding summer).

Bachelor's Degree (any)/International Security, Accelerated MA

Overview

Highly-qualified undergraduates in any major may apply to the accelerated MA degree program in International Security. If accepted students will be able to earn a bachelor's degree in their major and an MA in International Security with a reduced number of overall credits and within a reduced time frame, sometimes within five years. More information on bachelor's/accelerated master's programs may be found in AP.6.7 Bachelor's/Accelerated Master's Degrees.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. See AP.6.9 Requirements for Master's Degrees.

Admission

Please see Graduate Admission Policies for general information on graduate admission to George Mason University. Specific information on application requirements and deadlines may be found on the Schar admissions website (http://schar.gmu.edu/admissions/).

To be considered for this accelerated master's program, applicants must have completed a minimum of 60 credits, including at least 12 credits of Government, Economics and/or Global Affairs courses, and have a minimum GPA of 3.50 in all coursework applied to the degree.

Accelerated Option Requirements

While undergraduate students, accelerated master's students may complete up to twelve graduate credits, all of which may be counted toward both the bachelor's and master's degrees. Any remaining credits may be held as reserve graduate credit and count only toward the master's degree. The courses are:

Code	Title	Credits
GOVT 540	International Relations	3
POGO 511	Introductory Data Analysis for Policy and Government	3
PUBP 504	Grand Strategy	3
PUBP 506	Ethics and the Use of Force	3

Students must maintain a minimum GPA of 3.00 in these courses and in coursework applied to their major.

Upon completion and conferral of the undergraduate degree in the semester indicated in the application, students must submit the Bachelor's/Accelerated Master's Transition Form to apply credits to the master's degree. Students must begin their master's program the semester immediately following conferral of the undergraduate degree (excluding summer).

Bachelor's Degree (any)/International Commerce and Policy, Accelerated MA

Overview

Highly-qualified undergraduates in any major may apply to the accelerated MA degree program in International Commerce and Policy. If accepted students will be able to earn a bachelor's degree in their major and an MA in International Commerce and Policy with a reduced number of overall credits and within a reduced time frame, sometimes within five years. More information on bachelor's/accelerated master's programs may be found in AP.6.7 Bachelor's/Accelerated Master's Degrees.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. See AP.6.9 Requirements for Master's Degrees.

Admission

Please see Graduate Admission Policies for general information on graduate admission to George Mason University. Specific information on application requirements and deadlines may be found on the Schar admissions website (http://schar.gmu.edu/admissions/).

To be considered for this accelerated master's program, applicants must have completed a minimum of 60 credits, including at least 12 credits of Government, Economics and/or Global Affairs courses, and have a minimum GPA of 3.50 in all coursework applied to the degree.

Accelerated Option Requirements

While undergraduate students, accelerated master's students may complete up to eighteen graduate credits of which twelve may be counted toward both the bachelor's and master's degrees. Remaining credits may be held as reserve graduate credit and count only toward the master's degree. The courses include ITRN 500 Global Political Economy, ITRN 504 Microeconomics and Trade Policy, ITRN 503 Macroeconomic Policy in the Global Economy and ITRN 605 Technology, Culture and

Commerce. Students must maintain a minimum GPA of 3.00 in these courses and in coursework applied to their major.

Upon completion and conferral of the undergraduate degree in the semester indicated in the application, students must submit the Bachelor's/Accelerated Master's Transition Form to apply credits to the master's degree. Students must begin their master's program the semester immediately following conferral of the undergraduate degree (excluding summer).

Bachelor's Degree (any)/Political Science, Accelerated MA

Overview

Highly-qualified undergraduates in any major may apply to the accelerated MA degree in political science. If accepted, students will be able to earn a bachelor's degree in their chosen major and a MA in Political Science with a reduced number of overall credits and within a reduced time frame, sometimes five years. More information on bachelor's/accelerated master's programs may be found in AP.6.7 Bachelor's/Accelerated Master's Degrees.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. See AP.6.9 Requirements for Master's Degrees.

Admission

See Graduate Admission Policies for general information on graduate admission to George Mason University. Specific information on application requirements and deadlines for the Political Science master's program may be found on the Schar website (http://schar.gmu.edu/programs/undergraduate-degrees/accelerated-masters-programs/).

To be considered for this accelerated master's program, applicants must have completed a minimum of 60 credits, including 12 GOVT credits, and have a minimum GPA of 3.50 in all coursework applied to the degree.

Accelerated Option Requirements

While undergraduate students, accelerated master's students may complete up to eighteen graduate credits of which twelve may be counted toward both the bachelor's and master's degrees. Remaining credits may be held as reserve graduate credit and count only toward the master's degree. The courses are chosen from GOVT 500 The Scientific Method and Research Design, GOVT 510 American Government and Politics, GOVT 520 Political Theory, GOVT 530 Comparative Politics, GOVT 540 International Relations. Students must maintain a minimum GPA of 3.00 in these courses and in coursework applied to their major.

Upon completion and conferral of the undergraduate degree in the semester indicated in the application, students must submit the Bachelor's/Accelerated Master's Transition Form to apply credits to the master's degree. Students must begin their master's program the semester immediately following conferral of the undergraduate degree (excluding summer).

Bachelor's Degree (any)/Public Administration, Accelerated MPA

Overview

Highly-qualified undergraduates in any major may apply to the accelerated master's degree in public administration. If accepted, students will be able to earn a bachelor's degree in their chosen major and a master's degree in public administration with a reduced number of overall credits and within a reduced time frame, sometimes within five years. See AP.6.7 Bachelor's/Accelerated Master's Degrees.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

Admission

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions. Information specific to the accelerated MPA program may be found on the Schar website (http://schar.gmu.edu/programs/undergraduate-degrees/accelerated-masters-programs/).

To be considered for this accelerated master's program, applicants must have completed a minimum of 60 credits, including 12 GOVT credits, and have a minimum GPA of 3.50 in all coursework applied to the degree.

Accelerated Option Requirements

While undergraduate students, accelerated master's students may complete up to eighteen graduate credits of which twelve may be counted toward both the bachelor's and master's degrees. Remaining credits may be held as reserve graduate credit and count only toward the master's degree. The courses include PUAD 502 Administration in Public and Nonprofit Organizations, POGO 511 Introductory Data Analysis for Policy and Government, PUAD 520 Organization Theory and Management Behavior and PUAD 540 Public Policy Process. Students must maintain a minimum GPA of 3.00 in these courses and in coursework applied to their major.

Upon completion and conferral of the undergraduate degree in the semester indicated in the application, students must submit the Bachelor's/Accelerated Master's Transition Form to apply credits to the master's degree. Students must begin their master's program the semester immediately following conferral of the undergraduate degree (excluding summer).

Bachelor's Degree (any)/Public Policy, Accelerated MPP

Overview

Highly-qualified undergraduates in any major may apply to the accelerated Master of Public Policy (MPP) program. If accepted students will be able to earn a bachelor's degree in their chosen major and the Master of Public Policy with a reduced number of overall credits and within a reduced time frame, sometimes within five years. More information on bachelor's/accelerated master's programs may be found in AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7).

Students in an accelerated degree program must fulfill all university requirements for the master's degree. See AP.6.9 Requirements for Master's Degrees. (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-9)

Admission

Please see Graduate Admission Policies for general information on graduate admission to George Mason University. Information specific to the accelerated Master of Public Policy program may be found on

the Schar website (http://schar.gmu.edu/programs/undergraduate-degrees/accelerated-masters-programs/).

To be considered for this accelerated master's program, applicants must have completed a minimum of 60 credits, including 12 credits of Government and/or Economics courses, and have a minimum GPA of 3.50 in all coursework applied to the degree.

Accelerated Option Requirements

While undergraduate students, accelerated master's students may complete up to fifteen graduate credits of which twelve may be counted toward both the bachelor's and master's degrees. Remaining credits may be held as reserve graduate credit and count only toward the master's degree.. The student must have a minimum GPA of 3.00 in each course. Students must maintain a minimum GPA of 3.00 in these courses and in coursework applied to their major.

Code	Title	Credits
PUBP 500	Theory and Practice in Public Policy	3
PUBP 503	Culture, Organization, and Technology	3
ITRN 503	Macroeconomic Policy in the Global Economy	3
POGO 511	Introductory Data Analysis for Policy and Government	3

Upon completion and conferral of the undergraduate degree in the semester indicated in the application, students must submit the Bachelor's/Accelerated Master's Transition Form to apply credits to the master's degree. Students must begin their master's program the semester immediately following conferral of the undergraduate degree (excluding summer).

Illicit Trade Analysis Graduate Certificate

Banner Code: PP-CERG-ILTA

Admissions & Policies

Admissions

Applicants to all graduate programs must meet the admission standards and application requirements for graduate study as specified in Graduate Admission Policies (https://catalog.gmu.edu/admissions/graduate-policies/). Participants must be admitted to a certificate program. Admission requirements are the same as those for the master's programs and may be found with Schar Admissions (http://schar.gmu.edu/admissions/).

Policies

For policies governing all graduate certificates, see AP.6.8 Requirements for Graduate Certificates (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-8)

Termination from Program

Students admitted to a Schar program will be terminated from the program upon receiving one grade of F and are no longer eligible to take courses in the school. Per university regulation, students are terminated from the university after accumulating grades of F in two courses or 9 credits of unsatisfactory grades in graduate courses. For policies governing all graduate degrees, see Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/).

Requirements

Certificate Requirements

Total credits: 15

This certificate may be pursued on a part-time basis only.

Code	Title	Credits
Required Courses:		
PUBP 763	Illicit Trade	3
Electives:		
Select 12 credits from the following: [1]		12
ITRN 504	Microeconomics and Trade Policy	
ITRN 603	Global Trade Relations	
ITRN 740	Trade and Regulatory Compliance	
PUBP 716	Transportation Operations and Logistics	
PUBP 764	Transnational Crime and Corruption	
PUBP 765	Human Smuggling and Trafficking	
Total Credits		15

[1] Students may also select credits from special topics courses as approved by the academic advisor.

International Commerce and Policy, MA

Banner Code: PP-MA-ICP

Academic Advising

560 Founders Hall
Arlington Campus

359 Research Hall
Fairfax Campus

Website: schar.gmu.edu

The International Commerce and Policy, MA program (ICP) is an interdisciplinary course of study to help students from around the world prepare for jobs in the new economy. Unlike traditional international affairs programs, the degree is focused on such international economic issues as global trade and investment. The MA in International Commerce and Policy differs from an MBA program by providing training in the political, social, and technological aspects of the global economy. In today's world, it is critical for all participants in global markets to understand the multifaceted environment in which they work.

Faculty

The core faculty is augmented by adjunct faculty members who bring a wealth of practical knowledge and experience, as well as strong academic qualifications to the program. Adjuncts are drawn from the U.S. Commerce and State Departments, the Office of the U.S. Trade Representative, and the International Trade Commission, among other

government agencies, as well as from the private sector, the think tank community, and trade associations.

Courses

Courses are offered primarily in the late afternoon and evening to fit the schedules of busy professionals. In addition to classroom study, the program emphasizes experiential learning by supporting student internships, cooperative education, and research activities with private- and public-sector employers, and sponsoring a variety of study-abroad experiences.

Admissions & Policies

Admissions

Applications

Please see Graduate Admission Policies for general information on graduate admission to George Mason University. Specific information on application requirements and deadlines may be found on the Schar admissions website (http://schar.gmu.edu/admissions/).

Students from all academic backgrounds are welcome to apply; however, some knowledge of economics, preferably through at least two undergraduate economics courses, is encouraged. While many students may have prior educational and work-related training in business and economics, others see the ICP Program as a bridge from government, education, and other non-business occupations to careers in the global economy.

Completed applications for fall and spring semesters are reviewed on a rolling basis, with late applications considered on a space-available basis. Students may be admitted for nondegree study and apply a limited number of credits toward the master's degree should they choose to apply to the degree program later, in accordance with university policy.

Policies

For policies governing all graduate degrees, see AP.6 Graduate Policies.

Termination from Program

Students admitted to an Schar graduate program will be terminated from Schar upon receiving one grade of F and are no longer eligible to take courses in Schar. Per university regulation, students are terminated from the university after accumulating grades of F in two courses or 9 credits of unsatisfactory grades in graduate courses.

Program Requirements

The ICP program requires 36 credits of coursework. All degree candidates must take 21 credits of work in required courses. The remaining 15 credits consist of electives that may include internships, independent studies, and study abroad. Upon entering the program students complete core courses first to prepare for higher-level elective coursework.

Requirements

Degree Requirements

Total credits: 36

Core Courses

Code	Title	Credits
Three credits of		3
ITRN 500	Global Political Economy	
ITRN 501	Data Analysis for Global Political Economy	3
Three credits of		3
ITRN 503	Macroeconomic Policy in the Global Economy	
Three credits of		3
ITRN 504	Microeconomics and Trade Policy	
ITRN 602	Global Financial Crises and Institutions	3
ITRN 603	Global Trade Relations	3
ITRN 605	Technology, Culture and Commerce	3
Total Credits		21

Electives

Code	Title	Credits
Select 15 credits of electives in consultation with the student's advisor		15
Total Credits		15

Concentrations

If desired, a student has the option to declare one of three concentrations. Students without a concentration may select any ITRN or POGO course, any courses from the concentrations listed below, or other courses as approved by the advisor or program director.

Concentration in Global Finance, Investment and Trade (GFIT)
Concentration in Global Development and Governance (GDGV)
Concentration in Global Risk and Strategy (GRS)

Concentration in Global Finance, Investment and Trade (GFIT)

Code	Title	Credits
Select four courses of the 15 elective credits within the area of concentration. Preapproved courses include the following:[1]		12
BIOD 622	Negotiating in the International Arena	
GOVT 742	International Negotiation	
ITRN 604	New Technologies in the Global Economy	
ITRN 612	International Business Operations and the Multinational Corporation	
ITRN 701	Special Topics in International Commerce and Policy	
ITRN 702	Special Topics in International Commerce and Policy: Study Abroad	
ITRN 710	International Business Transactions: Finance and Investment	
ITRN 711	United States Law and Global Trade	
ITRN 712	World Trade Organization and Global Trade	
ITRN 731		
ITRN 736	Sources of Growth in East Asia	
ITRN 738	Fundamentals of International Marketing	
ITRN 740	Trade and Regulatory Compliance	
ITRN 758	Global Market Planning Practicum	

POGO 731	Business and Politics in Emerging Markets
ITRN 761	European Political and Economic Union
ITRN 767	Political Economy and Integration in Latin America
ITRN 769	International Entrepreneurship
ITRN 770	International Contract Negotiation
ITRN 771	Trade, Investment, and Politics in South and Southeast Asia
ITRN 791	Advanced Trade Policy
PUAD 739	Issues in International Management
PUBP 710	Topics in Public Policy
PUBP 716	Transportation Operations and Logistics
PUBP 736	International Migration and Public Policy
PUBP 763	Illicit Trade
PUBP 764	Transnational Crime and Corruption
PUBP 765	Human Smuggling and Trafficking
PUBP 782	International Financial Policy
PUBP 783	Global Governance
POGO 750	Topics in Policy and Government
Total Credits	12

[1] Courses must be approved by the student's academic advisor.

Concentration in Global Development and Governance (GDGV)

Code	Title	Credits
Select four courses of the 15 elective credits within the area of concentration. Preapproved courses include the following:[1]		12
BIOD 620	Global Health Security Policy	
BIOD 726	Food Security	
GOVT 631	Seminar in Comparative Politics and Institutions	
GOVT 742	International Negotiation	
ITRN 701	Special Topics in International Commerce and Policy	
ITRN 702	Special Topics in International Commerce and Policy: Study Abroad	
ITRN 736	Sources of Growth in East Asia	
ITRN 760	International Environmental Politics	
ITRN 761	European Political and Economic Union	
ITRN 767	Political Economy and Integration in Latin America	
ITRN 769	International Entrepreneurship	
ITRN 770	International Contract Negotiation	
ITRN 771	Trade, Investment, and Politics in South and Southeast Asia	
POGO 730	Global Economic and Human Development	
POGO 731	Business and Politics in Emerging Markets	
PUAD 636	The NGO: Policy and Management	
PUAD 739	Issues in International Management	
PUBP 655	State- and Institution-Building	
PUBP 710	Topics in Public Policy	
PUBP 732	Labor Markets and Policies	
PUBP 736	International Migration and Public Policy	
PUBP 753	Ethics in Public Policy	
PUBP 757	Public Policy in Global Health and Medical Practice	
PUBP 758	Global Threats and Medical Policies	
PUBP 760	Science and Technology Policy in the 21st Century	
PUBP 761	Social Entrepreneurship and Public Policy	
PUBP 763	Illicit Trade	
PUBP 764	Transnational Crime and Corruption	
PUBP 765	Human Smuggling and Trafficking	
PUBP 781	Entrepreneurship and Economic Development	
PUBP 783	Global Governance	
POGO 750	Topics in Policy and Government	
Total Credits		12

[1] Courses must be approved by the student's academic advisor.

Concentration in Global Risk and Strategy (GRS)

Code	Title	Credits
Select four courses of the 15 elective credits within the area of concentration. Preapproved courses include the following:[1]		12
BIOD 706	Nuclear, Biological, and Chemical Weapons Policy and Security	
BIOD 620	Global Health Security Policy	
BIOD 709	Nonproliferation and Arms Control	
BIOD 722	Examining Terrorist Groups	
BIOD 725	Terrorism and Weapons of Mass Destruction	
BIOD 726	Food Security	
ITRN 701	Special Topics in International Commerce and Policy	
ITRN 710	International Business Transactions: Finance and Investment	
ITRN 740	Trade and Regulatory Compliance	
ITRN 756	National Security and the Global Economy	
GOVT 744	Foundations of Security Studies	
GOVT 745	International Security	
POGO 731	Business and Politics in Emerging Markets	
PUAD 504	Managing in the International Arena: Theory and Practice	
PUAD 630	Emergency Planning and Preparedness	
PUAD 631	Disaster Response Operations and Recovery	
PUAD 637	Managing Homeland Security	
PUAD 727	Seminar in Risk Assessment and Decision Making	
PUBP 505	Politics and Practice of International Security Policy	
PUBP 655	State- and Institution-Building	
PUBP 710	Topics in Public Policy	

PUBP 714	Topics in Transportation Policy, Operations, and Logistics	
PUBP 736	International Migration and Public Policy	
PUBP 743	National Security Management and Policy	
PUBP 751	International Police Operations	
PUBP 759	National Security Law and Public Policy	
PUBP 763	Illicit Trade	
PUBP 764	Transnational Crime and Corruption	
PUBP 765	Human Smuggling and Trafficking	
PUBP 769	Political Violence and Terrorism	
POGO 750	Topics in Policy and Government	
Total Credits		12

[1] Courses must be approved by the student's academic advisor.

Accelerated Master's

Bachelor's Degree (any)/International Commerce and Policy, Accelerated MA

Overview

Highly-qualified undergraduates in any major may apply to the accelerated MA degree program in International Commerce and Policy. If accepted students will be able to earn a bachelor's degree in their major and an MA in International Commerce and Policy with a reduced number of overall credits and within a reduced time frame, sometimes within five years. More information on bachelor's/accelerated master's programs may be found in AP.6.7 Bachelor's/Accelerated Master's Degrees.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. See AP.6.9 Requirements for Master's Degrees.

Admission

Please see Graduate Admission Policies for general information on graduate admission to George Mason University. Specific information on application requirements and deadlines may be found on the Schar admissions website (http://schar.gmu.edu/admissions/).

To be considered for this accelerated master's program, applicants must have completed a minimum of 60 credits, including at least 12 credits of Government, Economics and/or Global Affairs courses, and have a minimum GPA of 3.50 in all coursework applied to the degree.

Accelerated Option Requirements

While undergraduate students, accelerated master's students may complete up to eighteen graduate credits of which twelve may be counted toward both the bachelor's and master's degrees. Remaining credits may be held as reserve graduate credit and count only toward the master's degree. The courses include ITRN 500 Global Political Economy, ITRN 504 Microeconomics and Trade Policy, ITRN 503 Macroeconomic Policy in the Global Economy and ITRN 605 Technology, Culture and Commerce. Students must maintain a minimum GPA of 3.00 in these courses and in coursework applied to their major.

Upon completion and conferral of the undergraduate degree in the semester indicated in the application, students must submit the Bachelor's/Accelerated Master's Transition Form to apply credits to the master's degree. Students must begin their master's program the semester immediately following conferral of the undergraduate degree (excluding summer).

International Security Minor

Banner Code: INLS

Academic Advising

359 Research Hall
Fairfax Campus

The world faces a complex range of threats to its security and stability. Some, including war, terrorism and weapons of mass destruction, have been around for a long time. Others, including climate change and cyber conflict, are relatively new. And in today's increasingly connected world, old threats like pandemic disease and state fragility now take on a new urgency. Using a mix of history, theory and policy analysis, the international security minor prepares students to think critically about these pressing issues.

Faculty

Hunzeker (minor advisor)

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 18

Students must complete all coursework with a minimum grade of 2.00 in each course.

Core Courses

Code	Title	Credits
GOVT 132	Introduction to International Politics (Mason Core)	3
GOVT 346	American Security Policy	3
GOVT 347	International Security	3
Total Credits		9

Electives

Code	Title	Credits
Select three electives from the following:		9
GOVT 322	International Relations Theory	
GOVT 342	Diplomacy	
GOVT 344	American Foreign Policy	
GOVT 443	Law and Ethics of War	
GOVT 444	Issues in International Studies (when topic is relevant with approval of the minor advisor)	

GOVT 446	International Law and Organization	
GOVT 447	Revolution and International Politics	
GOVT 448	Ethics and International Politics	
GOVT 480	Internship (when topic is relevant with approval of the minor advisor)	
Total Credits		9

International Security, MA

Banner Code: PP-MA-INLS

Academic Advising

560 Founders Hall
Arlington Campus

359 Research Hall
Fairfax Campus

Website: schar.gmu.edu

The program trains early to mid-career professionals who seek the analytical and substantive capabilities to address the security challenges of the 21st century. In addition to understanding the traditional military and diplomatic approaches that characterized the state-centric security framework of the last century, the program's core courses will provide a firm grounding with regard to public-private and international collaborative responses to emerging and unconventional threats, ranging from transnational crime, terrorism, illicit trade, proliferation of emerging technologies and WMD, and corruption to state fragility and ethnic and sectarian conflict.

Admissions & Policies

Admissions

See Graduate Admission Policies for general information on graduate admission to George Mason University. Specific information on application requirements and deadlines for the MA in International Security program may be found on the Schar admissions website (http://schar.gmu.edu/admissions/).

Completed applications for fall and spring semesters are reviewed on a rolling basis, with late applications considered on a space-available basis. Students may be admitted for nondegree study and apply a limited number of credits toward the master's degree should they choose to apply to the degree program later, in accordance with university policy.

Policies

Students admitted to a Schar program will be terminated from Schar upon receiving one grade of F and are no longer eligible to take courses in Schar. Per university regulation, students are terminated from the university after accumulating grades of F in two courses or 9 credits of unsatisfactory grades in graduate courses. For additional information, see Graduate Policies.

Requirements

Degree Requirements

Total credits: 36

International Security Core Courses

Code	Title	Credits
PUBP 504	Grand Strategy	3
PUBP 506	Ethics and the Use of Force	3
PUBP 505	Politics and Practice of International Security Policy	3
GOVT 540	International Relations	3
GOVT 745	International Security	3
BIOD 760	National Security Technology and Policy	3
Select one of the following:		3
POGO 511	Introductory Data Analysis for Policy and Government	
or ITRN 501	Data Analysis for Global Political Economy	
Total Credits		21

Electives

Students may pursue the program with or without a concentration.

Elective Options For Students Not Pursuing a Concentration

Focus area courses have been selected to provide additional breadth and depth on specific security challenges or areas of policy debate.

Code	Title	Credits
Select five elective courses (15 credits), including at least one course (3 credits) from each of the three areas below. Exceptions must be approved by the student advisor.		15
Managing Global Risks		
National Security Policy and Processes		
Regional and Transnational Security Challenges		
Total Credits		15

Managing Global Risks

Code	Title	Credits
BIOD 610	Advanced Topics in Global Health Security	3
BIOD 620	Global Health Security Policy	3
GOVT 739	Issues in Comparative and International Politics	3
GOVT 741	Advanced Seminar in International Politics	3
PUAD 631	Disaster Response Operations and Recovery	3
PUAD 637	Managing Homeland Security	3
PUBP 654	Analysis for Peace Operations	3
PUBP 655	State- and Institution-Building	4
PUBP 710	Topics in Public Policy	3
PUBP 714	Topics in Transportation Policy, Operations, and Logistics	3
PUBP 751	International Police Operations	3

PUBP 777	Critical Infrastructure Protection: Policy and Practice	3
POGO 750	Topics in Policy and Government	1-3

National Security Policy and Processes

Code	Title	Credits
BIOD 609	Biodefense Strategy	3
BIOD 610	Advanced Topics in Global Health Security	1-4
BIOD 705	Intelligence: Theory and Practice	3
BIOD 706	Nuclear, Biological, and Chemical Weapons Policy and Security	3
BIOD 709	Nonproliferation and Arms Control	3
BIOD 751	Biosurveillance	3
GOVT 742	International Negotiation	3
GOVT 755	Seminar in Politics and Bureaucracy	3
GOVT 758	Homeland/Transportation Security Administration	3
PUAD 504	Managing in the International Arena: Theory and Practice	3
PUAD 520	Organization Theory and Management Behavior	3
PUAD 630	Emergency Planning and Preparedness	3
PUAD 634	Management of International Security	3
PUAD 636	The NGO: Policy and Management	3
PUAD 727	Seminar in Risk Assessment and Decision Making	3
PUBP 653	Interagency Operations in Conflict and Post-Conflict Settings	3
PUBP 710	Topics in Public Policy	1-3
PUBP 740	U.S. Foreign Policy: Formulation and Practice	3
PUBP 743	National Security Management and Policy	3
PUBP 759	National Security Law and Public Policy	3
PUBP 766	Modern Counterinsurgency: Theory and Practice	3
POGO 750	Topics in Policy and Government	1-3

Regional and Transnational Security Challenges

Code	Title	Credits
BIOD 722	Examining Terrorist Groups	3
BIOD 725	Terrorism and Weapons of Mass Destruction	3
BIOD 726	Food Security	3
GOVT 530	Comparative Politics	3
GOVT 631	Seminar in Comparative Politics and Institutions	3
GOVT 731	Advanced Seminar in Comparative Politics	3
GOVT 733	Islam and Politics	3
GOVT 741	Advanced Seminar in International Politics	3
GOVT 743	International Political Economy	3
PUBP 710	Topics in Public Policy	3
PUBP 764	Transnational Crime and Corruption	3
PUBP 769	Political Violence and Terrorism	3
POGO 750	Topics in Policy and Government	1-3

Concentrations

If desired, a student has the option to declare one of three concentrations.

Concentration in Intelligence (IN)

Code	Title	Credits
Select four courses of the 15 elective credits within the area of concentration. Preapproved courses include the following:[1]		12
BIOD 722	Examining Terrorist Groups	3
BIOD 725	Terrorism and Weapons of Mass Destruction	3
BIOD 610	Advanced Topics in Global Health Security (Specific topic approved by advisor)	1-4
PUBP 570	Policy Writing Fundamentals	3
PUBP 710	Topics in Public Policy (Specific Topic Approved by Advisor)	1-3
PUBP 754	Geographic Information Systems and Spatial Analysis for Public Policy	3
POGO 750	Topics in Policy and Government (Specific Topic Approved by Advisor)	1-3

[1] Additional courses must be approved by the student's academic advisor.

Concentration in Peace Operations (PO)

Code	Title	Credits
Select four courses of the 15 elective credits within the area of concentration. Preapproved courses include the following:[1]		12
PUBP 650	International Conflict and Crisis Response	3
PUBP 651	Peace and Stabilization Operations	3
PUBP 652	Strategies for Peace and Stabilization Operations	4
PUBP 655	State- and Institution-Building	4
PUBP 710	Topics in Public Policy (Specific Topic Approved by Advisor)	1-3
PUBP 751	International Police Operations	3

[1] Additional courses must be approved by the student's academic advisor.

Concentration in Transnational Challenges (TC)

Code	Title	Credits
Select four courses of the 15 elective credits within the area of concentration. Preapproved courses include the following:[1]		12
BIOD 722	Examining Terrorist Groups	3
PUBP 710	Topics in Public Policy (Specific Topic Approved by Advisor)	1-3
PUBP 751	International Police Operations	3
PUBP 763	Illicit Trade	3
PUBP 764	Transnational Crime and Corruption	3
PUBP 765	Human Smuggling and Trafficking	3

POGO 750	Topics in Policy and Government (Specific Topic Approved by Advisor)	1-3

[1] Additional courses must be approved by the student's academic advisor.

Accelerated Master's

Bachelor's Degree (any)/International Security, Accelerated MA

Overview

Highly-qualified undergraduates in any major may apply to the accelerated MA degree program in International Security. If accepted students will be able to earn a bachelor's degree in their major and an MA in International Security with a reduced number of overall credits and within a reduced time frame, sometimes within five years. More information on bachelor's/accelerated master's programs may be found in AP.6.7 Bachelor's/Accelerated Master's Degrees.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. See AP.6.9 Requirements for Master's Degrees.

Admission

Please see Graduate Admission Policies for general information on graduate admission to George Mason University. Specific information on application requirements and deadlines may be found on the Schar admissions website (http://schar.gmu.edu/admissions/).

To be considered for this accelerated master's program, applicants must have completed a minimum of 60 credits, including at least 12 credits of Government, Economics and/or Global Affairs courses, and have a minimum GPA of 3.50 in all coursework applied to the degree.

Accelerated Option Requirements

While undergraduate students, accelerated master's students may complete up to twelve graduate credits, all of which may be counted toward both the bachelor's and master's degrees. Any remaining credits may be held as reserve graduate credit and count only toward the master's degree. The courses are:

Code	Title	Credits
GOVT 540	International Relations	3
POGO 511	Introductory Data Analysis for Policy and Government	3
PUBP 504	Grand Strategy	3
PUBP 506	Ethics and the Use of Force	3

Students must maintain a minimum GPA of 3.00 in these courses and in coursework applied to their major.

Upon completion and conferral of the undergraduate degree in the semester indicated in the application, students must submit the Bachelor's/Accelerated Master's Transition Form to apply credits to the master's degree. Students must begin their master's program the semester immediately following conferral of the undergraduate degree (excluding summer).

International/Comparative Studies Minor

Banner Code: ICS

Academic Advising

359 Research Hall
Fairfax Campus

In this minor, students learn the key features of government systems as they are applied in different contexts around the world. Students explore the interaction between government, society, and humans' most important challenges with respect to different regions and the international community.

Faculty

Butt (minor advisor)

Admissions & Policies

Policies

Students must complete all coursework with a minimum GPA of 2.00 and 8 credits of coursework must be unique to the minor. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 18

Students must complete all coursework with a minimum grade of 2.00 in each course.

Core Courses

Code	Title	Credits
GOVT 132	Introduction to International Politics (Mason Core)	3
GOVT 133	Introduction to Comparative Politics (Mason Core)	3
Total Credits		6

Electives

Code	Title	Credits
Select four electives from the following categories with only one from each category:		12
GOVT 103	Introduction to American Government (Mason Core)	
Any GOVT 330–GOVT 339 world regions		
Any GOVT 340–GOVT 349 politics and policy		
Any GOVT 430–GOVT 439 global perspectives		
Any GOVT 440–GOVT 449 international studies		
GOVT 480	Internship (when relevant, with the prior written approval of the minor advisor)	
Total Credits		12

Legal Studies Minor

Banner Code: LGLS

Academic Advising

359 Research Hall
Fairfax Campus

The minor in legal studies focuses on constitutional foundations and interpretations, legal processes, the development of common, statutory, and agency law, and the functions of judicial systems.

Faculty

Walker (minor advisor)

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 18

Students must complete all coursework with a minimum grade of 2.0 in each course.

Core Courses

Code	Title	Credits
GOVT 103	Introduction to American Government (Mason Core)	3
GOVT 301	Public Law and the Judicial Process	3
Total Credits		6

Electives

Code	Title	Credits
Select four from the following:		12
GOVT 480	Internship (when relevant, may be used to partially meet this requirement with prior written approval of the minor advisor.)	
GOVT 307	Legislative Behavior	
GOVT 414	Politics of Race and Gender	
GOVT 420	American Political Thought	
GOVT 422	Constitutional Interpretation	
GOVT 423	Constitutional Law: Civil Rights and Liberties	
GOVT 446	International Law and Organization	
GOVT 452	Administrative Law and Procedures	
CRIM 424	Constitutional Law: Criminal Process and Rights	
Total Credits		12

National Security and Public Policy Graduate Certificate

Banner Code: PP-CERG-NSP

Academic Advising

560 Founders Hall
Arlington Campus

359 Research Hall
Fairfax Campus

Website: schar.gmu.edu

The Schar School of Policy and Government offers certificate programs in conjunction with its master's programs. Students already pursuing a master's degree in the school may, in most cases, after admission to a certificate program, earn an additional six credits (two courses) in Schar to receive a certificate in addition to the master's degree.

The graduate certificate may be pursued on a part-time or full-time basis.

Admissions & Policies

Admissions

Applicants to all graduate programs must meet the admission standards and application requirements for graduate study as specified in Graduate Admission Policies. Participants must be admitted to a certificate program. Admission requirements are the same as those for the master's programs and may be found with Schar Admissions (http://schar.gmu.edu/admissions/).

Policies

For policies governing all graduate certificates, see AP.6.8 Requirements for Graduate Certificates.

Termination from Program

Students admitted to a Schar program will be terminated from the program upon receiving one grade of F and are no longer eligible to take courses in the school. Per university regulation, students are terminated from the university after accumulating grades of F in two courses or 9 credits of unsatisfactory grades in graduate courses. For policies governing all graduate degrees, see Graduate Policies.

Requirements

Certificate Requirements

Total credits: 15

This certificate may be pursued on a full-or part-time basis.

Required Core

Code	Title	Credits
PUBP 500	Theory and Practice in Public Policy	3
Total Credits		3

Electives

Code	Title	Credits
Select 12 credits from the following courses as well as any other PUBP or ITRN course approved by the academic advisor. [1]		12
PUBP 650	International Conflict and Crisis Response	
PUBP 651	Peace and Stabilization Operations	
PUBP 710	Topics in Public Policy	
PUBP 743	National Security Management and Policy	
PUBP 750	History of Military Operations Other than War	
PUBP 751	International Police Operations	
PUBP 755	National Security Decision-Making Policy	
ITRN 701	Special Topics in International Commerce and Policy	
ITRN 756	National Security and the Global Economy	
POGO 750	Topics in Policy and Government	
Total Credits		12

[1] One of the four electives must have an international focus

Nonprofit Management Graduate Certificate

Banner Code: PP-CERG-NPMG

Academic Advising

560 Founders Hall
Arlington Campus

359 Research Hall
Fairfax Campus

Website: schar.gmu.edu

The Schar School of Policy and Government offers certificate programs in conjunction with its master's programs. Students already pursuing a master's degree in the school may, in most cases, after admission to a certificate program, earn an additional six credits (two courses) in Schar to receive a certificate in addition to the master's degree.

The graduate certificate in nonprofit management may only be pursued on a part-time basis.

Admissions & Policies

Admissions

Applicants to all graduate programs must meet the admission standards and application requirements for graduate study as specified in the Graduate Admission Policies section of this catalog. Participants must be admitted to a certificate program. Admission requirements are the same as those for the master's programs and may be found on the Schar Admissions website (http://schar.gmu.edu/admissions/).

Policies

For policies governing all graduate certificates, see AP.6.8 Requirements for Graduate Certificates

Termination from Program

Students admitted to a Schar program will be terminated from the program upon receiving one grade of F and are no longer eligible to take courses in the school. Per university regulation, students are terminated from the university after accumulating grades of F in two courses or 9 credits of unsatisfactory grades in graduate courses. See AP.6 Graduate Policies for additional policies pertaining to graduate students.

Requirements

Certificate Requirements

Total credits: 15

This certificate may be pursued on a part-time basis only.

Required Courses

Code	Title	Credits
PUAD 505	Introduction to Management of Nonprofits	3
PUAD 659	Nonprofit Law, Governance, and Ethics	3
PUAD 664	Nonprofit Financial Management	3
Total Credits		9

Electives

Code	Title	Credits
Select two electives (6 credits) in the nonprofit area. [1]		6
Total Credits		6

[1] A list of relevant electives is available under the concentration in nonprofit management in the MPA (master of public administration).

Organization Development and Knowledge Management, MS

Banner Code: PP-MS-ODKM

Academic Advising

560 Founders Hall
Arlington Campus

Website: schar.gmu.edu

The Master of Science in Organization Development and Knowledge Management is an integrated program taught in executive format and designed for professionals who have several years of work experience. Providing conceptual tools and practical guidance to foster organizational change, the program focuses on three related areas: creating and leveraging knowledge through networks of people who communicate and collaborate; understanding and managing change by integrating the diverse roles of people, processes, and technology; and enhancing and facilitating collaboration by building effective relationships in technology-rich environments. A feature of this program is the group-oriented approach to learning supported by the use of

web-based collaborative computer technologies. Students develop the competencies to apply these technologies to make organizations more effective.

The cohort usually completes the program on a part-time basis. Full-time study is also possible by arrangement with the program director.

Students work in teams and complete most of the courses in sequence. The second academic year includes an action learning component, in which participants undertake projects in organizations and apply research methods. Overall, the process and methods of evaluation stress the cumulative development of competencies and the capacity to apply the insights gained. Students are expected to have easy access to a computer and the Internet. Minimum computer specifications can be obtained from the program office.

Admissions & Policies

Admissions

Students are considered for admission for the fall term only.

Please see Graduate Admission Policies for general information on graduate admission to George Mason University. Specific information on application requirements and deadlines may be found on the Schar admissions website (http://schar.gmu.edu/admissions/).

Policies

Students admitted to a Schar program will be terminated from Schar upon receiving one grade of F and are no longer eligible to take courses in Schar. Per university regulation, students are terminated from the university after accumulating grades of F in two courses or 9 credits of unsatisfactory grades in graduate courses.

See AP.6 Graduate Policies for more information.

Requirements

Degree Requirements

Total credits: 35-38

Core Courses

Code	Title	Credits
ODKM 700	Foundations of Organization Development and Knowledge Management	3
ODKM 705	Group Dynamics and Team Learning	3
ODKM 710	Social and Organizational Inquiry	4
ODKM 715	Creating Learning Organizations	3
ODKM 721	Foundations of Coaching	3
ODKM 722	Coaching and Organization Development	3
ODKM 725	Knowledge Management and Collaborative Work	3
ODKM 732	Leadership and Social Justice	4
ODKM 735	Organizational Development Practices	3
ODKM 740	Learning Community	3
Total Credits		32

Electives

Code	Title	Credits
Select 3 credits of electives [1]		3
Total Credits		3

[1] Must be approved by the program director or advisor

Experiential Requirement

A 3-credit internship is required. For students with appropriate work experience, this requirement can be waived with the approval of the program director or dean.

Code	Title	Credits
3 credits of		3
POGO 794	Internship	
Total Credits		3

Political Communication Minor (Schar)

Banner Code: PCOM

Academic Advising

359 Research Hall
Fairfax Campus

The interdisciplinary minor in political communication is offered jointly by the Schar School of Policy and Government and the CHSS Department of Communication.

Political communication explores the interaction among members of the public, the media, advocacy groups, and politicians in democratic society. This minor uses a diverse approach to questions of how mass and interpersonal communication influence democratic functioning, including

1. how political actors use strategic messaging to persuade and mobilize the public
2. how citizens make sense of these messages and their impact on engagement, deliberation, efficacy, knowledge, and participation
3. the role of the mass media in facilitating or hindering this relationship

Political communication includes explicitly political activities like voting and political campaigns. It also encompasses any issue of public debate or deliberation, including culture and social movements.

Faculty

Daigle (minor advisor for Schar)

Admissions & Policies

Admissions

This minor is available to all Mason undergraduate students with the exception of communication majors pursuing a concentration in political communication.

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. A minimum of 6 COMM credits and a minimum of 6 GOVT credits are required. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 18

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Coursework

Code	Title	Credits
COMM 327	Political Communication	3
COMM 412	Politics and the Mass Media	3
or GOVT 412	Politics and the Mass Media	
Total Credits		6

Communication and Political Process

Code	Title	Credits
Select one course from the following: [1]		3
COMM 326	Rhetoric of Social Movements and Political Controversy (Mason Core)	
COMM 374	Political Journalism	
COMM 431	New Media and Democracy	
COMM 454	Free Speech and Ethics (Mason Core)	
GOVT 311	Public Opinion and Electoral Behavior	
Total Credits		3

Persuasion Theory

Code	Title	Credits
Select one course from the following: [1]		3
COMM 230	Case Studies in Persuasion	
COMM 261	Theories of Argumentation	
COMM 362	Argument and Public Policy (Mason Core)	
COMM 430	Persuasion	
GOVT 313	Political Psychology	
GOVT 342	Diplomacy	
Total Credits		3

Political Process

Code	Title	Credits
Select one course from the following: [1]		3
GOVT 308	The American Presidency	
GOVT 312	Political Parties and Campaigns	
GOVT 318	Interest Groups, Lobbying, and the Political Process	
GOVT 353	Social Entrepreneurship	
GOVT 364	Public Policy Making	
GOVT 430	Comparative Political Leadership	
GOVT 445	Human Rights	
GOVT 447	Revolution and International Politics	
Total Credits		3

Cultural Politics

Code	Title	Credits
Select one course from the following: [1]		3
COMM 380	Media Criticism	
COMM 433	Environmental Communication	
COMM 465	Topics in Communication and Gender	
GOVT 361	Introduction to Environmental Policy	
GOVT 414	Politics of Race and Gender	
GOVT 427	Feminist Political Thought	
GOVT 460	Surveillance and Privacy in Contemporary Society	
Total Credits		3

[1] COMM 386 Special Topics in Political Communication may be substituted for any other COMM course with the permission of the minor director, depending on the specific topic.
GOVT 319 Issues in Government and Politics may be substituted for any other GOVT course with the permission of the minor director, depending on the specific topic. Courses from the Schar School of Policy and Government may be substituted in the cultural politics, persuasion theory, or political process categories, with the permission of the minor director.

Political Science, MA

Banner Code: PP-MA-POS

Academic Advising

560 Founders Hall
Arlington Campus

359 Research Hall
Fairfax Campus

Website: schar.gmu.edu

The Master of Arts in Political Science program prepares students for advanced work in political science, teaching, and research about government; a career in government and politics; and work in domestic and international nongovernmental organizations.

The program is made up of four core courses in political science and completion of either a concentration in international security or a broader field of specialization in American government and politics, international relations, or comparative politics. Students choosing a specialization have interdisciplinary opportunities to take up to 9 credits in related fields such as history or public policy.

The master's degree is the first step in an engaging and stimulating career. Students develop a deeper understanding of political ideas and institutions, more sophisticated research skills, a better grasp of the intricacies of governments abroad, and a deeper knowledge of the complexities of international politics. This degree can lead to a career teaching about government; working with legislative bodies, government agencies, and international organizations; or doing research and writing about politics and government.

Admissions & Policies

Admissions

Requirements

See Graduate Admission Policies for general information on graduate admission to George Mason University. Specific information on application requirements and deadlines may be found with Schar Admissions (http://schar.gmu.edu/admissions/).

Completed applications for fall and spring semesters are reviewed on a rolling basis, with late applications considered on a space-available basis. Students may be admitted for non-degree study and apply a limited number of credits toward the master's degree should they choose to apply to the degree program later, in accordance with university policy.

Policies

Termination from Program

Students admitted to a Schar program will be terminated from Schar upon receiving one grade of F and are no longer eligible to take courses offered by the Schar school. Per university regulation, students are terminated from the university after accumulating grades of F in two courses or 9 credits of unsatisfactory grades in graduate courses. For policies governing all graduate degrees, see Graduate Policies.

Requirements

Degree Requirements

Total credits: 36

Students should develop an education plan with their advisors that lists the courses they plan to take. The plan is approved by the student's advisor. Students may include courses from other units to complement their field of specialization; they should reflect the ideas, institutions, or processes of contemporary governance.

Students who wish to begin a career in government and politics or to alter their current career path in government and politics are encouraged to take a 3-credit internship in their area of interest. Internships can be arranged through the Schar school.

Core Courses

Code	Title	Credits
GOVT 510	American Government and Politics	3
GOVT 520	Political Theory	3
GOVT 530	Comparative Politics	3
GOVT 540	International Relations	3
Total Credits		12

Methods Courses

Code	Title	Credits
GOVT 500	The Scientific Method and Research Design	3
POGO 511	Introductory Data Analysis for Policy and Government	3
Total Credits		6

Concentration or a Specialization

Code	Title	Credits
Select three to five courses in the concentration or a specialization		9-15
Total Credits		9-15

Students complete the degree by completing additional coursework in the concentration or one of the specializations.

Concentration in International Security (INLS)

Code	Title	Credits
Required Courses		
GOVT 744	Foundations of Security Studies	3
GOVT 745	International Security	3
Electives		
Select two to three courses from the following:		6-9
GOVT 741	Advanced Seminar in International Politics	
BIOD 621	Ethics and International Security	
BIOD 622	Negotiating in the International Arena	
BIOD 705	Intelligence: Theory and Practice	
BIOD 706	Nuclear, Biological, and Chemical Weapons Policy and Security	
BIOD 709	Nonproliferation and Arms Control	
BIOD 722	Examining Terrorist Groups	
BIOD 725	Terrorism and Weapons of Mass Destruction	
BIOD 760	National Security Technology and Policy	
Total Credits		12-15

American Government and Politics Specialization

Code	Title	Credits
Required Field Seminars		
Select two field seminars from the following:		6
GOVT 603	Seminar in the Courts and Constitutionalism	
GOVT 604	Seminar on Congress and Legislative Behavior	
GOVT 605	Seminar on the Presidency	
GOVT 706	Federalism and Intergovernmental Relations	
Electives		
Select one to three electives.		3-9
Total Credits		9-15

Comparative Politics Specialization

Code	Title	Credits
Required Field Seminars		
GOVT 631	Seminar in Comparative Politics and Institutions	3
GOVT 731	Advanced Seminar in Comparative Politics	3
Electives		
Select one to three electives		3-9
Total Credits		9-15

International Relations Specialization

Code	Title	Credits
Required Field Seminars		
Select two field seminars from the following:		6
GOVT 741	Advanced Seminar in International Politics	
GOVT 743	International Political Economy	
GOVT 745	International Security	
Electives		
Select one to three electives.		3-9
Total Credits		9-15

Electives

Code	Title	Credits
Select up to two electives. [1]		0-6
Total Credits		0-6

[1] The number of electives students have will depend on how many credits they took in the concentration or field of specialization and whether they choose a 3-credit project or a 6-credit thesis. Students choose the remaining credits required for the degree, if any, from other courses in Schar, including an internship, additional courses in the field of specialization, or from course work offered by other units.

3 Credits of Project or 6 Credits of Thesis

A project or thesis is required for the MA in political science. Students who choose to do a project take 3 credits of GOVT 798 Political Science Research Project linked to an advanced specialty course and produce a final research project. Students who choose to do a thesis should be aware of the policies governing theses. They must follow the enrollment policy of the university and, once enrolled in GOVT 799 Political Science Thesis, must maintain continuous enrollment as specified in AP.6.9.3 Master's Thesis. A thesis director and a committee of two additional faculty members appointed by the school read and approve the thesis. Students should make arrangements for doing a project or thesis with their advisor.

Code	Title	Credits
Select one from the following:		3-6
GOVT 798	Political Science Research Project	
GOVT 799	Political Science Thesis	
Total Credits		3-6

Accelerated Master's

Bachelor's Degree (any)/Political Science, Accelerated MA

Overview

Highly-qualified undergraduates in any major may apply to the accelerated MA degree in political science. If accepted, students will be able to earn a bachelor's degree in their chosen major and a MA in Political Science with a reduced number of overall credits and within a reduced time frame, sometimes five years. More information on bachelor's/accelerated master's programs may be found in AP.6.7 Bachelor's/Accelerated Master's Degrees.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. See AP.6.9 Requirements for Master's Degrees.

Admission

See Graduate Admission Policies for general information on graduate admission to George Mason University. Specific information on application requirements and deadlines for the Political Science master's program may be found on the Schar website (http://schar.gmu.edu/programs/undergraduate-degrees/accelerated-masters-programs/).

To be considered for this accelerated master's program, applicants must have completed a minimum of 60 credits, including 12 GOVT credits, and have a minimum GPA of 3.50 in all coursework applied to the degree.

Accelerated Option Requirements

While undergraduate students, accelerated master's students may complete up to eighteen graduate credits of which twelve may be counted toward both the bachelor's and master's degrees. Remaining credits may be held as reserve graduate credit and count only toward the master's degree. The courses are chosen from GOVT 500 The Scientific Method and Research Design, GOVT 510 American Government and Politics, GOVT 520 Political Theory, GOVT 530 Comparative Politics, GOVT 540 International Relations. Students must maintain a minimum GPA of 3.00 in these courses and in coursework applied to their major.

Upon completion and conferral of the undergraduate degree in the semester indicated in the application, students must submit the Bachelor's/Accelerated Master's Transition Form to apply credits to the master's degree. Students must begin their master's program the semester immediately following conferral of the undergraduate degree (excluding summer).

Political Science, PhD

Banner Code: PP-PHD-POS

Academic Advising

560 Founders Hall
Arlington Campus

359 Research Hall
Fairfax Campus

Website: schar.gmu.edu

The doctoral degree in political science program is designed to prepare students for teaching and conducting research about government, careers in government and politics, and work in domestic and international nongovernmental organizations. The program allows students to combine their academic education with experience in the kinds of complex domestic and international political organizations they are studying. This model for political science education, patterned after the American Political Science Association's Congressional Fellows Program, is designed to foster scholarship and a firsthand understanding of domestic and international institutions such as think tanks, international bodies, nongovernmental organizations, journals of political opinion, and congressional and executive branch offices.

Admissions & Policies

Admissions

Application Requirements

See Graduate Admission Policies for general information on graduate admission to George Mason University. See Schar Admissions (http://schar.gmu.edu/admissions/) for application requirements and deadlines for the PhD in Public Policy. Students are considered for admission for the Fall term only.

For students who have been admitted with a bachelor's degree, the Faculty Review Committee will review each student's progress after 30 credits of coursework to determine whether the student will be allowed to continue their work toward the PhD. For students entering the program with a master's degree, this review will occur after 12 credits in this program. Students who are not allowed to continue to work toward the PhD will be allowed to complete the MA degree.

Policies

For policies governing all graduate programs, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/).

Academic Advising

A total of 12 credits of supporting courses may be taken in other departments to fulfill a minority of the credits for any of the requirements below, including the methodology requirement, with prior written approval of the program director. All courses should be planned with an advisor and appear on a program of study, which requires the approval of the program director.

A complete description of the program policies, procedures, and requirements is in the PhD student and faculty handbook (https://schar.gmu.edu/current-students/phd-student-services/phd-handbook-forms/), which is published annually.

Reduction of Credit

For students entering the program with a master's or MPA degree, the number of credits required for the doctorate may be reduced by up to 30 credits subject to approval of the doctoral program director.

Requirements

Degree Requirements

Total credits: 72

Core Courses

Code	Title	Credits
Select three from the following:		9
GOVT 510	American Government and Politics	
or POGO 840	Policy, Politics, and American Government Institutions	
GOVT 520	Political Theory	
GOVT 530	Comparative Politics	
GOVT 540	International Relations	
GOVT 550	Seminar in Theories of Public Administration	
Total Credits		9

Advanced Courses in Two Major Fields

Students choose two major fields from the four fields below and complete all course requirements for both fields of study for a total of 21 credits.

American Government and Politics

Code	Title	Credits
Required Field Seminars		
Select two from the following:		6
GOVT 603	Seminar in the Courts and Constitutionalism	
GOVT 604	Seminar on Congress and Legislative Behavior	
GOVT 605	Seminar on the Presidency	
GOVT 706	Federalism and Intergovernmental Relations	
Electives		
Select one to three electives		3-9
Total Credits		9-15

Comparative Politics

Code	Title	Credits
Required Field Seminars		
GOVT 631	Seminar in Comparative Politics and Institutions	3
GOVT 731	Advanced Seminar in Comparative Politics	3
Electives		
Select one to three electives		3-9
Total Credits		9-15

International Relations

Code	Title	Credits
Required Field Seminars		
Select two from the following:		6
GOVT 741	Advanced Seminar in International Politics	
GOVT 743	International Political Economy	
GOVT 745	International Security	
PUBP 783	Global Governance	
Electives		
Select one to three electives		3-9
Total Credits		9-15

Public Administration

Code	Title	Credits
Required Field Seminars		
GOVT 753	Collaborative Public Management	3
GOVT 755	Seminar in Politics and Bureaucracy	3
Electives		

Select one to three electives	3-9
Total Credits	9-15

Advanced Courses in a Minor Field

Code	Title	Credits
Select three advanced courses in a minor field in consultation with an advisor. [1]		9
Total Credits		9

[1] The courses in the minor field should complement the two major fields and need the prior written approval of the advisor.

Advanced Courses in Methodology

Code	Title	Credits
Methodology Courses		
GOVT 500	The Scientific Method and Research Design	3
POGO 511	Introductory Data Analysis for Policy and Government	3
Elective Methodology Course		
Select an elective methodology course to meet dissertation research needs. [1]		3
Total Credits		9

[1] Course work in language or to help achieve proficiency in quantitative or qualitative research techniques may be used to meet this requirement with certification of proficiency by a specific outside examination.

Electives

Code	Title	Credits
Select 0-12 credits of electives		0-12
Total Credits		0-12

Advancement to Candidacy

To advance to candidacy, students must complete all coursework required by their approved program of study. Students must also successfully complete and pass two comprehensive qualifying exams in major fields. In addition, students must have an approved dissertation committee and must present and successfully defend a dissertation proposal before advancing to candidacy.

Dissertation Research

Once enrolled in GOVT 998 Doctoral Dissertation Proposal, students in this degree program must maintain continuous registration in GOVT 998 Doctoral Dissertation Proposal or GOVT 999 Doctoral Dissertation Research each semester (excluding summers) until the dissertation is submitted to and accepted by the University Libraries. Once enrolled in GOVT 999 Doctoral Dissertation Research, students must follow the university's continuous registration policy as specified in AP.6.10.6 Dissertation Research. Students who defend in the summer must be registered for at least 1 credit of GOVT 999 Doctoral Dissertation Research.

Students may apply to this degree a minimum of 3 and a maximum of 6 credits of GOVT 998 Doctoral Dissertation Proposal and a minimum of 6 credits of GOVT 999 Doctoral Dissertation Research. They apply a minimum of 12 and a maximum of 24 dissertation credits (GOVT 998 Doctoral Dissertation Proposal and GOVT 999 Doctoral Dissertation Research combined) to the degree. Because of the continuous registration policy, students may be required to register for additional credits of these courses.

Students who do fewer than 24 credits of dissertation will complete their degree with additional electives.

Code	Title	Credits
Select 12-24 credits from the following:		12-24
GOVT 998	Doctoral Dissertation Proposal (minimum of 3, maximum of 6 credits)	
GOVT 999	Doctoral Dissertation Research (minimum of 6 credits)	
Total Credits		12-24

Public Administration, BS

Banner Code: PP-BS-PUAD

Academic Advising

359 Research Hall
Fairfax Campus

Email: puad@gmu.edu
Website: schar.gmu.edu

Admissions & Policies

Policies

For policies governing all undergraduate degrees, see AP.5 Undergraduate Policies.

Requirements

Degree Requirements

Total credits: minimum 120

Students must fulfill all Requirements for Bachelor's Degrees including the Mason Core. Students pursuing a BS in Public Administration must complete additional requirements for the BS degree in the Schar School of Policy and Government.

Students must earn a minimum grade of 2.00 in each course applied to the major, including GOVT courses as well as the supporting courses in other disciplines used to fulfill the requirements below. See an advisor before registering.

Core Courses

The math or statistics core course cannot be used to fulfill the Mason Core requirement in quantitative reasoning.

Code	Title	Credits
GOVT 101	Democratic Theory and Practice (Mason Core)	3
GOVT 103	Introduction to American Government (Mason Core)	3
GOVT 132	Introduction to International Politics (Mason Core)	3

or GOVT 133	Introduction to Comparative Politics (Mason Core)	
GOVT 300	Research Methods and Analysis	4
GOVT 351	Administration in the Political System	3
GOVT 367	Money, Markets and Economic Policy (Mason Core)	3
GOVT 368	Tools for Economic Policy Analysis	3
One course (3 credits) in math or statistics in addition to the quantitative reasoning Mason Core requirement		3
Total Credits		25

Senior Seminar

Code	Title	Credits
GOVT 490	Synthesis Seminar (Mason Core)	3
or GOVT 491	Honors Seminar (Mason Core)	
Total Credits		3

Public Administration Field Study

Code	Title	Credits
Students complete the degree by taking a minimum of 24 credits of advanced public administration field courses, with or without concentration		24
Total Credits		24

Students may complete a concentration of at least 12 credits in one field to fulfill a concentration. Students who do not wish to pursue a concentration may choose at least 24 credits from any of the advanced public administration courses listed below (with restrictions noted below) for a broader learning experience. Up to three credits of GOVT 399 Research Practicum and GOVT 480 Internship may be used to fulfill the field course requirement with prior advisor approval. Up to six credits of GOVT 496 Directed Readings and Research may be used to fulfill this requirement with prior advisor approval. GOVT 490 Synthesis Seminar (Mason Core) or GOVT 491 Honors Seminar (Mason Core) may not be used to fulfill this requirement.

Advanced Public Administration courses

Code	Title	Credits
ECON 309	Economic Problems and Public Policies	3
ECON 310	Money and Banking	3
ECON 335	Environmental Economics	3
ECON 355	The Political Economy of Nonprofit Institutions	3
ECON 385	International Economic Policy	3
ECON 390	International Economics	3
GOVT 301	Public Law and the Judicial Process	3
GOVT 302	American Political Development	3
GOVT 304	American State and Local Government	3
GOVT 305	Contemporary American Federalism	3
GOVT 307	Legislative Behavior	3
GOVT 308	The American Presidency	3
GOVT 309	Government and Politics of Metropolitan Areas	3
GOVT 311	Public Opinion and Electoral Behavior	3
GOVT 312	Political Parties and Campaigns	3
GOVT 313	Political Psychology	3
GOVT 318	Interest Groups, Lobbying, and the Political Process	3
GOVT 319	Issues in Government and Politics	1-3
GOVT 322	International Relations Theory	3
GOVT 339	Issues in the Politics of Advanced Industrial Societies	1-3
GOVT 343	International Political Economy	3
GOVT 344	American Foreign Policy	3
GOVT 346	American Security Policy	3
GOVT 347	International Security	3
GOVT 353	Social Entrepreneurship	3
GOVT 354	Nonprofit Sector in Society	3
GOVT 355	Public Personnel Administration	3
GOVT 356	Public Budgeting and Finance	3
GOVT 358	Nonprofit Financial Planning	4
GOVT 361	Introduction to Environmental Policy	3
GOVT 364	Public Policy Making	3
GOVT 366	Public Policy Analysis	3
GOVT 400	Issues in Political Analysis	1-3
GOVT 409	Virginia Government and Politics	3
GOVT 412	Politics and the Mass Media	3
GOVT 433	Political Economy of East Asia	3
GOVT 446	International Law and Organization	3
GOVT 452	Administrative Law and Procedures	3
GOVT 464	Issues in Public Policy and Administration	1-3
GOVT 469	Philosophy, Politics, and Economics	3
INTS 331	The Nonprofit Sector (Mason Core)	4
INTS 431	Principles of Fund Raising	4

Concentrations

Code	Title	Credits
Students may partially satisfy the field focus requirement by completing at least 12 credits in any one (1) approved concentration as described below		0-12
Total Credits		0-12

Students pursuing a concentration will complete the degree by taking four courses (minimum of 12 credits) within one concentration, chosen from the lists of advanced field courses shown below, to complete a minimum of 24 credits of field courses.

Concentration Areas

- Concentration in Administration and Management (ADMM)
- Concentration in Public Policy (PUBP)
- Concentration in Nonprofit Management (NPMG)
- Concentration in US Government Institutions (USGI)
- Concentration in Economic Policy Analysis (ECPA)
- Concentration in International Political Economy (IPE)
- Individualized Concentration (IND)

Concentration in Administration and Management (ADMM)

Code	Title	Credits
GOVT 305	Contemporary American Federalism	3
GOVT 313	Political Psychology	3
GOVT 355	Public Personnel Administration	3

GOVT 356	Public Budgeting and Finance	3
GOVT 357	Urban Planning	3
GOVT 358	Nonprofit Financial Planning	4
GOVT 400	Issues in Political Analysis	1-3
GOVT 452	Administrative Law and Procedures	3

Concentration in Public Policy (PUBP)

Code	Title	Credits
GOVT 312	Political Parties and Campaigns	3
GOVT 313	Political Psychology	3
GOVT 318	Interest Groups, Lobbying, and the Political Process	3
GOVT 346	American Security Policy	3
GOVT 347	International Security	3
GOVT 357	Urban Planning	3
GOVT 361	Introduction to Environmental Policy	3
GOVT 364	Public Policy Making	3
GOVT 366	Public Policy Analysis	3
GOVT 400	Issues in Political Analysis	1-3
GOVT 412	Politics and the Mass Media	3
GOVT 464	Issues in Public Policy and Administration	1-3
ECON 309	Economic Problems and Public Policies	3
ECON 335	Environmental Economics	3

Concentration in Nonprofit Management (NPMG)

Code	Title	Credits
GOVT 313	Political Psychology	3
GOVT 353	Social Entrepreneurship	3
GOVT 354	Nonprofit Sector in Society	3
GOVT 358	Nonprofit Financial Planning	4
ECON 355	The Political Economy of Nonprofit Institutions	3
INTS 331	The Nonprofit Sector (Mason Core)	4
INTS 431	Principles of Fund Raising	4

Concentration in US Government Institutions (USGI)

Code	Title	Credits
GOVT 301	Public Law and the Judicial Process	3
GOVT 302	American Political Development	3
GOVT 304	American State and Local Government	3
GOVT 305	Contemporary American Federalism	3
GOVT 307	Legislative Behavior	3
GOVT 308	The American Presidency	3
GOVT 309	Government and Politics of Metropolitan Areas	3
GOVT 311	Public Opinion and Electoral Behavior	3
GOVT 409	Virginia Government and Politics	3

Concentration in Economic Policy Analysis (ECPA)

Code	Title	Credits
ECON 309	Economic Problems and Public Policies	3
ECON 310	Money and Banking	3
ECON 335	Environmental Economics	3
ECON 355	The Political Economy of Nonprofit Institutions	3
GOVT 357	Urban Planning	3
GOVT 400	Issues in Political Analysis	1-3

Concentration in International Political Economy (IPE)

Code	Title	Credits
GOVT 322	International Relations Theory	3
GOVT 339	Issues in the Politics of Advanced Industrial Societies	1-3
GOVT 343	International Political Economy	3
GOVT 366	Public Policy Analysis	3
GOVT 433	Political Economy of East Asia	3
GOVT 446	International Law and Organization	3
GOVT 469	Philosophy, Politics, and Economics	3
ECON 385	International Economic Policy	3

Individualized Concentration (IND)

Code	Title	Credits
Create your own concentration consisting of four upper level courses with Director approval [1]		

[1] A minimum of two courses in this concentration must be advanced public administration field courses.

Writing-Intensive Requirement

The university requires all students to complete at least one course designated "writing intensive" in their majors. Students majoring in public administration may fulfill this requirement by successfully completing GOVT 490 Synthesis Seminar (Mason Core) or GOVT 491 Honors Seminar (Mason Core) in their major programs.

Mason Core

Some Mason Core requirements may already be fulfilled by the major requirements listed above. Students are strongly encouraged to consult their advisors to ensure they fulfill all remaining Mason Core requirements.

Code	Title	Credits
Foundation Requirements		
Written Communication (ENGH 101)		3
Oral Communication		3
Quantitative Reasoning		3
Information Technology and Computing		3
Exploration Requirements		
Arts		3
Global Understanding		3
Literature		3
Natural Science		7
Social and Behavioral Sciences		3
Western Civilization/World History		3
Integration Requirements		
Written Communications (ENGH 302)		3
Writing-Intensive [1]		3
Synthesis/Capstone [2]		3
Total Credits		40

[1] Most programs include the writing-intensive course designated for the major as part of the major requirements; this course is therefore not counted towards the total required for Mason Core.

[2] Minimum 3 credits required.

4-Year Plan

Bachelors of Science in Public Administration Sample Plan of Study

The sample plan below is a recommended sequencing of courses based on pre-requisites and scheduling. This may not fit every student's needs and is a guideline, not a requirement. Students should confirm major requirements with their academic advisor and with PatriotWeb Degree Evaluation to ensure they enroll in the proper courses and are on track to graduate.

First Year

Fall Semester	Credits	Spring Semester	Credits
GOVT 101	3	GOVT 103	3
GOVT 132 or 133	3	STAT 250	3
ENGH 101 or COMM 101	3	ENGH 101 or COMM 101	3
Western Civ/ World History	3	Nat Science 1	4
MATH 106	3	Literature	3
	15		16

Second Year

Fall Semester	Credits	Spring Semester	Credits
GOVT 351	3	ENGH 302	3
GOVT 367 (Fall only)	3	GOVT 368	3
Elective/Minor	3	GOVT Field 1	3
Elective/Minor	3	GOVT Field 2	3
Arts	3	GOVT 300	4
	15		16

Third Year

Fall Semester	Credits	Spring Semester	Credits
GOVT Field 3	3	GOVT Field 5	3
GOVT Field 4	3	GOVT Field 6	3
Nat Science 2	3	Elective	3
Elective/Minor	3	Elective/Minor	3
Elective/Minor	3	UL elective	3
	15		15

Fourth Year

Fall Semester	Credits	Spring Semester	Credits
GOVT Field 7	3	GOVT 490	3
GOVT Field 8	3	Elective	3
Elective	3	Elective	3
Elective/Minor	3	Elective/Minor	3
Elective/Minor	3	Elective/Minor	3
	15		15

Total Credits 122

Detailed four year plans and degree planning checklists can be found at https://advising.gmu.edu/current-student/majors-at-mason/.

Honors

Honors in the Major

Highly qualified students majoring in Government and International Politics and Public Administration may pursue advanced work leading to graduation with honors in the major. Those students selected for participation in this program take a two-course sequence: GOVT 491 Honors Seminar (Mason Core) and GOVT 496 Directed Readings and Research. To graduate with honors in the major, students must complete these courses with a minimum GPA of 3.50.

Accelerated Master's

Bachelor's Degree (any)/Biodefense, Accelerated MS

Overview

Highly qualified undergraduates in any major may apply to the accelerated Biodefense, MS. If accepted, students will be able to earn a bachelor's degree in their chosen major and a Biodefense, MS with a reduced number of overall credits and within a reduced time frame, sometimes within five years.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies.

Admission

Please see the Graduate Admissions for general information on graduate admission to George Mason University. Information specific to the accelerated MS program may be found on the Schar website (http://schar.gmu.edu/programs/undergraduate-degrees/accelerated-masters-programs/).

To be considered for this accelerated master's program, applicants must have completed a minimum of 60 credits and have a minimum GPA of 3.50 in all coursework applied to the degree.

Accelerated Option Requirements

While undergraduate students, accelerated master's students may complete up to fifteen graduate credits of which twelve may be counted toward both the bachelor's and master's degrees. Remaining credits may be held as reserve graduate credit and count only toward the master's degree. The courses include BIOD 604 Emerging Infectious Diseases I: Bacteria and Toxins, GOVT 500 The Scientific Method and Research Design, BIOD 605 Emerging Infectious Diseases II: Viral Agents and BIOD 620 Global Health Security Policy. Students must maintain a minimum GPA of 3.00 in these courses and in coursework applied to their major.

Upon completion and conferral of the undergraduate degree in the semester indicated in the application, students must submit the Bachelor's/Accelerated Master's Transition Form to apply credits to the master's degree. Students must begin their master's program the semester immediately following conferral of the undergraduate degree (excluding summer).

Bachelor's Degree (any)/International Security, Accelerated MA

Overview

Highly-qualified undergraduates in any major may apply to the accelerated MA degree program in International Security. If accepted students will be able to earn a bachelor's degree in their major and an MA in International Security with a reduced number of overall credits and within a reduced time frame, sometimes within five years. More information on bachelor's/accelerated master's programs may be found in AP.6.7 Bachelor's/Accelerated Master's Degrees.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. See AP.6.9 Requirements for Master's Degrees.

Admission

Please see Graduate Admission Policies for general information on graduate admission to George Mason University. Specific information on application requirements and deadlines may be found on the Schar admissions website (http://schar.gmu.edu/admissions/).

To be considered for this accelerated master's program, applicants must have completed a minimum of 60 credits, including at least 12 credits of Government, Economics and/or Global Affairs courses, and have a minimum GPA of 3.50 in all coursework applied to the degree.

Accelerated Option Requirements

While undergraduate students, accelerated master's students may complete up to twelve graduate credits, all of which may be counted toward both the bachelor's and master's degrees. Any remaining credits may be held as reserve graduate credit and count only toward the master's degree. The courses are:

Code	Title	Credits
GOVT 540	International Relations	3
POGO 511	Introductory Data Analysis for Policy and Government	3
PUBP 504	Grand Strategy	3
PUBP 506	Ethics and the Use of Force	3

Students must maintain a minimum GPA of 3.00 in these courses and in coursework applied to their major.

Upon completion and conferral of the undergraduate degree in the semester indicated in the application, students must submit the Bachelor's/Accelerated Master's Transition Form to apply credits to the master's degree. Students must begin their master's program the semester immediately following conferral of the undergraduate degree (excluding summer).

Bachelor's Degree (any)/International Commerce and Policy, Accelerated MA

Overview

Highly-qualified undergraduates in any major may apply to the accelerated MA degree program in International Commerce and Policy. If accepted students will be able to earn a bachelor's degree in their major and an MA in International Commerce and Policy with a reduced number of overall credits and within a reduced time frame, sometimes within five years. More information on bachelor's/accelerated master's programs may be found in AP.6.7 Bachelor's/Accelerated Master's Degrees.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. See AP.6.9 Requirements for Master's Degrees.

Admission

Please see Graduate Admission Policies for general information on graduate admission to George Mason University. Specific information on application requirements and deadlines may be found on the Schar admissions website (http://schar.gmu.edu/admissions/).

To be considered for this accelerated master's program, applicants must have completed a minimum of 60 credits, including at least 12 credits of Government, Economics and/or Global Affairs courses, and have a minimum GPA of 3.50 in all coursework applied to the degree.

Accelerated Option Requirements

While undergraduate students, accelerated master's students may complete up to eighteen graduate credits of which twelve may be counted toward both the bachelor's and master's degrees. Remaining credits may be held as reserve graduate credit and count only toward the master's degree. The courses include ITRN 500 Global Political Economy, ITRN 504 Microeconomics and Trade Policy, ITRN 503 Macroeconomic Policy in the Global Economy and ITRN 605 Technology, Culture and Commerce. Students must maintain a minimum GPA of 3.00 in these courses and in coursework applied to their major.

Upon completion and conferral of the undergraduate degree in the semester indicated in the application, students must submit the Bachelor's/Accelerated Master's Transition Form to apply credits to the master's degree. Students must begin their master's program the semester immediately following conferral of the undergraduate degree (excluding summer).

Bachelor's Degree (any)/Political Science, Accelerated MA

Overview

Highly-qualified undergraduates in any major may apply to the accelerated MA degree in political science. If accepted, students will be able to earn a bachelor's degree in their chosen major and a MA in Political Science with a reduced number of overall credits and within a reduced time frame, sometimes five years. More information on bachelor's/accelerated master's programs may be found in AP.6.7 Bachelor's/Accelerated Master's Degrees.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. See AP.6.9 Requirements for Master's Degrees.

Admission

See Graduate Admission Policies for general information on graduate admission to George Mason University. Specific information on application requirements and deadlines for the Political Science master's program may be found on the Schar website (http://schar.gmu.edu/programs/undergraduate-degrees/accelerated-masters-programs/).

To be considered for this accelerated master's program, applicants must have completed a minimum of 60 credits, including 12 GOVT credits, and have a minimum GPA of 3.50 in all coursework applied to the degree.

Accelerated Option Requirements

While undergraduate students, accelerated master's students may complete up to eighteen graduate credits of which twelve may be counted toward both the bachelor's and master's degrees. Remaining credits may be held as reserve graduate credit and count only toward the master's degree. The courses are chosen from GOVT 500 The Scientific Method and Research Design, GOVT 510 American Government and Politics, GOVT 520 Political Theory, GOVT 530 Comparative Politics, GOVT 540 International Relations. Students must maintain a minimum GPA of 3.00 in these courses and in coursework applied to their major.

Upon completion and conferral of the undergraduate degree in the semester indicated in the application, students must submit the Bachelor's/Accelerated Master's Transition Form to apply credits to the master's degree. Students must begin their master's program the semester immediately following conferral of the undergraduate degree (excluding summer).

Bachelor's Degree (any)/Public Administration, Accelerated MPA

Overview

Highly-qualified undergraduates in any major may apply to the accelerated master's degree in public administration. If accepted, students will be able to earn a bachelor's degree in their chosen major and a master's degree in public administration with a reduced number of overall credits and within a reduced time frame, sometimes within five years. See AP.6.7 Bachelor's/Accelerated Master's Degrees.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

Admission

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions. Information specific to the accelerated MPA program may be found on the Schar website (http://schar.gmu.edu/programs/undergraduate-degrees/accelerated-masters-programs/).

To be considered for this accelerated master's program, applicants must have completed a minimum of 60 credits, including 12 GOVT credits, and have a minimum GPA of 3.50 in all coursework applied to the degree.

Accelerated Option Requirements

While undergraduate students, accelerated master's students may complete up to eighteen graduate credits of which twelve may be counted toward both the bachelor's and master's degrees. Remaining credits may be held as reserve graduate credit and count only toward the master's degree. The courses include PUAD 502 Administration in Public and Nonprofit Organizations, POGO 511 Introductory Data Analysis for Policy and Government, PUAD 520 Organization Theory and Management Behavior and PUAD 540 Public Policy Process. Students must maintain a minimum GPA of 3.00 in these courses and in coursework applied to their major.

Upon completion and conferral of the undergraduate degree in the semester indicated in the application, students must submit the Bachelor's/Accelerated Master's Transition Form to apply credits to the master's degree. Students must begin their master's program the semester immediately following conferral of the undergraduate degree (excluding summer).

Bachelor's Degree (any)/Public Policy, Accelerated MPP

Overview

Highly-qualified undergraduates in any major may apply to the accelerated Master of Public Policy (MPP) program. If accepted students will be able to earn a bachelor's degree in their chosen major and the Master of Public Policy with a reduced number of overall credits and within a reduced time frame, sometimes within five years. More information on bachelor's/accelerated master's programs may be found in AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7).

Students in an accelerated degree program must fulfill all university requirements for the master's degree. See AP.6.9 Requirements for Master's Degrees. (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-9)

Admission

Please see Graduate Admission Policies for general information on graduate admission to George Mason University. Information specific to the accelerated Master of Public Policy program may be found on the Schar website (http://schar.gmu.edu/programs/undergraduate-degrees/accelerated-masters-programs/).

To be considered for this accelerated master's program, applicants must have completed a minimum of 60 credits, including 12 credits of Government and/or Economics courses, and have a minimum GPA of 3.50 in all coursework applied to the degree.

Accelerated Option Requirements

While undergraduate students, accelerated master's students may complete up to fifteen graduate credits of which twelve may be counted toward both the bachelor's and master's degrees. Remaining credits may be held as reserve graduate credit and count only toward the master's degree.. The student must have a minimum GPA of 3.00 in each course. Students must maintain a minimum GPA of 3.00 in these courses and in coursework applied to their major.

Code	Title	Credits
PUBP 500	Theory and Practice in Public Policy	3
PUBP 503	Culture, Organization, and Technology	3
ITRN 503	Macroeconomic Policy in the Global Economy	3
POGO 511	Introductory Data Analysis for Policy and Government	3

Upon completion and conferral of the undergraduate degree in the semester indicated in the application, students must submit the Bachelor's/Accelerated Master's Transition Form to apply credits to the master's degree. Students must begin their master's program the semester immediately following conferral of the undergraduate degree (excluding summer).

Public Administration, MPA

Banner Code: PP-MPA-PUAD

Academic Advising

560 Founders Hall
Arlington Campus

359 Research Hall
Fairfax Campus

Website: schar.gmu.edu

The Master of Public Administration (MPA) is designed for people who hold or aspire to hold leadership positions in organizations that participate in the development and implementation of public policy. The mission of the MPA program is to give graduate students the opportunity to build their knowledge of politics, public policy and management and to enhance their analytic, problem solving, and communication skills.

MPA students at Mason have the research and cultural resources of the Washington, D.C. area at their disposal. Government agencies representing all levels in the U.S. federal system are located close to the campus, as are the National Archives, the Library of Congress, and the Smithsonian Institution. Another benefit is the wide range of internship opportunities available in governmental and nonprofit organizations. The MPA Program regularly has internship invitations from national, state, and local government organizations, as well as from nonprofit organizations whose principal work is at the local, state, national, or international levels. Many of these internships are paid positions.

MPA courses are held at the Fairfax and the Arlington campuses during the week and on the weekend in an accelerated format.

Admissions & Policies

Admissions

Requirements

See Graduate Admission Policies for general information on graduate admission to George Mason University. Specific information on application requirements and deadlines may be found with Schar Admissions (http://schar.gmu.edu/admissions/).

Completed applications for fall and spring semesters are reviewed on a rolling basis, with late applications considered on a space-available basis. Students may be admitted for nondegree study and apply a limited number of credits toward the master's degree should they choose to apply to the degree program later, in accordance with university and school policy.

Policies

Termination from Program

Students admitted to a Schar program will be terminated from Schar upon receiving one grade of F and are no longer eligible to take courses in Schar. Per university regulation, students are terminated from the university after accumulating grades of F in two courses or 9 credits of unsatisfactory grades in graduate courses. For policies governing all graduate degrees, see Graduate Policies.

Program Requirements

The MPA curriculum is arranged in a sequential manner. PUAD 500-level courses are foundation courses, 600-level courses are intermediate courses, and the 700-level courses are advanced courses. Students must take PUAD 500-level, or foundation courses, during the first two semesters, followed by 600-level classes. The PUAD 700-level courses should be taken during the last semester or two of enrollment in the MPA program.

For example, a full-time student should enroll in PUAD 502 Administration in Public and Nonprofit Organizations and two other 500-level courses, such as POGO 511 Introductory Data Analysis for Policy and Government and PUAD 520 Organization Theory and Management Behavior, during the first semester. In the second semester the student should enroll in PUAD 540 Public Policy Process and two intermediate courses such as PUAD 662 National Budgeting and a 600-level elective course.

Part-time students taking two courses a semester should take PUAD 502 Administration in Public and Nonprofit Organizations and either POGO 511 Introductory Data Analysis for Policy and Government or PUAD 520 Organization Theory and Management Behavior during the first semester, followed by either POGO 511 Introductory Data Analysis for Policy and Government or PUAD 520 Organization Theory and Management Behavior and PUAD 540 Public Policy Process in the second semester.

Requests for taking a course out of sequence must be made in writing to the student's advisor and must be approved by the advisor before enrollment.

Requirements

Degree Requirements

Total credits: 36-39

The required courses emphasize the development of knowledge about public policy and management, as well as analytical problem-solving and communication skills, and third-party governance. Through these courses, students develop a shared knowledge base and skill set. The elective courses can be used by students to focus their knowledge and skill development within one concentration. Alternatively, the electives can be used to extend the breadth of study with courses drawn from a variety of concentrations or from other departments and schools across the university.

Core Courses

Code	Title	Credits
PUAD 502	Administration in Public and Nonprofit Organizations	3

POGO 511	Introductory Data Analysis for Policy and Government	3
PUAD 520	Organization Theory and Management Behavior	3
PUAD 540	Public Policy Process	3
PUAD 700	Ethics and Public Administration	3
PUAD 703	Collaborative Public Management	3
Total Credits		18

Additional Methods Course

Code	Title	Credits
Select one course from the following:		3
PUAD 613	Economic Analysis in Public Administration	
PUAD 645	Policy Analysis	
POGO 611	Advanced Data Analysis for Policy and Government	
POGO 646	Policy and Program Evaluation	
Total Credits		3

Accounting, Budgeting, and Financial Management

Code	Title	Credits
Select one course from the following:		3
PUAD 660	Public and Nonprofit Accounting and Finance	
PUAD 662	National Budgeting	
PUAD 663	State and Local Budgeting	
PUAD 664	Nonprofit Financial Management	
Total Credits		3

Electives

Code	Title	Credits
Select four electives [1]		12
Total Credits		12

[1] Students may take their electives within one of the concentrations which follow. As an alternative, with the approval of their advisor, students may select their electives from several concentrations or fields. Students not pursuing a concentration may select electives from Schar course offerings.

Concentrations

Students may declare only one concentration. PUAD 794 Internship and POGO 796 Directed Readings and Research may be applied to a concentration where content is appropriate and with prior written approval of the student's advisor. Other courses may also be applied to a concentration with prior written approval of the advisor.

Concentrations

- Concentration in Administration of Justice (ADJ)
- Concentration in Emergency Management and Homeland Security (EMHS)
- Concentration in Environmental Science and Public Policy (EVPP)
- Concentration in Human Resources Management (HRM)
- Concentration in International Management (IM)
- Concentration in Nonprofit Management (NPMG)
- Concentration in Policy Studies (PS)
- Concentration in Public Management (PMG)
- Concentration in Public and Nonprofit Finance (PNF)
- Concentration in State and Local Government (SLG)
- Concentration in Managing Across Sectors (MAS)

Concentration in Administration of Justice (ADJ)

Code	Title	Credits
Select four courses from the following:		12
PUAD 730	Professional Development Workshop	
PUAD 781	Information Management: Technology and Policy	
CONF 501	Introduction to Conflict Analysis and Resolution	
CRIM 509	Justice Organizations and Processes	
CRIM 510	Policing in a Democratic Society	
CRIM 740	Justice Organizations	
CRIM 741	Street Level Criminal Justice	
CRIM 742	Leadership in Justice and Security Organizations	
CRIM 781	Justice Program Evaluation	
ITRN 702	Special Topics in International Commerce and Policy: Study Abroad	
PUBP 710	Topics in Public Policy	
POGO 750	Topics in Policy and Government	
POGO 794	Internship	
POGO 796	Directed Readings and Research	
Total Credits		12

Concentration in Emergency Management and Homeland Security (EMHS)

Code	Title	Credits
Select four courses from the following:		12
PUAD 630	Emergency Planning and Preparedness	
PUAD 631	Disaster Response Operations and Recovery	
PUAD 632	Terrorism: Theory and Practice	
PUAD 633	Hazard Mitigation Policy	
PUAD 634	Management of International Security	
PUAD 635	Emergency Preparedness: Interagency Communication and Coordination	
PUAD 637	Managing Homeland Security	
PUAD 727	Seminar in Risk Assessment and Decision Making	
PUAD 731	Homeland/Transportation Security Administration	
PUAD 738	Issues in International Security	
BIOD 723	Legal Dimensions of Homeland Security	
PUBP 710	Topics in Public Policy	
PUBP 742	Transportation Safety and Security	
PUBP 754	Geographic Information Systems and Spatial Analysis for Public Policy	
PUBP 758	Global Threats and Medical Policies	
ITRN 702	Special Topics in International Commerce and Policy: Study Abroad	

POGO 750	Topics in Policy and Government	
POGO 794	Internship	
POGO 796	Directed Readings and Research	
COMM 637	Risk Communication	
Total Credits		12

Concentration in Environmental Science and Public Policy (EVPP)

CONF 695 Selected Topics and COMM 590 Seminar in Communication when topic is the environment, may be used to fulfill this requirement with the prior written approval of the student's advisor.

Code	Title	Credits
PUAD 642	Environmental Policy	3
Select three courses from the following:		9
PUAD 645	Policy Analysis	
POGO 646	Policy and Program Evaluation [1]	
PUAD 649	Advocacy and Lobbying	
EVPP 524	Introduction to Environmental and Resource Economics	
EVPP 607	Fundamentals of Ecology	
EVPP 638	Corporate Environmental Management and Policy	
EVPP 641	Environmental Science and Public Policy	
EVPP 670	Environmental Law	
CONF 695	Selected Topics	
COMM 590	Seminar in Communication	
PUBP 710	Topics in Public Policy	
POGO 750	Topics in Policy and Government	
POGO 794	Internship	
POGO 796	Directed Readings and Research	
ITRN 701	Special Topics in International Commerce and Policy	
ITRN 702	Special Topics in International Commerce and Policy: Study Abroad	
Total Credits		12

[1] If not already taken to meet core requirements.

Concentration in Human Resources Management (HRM)

Code	Title	Credits
PUAD 670	Human Resources Management in the Public Sector	3
Select three courses from the following:		9
PUAD 623	Managing Government Contracting	
PUAD 652	Leading in the Nonprofit Sector	
PUAD 671	Public Employee Labor Relations	
PUAD 672	Human Resources Reforms for Public Administration	
PUAD 729	Issues in Public Management	
PUAD 730	Professional Development Workshop	
PSYC 631	Industrial and Personnel Testing and Evaluation	
PSYC 636	Survey of Industrial-Organizational Psychology	
PSYC 638	Training: Psychological Contributions to Theory, Design, and Evaluation	
PSYC 639	Survey of Organizational Processes	
PSYC 667	Behavior in Small Groups and Teams	
PSYC 739	Seminar in Industrial/Organizational Psychology	
ODKM 705	Group Dynamics and Team Learning	
ODKM 715	Creating Learning Organizations	
ODKM 731	Consulting Skills for Organizational Change	
ODKM 735	Organizational Development Practices	
PUBP 710	Topics in Public Policy	
ITRN 702	Special Topics in International Commerce and Policy: Study Abroad	
POGO 750	Topics in Policy and Government	
POGO 794	Internship	
POGO 796	Directed Readings and Research	
MBA 713	Managing Human Capital	
Total Credits		12

Concentration in International Management (IM)

Code	Title	Credits
PUAD 504	Managing in the International Arena: Theory and Practice	3
Select three courses from the following:		9
CONF courses [1]		
ITRN courses [1]		
PUAD 634	Management of International Security	
PUAD 636	The NGO: Policy and Management	
PUAD 730	Professional Development Workshop	
PUAD 738	Issues in International Security	
PUAD 739	Issues in International Management	
GOVT 540	International Relations	
GOVT 631	Seminar in Comparative Politics and Institutions	
PUBP 710	Topics in Public Policy	
ITRN 701	Special Topics in International Commerce and Policy	
POGO 750	Topics in Policy and Government	
POGO 794	Internship	
POGO 796	Directed Readings and Research	
ITRN 702	Special Topics in International Commerce and Policy: Study Abroad	
Total Credits		12

[1] With written prior approval of the director.

Concentration in Nonprofit Management (NPMG)

Students in the nonprofit concentration may take PUAD 505 Introduction to Management of Nonprofits as one of their first four courses and may take PUAD 505 Introduction to Management of Nonprofits simultaneously with PUAD 502 Administration in Public and Nonprofit Organizations. Likewise, students in the international concentration may take PUAD 504 Managing in the International Arena: Theory and Practice as one of their first four courses.

Code	Title	Credits
PUAD 505	Introduction to Management of Nonprofits	3
PUAD 659	Nonprofit Law, Governance, and Ethics	3
Select two courses from the following:		6
PUAD 636	The NGO: Policy and Management	
PUAD 649	Advocacy and Lobbying	
PUAD 652	Leading in the Nonprofit Sector	
PUAD 654	The Community, Marketing, and Public Relations	
PUAD 655	Nonprofit Fund Raising and Resource Development	
PUAD 657	Association Management	
PUAD 658	Social Entrepreneurship and Social Enterprise	
PUAD 660	Public and Nonprofit Accounting and Finance	
PUAD 664	Nonprofit Financial Management	
PUAD 680	Public Technology Management	
PUAD 720	Performance Measurement	
PUAD 730	Professional Development Workshop	
PUBP 710	Topics in Public Policy	
POGO 750	Topics in Policy and Government	
POGO 794	Internship	
POGO 796	Directed Readings and Research	
ITRN 702	Special Topics in International Commerce and Policy: Study Abroad	
Total Credits		12

Concentration in Policy Studies (PS)

Code	Title	Credits
Select four courses from the following:		12
PUAD 615	Administrative Law	
PUAD 622	Program Planning and Implementation	
PUAD 645	Policy Analysis	
PUAD 649	Advocacy and Lobbying	
PUAD 658	Social Entrepreneurship and Social Enterprise	
PUAD 661	Public Budgeting Systems	
PUAD 662	National Budgeting	
PUAD 663	State and Local Budgeting	
PUAD 680	Public Technology Management	
PUAD 727	Seminar in Risk Assessment and Decision Making	
PUAD 730	Professional Development Workshop	
PUAD 749	Issues in Public Policy	
PUAD 750	Federalism and Intergovernmental Relations	
PUAD 781	Information Management: Technology and Policy	
GOVT 520	Political Theory	
GOVT 605	Seminar on the Presidency	
PUBP 710	Topics in Public Policy	
POGO 646	Policy and Program Evaluation	
POGO 750	Topics in Policy and Government	
POGO 794	Internship	
POGO 796	Directed Readings and Research	
ITRN 702	Special Topics in International Commerce and Policy: Study Abroad	
Total Credits		12

Concentration in Public Management (PMG)

Code	Title	Credits
Select four courses from the following:		12
PUAD 615	Administrative Law	
PUAD 622	Program Planning and Implementation	
PUAD 623	Managing Government Contracting	
PUAD 658	Social Entrepreneurship and Social Enterprise	
PUAD 660	Public and Nonprofit Accounting and Finance	
PUAD 661	Public Budgeting Systems	
PUAD 662	National Budgeting	
PUAD 663	State and Local Budgeting	
PUAD 664	Nonprofit Financial Management	
PUAD 670	Human Resources Management in the Public Sector	
PUAD 672	Human Resources Reforms for Public Administration	
PUAD 679	Leadership Skills for the 21st Century	
PUAD 680	Public Technology Management	
PUAD 720	Performance Measurement	
PUAD 729	Issues in Public Management	
PUAD 730	Professional Development Workshop	
PUAD 731	Homeland/Transportation Security Administration	
PUAD 750	Federalism and Intergovernmental Relations	
PUAD 781	Information Management: Technology and Policy	
PUBP 710	Topics in Public Policy	
ITRN 702	Special Topics in International Commerce and Policy: Study Abroad	
POGO 646	Policy and Program Evaluation	
POGO 750	Topics in Policy and Government	
POGO 794	Internship	
POGO 796	Directed Readings and Research	
Total Credits		12

Concentration in Public and Nonprofit Finance (PNF)

Code	Title	Credits
Select four courses from the following:		12
PUAD 658	Social Entrepreneurship and Social Enterprise	
PUAD 660	Public and Nonprofit Accounting and Finance	
PUAD 661	Public Budgeting Systems	
PUAD 662	National Budgeting	
PUAD 663	State and Local Budgeting	

PUAD 664	Nonprofit Financial Management	
PUAD 729	Issues in Public Management	
PUAD 730	Professional Development Workshop	
PUAD 769	Issues in Public Financial Management	
PUBP 710	Topics in Public Policy	
POGO 750	Topics in Policy and Government	
POGO 794	Internship	
POGO 796	Directed Readings and Research	
ITRN 702	Special Topics in International Commerce and Policy: Study Abroad	
Total Credits		12

Concentration in State and Local Government (SLG)

Code	Title	Credits
Select four courses from the following:		12
PUAD 505	Introduction to Management of Nonprofits	
PUAD 615	Administrative Law	
PUAD 623	Managing Government Contracting	
PUAD 630	Emergency Planning and Preparedness	
PUAD 651	Virginia Politics, Policy, and Administration	
PUAD 660	Public and Nonprofit Accounting and Finance	
PUAD 661	Public Budgeting Systems	
PUAD 662	National Budgeting	
PUAD 663	State and Local Budgeting	
PUAD 680	Public Technology Management	
PUAD 729	Issues in Public Management	
PUAD 730	Professional Development Workshop	
PUAD 750	Federalism and Intergovernmental Relations	
PUAD 759	Issues in Local Government Administration	
PUAD 781	Information Management: Technology and Policy	
PUAD 679	Leadership Skills for the 21st Century	
PUBP 710	Topics in Public Policy	
POGO 750	Topics in Policy and Government	
POGO 794	Internship	
POGO 796	Directed Readings and Research	
ITRN 702	Special Topics in International Commerce and Policy: Study Abroad	
Total Credits		12

Concentration in Managing Across Sectors (MAS)

Code	Title	Credits
Select four courses from the following:		12
PUAD 613	Economic Analysis in Public Administration	
PUAD 622	Program Planning and Implementation	
PUAD 623	Managing Government Contracting	
PUAD 635	Emergency Preparedness: Interagency Communication and Coordination	
PUAD 636	The NGO: Policy and Management	
PUAD 658	Social Entrepreneurship and Social Enterprise	
PUAD 659	Nonprofit Law, Governance, and Ethics	
PUAD 750	Federalism and Intergovernmental Relations	
PUBP 710	Topics in Public Policy	
POGO 750	Topics in Policy and Government	
POGO 794	Internship	
POGO 796	Directed Readings and Research	
ITRN 702	Special Topics in International Commerce and Policy: Study Abroad	
Total Credits		12

Professional Experience Requirement

Certification that the student has experience in public administration outside the classroom and is ready to take leadership responsibilities must be exhibited by one of two ways:

- relevant professional experience, approved by the program director
- completion of PUAD 792 Advanced Seminar in Applied Public Administration Research

Code	Title	Credits
PUAD 792	Advanced Seminar in Applied Public Administration Research	3
Total Credits		3

Accelerated Master's

Bachelor's Degree (any)/Public Administration, Accelerated MPA

Overview

Highly-qualified undergraduates in any major may apply to the accelerated master's degree in public administration. If accepted, students will be able to earn a bachelor's degree in their chosen major and a master's degree in public administration with a reduced number of overall credits and within a reduced time frame, sometimes within five years. See AP.6.7 Bachelor's/Accelerated Master's Degrees.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

Admission

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions. Information specific to the accelerated MPA program may be found on the Schar website (http://schar.gmu.edu/programs/undergraduate-degrees/accelerated-masters-programs/).

To be considered for this accelerated master's program, applicants must have completed a minimum of 60 credits, including 12 GOVT credits, and have a minimum GPA of 3.50 in all coursework applied to the degree.

Accelerated Option Requirements

While undergraduate students, accelerated master's students may complete up to eighteen graduate credits of which twelve may be

counted toward both the bachelor's and master's degrees. Remaining credits may be held as reserve graduate credit and count only toward the master's degree. The courses include PUAD 502 Administration in Public and Nonprofit Organizations, POGO 511 Introductory Data Analysis for Policy and Government, PUAD 520 Organization Theory and Management Behavior and PUAD 540 Public Policy Process. Students must maintain a minimum GPA of 3.00 in these courses and in coursework applied to their major.

Upon completion and conferral of the undergraduate degree in the semester indicated in the application, students must submit the Bachelor's/Accelerated Master's Transition Form to apply credits to the master's degree. Students must begin their master's program the semester immediately following conferral of the undergraduate degree (excluding summer).

Public Management Graduate Certificate

Banner Code: PP-CERG-PMG

Academic Advising

560 Founders Hall
Arlington Campus

359 Research Hall
Fairfax Campus

Website: schar.gmu.edu

The Schar School of Policy and Government offers certificate programs in conjunction with its master's programs. Students already pursuing a master's degree in the school may, in most cases, after admission to a certificate program, earn an additional six credits (two courses) in Schar to receive a certificate in addition to the master's degree.

The graduate certificate in public management may only be pursued on a part-time basis.

Admissions & Policies

Admissions

Applicants to all graduate programs must meet the admission standards and application requirements for graduate study as specified in Graduate Admission Policies. Participants must be admitted to a certificate program. Admission requirements are the same as those for the master's programs and may be found on the Schar admissions website (http://schar.gmu.edu/admissions/).

Policies

For policies governing all graduate certificates, see AP.6.8 Requirements for Graduate Certificates.

Termination from Program

Students admitted to a Schar program will be terminated from that program upon receiving one grade of F and are no longer eligible to take courses in the school. Per university regulation, students are terminated from the university after accumulating grades of F in two courses or 9 credits of unsatisfactory grades in graduate courses. For policies governing all graduate degrees, see Graduate Policies.

Requirements

Certificate Requirements

Total credits: 15

This certificate may be pursued on a part-time basis only.

Required Courses

Code	Title	Credits
PUAD 502	Administration in Public and Nonprofit Organizations	3
PUAD 520	Organization Theory and Management Behavior	3
PUAD 540	Public Policy Process	3
Total Credits		9

Electives

Code	Title	Credits
Select two electives in the public management area. [1]		6
Total Credits		6

[1] See the Public Administration, MPA, Public Management Concentration (PMA) for a list of relevant electives.

Public Policy, MPP

Banner Code: PP-MPP-PUBP

Academic Advising

560 Founders Hall
Arlington Campus

359 Research Hall
Fairfax Campus

Website: schar.gmu.edu

The master of public policy leads to a degree for aspiring or experienced professionals who seek career advancement through cutting-edge education and training in policy analysis and development in increasingly technical and global environments. The program prepares students to be reflective practitioners who develop, implement, manage, analyze, evaluate, and effect innovative change in the public and private sectors through a course of study that emphasizes the fundamentals of policy development; the role of technology, analytic assessment, and modeling for policy evaluation; and the implications of international and global perspectives on policy formation. Courses are offered primarily in late afternoon and evening to fit the schedules of busy professionals.

Admissions & Policies

Admissions

Requirements

See Graduate Admission Policies for general information on graduate admission to George Mason University. Specific information on application requirements and deadlines may be found with Schar Admissions (http://schar.gmu.edu/admissions/). Completed applications for fall and spring semesters are reviewed on a rolling basis, with late applications considered on a space-available basis. Students may be admitted for nondegree study and apply a limited number of credits toward the master's degree should they choose to apply to the degree program later, in accordance with university policy.

Policies

Termination from Program

Students admitted to a Schar program will be terminated from Schar upon receiving one grade of F and are no longer eligible to take courses in Schar. Per university regulation, students are terminated from the university after accumulating grades of F in two courses or 9 credits of unsatisfactory grades in graduate courses. For policies governing all graduate degrees, see Graduate Policies.

Program Requirements

Students must complete 36 to 39 credits of coursework through a combination of core courses, electives, and a professional experience requirement. Appropriate professional experience can be demonstrated through previous employment or a supervised internship. Students will also be exposed to the global nature of public policy activity through the core requirement of international comparative policy assessment.

Requirements

Degree Requirements

Total credits: 36-39

Required Public Policy Courses

Code	Title	Credits
PUBP 500	Theory and Practice in Public Policy	3
PUBP 503	Culture, Organization, and Technology (3 credits)	3
ITRN 503	Macroeconomic Policy in the Global Economy (3 credits)	3
POGO 511	Introductory Data Analysis for Policy and Government	3
PUBP 720	Managerial Economics and Policy Analysis	3
PUBP 741	U.S. Financial Policy Processes and Procedures	3
Select one from the following, or approved substitution:		3
POGO 611	Advanced Data Analysis for Policy and Government	
POGO 646	Policy and Program Evaluation	
PUBP 754	Geographic Information Systems and Spatial Analysis for Public Policy	
Total Credits		21

Electives

Electives are chosen from one of the following policy emphasis areas. One of the courses in the emphasis sequence should have an international focus.

- Education Policy
- Global Medical and Health Policy
- International Governance and Institutions
- National Security and Public Policy
- Public Finance and Budgeting
- Regional Economic Development
- Science and Technology Policy
- Social Policy
- Terrorism, Transnational Crime and Corruption
- Transportation Policy
- Urban Policy and Development
- US Government Institutions and Policy Management

Code	Title	Credits
Select 15 credits from the following in consultation with the student's advisor: [1]		15
PUBP 504	Grand Strategy	
PUBP 506	Ethics and the Use of Force	
PUBP 650	International Conflict and Crisis Response	
PUBP 651	Peace and Stabilization Operations	
PUBP 710	Topics in Public Policy	
PUBP 721	Transportation Economics	
PUBP 723	Metropolitan Transportation Policy	
PUBP 726	Telecommunications Policy	
PUBP 730	US Institutions and the Policy Process	
PUBP 733	Urban Politics and Policy	
PUBP 737	Cases and Concepts in E-Government	
PUBP 739	Media and Public Policy	
PUBP 742	Transportation Safety and Security	
PUBP 743	National Security Management and Policy	
PUBP 747	Air Transportation Policy, Operations and Logistics	
PUBP 748	Public Transportation Policy, Operations and Logistics	
PUBP 750	History of Military Operations Other than War	
PUBP 751	International Police Operations	
PUBP 753	Ethics in Public Policy	
PUBP 754	Geographic Information Systems and Spatial Analysis for Public Policy	
PUBP 755	National Security Decision-Making Policy	
PUBP 757	Public Policy in Global Health and Medical Practice	
PUBP 758	Global Threats and Medical Policies	
PUBP 759	National Security Law and Public Policy	

PUBP 760	Science and Technology Policy in the 21st Century
PUBP 762	Social Institutions and Public Policy
PUBP 763	Illicit Trade
PUBP 764	Transnational Crime and Corruption
PUBP 765	Human Smuggling and Trafficking
PUBP 766	Modern Counterinsurgency: Theory and Practice
PUBP 768	Education and Public Policy (Topic Varies)
PUBP 769	Political Violence and Terrorism
PUBP 777	Critical Infrastructure Protection: Policy and Practice
PUBP 783	Global Governance
PUAD 729	Issues in Public Management
POGO 730	Global Economic and Human Development
POGO 733	Global Business and Policy
POGO 734	Country Risk Analysis
POGO 796	Directed Readings and Research
POGO 550	Topics in Policy and Government
POGO 750	Topics in Policy and Government
PUAD 738	Issues in International Security
PUAD 739	Issues in International Management
PUAD 749	Issues in Public Policy
PUAD 759	Issues in Local Government Administration
PUAD 769	Issues in Public Financial Management
ITRN 602	Global Financial Crises and Institutions
ITRN 603	Global Trade Relations
ITRN 701	Special Topics in International Commerce and Policy
ITRN 702	Special Topics in International Commerce and Policy: Study Abroad
ITRN 710	International Business Transactions: Finance and Investment
ITRN 712	World Trade Organization and Global Trade
ITRN 740	Trade and Regulatory Compliance
ITRN 761	European Political and Economic Union
ITRN 767	Political Economy and Integration in Latin America
ITRN 772	International Telecommunications
CONF 501	Introduction to Conflict Analysis and Resolution
HAP 609	Comparative International Health Systems
HAP 678	Introduction to the U.S. Health System
HAP 706	Integrated Health Systems Management
Total Credits	15

[1] Other courses must be approved by the advisor or program director.

Professional Experience Requirement

Certification that the student has experience in the public policy process outside the classroom and is ready to take leadership responsibilities must be exhibited by one of two ways: relevant professional experience, approved by the program director, or an approved internship.

Code	Title	Credits
Up to three credits of		0-3
POGO 794	Internship	
Total Credits		0-3

Accelerated Master's

Bachelor's Degree (any)/Public Policy, Accelerated MPP

Overview

Highly-qualified undergraduates in any major may apply to the accelerated Master of Public Policy (MPP) program. If accepted students will be able to earn a bachelor's degree in their chosen major and the Master of Public Policy with a reduced number of overall credits and within a reduced time frame, sometimes within five years. More information on bachelor's/accelerated master's programs may be found in AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7).

Students in an accelerated degree program must fulfill all university requirements for the master's degree. See AP.6.9 Requirements for Master's Degrees. (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-9)

Admission

Please see Graduate Admission Policies for general information on graduate admission to George Mason University. Information specific to the accelerated Master of Public Policy program may be found on the Schar website (http://schar.gmu.edu/programs/undergraduate-degrees/accelerated-masters-programs/).

To be considered for this accelerated master's program, applicants must have completed a minimum of 60 credits, including 12 credits of Government and/or Economics courses, and have a minimum GPA of 3.50 in all coursework applied to the degree.

Accelerated Option Requirements

While undergraduate students, accelerated master's students may complete up to fifteen graduate credits of which twelve may be counted toward both the bachelor's and master's degrees. Remaining credits may be held as reserve graduate credit and count only toward the master's degree.. The student must have a minimum GPA of 3.00 in each course. Students must maintain a minimum GPA of 3.00 in these courses and in coursework applied to their major.

Code	Title	Credits
PUBP 500	Theory and Practice in Public Policy	3
PUBP 503	Culture, Organization, and Technology	3
ITRN 503	Macroeconomic Policy in the Global Economy	3
POGO 511	Introductory Data Analysis for Policy and Government	3

Upon completion and conferral of the undergraduate degree in the semester indicated in the application, students must submit the Bachelor's/Accelerated Master's Transition Form to apply credits to

the master's degree. Students must begin their master's program the semester immediately following conferral of the undergraduate degree (excluding summer).

Public Policy, PhD

Banner Code: PP-PHD-PUBP

Academic Advising

560 Founders Hall
Arlington Campus

359 Research Hall
Fairfax Campus

Website: schar.gmu.edu

This doctoral degree in public policy is distinctive in its heavy emphasis on the combined influence of technology, culture, and institutions on public policy. Students investigate the increasing tensions created by technologically driven organizational change. This doctoral program prepares its graduates to assume positions of significant responsibility in academia, government, and the private and public sectors. With a focus on analytical and research-based approaches to public policy, our students seek to understand the underlying determinants of public policy choices, analyze and improve the implementation of policy, and identify and assess new opportunities to address emerging issues.

To investigate the policy issues associated with substantive policy areas, students develop in-depth understanding of American institutions, values, and culture; competence in research methods and advanced analytical methodologies; and a comparative, international perspective. At the time of admission, each student is assigned a faculty advisor who assists in the design and development of the student's program.

Admissions & Policies

Admissions

See Graduate Admission Policies for general information on graduate admission to George Mason University. See Schar Admissions (http://schar.gmu.edu/admissions/) for application requirements and deadlines for the PhD in Public Policy. Students are considered for admission for the Fall term only.

Policies

For policies governing all graduate degrees, see AP.6.10 Requirements for Doctoral Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-10).

Program Requirements

Students are required to complete a minimum of 80 credits of graduate coursework, of which no more than 12 may be dissertation credits. Specific coursework requirements include four foundational core courses, one semester of participation in the research colloquium (public policy seminar), two advanced methodology courses, three courses in an area of program specialization, and three advanced courses tailored to the student's research needs and interests. Courses are determined in collaboration with the student's advisor and are drawn widely not only from Schar, but also from other programs at Mason.

At the completion of core skills coursework (Stage One), students must pass a qualifying exam that evaluates mastery of the first year's material, as well as the ability to integrate that material when addressing important and complex public policy problems and issues. Students must then develop their research areas through specialized coursework, and pass a field exam structured around their specific field of proposed doctoral research (Stages Two and Three). Other requirements include the successful preparation and defense of a doctoral research proposal and the ensuing dissertation (Stage Four).

A complete description of the program policies, procedures, and requirements is in the PhD student and faculty handbook (https://schar.gmu.edu/current-students/phd-student-services/phd-handbook-forms/), which is published annually.

Reduction of Credit

Students who enter the doctoral program with a master's degree or other graduate credit may have their credit reduced by up to 30 credits, subject to the approval of the program director.

Prerequisites: Methodological and Substantive Foundations

PhD students are required to have competence in the following three areas, either by taking these courses or by proving competence through a placement exam and/or evidence of previous relevant coursework.

Prerequisite courses will not count as part of the 80 credit requirement.

Code	Title	Credits
POGO 511	Introductory Data Analysis for Policy and Government	3
PUBP 720	Managerial Economics and Policy Analysis	3
PUBP 730	US Institutions and the Policy Process	3

Requirements

Degree Requirements

Total credits: minimum 80

Doctoral Coursework and Requirements

Stage One - Core Skills

Code	Title	Credits
Coursework		
Four credits of		4
PUBP 800	Culture and Public Policy	
POGO 801	Research Design for the Social Sciences and Public Policy	3
PUBP 804	Multivariate Statistical Analysis in Public Policy	4
PUBP 805	Foundations of Social Science for Public Policy	4
Pass the comprehensive Qualifying Exam		
Total Credits		15

Stage Two - Policy Fields and Skills

After passing the qualifying exam, students assemble a Field Research Committee. By the end of their third semester, full-time students (fourth semester for part-time) must choose a chair for their Field Committee.

By the start of their fourth semester, full-time students (fifth semester for part-time) must submit to the chair of their Field Committee a plan for their Field of Study. The Field of Study Plan will describe a proposed research area, including citations relevant to current research in that field; four relevant field courses; and the names of faculty who will be involved. The plan must be approved by both the student's Field Committee chair and the program director.

Code	Title	Credits
Coursework		
Three courses in an area of program specialization, chosen in collaboration with advisor		9
One advanced methods course chosen from the following: [1]		3-4
POGO 611	Advanced Data Analysis for Policy and Government	
PUBP 754	Geographic Information Systems and Spatial Analysis for Public Policy	
PUBP 791	Advanced Field Research for Policy: Theory and Method	
PUBP 792	Advanced Economic Analysis for Policy Research	
POGO 793	Big Data Analytics for Policy and Government	
POGO 850	PhD Professional Development Seminar	1
Total Credits		13-14

[1] Other courses may be approved by the program director.

Stage Three - Research Foundations

In Stage Three, students take coursework approved in the Field of Study Plan.

The Field of Study must include one advanced methods course from the approved list for the doctoral program, or be approved in writing by the Field Committee Chair and Doctoral Program Director. Where appropriate courses are not available from Schar School, students may petition the Director of the PhD program for substitute courses to count for their Field of Study Plan.

Students are expected to complete coursework before taking PUBP 998 credits. A student may take no more than six credits of PUBP 998 before completing a field of study plan and having it approved by three Graduate Faculty members.

Code	Title	Credits
Coursework		
Three substantive Field of Study courses that will serve as a foundation for their Field [1]		9-12
PUBP 810	Regional Development and Transportation Policy	
PUBP 811	Applied Methods in Regional Development and Transportation Policy	
PUBP 820	Technology, Science, and Innovation: Institutions and Governance	
PUBP 821	Analytic Methods for Technology, Science, and Innovation Policy	
PUBP 834	Entrepreneurship, Growth, and Public Policy	
PUBP 835	Entrepreneurship, Creativity, and Innovation	
POGO 840	Policy, Politics, and American Government Institutions	
POGO 841	U.S. Political Behavior and the Process of Policymaking	
PUBP 860	Social Theory, Culture, and Public Policy	
PUBP 861	Culture and Social Policy Analysis	
PUBP 880	Global and International Public Policy I	
PUBP 881	International Trade Policy	
One Advanced Methods course [2]		3-4
POGO 611	Advanced Data Analysis for Policy and Government	
PUBP 754	Geographic Information Systems and Spatial Analysis for Public Policy	
PUBP 791	Advanced Field Research for Policy: Theory and Method	
PUBP 792	Advanced Economic Analysis for Policy Research	
POGO 793	Big Data Analytics for Policy and Government	
Total Credits		12-16

[1] Courses must include at least one 800 level Schar course from this list.

[2] Other courses must be approved in writing by the Field Committee Chair and program director.

Note: Where appropriate courses are not available from Schar, students may petition the program director for substitute courses to count for their Field of Study Plan.

Dissertation Research

Qualifying Exams

Students must pass a qualifying exam which is taken after the core courses are completed.

When students have completed all coursework, have passed the qualifying exam, have an approved dissertation committee and presented and successfully defended a dissertation proposal, they advance to candidacy.

Stage Four - Dissertation

Twelve credits of PUBP 998 and PUBP 999 must be applied to the degree. A minimum of six credits must be PUBP 999.

Code	Title	Credits
Up to six credits of		6
PUBP 998	Research/Proposal for Dissertation	
Proposal Oral Defense		
At least six credits of		6
PUBP 999	Dissertation	

Dissertation Oral Defense	
Total Credits	12

Public Policy and Management Minor

Banner Code: PPMG

Academic Advising

359 Research Hall
Fairfax Campus

This minor equips students with the background and tools to understand the complexities of policy formation and implementation as leaders and managers in the political arena.

Faculty

Conant (minor advisor)

Admissions & Policies

Policies

Students pursuing this minor must complete 18 credits in government with a minimum grade of C in each course. Eight credits of coursework must be unique to the minor. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 18

Core Courses

Code	Title	Credits
GOVT 103	Introduction to American Government (Mason Core)	3
GOVT 351	Administration in the Political System	3
Total Credits		6

Elective Courses

Code	Title	Credits
Select four elective courses from the following:		12
GOVT 35X	public administration	
GOVT 36X	public policy	
GOVT 45X	administration, law and procedures	
GOVT 46X	public policy issues	
GOVT 400	Issues in Political Analysis	
GOVT 480	Internship [1]	
Total Credits		12

[1] Only when relevant, with the prior written approval of the minor advisor.

Science, Technology, and Security Graduate Certificate

Banner Code: PP-CERG-STS

Academic Advising

560 Founders Hall
Arlington Campus

359 Research Hall
Fairfax Campus

Website: schar.gmu.edu

The Schar School of Policy and Government offers certificate programs in conjunction with its master's programs. Students already pursuing a master's degree in the school may, in most cases, after admission to a certificate program, earn an additional six credits (two courses) in Schar to receive a certificate in addition to the master's degree. The certificate in science, technology, and security provides an introduction to the intersection of science and security, covering topics such as the technology of CBRN weapons, proliferation, technical countermeasures, and the role of science and technology in the policy-making process.

The graduate certificate in science, technology, and security may be pursued on a part-time or full-time basis.

Admissions & Policies

Admissions

Applicants to all graduate programs must meet the admission standards and application requirements for graduate study as specified in Graduate Admission Policies. Participants must be admitted to a certificate program. Admission requirements are the same as those for the master's programs and may be found on the Schar admissions website (http://schar.gmu.edu/admissions/).

Policies

For policies governing all graduate certificates, see AP.6.8 Requirements for Graduate Certificates.

Termination from Program

Students admitted to a Schar program will be terminated from that program upon receiving one grade of F and are no longer eligible to take courses in the school. Per university regulation, students are terminated from the university after accumulating grades of F in two courses or 9 credits of unsatisfactory grades in graduate courses. For policies governing all graduate degrees, see Graduate Policies.

Requirements

Certificate Requirements

Total credits: 15

This certificate may be pursued on a full-or part-time basis.

Required Courses

Code	Title	Credits
BIOD 706	Nuclear, Biological, and Chemical Weapons Policy and Security	3
BIOD 760	National Security Technology and Policy	3
Total Credits		6

Electives

Code	Title	Credits
Select three electives from the following:		9
BIOD 604	Emerging Infectious Diseases I: Bacteria and Toxins	
BIOD 605	Emerging Infectious Diseases II: Viral Agents	
BIOD 709	Nonproliferation and Arms Control	
BIOD 725	Terrorism and Weapons of Mass Destruction	
BIOD 751	Biosurveillance	
Other course with prior written approval of program director		
Total Credits		9

Strategic Trade Graduate Certificate

Banner Code: PP-CERG-STTR

Academic Advising

560 Founders Hall
Arlington Campus

359 Research Hall
Fairfax Campus

Website: schar.gmu.edu

Admissions & Policies

Admissions

Applicants to all graduate programs must meet the admission standards and application requirements for graduate study as specified in Graduate Admission Policies. Participants must be admitted to a certificate program. Admission requirements are the same as those for the master's programs and may be found with Schar Admissions (http://schar.gmu.edu/admissions/).

Policies

For policies governing all graduate certificates, see AP.6.8 Requirements for Graduate Certificates.

Termination from Program

Students admitted to a Schar program will be terminated from the program upon receiving one grade of F and are no longer eligible to take courses in the school. Per university regulation, students are terminated from the university after accumulating grades of F in two courses or 9 credits of unsatisfactory grades in graduate courses. For policies governing all graduate degrees, see Graduate Policies.

Requirements

Certificate Requirements

Total credits: 15

This certificate may be pursued on a part-time basis only.

Required Courses

Code	Title	Credits
POGO 732	Strategic Trade Controls	3

Electives

Code	Title	Credits
Select 12 credits from the following courses:		12
BIOD 706	Nuclear, Biological, and Chemical Weapons Policy and Security	
BIOD 709	Nonproliferation and Arms Control	
BIOD 760	National Security Technology and Policy	
ITRN 504	Microeconomics and Trade Policy	
ITRN 603	Global Trade Relations	
ITRN 740	Trade and Regulatory Compliance	
POGO 750	Topics in Policy and Government [1]	
PUBP 759	National Security Law and Public Policy	
PUBP 763	Illicit Trade	
Total Credits		12

[1] The topic must be approved by an academic advisor.

Terrorism and Homeland Security Graduate Certificate

Banner Code: PP-CERG-TRHS

Academic Advising

560 Founders Hall
Arlington Campus

359 Research Hall
Fairfax Campus

Website: schar.gmu.edu

The Schar School offers certificate programs in conjunction with its master's programs. Students already pursuing a master's degree in the school may, in most cases, after admission to a certificate program, earn an additional six credits (two courses) in Schar to receive a certificate in addition to the master's degree. The certificate in Terrorism and Homeland Security is an interdisciplinary introduction to the phenomenon of modern terrorism and its implications for US domestic and foreign policy. It focuses on multidisciplinary analysis and holistic cross-sectorial approaches to long-term prevention of and response to terrorism.

The graduate certificate may only be pursued on a part-time basis.

Admissions & Policies

Admissions

Applicants to all graduate programs must meet the admission standards and application requirements for graduate study as specified in Graduate Admission Policies. Participants must be admitted to a certificate program. Admission requirements are the same as those for the master's programs and may be found on the Schar admissions website (http://schar.gmu.edu/admissions/).

Policies

For policies governing all graduate certificates, see AP.6.8 Requirements for Graduate Certificates.

Termination from Program

Students admitted to a Schar program will be terminated from that program upon receiving one grade of F and are no longer eligible to take courses in the school. Per university regulation, students are terminated from the university after accumulating grades of F in two courses or 9 credits of unsatisfactory grades in graduate courses. For policies governing all graduate degrees, see Graduate Policies.

Requirements

Certificate Requirements

Total credits: 15

This certificate may be pursued on a part-time basis only.

Required Courses

Code	Title	Credits
BIOD 722	Examining Terrorist Groups	3
BIOD 725	Terrorism and Weapons of Mass Destruction	3
Total Credits		6

Electives Related to Terrorism Analysis or Response

Code	Title	Credits
Select three courses from the following:		9
BIOD 609	Biodefense Strategy	
BIOD 610	Advanced Topics in Global Health Security	
BIOD 705	Intelligence: Theory and Practice	
BIOD 706	Nuclear, Biological, and Chemical Weapons Policy and Security	
BIOD 709	Nonproliferation and Arms Control	
BIOD 726	Food Security	
GOVT 744	Foundations of Security Studies	
GOVT 745	International Security	
GOVT 758	Homeland/Transportation Security Administration	
PUAD 630	Emergency Planning and Preparedness	
PUAD 631	Disaster Response Operations and Recovery	
PUAD 633	Hazard Mitigation Policy	
PUAD 635	Emergency Preparedness: Interagency Communication and Coordination	
PUAD 637	Managing Homeland Security	
PUAD 731	Homeland/Transportation Security Administration	
PUBP 742	Transportation Safety and Security	
PUBP 763	Illicit Trade	
PUBP 764	Transnational Crime and Corruption	
PUBP 777	Critical Infrastructure Protection: Policy and Practice	
CONF 501	Introduction to Conflict Analysis and Resolution	
GGS 590	Selected Topics in Geography [1]	
POGO 750	Topics in Policy and Government	
Other course with prior written approval of the advisor		
Total Credits		9

[1] Only when topic is Geography of Terrorism and Homeland Security.

Transportation Policy, Operations, and Logistics, MA

Banner Code: PP-MA-TPOL

Academic Advising

560 Founders Hall
Arlington Campus

359 Research Hall
Fairfax Campus

Website: schar.gmu.edu

The Master of Arts in Transportation Policy, Operations, and Logistics (TPOL) program is designed for students and practicing professionals engaged in planning, regulating, managing, and operating transportation facilities and services. Students obtain a working knowledge of the theory, policy, law, research, and practices required to effectively and efficiently supply and operate transportation facilities and services. They also learn to think critically and analytically about the problems and challenges in this field and communicate their analyses clearly and effectively through written and oral presentations.

Admissions & Policies

Admissions

Requirements

See Graduate Admission Policies for general information on graduate admission to George Mason University. Specific information on application requirements and deadlines may be found with Schar Admissions (http://schar.gmu.edu/admissions/).

Completed applications for fall and spring semesters are reviewed on a rolling basis, with late applications considered on a space-available

basis. Students may be admitted for nondegree study and apply a limited number of credits toward the master's degree should they choose to apply to the degree program later, in accordance with university policy.

Policies

For policies governing all graduate degrees, see Graduate Policies.

Termination from Program

Students admitted to a Schar program will be terminated from Schar upon receiving one grade of F and are no longer eligible to take courses in Schar. Per university regulation, students are terminated from the university after accumulating grades of F in two courses or 9 credits of unsatisfactory grades in graduate courses.

Requirements

Degree Requirements

Total credits: 34

Core Courses

Code	Title	Credits
PUBP 715	Introduction to Transportation Systems	3
PUBP 716	Transportation Operations and Logistics	3
PUBP 717	Analysis for Transportation Managers	4
PUBP 718	Transportation Planning and Policy	3
PUBP 721	Transportation Economics	3
PUBP 722	Practicum in Transportation Policy, Operations, and Logistics	3
PUBP 500	Theory and Practice in Public Policy	3
Three credits of		3
PUBP 503	Culture, Organization, and Technology	
Total Credits		25

Electives

Code	Title	Credits
Electives must be approved by the program director or academic advisor.		9
Total Credits		9

Urban and Suburban Studies Minor

Banner Code: USSD

Academic Advising

359 Research Hall
Fairfax Campus

Website: https://schar.gmu.edu/

This is an interdisciplinary minor offered with the College of Humanities and Social Sciences. Students may design their own focus by consulting with the minor advisor.

Faculty

McGrath (minor advisor)

Admissions & Policies

Policies

Students pursuing this minor must complete 18 credits of coursework with a minimum GPA of 2.00. Eight credits of coursework must be unique to the minor. For policies governing all minors, see the Undergraduate Policies section of this catalog.

Requirements

Minor Requirements

Total credits: 18

Core Courses

Code	Title	Credits
USST 301	Urban Growth in a Shrinking World	3
USST 390	Special Topics in Urban and Suburban Studies	3
USST 401	Seminar: The Future of Metropolitan America	3
Total Credits		9

Electives

Code	Title	Credits
Select three courses (9 credits) from a list of approved electives, which must be selected from more than one of the following categories: [1]		9
Environment and Culture		
Government and Policy		
Economy		
Total Credits		9

[1] Consult the director for a list of approved courses in each category.

Jimmy and Rosalynn Carter School for Peace and Conflict Resolution

Undergraduate Programs
Phone: 703-993-4165
E-mail: ugradcar@gmu.edu
Location: Northeast Module II, Room 110
Fairfax Campus

Graduate Programs
Phone: 703-993-1300
E-mail: carter@gmu.edu
Location: Vernon Smith Hall Suite 5000
Arlington Campus

Website: carterschool.gmu.edu

Administration

- Alpaslan Özerdem, Dean
- Julie Shedd, Associate Dean

- Thomas Flores, Graduate Programs Director
- Mara Schoeny, Undergraduate Program Director

College Code: CA

The Jimmy and Rosalynn Carter School for Peace and Conflict Resolution (Carter School) is committed to the development of theory, research, and practice that interrupt cycles of violence. The school community includes scholars, graduate and undergraduate students, alumni, practitioners, and organizations in the field of peace making and conflict resolution. Building on the strengths of our four research centers, field-based courses, and faculty with expertise from over a dozen disciplines, earning a degree at the Carter School will take you to the epicenter of conflict and prepare you for a meaningful career.

Recognized in 1997 as a Commonwealth Center of Excellence by the Virginia Legislature, the Carter School is committed to serving our students, faculty and staff, our local community, our global mission, and the field of Conflict Analysis and Resolution. The Carter School is a leader in George Mason University's commitment to be a University for the world, leveraging our long history of engagement in research and intervention in real world problems and our strength in preparing our graduates to productively engage in our local and global challenges. The Carter School strives to break down the silos of domestic and international conflict research and practice with teaching, research and practice that cut across levels of conflict.

Our world class faculty has published foundational texts on such topics as culture, social identity, narrative, religion, history and education, gender, and peacebuilding and consciousness. As scholar-practitioners, their projects and teaching engage them around the globe, including in the Middle East, Africa, the Caucasus, and here in the United States.

We offer a full complement of degree programs: Bachelor's, Master's, Graduate Certificate, and Doctoral degrees that develop students' ability to engage with theory and build their own practice.

Undergraduate Programs

Bachelor's Degrees and Minors

The Carter School offers students a BA, BS, and two minors in an interdisciplinary social science field with practical applications. The BA and BS are in Conflict Analysis and Resolution and the minors are in Conflict Analysis and Resolution or Sport and Conflict Resolution. The field of conflict analysis and resolution analyzes the sources and dynamics of conflict and the means for resolution toward lasting peace. Conflict resolution students take a series of core courses that provide a background in conflict theory, analysis, and conflict resolution skills. All conflict analysis and resolution majors also choose an area of concentration. There are six concentrations: Building Peace in Divided Societies, Global Engagement, Political and Social Action, Justice and Reconciliation, Interpersonal Dynamics, and Collaborative Leadership. After selecting a concentration, students choose courses from units throughout the university that relate to the concentration and their areas of interest. The major also requires three credits of field experience in the form of an internship, independent research, or study abroad.

Bachelor's/Accelerated Master's

Bachelor's/Accelerated Master's

The School offers qualified undergraduates the opportunity to apply to the accelerated master's degree program. If accepted, students will earn both an undergraduate and a graduate degree after satisfactory completion of 147 credits, sometimes within 5 years. More information about the degree options and application process may be found here (http://scar.gmu.edu/undergraduate/degrees/accelerated-masters/).

Graduate Programs

PhD Program

The PhD program in Conflict Analysis and Resolution, the first of its kind in the United States, provides advanced study for students in the fields of conflict and conflict resolution. Students are prepared for careers as researchers, theoreticians, and teachers in higher education, and as policy administrators, analysts, and consultants in the public and the private sectors. The program stresses a close link between knowledge of theory and process in the resolution of conflict. For this, training in the methods of research and analysis is emphasized. In addition, students are expected to obtain a background in a substantive area of conflict, usually related to the topic of the dissertation.

MS Program

The MS in Conflict Analysis and Resolution is a professional program that prepares students for practice and further academic work by integrating conflict analysis and resolution theory, research, and practical techniques. Participants study the theory, methods, and ethical perspectives of the field, and apply this knowledge in laboratory simulations and workshops, internships, and field practice. Graduates work in a variety of settings where conflict resolution is useful and interest groups are in conflict with current and emergent public policy. Examples are businesses, unions, government agencies, religious groups, court systems, educational institutions, community centers, international relief and development organizations, and consulting firms.

Graduate Certificates

The Carter School offers a graduate certificate in Mass Atrocity and Genocide Prevention and a graduate certificate in Conflict Analysis and Resolution. The Conflict Analysis and Resolution certificate offers four concentrations: Advanced Skills; Collaborative Community Action; Prevention and Reconstruction Contexts; and World Religions and Peacebuilding. Each of these 15-credit programs is specifically tailored to provide students with practical knowledge of conflict analysis and resolution relevant to their focused areas of work. Designed for mid-career professionals studying in a cohort environment, the certificate programs integrate conflict analysis and resolution theory, research, and practical technique. These programs use intensive course sessions, lecture, seminar, and applied mentored learning in real and simulated situations to prepare students to use conflict analysis and resolution approaches in their work in a variety of fields.

Faculty

School Faculty

Professors

Avruch, Cobb, Gopin, Hirsch, Korostelina, Rothbart, Rubenstein

Associate professors

Allen, Dwyer, Flores, Lyons, Maulden, Paczynska, Schoeny, Shedd, Simmons

Assistant professors

Chavis, Irvin-Erickson, Lopez Bunyasi, Romano

Visiting professors
De Janasz

Research professors
Price

Affiliate faculty
Baily, Baker, Boileua, Burt, Carton, Cioffi-Revilla, Dale, Deshmukh, Diamond, Dukes, Eby, Geller, Goldstone, Gusterson, Haddad, Hamrin, Heineman-Peiper, Johnston, Katz, Kelly, Kurtz, Mandaville, Mantz, McFerson, McGlinchey, Montville, Murdock, Oren, Osman, Paden, Pirio, Pruitt, Reinert, Schwartzstein, Scimecca, Seligmann, Sklarew, Thatchenkery, Thurston, Tolchin, Trencher, Waters, Wedel

Emeritus faculty
Cheldelin, Mitchell, Sluzki

Requirements & Policies

Policies
Students should become familiar with the university's general academic policies in addition to those specific to each academic unit. See the Academic Policies.

Policies specific to each academic program can be found listed in each program's catalog listing.

Appeal of Decisions
The policies of the Jimmy and Rosalynn Carter School for Peace and Conflict Resolution are designed to be consistent, equitable, and transparent. Our office strives to be thorough, timely, and open to answer any questions students may have regarding our decisions and/or the process through which they were reached. Students seeking clarification and explanation of the decision should request an appointment with the appropriate Program Director to discuss their concerns.

Students have the right to appeal decisions regarding requests for academic actions. This step can only be taken after a request to meet with the Program Director. Students who wish to pursue an appeal after this meeting should do so only if they can provide sufficient and compelling reasons for their initial claim to be reconsidered. Such reasons include newly available documentation, proof of an irregularity in procedures, proof of inequity or inconsistency, or consequences so serious that further review is warranted. A student's dissatisfaction or disagreement with the decision does not constitute sufficient reason for a decision to be changed. Appeals are first reviewed by the Program Director. If denied, the appeal is forwarded to the Dean. The decision of the Dean is the final decision of the School.

If the appeal is a case involving a school-level policy, the Dean serves as the final point of appeal. If the appeal involves university level policies, students must first complete the school-level appeal process before appealing to the Provost's Office.

Programs

- Conflict Analysis and Resolution Graduate Certificate
- Conflict Analysis and Resolution Minor
- Conflict Analysis and Resolution, BA
- Conflict Analysis and Resolution, BS
- Conflict Analysis and Resolution, MS
- Conflict Analysis and Resolution, PhD
- Contemporary Dispute Resolution Graduate Certificate
- Mass Atrocity and Genocide Prevention Graduate Certificate
- Organizational Conflict Resolution Minor
- Sport and Conflict Resolution Minor (TCS)

Conflict Analysis and Resolution Graduate Certificate

Banner Code: CA-CERG-CONF

Academic Advising

Phone: 703-993-1300
Email: carter@gmu.edu
Website: https://carterschool.gmu.edu/

This 15-credit certificate is specifically tailored to provide students with practical knowledge of conflict analysis and resolution relevant to their focused areas of work. Designed for mid-career professionals studying in a cohort environment, the certificate programs integrate conflict analysis and resolution theory, research, and practical technique. These programs use intensive course sessions, lecture, seminar, and applied mentored learning in real and simulated situations to prepare students to use conflict analysis and resolution approaches in their work in a variety of fields. Students choose one of four concentrations.

This certificate may only be pursued on a part-time basis, unless a student is concurrently enrolled in another degree program or takes additional courses over those required for the certificate program. Some courses are offered only in intensive Saturday and Sunday formats or online.

Concentrations
Advanced Skills
The Advanced Skills concentration covers conflict resolution skills in challenging conflicts and considers innovative and emerging practices. This concentration considers the complexity of conflict in a variety of different settings and prepares students to design and implement interventions for difficult conflicts. The concentration emphasizes skill development.

Prevention and Reconstruction Contexts
The Prevention and Stabilization Contexts concentration augments development, defense, security, or humanitarian aid work experience with the theories and skills of conflict analysis and resolution for designing, implementing, and evaluating conflict-sensitive initiatives internationally in areas of potential violence and post-conflict reconstruction and stabilization. Considers cross-sectoral approaches to long-term violence prevention and constructive conflict resolution.

World Religions and Peacebuilding
The World Religions and Peacebuilding concentration considers strategies to reduce global violence and terrorism by incorporating the best moral practices of religious communities into policy planning, diplomacy, civil society building and democratization. Covers strategies

to elicit moderate moral religious expression in conflict regions to strengthen civil society and democracy.

Collaborative Community Action

All communities have conflicts, some much more severe than others, often driven by deep racial and ethnic divisions, economic inequity, complex intractable problems, and environmental degradation. Many community conflicts are triggered by changes, whether a new law or new development. These are among the many issues that effective, inclusive, collaborative community processes can help address. This concentration incorporates theory and skills needed to identify concerns and design collaborative processes that employ a wide range of design options ranging from small group dialogue to facilitated consensus building and online engagement to thousand person town meetings.

Admissions & Policies

Admissions

Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions. Applicants to this certificate must submit an undergraduate transcript showing completion of an undergraduate degree or equivalent, a cover letter specifying interest in the program, two letters of recommendation, and a curriculum vitae or résumé indicating relevant work experience.

In addition, prior work experience in areas related to the chosen graduate certificate is desirable. GRE or other standardized test scores are not required but may be submitted. The TOEFL is required of international students. For more information, see Admission of International Students.

Policies

For policies governing all graduate certificates, see AP.6.8 Requirements for Graduate Certificates.

Class Schedule

Please note that some classes for this graduate certificate are offered only in Saturday and Sunday sessions. Please check the Schedule of Classes for each term to identify course meeting dates, and specific add/drop dates for these partial semester courses.

Requirements

Certificate Requirements

Total credits: 15

This certificate may be pursued on a full-or part-time basis.

Core Courses

Code	Title	Credits
CONF 501	Introduction to Conflict Analysis and Resolution	3
CONF 668	Applied Integration for Graduate Certificates	3
Total Credits		6

Students must also select one concentration and complete all requirements therein.

Advanced Skills Concentration (CARA)

Code	Title	Credits
CONF 650	Conflict Analysis and Resolution Advanced Skills	3
CONF 660	Conflict Assessment and Program Evaluation	3
Select 3 credits from the following: [1]		3
CONF 657	Facilitation Skills	
CONF 658	Diversity and Difference in Conflict Analysis and Resolution	
CONF 659	Leadership in Conflict Analysis and Resolution	
CONF 665	Special Topics in Conflict Analysis and Resolution	
CONF 704	Narrative Approaches to Conflict Analysis	
CONF 741	Negotiating in Complex Systems	
CONF 755	Transforming Conflict through Insight	
Total Credits		9

[1] Application of any other course toward fulfillment of the elective requirement must be approved by the Certificate Program Director.

Collaborative Community Action Concentration (CCA)

Code	Title	Credits
CONF 651	Collaborative Community Action Participatory Governance	3
CONF 657	Facilitation Skills	3
Select 3 credits from the following: [1]		3
CONF 658	Diversity and Difference in Conflict Analysis and Resolution	
CONF 659	Leadership in Conflict Analysis and Resolution	
CONF 660	Conflict Assessment and Program Evaluation	
CONF 665	Special Topics in Conflict Analysis and Resolution	
CONF 720	Ethnic and Cultural Factors in Conflict Resolution	
CONF 721	Conflict and Race	
CONF 723	Conflict and Gender	
CONF 733	Law and Justice from a Conflict Perspective	
Total Credits		9

[1] Application of any other course toward fulfillment of the elective requirement must be approved by the Certificate Program Director.

Prevention and Reconstruction Contexts Concentration (PRC)

Code	Title	Credits
CONF 652	Conflict Analysis and Resolution for Prevention, Reconstruction, and Stabilization Contexts	3

CONF 660	Conflict Assessment and Program Evaluation	3
Select 3 credits from the following: [1]		3
CONF 657	Facilitation Skills	
CONF 658	Diversity and Difference in Conflict Analysis and Resolution	
CONF 659	Leadership in Conflict Analysis and Resolution	
CONF 665	Special Topics in Conflict Analysis and Resolution	
CONF 732	Conflict in Development	
CONF 733	Law and Justice from a Conflict Perspective	
CONF 752	Dynamics of Post-War Peacebuilding	
Total Credits		9

[1] Application of any other course toward fulfillment of the elective requirement must be approved by the Certificate Program Director.

World Religions and Peacebuilding Concentration (WRP)

Code	Title	Credits
CONF 653	World Religions, Diplomacy, and Conflict Resolution	3
CONF 660	Conflict Assessment and Program Evaluation	3
Select 3 credits from the following: [1]		3
CONF 657	Facilitation Skills	
CONF 658	Diversity and Difference in Conflict Analysis and Resolution	
CONF 659	Leadership in Conflict Analysis and Resolution	
CONF 665	Special Topics in Conflict Analysis and Resolution	
Total Credits		9

[1] Application of any other course toward fulfillment of the elective requirement must be approved by the Certificate Program Director.

Conflict Analysis and Resolution Minor

Banner Code: CONF

Academic Advising

Phone: 703-993-4165
Email: ugradcar@gmu.edu
Website: https://carterschool.gmu.edu/

This minor provides students with the theory and skills to examine how and why conflicts occur and what can be done to mitigate their destructive aspects while reinforcing their constructive potential. Courses in the minor highlight relational, social, structural, and cultural factors that influence conflict and its resolution. This minor engages students in understanding the complexity of contemporary issues and problems and can be applied to many fields of study or professional careers.

Advising

Advisors help students create a course of study that meets their interests and career goals. All majors and minors are strongly encouraged to meet regularly with an academic advisor from the School who will help students develop and follow a coherent plan of study and complete the degree in a timely manner.

Admissions & Policies

Admissions

This minor is open to all undergraduate students.

Policies

Students pursuing this minor must complete 15 credits of coursework in conflict analysis and resolution with a minimum GPA of 2.00. Eight credits of coursework must be unique to the minor. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 15

Required Core Courses

Code	Title	Credits
CONF 101	Conflict and Our World (Mason Core)	3
or CONF 210	Theories of Conflict Analysis and Resolution	
CONF 300	Conflict Resolution Techniques and Practice	3
Select one from the following:		3
CONF 302	Culture, Identity, and Conflict	
CONF 320	Interpersonal Conflict Analysis and Resolution	
CONF 330	Community, Group, and Organizational Conflict Analysis and Resolution	
CONF 340	Global Conflict Analysis and Resolution (Mason Core)	
Total Credits		9

CONF Selective Courses

Code	Title	Credits
Select six conflict analysis and resolution (CONF) credits from core, elective and special topic courses		6
Total Credits		6

Conflict Analysis and Resolution, BA

Banner Code: CA-BA-CONF

Academic Advising

Phone: 703-993-4165
Email: ugradcar@gmu.edu
Website: https://carterschool.gmu.edu/

The world is becoming increasingly connected and the ability to create and maintain cross-cultural connections is more important than ever. As the effects of violence and conflict are felt throughout the global community, we are seeing more and more opportunities for collaboration, problem solving, and peacebuilding in local communities and across international barriers. To prepare our students to make cross-cultural connections, Bachelor's of Arts in Conflict Analysis and Resolution students must demonstrate intermediate level proficiency in a foreign language.

All conflict analysis and resolution majors choose an area of concentration:

- Building Peace in Divided Societies
- Global Engagement
- Political and Social Action
- Justice and Reconciliation
- Interpersonal Dynamics
- Collaborative Leadership
- Environmental Conflict and Collaboration

Advising

Advisors help students create an interdisciplinary course of study that meets their interests and career goals. All majors are strongly encouraged to meet regularly with an academic advisor from the School who will help students develop and follow a coherent plan of study and complete the degree in a timely manner.

Admissions & Policies

Policies

For policies governing all undergraduate degrees, see AP.5 Undergraduate Policies.

Major Coursework Grade Requirement

Students cannot use more than 12 credits of coursework within the major with a C- or D grade to count towards the Conflict Analysis and Resolution, BA. If a student receives C- or D grades in excess of the allowed number, they may retake courses to meet the major coursework grade requirement for graduation. Students taking a graduate course for undergraduate credit must achieve a grade of B- or higher for graduate course credits to count towards their undergraduate degree.

Transfer Students

For policies governing admission and requirements for students transferring from another college or university, see Undergraduate Admission Policies - Transfer.

Admitted and enrolled transfer students who have completed an AA, AS, or AA&S degree from the Virginia Community College System (VCCS) and have been offered admission to Mason by the Office of Admissions may be eligible for a waiver of all George Mason University's Mason Core requirements in accordance with the Guaranteed Admission Agreement. Students eligible for this waiver are still required by the university to complete ENGH 302 Advanced Composition (Mason Core) and a synthesis course.

Transfer students who have been offered admission under the terms of the Guaranteed Admission Agreement and are pursuing a BA are considered to have met all school requirements except for proficiency in a foreign language.

Students with a bachelor's degree from an accredited institution who are pursuing a BA in this school are considered to have met all school requirements except for proficiency in a foreign language.

Requirements

Degree Requirements

Total credits: 120

Students must fulfill all requirements for bachelor's degrees as stated in Academic Policies including all Mason Core requirements. Students majoring in Conflict Analysis and Resolution must also complete the college-level requirements for foreign language proficiency as well as 51 major requirement credits for the BA degree.

Students pursuing a double major/degree with a program outside of the Carter School undergraduate program will be expected to fulfill all of the Mason Core and college requirements necessary to complete the second major. Please check with the second major department concerning additional requirements.

Required Core Courses

Code	Title	Credits
CONF 101	Conflict and Our World (Mason Core)	3
CONF 210	Theories of Conflict Analysis and Resolution	3
CONF 300	Conflict Resolution Techniques and Practice	3
CONF 301	Research and Inquiry in Conflict Resolution	3
CONF 302	Culture, Identity, and Conflict	3
CONF 320	Interpersonal Conflict Analysis and Resolution	3
CONF 330	Community, Group, and Organizational Conflict Analysis and Resolution	3
CONF 340	Global Conflict Analysis and Resolution (Mason Core)	3
CONF 490	RS: Integration (Mason Core)	3
Total Credits		27

Field Experience

Students can choose to fulfill this requirement through an internship, service learning, study abroad, or independent study.

Students may not be approved for field experience until they have earned at least 30 credits. It is recommended that students complete at least nine credits of conflict coursework before applying for field experience credit. Prior departmental approval is *required* for students to receive credit through any field experience options. Students interested in trips with the Carter School can find information here (https://scar.gmu.edu/academics/undergraduate/study-abroad/). Students interested in study abroad through the Global Education Office can find information here (https://studyabroad.gmu.edu). Please contact a Carter School advisor with questions or for information on the opportunities, policies, and procedures for field experience credit.

Code	Title	Credits
Select a minimum of three credits from the following:		3
CONF 370	Internship Field Experience	
CONF 375	Special Programs Field Experience	
CONF 385	International Field Experience	
CONF 499	Independent Research in Conflict Analysis and Resolution	
Total Credits		3

Skills and Practice

This three credit requirement can be fulfilled by taking:

1. an additional 3 credits from a second field experience, OR
2. a foreign language course at the 250 level or higher, OR
3. one of the 3 credit courses or three of the 1 credit courses listed below:

Code	Title	Credits
Select one of these 3 credit courses:		3
CONF 325	Dialogue and Difference	
CONF 398	Special Topics in Advanced Techniques and Practices	
CONF 425	Mediating Conflict	
CONF 499	Independent Research in Conflict Analysis and Resolution	
Or select three of these 1 credit skills courses:		
CONF 310	Special Topics in Practice	
CONF 314	Career Development Seminar	
CONF 331	Simulation in Community and Organizational Conflict Resolution	
CONF 341	Simulation in Global Conflict Resolution	
Total Credits		3

Courses may NOT double count for the concentration requirement and the skills and practice requirement.

Concentrations

There are eight concentrations.

Concentrations

- Concentration in Building Peace in Divided Societies (BPDS)
- Concentration in Global Engagement (GLBE)
- Concentration in Political and Social Action (PSA)
- Concentration in Justice and Reconciliation (JRCN)
- Concentration in Interpersonal Dynamics (INTD)
- Concentration in Collaborative Leadership (CLDR)
- Concentration in Environmental Conflict and Collaboration (EVCC)
- Individualized Concentration (IND)

To fulfill the concentration requirement students select six concentration courses. Four of those six courses must be taken from within their chosen concentration. The remaining two concentration courses may be taken from any of the concentration course lists. Special topics courses relevant to the concentration and/or courses that provide regional expertise can be substituted with departmental approval. Students are encouraged to check special topics courses each semester and think creatively about which courses support learning in their chosen concentration. At least two of the six concentration courses must be CONF courses taken in residence. CONF 397 Study Abroad Special Topics and courses transferred from another institution do not fulfill this requirement. Courses may not double count for the concentration requirement and the skills and practice requirement.

Concentration in Building Peace in Divided Societies (BPDS)

Focuses on how divided societies with a history of conflict seek to transform relationships and situations of violence and injustice. Examines communities and societies that have experienced conflict and how individuals and groups build peace locally and globally.

Code	Title	Credits
Select at least four of the six concentration courses from the following:		12
CONF 325	Dialogue and Difference	
CONF 335	Justice and Reconciliation	
CONF 392	Youth and Conflict	
CONF 393	Violence: Causes, Dynamics Alternatives	
CONF 435	Building Peace in Divided Societies	
COMM 305	Foundations of Intercultural Communication (Mason Core)	
CULT 320	Globalization and Culture	
ECON 360	Economics of Developing Areas (Mason Core)	
GGS 307	Geographic Approaches for Sustainable Development	
GOVT 342	Diplomacy	
HIST 373	The Civil War and Reconstruction	
INTS 305	Conflict Resolution and Transformation	
SOCI 320	Globalization and Social Change (Mason Core)	
Total Credits		12

Concentration in Global Engagement (GLBE)

Focuses on studying the dynamics and impact of global conflict resolution. Examines domestic and international dimensions of security, state-to-state conflict, internal wars, terrorism, migration, negotiation, and diplomacy. Explores what can be done to reduce violent conflict and increase peace and security.

Code	Title	Credits
Select at least four of the six concentration courses from the following:		12
CONF 335	Justice and Reconciliation	
CONF 345	Social Dynamics of Terrorism, Security, and Justice	
CRIM 405	Law and Justice around the World (Mason Core)	
ECON 385	International Economic Policy	
EVPP 337	Environmental Policy Making in Developing Countries	
GGS 301	Political Geography (Mason Core)	
GGS 307	Geographic Approaches for Sustainable Development	
GOVT 322	International Relations Theory	
GOVT 342	Diplomacy	
GOVT 446	International Law and Organization	

INTS 416	Refugee and Internal Displacement (Mason Core)	
SOCI 388	Violence and Religion	
Total Credits		12

Concentration in Political and Social Action (PSA)

Focuses on the ways that people organize themselves to effect change in their societies. This concentration explores social action, social organization, social movements, and civil resistance to analyze and investigate the role of constructive conflict.

Code	Title	Credits
Select at least four of the six concentration courses from the following:		12
CONF 393	Violence: Causes, Dynamics Alternatives	
CONF 394	Human Rights and Inequality	
COMM 326	Rhetoric of Social Movements and Political Controversy (Mason Core)	
ECON 309	Economic Problems and Public Policies	
GOVT 301	Public Law and the Judicial Process	
GOVT 364	Public Policy Making	
INTS 304	Social Movements and Community Activism (Mason Core)	
INTS 334	Environmental Justice (Mason Core)	
INTS 362	Social Justice and Human Rights (Mason Core)	
PSYC 427	Community Engagement for Social Change (Mason Core)	
SOCI 307	Social Movements and Political Protest	
SOCI 340	Power, Politics, and Society	
SOCI 352	Social Problems and Solutions (Mason Core)	
Total Credits		12

Concentration in Justice and Reconciliation (JRCN)

Focuses on the relationships between human rights, justice, and conflict resolution. Encompasses a spectrum of coursework including legal dimensions of human rights, trauma, memory, healing, conflict transformation, and forms of restorative justice.

Code	Title	Credits
Select four of the six concentration courses from the following:		12
CONF 335	Justice and Reconciliation	
CONF 394	Human Rights and Inequality	
CONF 435	Building Peace in Divided Societies	
CRIM 307	Social Inequality, Crime, and Justice	
CRIM 404	Crime Victims and Victimization	
CRIM 406	Family Law and the Justice System	
INTS 300	Law and Justice (Mason Core)	
INTS 314	Conflict, Trauma and Healing	
INTS 362	Social Justice and Human Rights (Mason Core)	
SOCI 308	Race and Ethnicity in a Changing World (Mason Core)	
SOCI 355	Social Inequality (Mason Core)	
Total Credits		12

Concentration in Interpersonal Dynamics (INTD)

Focuses on the dynamics of social interaction that lead to interpersonal conflict and the processes and skills that support the transformation of these conflicts. Issues examined include intercultural communication, psychology of groups, family relationships, and other dimensions of human relations.

Code	Title	Credits
Select four of the six concentration courses from the following:		12
CONF 325	Dialogue and Difference	
CONF 392	Youth and Conflict	
CONF 425	Mediating Conflict	
COMM 301	Relational Communication Theory	
COMM 305	Foundations of Intercultural Communication (Mason Core)	
COMM 401	Interpersonal Communication in the Workplace	
INTS 317	Issues in Family Relationships (Mason Core)	
PSYC 231	Social Psychology (Mason Core)	
PSYC 379	Applied Cross-Cultural Psychology (Mason Core)	
PSYC 417	Science of Well Being	
PSYC 467	The Psychology of Working in Groups and Teams	
SOCI 309	Marriage, Families, and Intimate Life	
SOCI 315	Contemporary Gender Relations (Mason Core)	
Total Credits		12

Concentration in Collaborative Leadership (CLDR)

Focuses on improving the capacity of leaders to work with conflict and manage change. Includes topics in conflict transformation, mediation, dialogue, and organizational leadership.

Code	Title	Credits
Select four of the six concentration courses from the following:		12
CONF 325	Dialogue and Difference	
CONF 326	Negotiation	
CONF 425	Mediating Conflict	
COMM 201	Small Group Communication	
COMM 335	Organizational Communication	
GOVT 351	Administration in the Political System	
INTS 331	The Nonprofit Sector (Mason Core)	
INTS 404	Ethics and Leadership	
INTS 435	Leadership in a Changing Environment	
MBUS 301	Managing People and Organizations in a Global Economy	
PRLS 316	Leadership and Outdoor Education	
PSYC 333	Industrial and Organizational Psychology	

PSYC 335	Psychology of Creativity and Innovation	
Total Credits		12

Concentration in Environmental Conflict and Collaboration (EVCC)

Focuses on using a variety of conflict resolution processes to address environmental issues. Examines how communities and societies are dealing with environmental issues and prepares students with process skills to promote collaborative solutions.

Code	Title	Credits
Select at least four of the six concentration courses from the following:		12
CONF 325	Dialogue and Difference	
CONF 326	Negotiation	
CONF 329	Community Engagement and Collaborative Problem Solving	
CONF 425	Mediating Conflict	
ANTH 370	Environment and Culture	
CONS 410	Human Dimensions in Conservation (Mason Core)	
CONS 490	RS: Integrated Conservation Strategies (Mason Core)	
EVPP 336	Human Dimensions of the Environment	
EVPP 337	Environmental Policy Making in Developing Countries	
EVPP 436	The Human Dimensions of Global Climate Change	
GGS 307	Geographic Approaches for Sustainable Development	
INTS 334	Environmental Justice (Mason Core)	
Total Credits		12

Individualized Concentration (IND)

Students interested in creating their own concentration can work with an advisor to decide upon a set of at least six courses that form a cohesive theme and will fulfill the requirements of the BA in Conflict Analysis and Resolution. Individualized concentrations must be approved by the Director of the Undergraduate Program

BA in Conflict Analysis and Resolution without Concentration

Students may opt to complete their major in Conflict Analysis and Resolution without a concentration. The department offers many elective courses that allow students to deepen their understanding of theory and practice within the field of Conflict Resolution. Students may choose this option and complete the conflict resolution Core and 18 credits of conflict coursework selected from the following. These credits may not be used to also fulfill the skills and practice or field experience requirements.

Code	Title	Credits
Select 18 credits from the following:		18
CONF 325	Dialogue and Difference	
CONF 326	Negotiation	
CONF 335	Justice and Reconciliation	
CONF 345	Social Dynamics of Terrorism, Security, and Justice	
CONF 375	Special Programs Field Experience	
CONF 392	Youth and Conflict	
CONF 393	Violence: Causes, Dynamics Alternatives	
CONF 394	Human Rights and Inequality	
CONF 398	Special Topics in Advanced Techniques and Practices	
CONF 399	Special Topics in Conflict Analysis and Resolution	
CONF 425	Mediating Conflict	
CONF 435	Building Peace in Divided Societies	
CONF 499	Independent Research in Conflict Analysis and Resolution	
Total Credits		18

Foreign Language Proficiency

Students must demonstrate intermediate-level proficiency in one foreign language. This requirement may be fulfilled by successfully completing a foreign language course numbered 202 or higher. Students may also fulfill this requirement by achieving a satisfactory score on a university approved foreign language proficiency test. Students who are already proficient in a second language may be eligible for a waiver of this requirement.

Writing-Intensive Requirement

All Mason students are required to complete at least one course designated as "writing intensive" in their major at the 300-level or above. CONF 302 Culture, Identity, and Conflict has been designated "writing intensive."

Electives

Code	Title	Credits
Remaining credits needed to bring the degree total to 120 may be fulfilled with general elective courses. [1,2]		

1 Up to 3 credits of 100 level Recreation (RECR) courses may be taken as general elective credits.

2 Only Military Science (MLSC) courses at the 400-level can be used for credit for a degree in the School; credit for other MLSC courses may not be applied toward a degree in the School.

Mason Core

Some Mason Core requirements may already be fulfilled by the major requirements listed above. Students are strongly encouraged to consult their advisors to ensure they fulfill all remaining Mason Core requirements.

Code	Title	Credits
Foundation Requirements		
Written Communication (ENGH 101)		3
Oral Communication		3
Quantitative Reasoning		3
Information Technology and Computing		3
Exploration Requirements		
Arts		3
Global Understanding		3
Literature		3
Natural Science		7
Social and Behavioral Sciences		3
Western Civilization/World History		3

Integration Requirements	
Written Communications (ENGH 302)	3
Writing-Intensive [1]	3
Synthesis/Capstone [2]	3
Total Credits	40

[1] Most programs include the writing-intensive course designated for the major as part of the major requirements; this course is therefore not counted towards the total required for Mason Core.

[2] Minimum 3 credits required.

4-Year Plan

Bachelor of Arts in Conflict Analysis and Resolution Sample Plan of Study

The sample plan below is a recommended sequencing of courses based on pre-requisites and scheduling. This may not fit every student's needs and is a guideline, not a requirement. Students should confirm major requirements with their academic advisor and with PatriotWeb Degree Evaluation to ensure they enroll in the proper courses and are on track to graduate.

First Year

Fall Semester	Credits	Spring Semester	Credits
CONF 101	3	CONF 210	3
Mason Core (ENGH or COMM)	3	Foreign Language Intermediate Course I	3
Mason Core - Quantitative Reasoning	3	Mason Core- World History or Western Civilization	3
Foreign Language Introduction Course	6	Mason Core- Natural Science non-lab	3
UNIV 100	1	Mason Core (ENGH or COMM)	3
	16		15

Second Year

Fall Semester	Credits	Spring Semester	Credits
CONF 300	3	CONF 320	3
CONF 314	1	Concentration Course #1	3
Mason Core- Fine Arts	3	Mason Core- Literature	3
Mason Core- Natural Science with Lab	4	Mason Core- Information Technology	3
CONF 310	1	Minor Course	3
Foreign Language Intermediate Course II	3		
	15		15

Third Year

Fall Semester	Credits	Spring Semester	Credits
CONF 330	3	CONF 340	3
Mason Core- ENGH 302: Advanced Composition	3	CONF 301	3
Concentration Course #2	3	Concentration Course #3	3
Minor Course	3	Concentration Course #4	3
Elective	3	Elective	3
	15		15

Fourth Year

Fall Semester	Credits	Spring Semester	Credits
CONF 302	3	CONF 490	3
Field Experience	3	CONF 310	1
Concentration #5	3	Concentration #6	3
Minor Course	3	Minor Course	3
Skill Based Elective	3	Electives	4
	15		14

Total Credits 120

Detailed four year plans and degree planning checklists can be found at https://advising.gmu.edu/current-student/majors-at-mason/.

Accelerated Master's

Conflict Analysis and Resolution, BA or BS/Conflict Analysis and Resolution, Accelerated MS

Overview

This accelerated Master's option is designed for highly qualified and motivated undergraduate students that have completed at least 6 credit hours of CONF coursework at the time of application. If accepted, students may take up to 12 credits of graduate coursework before undergraduate degree conferral and will be able to earn an undergraduate degree and the Conflict Analysis and Resolution, MS after satisfactory completion of at least 147 credits. The time period for the combined program is typically five years. It provides a streamlined MS application process with no additional application fee.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies.

Application Requirements

For specific application requirements and information for the accelerated Conflict Analysis and Resolution, MS, see Eligibility, Policies, and Deadlines (http://scar.gmu.edu/undergraduate/degrees/accelerated-masters/). Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions.

Students must have a minimum undergraduate cumulative GPA of 3.25 at the time of application.

Accelerated Master's Requirements

- During the *first semester* in *senior status* admitted students may take up to 6 credits (1-2 classes) that will count towards both their undergraduate AND graduate degrees. During the *second semester of senior status*, students may take up to 6 credits (1-2 classes) that will count towards the graduate degree only.
- Students must begin their master's program the semester immediately following conferral of the undergraduate degree and will be expected to complete all remaining graduate program requirements within five years.
- See the program website (https://scar.gmu.edu/academics/undergraduate/accelerated-masters/) for additional information.

Accelerated MS Requirements

- No grade below a B is permitted for any undergraduate or graduate CONF course taken after application to the accelerated master's program until completion of the undergraduate program.
- If a student receives a grade below a B in any CONF course after acceptance in the program, they will not be allowed to continue on to the master's program. Students that have received a grade below a B in a CONF course after acceptance into the program may re-apply to the master's program after conferral of the undergraduate degree; however, re-application does not guarantee admission.
- At the time of the undergraduate degree conferral, students' GPAs must meet the standard required for admission to the master's degree.
- Students may not take more than 12 credits a semester if taking two graduate courses or 15 credits a semester if taking one graduate course.

Conflict Analysis and Resolution, BS

Banner Code: CA-BS-CONF

Academic Advising

Phone: 703-993-4165
Email: ugradcar@gmu.edu
Website: https://carterschool.gmu.edu/

Analytical skills and techniques are critical to solving the world's toughest problems. In order to solve conflict we must first understand it. Critical thinking and research skills are the focus of our Bachelor of Science program and are in demand by employers of all sectors. Students pursuing a Bachelor's of Science in Conflict Analysis and Resolution develop research skills and have the opportunity to gain experience designing surveys, conducting interviews, analyzing statistics, and organizing data.

All conflict analysis and resolution majors choose an area of concentration:

- Building Peace in Divided Societies
- Global Engagement
- Political and Social Action
- Justice and Reconciliation
- Interpersonal Dynamics
- Collaborative Leadership
- Environmental Conflict and Collaboration

Advising

Advisors help students create an interdisciplinary course of study that meets their interests and career goals. All majors are strongly encouraged to meet regularly with an academic advisor from the School who will help students develop and follow a coherent plan of study and complete the degree in a timely manner.

Admissions & Policies

Policies

For policies governing all undergraduate degrees, see AP.5 Undergraduate Policies.

Major Coursework Grade Requirement

Students cannot use more than 12 credits of coursework within the major with a C- or D grade to count towards the Conflict Analysis and Resolution, BS. If a student receives C- or D grades in excess of the allowed number, they may retake courses to meet the major coursework grade requirement for graduation. Students taking a graduate course for undergraduate credit must achieve a grade of B- or higher for graduate course credits to count towards their undergraduate degree.

Transfer Students

For policies governing admission and requirements for students transferring from another college or university, see Undergraduate Admission Policies - Transfer.

Admitted and enrolled transfer students who have completed an AA, AS, or AA&S degree from the Virginia Community College System (VCCS) and have been offered admission to Mason by the Office of Admissions may be eligible for a waiver of all George Mason University's Mason Core requirements in accordance with the Guaranteed Admission Agreement. Students eligible for this waiver are still required by the university to complete ENGH 302 Advanced Composition (Mason Core) and a synthesis course.

Requirements

Degree Requirements

Total credits: 120

Students must fulfill all requirements for bachelor's degrees as stated in Academic Policies including all Mason Core requirements. Carter School

majors must complete the 6 credit college-level requirement in research methods as well as 51 major requirement credits for the BS degree.

Students pursuing a double major/degree with a program outside of the Carter School undergraduate program will be expected to fulfill all of the Mason Core and college requirements necessary to complete the second major. Please check with the second major department concerning additional requirements.

Required Core Courses

Code	Title	Credits
CONF 101	Conflict and Our World (Mason Core)	3
CONF 210	Theories of Conflict Analysis and Resolution	3
CONF 300	Conflict Resolution Techniques and Practice	3
CONF 301	Research and Inquiry in Conflict Resolution	3
CONF 302	Culture, Identity, and Conflict	3
CONF 320	Interpersonal Conflict Analysis and Resolution	3
CONF 330	Community, Group, and Organizational Conflict Analysis and Resolution	3
CONF 340	Global Conflict Analysis and Resolution (Mason Core)	3
CONF 490	RS: Integration (Mason Core)	3
Total Credits		27

Field Experience

Students can choose to fulfill this requirement through an internship, service learning, study abroad, or independent study.

Students may not be approved for field experience until they have earned at least 30 credits. It is recommended that students complete at least 9 credits of conflict coursework before applying for field experience credit. Prior departmental approval is *required* for students to receive credit through any field experience options. Students interested in trips with the Carter School can find information here (https://scar.gmu.edu/field-experience/). Students interested in study abroad through the Global Education Office can find information here (http://studyabroad.gmu.edu). Please contact a Carter School advisor with questions or for information on the opportunities, policies, and procedures for field experience credit.

Code	Title	Credits
Select a minimum of three credits from the following:		3
CONF 370	Internship Field Experience	
CONF 375	Special Programs Field Experience	
CONF 385	International Field Experience	
CONF 499	Independent Research in Conflict Analysis and Resolution	
Total Credits		3

Skills and Practice

This three credit requirement can be fulfilled by taking

1. an additional 3 credits from a second field experience, OR
2. a foreign language course at the 250 level or higher, OR
3. one 3 credit course or three 1 credit courses from the following:

Code	Title	Credits
Select one of these 3 credit courses:		3
CONF 325	Dialogue and Difference	
CONF 398	Special Topics in Advanced Techniques and Practices	
CONF 425	Mediating Conflict	
CONF 499	Independent Research in Conflict Analysis and Resolution	
Or select 3 of these 1 credit skills courses:		
CONF 310	Special Topics in Practice	
CONF 314	Career Development Seminar	
CONF 331	Simulation in Community and Organizational Conflict Resolution	
CONF 341	Simulation in Global Conflict Resolution	
Total Credits		3

Courses may NOT double count for the concentration requirement and the skills and practice requirement.

Research Methods

Code	Title	Credits
Select at least six credits from the following:		6
ANTH 380	Language and Culture	
ANTH 450	Qualitative Methods: Nonstatistical Approaches in Culture and Social Research	
CRIM 315	Research Methods and Analysis in Criminology	
ENGH 318	Introduction to Cultural Studies	
GOVT 300	Research Methods and Analysis	
GOVT 366	Public Policy Analysis	
HIST 300	Introduction to Historical Method (Mason Core)	
HIST 390	The Digital Past	
PHIL 357	Philosophy of the Social Sciences	
PSYC 300	Statistics in Psychology	
PSYC 301	Research Methods in Psychology	
SOCI 303	Methods and Logic of Inquiry	
SOCI 313	Statistics for the Behavioral Sciences (Mason Core)	
SOCI 410	Social Surveys and Attitude and Opinion Measurements	
STAT 250	Introductory Statistics I (Mason Core)	
STAT 362	Introduction to Computer Statistical Packages	
STAT 474	Introduction to Survey Sampling	
WMST 410	Feminist Approaches to Social Research	
Total Credits		6

Concentrations

There are eight concentrations:

- Concentration in Building Peace in Divided Societies (BPDS)
- Concentration in Global Engagement (GLBE)
- Concentration in Political and Social Action (PSA)
- Concentration in Justice and Reconciliation (JRCN)
- Concentration in Interpersonal Dynamics (INTD)
- Concentration in Collaborative Leadership (CLDR)
- Concentration in Environmental Conflict and Collaboration (EVCC)
- Individualized (IND)

To fulfill the concentration requirement students select six concentration courses. Four of those six courses must be taken from within their chosen concentration. The remaining two concentration courses may be taken from any of the concentration course lists. Special topics courses relevant to the concentration and/or courses that provide regional expertise can be substituted with departmental approval. Students are encouraged to check special topics courses each semester and think creatively about the applicability of courses that support learning in their chosen concentration. At least two of the six concentration courses must be CONF courses taken in residence. CONF 397 Study Abroad Special Topics and courses transferred from another institution do not fulfill this requirement. Courses may not double count for the concentration requirement and the skills and practice requirement.

Concentration in Building Peace in Divided Societies (BPDS)

Focuses on how divided societies with a history of conflict seek to transform relationships and situations of violence and injustice. Examines communities and societies that have experienced conflict and how individuals and groups build peace locally and globally.

Code	Title	Credits
Select at least four of the six concentration courses from the following:		12
CONF 325	Dialogue and Difference	
CONF 335	Justice and Reconciliation	
CONF 392	Youth and Conflict	
CONF 393	Violence: Causes, Dynamics Alternatives	
CONF 435	Building Peace in Divided Societies	
COMM 305	Foundations of Intercultural Communication (Mason Core)	
CULT 320	Globalization and Culture	
ECON 360	Economics of Developing Areas (Mason Core)	
GGS 307	Geographic Approaches for Sustainable Development	
GOVT 342	Diplomacy	
HIST 373	The Civil War and Reconstruction	
INTS 305	Conflict Resolution and Transformation	
SOCI 320	Globalization and Social Change (Mason Core)	
Total Credits		12

Concentration in Global Engagement (GLBE)

Focuses on studying the dynamics and impact of global conflict resolution. Examines domestic and international dimensions of security, state-to-state conflict, internal wars, terrorism, migration, negotiation, and diplomacy. Explores what can be done to reduce violent conflict and increase peace and security.

Code	Title	Credits
Select at least four of the six concentration courses from the following:		12
CONF 335	Justice and Reconciliation	
CONF 345	Social Dynamics of Terrorism, Security, and Justice	
CRIM 405	Law and Justice around the World (Mason Core)	
ECON 385	International Economic Policy	
EVPP 337	Environmental Policy Making in Developing Countries	
GGS 301	Political Geography (Mason Core)	
GGS 307	Geographic Approaches for Sustainable Development	
GOVT 322	International Relations Theory	
GOVT 342	Diplomacy	
GOVT 446	International Law and Organization	
INTS 416	Refugee and Internal Displacement (Mason Core)	
SOCI 388	Violence and Religion	
Total Credits		12

Concentration in Political and Social Action (PSA)

Focuses on the ways that people organize themselves to effect change in their societies. This concentration explores social action, social organization, social movements, and civil resistance to analyze and investigate the role of constructive conflict.

Code	Title	Credits
Select at least four of the six concentration courses from the following:		12
CONF 393	Violence: Causes, Dynamics Alternatives	
CONF 394	Human Rights and Inequality	
COMM 326	Rhetoric of Social Movements and Political Controversy (Mason Core)	
ECON 309	Economic Problems and Public Policies	
GOVT 301	Public Law and the Judicial Process	
GOVT 364	Public Policy Making	
INTS 304	Social Movements and Community Activism (Mason Core)	
INTS 334	Environmental Justice (Mason Core)	
INTS 362	Social Justice and Human Rights (Mason Core)	
PSYC 427	Community Engagement for Social Change (Mason Core)	
SOCI 307	Social Movements and Political Protest	
SOCI 340	Power, Politics, and Society	
SOCI 352	Social Problems and Solutions (Mason Core)	
Total Credits		12

Concentration in Justice and Reconciliation (JRCN)

Focuses on the relationships between human rights, justice, and conflict resolution. Encompasses a spectrum of coursework including legal dimensions of human rights, trauma, memory, healing, conflict transformation, and forms of restorative justice.

Code	Title	Credits
Select four of the six concentration courses from the following:		12
CONF 335	Justice and Reconciliation	
CONF 394	Human Rights and Inequality	
CONF 435	Building Peace in Divided Societies	
CRIM 307	Social Inequality, Crime, and Justice	
CRIM 404	Crime Victims and Victimization	
CRIM 406	Family Law and the Justice System	
INTS 300	Law and Justice (Mason Core)	
INTS 314	Conflict, Trauma and Healing	
INTS 362	Social Justice and Human Rights (Mason Core)	
SOCI 308	Race and Ethnicity in a Changing World (Mason Core)	
SOCI 355	Social Inequality (Mason Core)	
Total Credits		12

Concentration in Interpersonal Dynamics (INTD)

Focuses on the dynamics of social interaction that lead to interpersonal conflict and the processes and skills that support the transformation of these conflicts. Issues examined include intercultural communication, psychology of groups, family relationships, and other dimensions of human relations.

Code	Title	Credits
Select four of the six concentration courses from the following:		12
CONF 325	Dialogue and Difference	
CONF 392	Youth and Conflict	
CONF 425	Mediating Conflict	
COMM 301	Relational Communication Theory	
COMM 305	Foundations of Intercultural Communication (Mason Core)	
COMM 401	Interpersonal Communication in the Workplace	
INTS 317	Issues in Family Relationships (Mason Core)	
PSYC 231	Social Psychology (Mason Core)	
PSYC 379	Applied Cross-Cultural Psychology (Mason Core)	
PSYC 417	Science of Well Being	
PSYC 467	The Psychology of Working in Groups and Teams	
SOCI 309	Marriage, Families, and Intimate Life	
SOCI 315	Contemporary Gender Relations (Mason Core)	
Total Credits		12

Concentration in Collaborative Leadership (CLDR)

Focuses on improving the capacity of leaders to work with conflict and manage change. Includes topics in conflict transformation, mediation, dialogue, and organizational leadership.

Code	Title	Credits
Select four of the six concentration courses from the following:		12
CONF 325	Dialogue and Difference	
CONF 326	Negotiation	
CONF 425	Mediating Conflict	
COMM 201	Small Group Communication	
COMM 335	Organizational Communication	
GOVT 351	Administration in the Political System	
INTS 404	Ethics and Leadership	
INTS 435	Leadership in a Changing Environment	
INTS 331	The Nonprofit Sector (Mason Core)	
MBUS 301	Managing People and Organizations in a Global Economy	
PRLS 316	Leadership and Outdoor Education	
PSYC 333	Industrial and Organizational Psychology	
PSYC 335	Psychology of Creativity and Innovation	
Total Credits		12

Concentration in Environmental Conflict and Collaboration (EVCC)

Focuses on using a variety of conflict resolution processes to address environmental issues. Examines how communities and societies are dealing with environmental issues and prepares students with process skills to promote collaborative solutions.

Code	Title	Credits
Select at least four of the six concentration courses from the following:		12
CONF 325	Dialogue and Difference	
CONF 326	Negotiation	
CONF 329	Community Engagement and Collaborative Problem Solving	
CONF 425	Mediating Conflict	
ANTH 370	Environment and Culture	
CONS 410	Human Dimensions in Conservation (Mason Core)	
CONS 490	RS: Integrated Conservation Strategies (Mason Core)	
EVPP 336	Human Dimensions of the Environment	
EVPP 337	Environmental Policy Making in Developing Countries	
EVPP 436	The Human Dimensions of Global Climate Change	
GGS 307	Geographic Approaches for Sustainable Development	
INTS 334	Environmental Justice (Mason Core)	
Total Credits		12

Individualized Concentration (IND)

Students interested in creating their own concentration can work with an advisor to decide upon a set of at least six courses that will fulfill the requirements of the BS in Conflict Analysis and Resolution. Individualized concentrations must be approved by the Director of the Undergraduate Program.

BS in Conflict Analysis and Resolution without Concentration

Students may opt to complete their major in Conflict Analysis and Resolution without a concentration. The department offers many elective courses that allow students to deepen their understanding of theory and

practice within the field of Conflict Resolution. Students may choose this option and complete the conflict resolution Core and 18 credits of conflict coursework selected from the following. These credits may not be used to also fulfill the skills and practice or field experience requirements.

Code	Title	Credits
Select 18 credits from the following:		18
CONF 325	Dialogue and Difference	
CONF 326	Negotiation	
CONF 335	Justice and Reconciliation	
CONF 345	Social Dynamics of Terrorism, Security, and Justice	
CONF 375	Special Programs Field Experience	
CONF 392	Youth and Conflict	
CONF 393	Violence: Causes, Dynamics Alternatives	
CONF 394	Human Rights and Inequality	
CONF 398	Special Topics in Advanced Techniques and Practices	
CONF 399	Special Topics in Conflict Analysis and Resolution	
CONF 425	Mediating Conflict	
CONF 435	Building Peace in Divided Societies	
CONF 499	Independent Research in Conflict Analysis and Resolution	
Total Credits		18

Writing-Intensive Requirement

All Mason students are required to complete at least one course designated as "writing intensive" in their major at the 300-level or above. CONF 302 Culture, Identity, and Conflict has been designated "writing intensive."

Electives

Code	Title	Credits
Remaining credits needed to bring the degree total to 120 may be fulfilled with general elective courses. [1,2]		

1 Up to 3 credits of 100 level Recreation (RECR) courses may be taken as general elective credits.

2 Only Military Science (MLSC) courses at the 400-level can be used for credit for a degree in the School; credit for other MLSC courses may not be applied toward a degree in the School.

Mason Core

Some Mason Core requirements may already be fulfilled by the major requirements listed above. Students are strongly encouraged to consult their advisors to ensure they fulfill all remaining Mason Core requirements.

Code	Title	Credits
Foundation Requirements		
Written Communication (ENGH 101)		3
Oral Communication		3
Quantitative Reasoning		3
Information Technology and Computing		3
Exploration Requirements		
Arts		3
Global Understanding		3
Literature		3
Natural Science		7
Social and Behavioral Sciences		3
Western Civilization/World History		3
Integration Requirements		
Written Communications (ENGH 302)		3
Writing-Intensive [1]		3
Synthesis/Capstone [2]		3
Total Credits		40

1 Most programs include the writing-intensive course designated for the major as part of the major requirements; this course is therefore not counted towards the total required for Mason Core.

2 Minimum 3 credits required.

4-Year Plan

Bachelor of Science in Conflict Analysis and Resolution Sample Plan of Study

The sample plan below is a recommended sequencing of courses based on pre-requisites and scheduling. This may not fit every student's needs and is a guideline, not a requirement. Students should confirm major requirements with their academic advisor and with PatriotWeb Degree Evaluation to ensure they enroll in the proper courses and are on track to graduate.

First Year

Fall Semester	Credits	Spring Semester	Credits
CONF 101	3	CONF 210	3
Mason Core (ENGH or COMM)	3	Mason Core-ENGH or COMM	3
Mason Core-Quantitative Reasoning	3	Mason Core-World History or Western Civilization	3
Mason Core-Fine Art	3	Mason Core-Natural Science non-Lab	3
Mason Core-Information Technology	3	Minor Introduction Course	3
UNIV 100	1		
	16		15

Second Year

Fall Semester	Credits	Spring Semester	Credits
CONF 300	3	CONF 320	3
CONF 314	1	Concentration Course #2	3
Mason Core-Literature	3	Mason Core-ENGH 302	3

Mason Core-Natural Science with Lab	4	Minor Course	3
Concentration Course #1	3	Minor Course	3
CONF 310	1		
	15		15

Third Year

Fall Semester	Credits	Spring Semester	Credits
CONF 330	3	CONF 340	3
CONF 301	3	Research Methods #1	3
Concentration Course #3	3	Minor Course	3
Minor Course	3	Concentration Course #4	3
Elective	3	Elective	3
	15		15

Fourth Year

Fall Semester	Credits	Spring Semester	Credits
CONF 302	3	CONF 490	3
Field Experience	3	CONF 310	1
Concentration #5	3	Concentration #6	3
Research Methods #2	3	Electives	7
Skill Based Elective	3		
	15		14

Total Credits 120

Detailed four year plans and degree planning checklists can be found at https://advising.gmu.edu/current-student/majors-at-mason/.

Accelerated Master's

Conflict Analysis and Resolution, BA or BS/Conflict Analysis and Resolution, Accelerated MS

Overview

This accelerated Master's option is designed for highly qualified and motivated undergraduate students that have completed at least 6 credit hours of CONF coursework at the time of application. If accepted, students may take up to 12 credits of graduate coursework before undergraduate degree conferral and will be able to earn an undergraduate degree and the Conflict Analysis and Resolution, MS after satisfactory completion of at least 147 credits. The time period for the combined program is typically five years. It provides a streamlined MS application process with no additional application fee.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies.

Application Requirements

For specific application requirements and information for the accelerated Conflict Analysis and Resolution, MS, see Eligibility, Policies, and Deadlines (http://scar.gmu.edu/undergraduate/degrees/accelerated-masters/). Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions.

Students must have a minimum undergraduate cumulative GPA of 3.25 at the time of application.

Accelerated Master's Requirements

- During the *first semester* in *senior status* admitted students may take up to 6 credits (1-2 classes) that will count towards both their undergraduate AND graduate degrees. During the *second semester of senior status*, students may take up to 6 credits (1-2 classes) that will count towards the graduate degree only.
- Students must begin their master's program the semester immediately following conferral of the undergraduate degree and will be expected to complete all remaining graduate program requirements within five years.
- See the program website (https://scar.gmu.edu/academics/undergraduate/accelerated-masters/) for additional information.

Accelerated MS Requirements

- No grade below a B is permitted for any undergraduate or graduate CONF course taken after application to the accelerated master's program until completion of the undergraduate program.
- If a student receives a grade below a B in any CONF course after acceptance in the program, they will not be allowed to continue on to the master's program. Students that have received a grade below a B in a CONF course after acceptance into the program may re-apply to the master's program after conferral of the undergraduate degree; however, re-application does not guarantee admission.
- At the time of the undergraduate degree conferral, students' GPAs must meet the standard required for admission to the master's degree.
- Students may not take more than 12 credits a semester if taking two graduate courses or 15 credits a semester if taking one graduate course.

Conflict Analysis and Resolution, MS

Banner Code: CA-MS-CONF

Academic Advising

Phone: 703-993-1300
Email: carter@gmu.edu
Website: https://carterschool.gmu.edu/

This professional program prepares students for practice and further academic work by integrating conflict analysis and resolution theory, research, and practical techniques. Participants study the theory, methods, and ethical perspectives of the field, and apply this knowledge in laboratory simulations and workshops, internships, and field practice.

Graduates work in a variety of settings where conflict resolution is useful and interest groups are in conflict with current and emergent public policy. Examples are businesses, unions, government agencies, religious groups, court systems, educational institutions, community centers, international relief and development organizations, and consulting firms.

Admissions & Policies

Admissions

Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions. In addition, applicants must submit all undergraduate and graduate transcripts; two letters of recommendation, one of which should be from a faculty member in the applicant's undergraduate or graduate major field; a resume or curriculum vitae; and a 750- to 1,000-word essay on goals and reasons for seeking admission to the program. GRE or other standardized test scores are not required but may be submitted. The TOEFL is required of international students. For more information, see Admission of International Students. Students can be admitted to the MS program for either the Fall or Spring semesters.

Background courses in social sciences, as well as prior work experience, are desirable. Prior graduate academic work is evaluated on an individual basis for possible transfer credit and fulfillment of program requirements; however, Mason usually does not reduce the total credits required for the degree. Students may enroll on a full- or part-time basis. The MS Program is available on-campus, online (https://masononline.gmu.edu/programs/conflict-analysis-and-resolution-ms/) or in a hybrid format (on-campus and distance learning).

Policies

Mason requires all students to complete the master's degree within six years of their official admission date.

Consult the Carter School student handbook for information on registration procedures.

Transfer of Non-Degree Credit

A maximum of 12 credits of Carter School graduate courses taken at George Mason as a non-degree graduate student, or as part of the Carter School's graduate certificate program may be transferred into the MS program. How credit will be counted will be determined in consultation with the admitted student's advisor. A maximum of six credits of non-Carter School courses taken as non-degree credit can be counted toward the MS program. Courses counted toward another degree cannot be transferred.

Adding a Carter School Certificate Program

Students may elect to complete a Carter School Graduate Certificate in addition to the MS program. Graduate certificates are opportunities for students to further tailor their academic program and specialize in a specific area of conflict resolution practice. Certain graduate certificate courses can be used to fulfill MS program requirements. Students should consult with the Graduate Programs Director for policies on counting certificate courses toward the MS degree.

Requirements

Degree Requirements

Total credits: 33

Required Courses

Code	Title	Credits
Introductory Course [1]		
CONF 600	Foundations of Conflict Analysis and Resolution	6
Conflict Inquiry		
CONF 610	Conflict Inquiry	3
or CONF 660	Conflict Assessment and Program Evaluation	
Conflict Praxis [2]		
CONF 657	Facilitation Skills	3
CONF 625	Engaging Conflict	3
Total Credits		15

1. Students must take the introductory course in the first semester.
2. Students must take CONF 657 Facilitation Skills and at least 3 credits of CONF 625 Engaging Conflict. Additional credits of CONF 625 Engaging Conflict will count as electives.

Concentration in Social Justice Advocacy and Activism (SJAA)

This concentration will be geared towards students who want to work in communities both in the United States and internationally on issues of social justice and critical human rights promotion.

Code	Title	Credits
Select twelve (12) credits from the following:		12
CONF 651	Collaborative Community Action Participatory Governance	
CONF 658	Diversity and Difference in Conflict Analysis and Resolution	
CONF 682	Principles of Environmental Conflict Resolution	
CONF 706	Ethics and Conflict	
CONF 722	Conflict and Religion	
CONF 723	Conflict and Gender	
CONF 728	Human Rights Theory and Practice in Comparative Perspective	
CONF 733	Law and Justice from a Conflict Perspective	
CONF 747	Reconciliation	
CONF 756	Addressing Intractable Conflict	
Total Credits		12

Professional Opportunities: Conflict Resolution NGOs, Advocacy NGOs, Human Right Organizations, International

Concentration in Dynamics of Violence (DYNV)

This concentration is geared towards students who are interested in understanding the various manifestations of violence, structural sources of violence, networks of violence that straddle the divides between

domestic and international contexts and who want to work on violence prevention both in the United States and internationally.

Code	Title	Credits
Select twelve (12) credits from the following:		12
CONF 653	World Religions, Diplomacy, and Conflict Resolution	
CONF 702	Peace Studies	
CONF 706	Ethics and Conflict	
CONF 707	Gender and Violence	
CONF 720	Ethnic and Cultural Factors in Conflict Resolution	
CONF 723	Conflict and Gender	
CONF 730	Structural Sources of Conflict	
CONF 751	Dynamics of Civil Wars	
CONF 754	Micro-theories of Conflict	
CONF 758	Social Dynamics of Terrorism	
Total Credits		12

Professional Opportunities: Gang Violence Prevention, Sexual Assault Prevention, Domestic Violence Prevention, Police, Conflict Resolution NGOs, Think Tanks, Development NGOs, Humanitarian organizations, USAID, State Department, UN

Concentration in Inclusive Conflict Engagement (ICEN)

This concentration prepares students for working to resolve conflicts and address divided cultures, societies, and organizations as advocates, mediators, peace-builders, and insider-partials. It will also prepare students for working with an intersectional awareness of diversity.

Code	Title	Credits
Select twelve (12) credits from the following:		12
CONF 650	Conflict Analysis and Resolution Advanced Skills	
CONF 651	Collaborative Community Action Participatory Governance	
CONF 653	World Religions, Diplomacy, and Conflict Resolution	
CONF 658	Diversity and Difference in Conflict Analysis and Resolution	
CONF 682	Principles of Environmental Conflict Resolution	
CONF 702	Peace Studies	
CONF 704	Narrative Approaches to Conflict Analysis	
CONF 706	Ethics and Conflict	
CONF 707	Gender and Violence	
CONF 708	Identity and Conflict	
CONF 720	Ethnic and Cultural Factors in Conflict Resolution	
CONF 721	Conflict and Race	
CONF 722	Conflict and Religion	
CONF 723	Conflict and Gender	
CONF 731	Conflict in Organizations	
CONF 741	Negotiating in Complex Systems	
CONF 747	Reconciliation	
CONF 755	Transforming Conflict through Insight	
CONF 756	Addressing Intractable Conflict	
Total Credits		12

Professional Opportunities: Conflict Resolution NGOs, Advocacy NGOs, International Peacebuilding NGOs, USAID, State Department, Human Rights, Resilience, Community Development, Humanitarian NGOs, Courts, Ombudsmen, Public Schools, Private Sector

Concentration in Conflict-Sensitive Development and Resilience (CSDR)

This concentration will be geared towards students who wish to work in development and humanitarian assistance fields, bringing an in-depth knowledge of conflict dynamics to improving communities' capacity to adapt to change and be resilient in times of social, economic, and political stress.

Code	Title	Credits
Select twelve (12) credits from the following:		12
CONF 650	Conflict Analysis and Resolution Advanced Skills	
CONF 651	Collaborative Community Action Participatory Governance	
CONF 652	Conflict Analysis and Resolution for Prevention, Reconstruction, and Stabilization Contexts	
CONF 659	Leadership in Conflict Analysis and Resolution	
CONF 704	Narrative Approaches to Conflict Analysis	
CONF 705	Conflict and Discourse Analysis	
CONF 706	Ethics and Conflict	
CONF 707	Gender and Violence	
CONF 708	Identity and Conflict	
CONF 722	Conflict and Religion	
CONF 723	Conflict and Gender	
CONF 728	Human Rights Theory and Practice in Comparative Perspective	
CONF 730	Structural Sources of Conflict	
CONF 731	Conflict in Organizations	
CONF 751	Dynamics of Civil Wars	
CONF 755	Transforming Conflict through Insight	
Total Credits		12

Professional Opportunities: Conflict Resolution NGOs, Humanitarian organizations, development NGOs, USAID, UN, State Department

Concentration in Media, Narrative, and Public Discourse (MNPD)

This concentration is designed for students who wish to work with and create representation, communication, media, discourse and narratives related to conflict.

Code	Title	Credits
Select twelve (12) credits from the following:		12
CONF 625	Engaging Conflict	
CONF 704	Narrative Approaches to Conflict Analysis	
CONF 705	Conflict and Discourse Analysis	
CONF 757	Conflict and Literature	

CONF 758	Social Dynamics of Terrorism	
Additional courses under developement		
Total Credits		12

Professional Opportunities: Journalism, Media, Communications, Conflict Resolution NGOs, Advocacy NGOs, International NGOs, Film Production

Concentration in Peacebuilding (PCB)

This concentration is designed for students interested in real-world, practical and professional skills in project design, management, monitoring and evaluation that will enable them to work in the peacebuilding field, primarily in NGOs and international organizations.

Code	Title	Credits
Complete the following fifteen (15) credits:		15
CONF 661	Program Design and Monitoring	
CONF 662	Funding and Managing Peacebuilding Programming	
CONF 651	Collaborative Community Action Participatory Governance	
CONF 670	Conflict Sensitive and Inclusive Peacebuilding	
CONF 694	Internship	
Total Credits		15

Individualized Concentration (IND)

Students will also be able to craft their own twelve (12) credit concentration with the approval of MS Program Director.

Electives

Code	Title	Credits
Select 3- 6 credits of elective courses from any 500, 600, or 700 level CONF courses, except required courses. Students in the Peacebuilding concentration will complete 3 elective credits. Students in all other concentrations complete 6. [1]		3 or 6
Total Credits		3-6

Students will need to declare their concentration by the start of their second semester of study. Students will need to take 12-15 credits of courses within the concentration to meet the concentration's distribution requirement.

Because the choice of courses within concentrations can vary significantly according to individual goals or needs, each student should develop a plan of study that should be discussed once each semester with the advisor and updated as appropriate.

With the advisor's approval, each student is eligible to include a maximum of six credits of electives from outside the S-CAR program, including courses in other Mason departments, consortium courses, and transfer courses from other universities.

Students wishing to complete a Master's Thesis or Internship would count these credits towards their elective requirement.

Internship

The CONF 694 Internship internship course provides students with opportunities to use and develop conflict resolution skills, integrate theory and practice of conflict analysis and resolution, and network with professionals in the field to enhance employment opportunities. The internship requires 160 hours of supervised work per every 3 credits. The goals and objectives of the internship are defined in an application and memorandum of agreement to be signed by the student, the internship site supervisor, and the advisor before the internship begins.

Students may either take 3 or 6 credits of CONF 694 Internship.

Code	Title	Credits
CONF 694	Internship (take 3 or 6 credits)	1-6

Thesis

Students wishing to complete a Master's Thesis are strongly encouraged to take CONF 797 Proposal Development (Proposal Development) the semester before beginning the thesis project. Before registering, students must have identified a Master's thesis committee chair to supervise the project. Students should contact Carter School student services to receive the CRN to register for thesis.

Code	Title	Credits
CONF 797	Proposal Development	1
CONF 799	Thesis	1-6

Directed Readings

Only two directed readings may be applied toward requirements for the master's degree (maximum 6 credits).

Code	Title	Credits
CONF 697	Directed Readings and Research	1-3

Dual Degree Options

Dual Degree Program with the University of Malta

Students have the opportunity to pursue a MS in Conflict Analysis and Resolution from George Mason University and a MA in Conflict Resolution and Mediterranean Security from the University of Malta through an innovative dual degree program. Teaching faculty includes professors from both George Mason University and the University of Malta. All teaching is in English and all classes are held at the Valetta Campus of the University of Malta. The 400-year-old University of Malta Valletta campus incorporates state-of-the-art instructional technology. The entire program is delivered over three intensive semesters on a full time basis starting in late September. Classes are held on a two week intensive block basis for the first two semesters while the third semester is devoted to the completion of a thesis.

Orientation in Malta begins at the end of September. Classes run from the beginning of October through June. Students work on their theses from June until October. University of Malta graduation is in November and Mason graduation is in December. The total duration of the program is 15 months. More information is available at the program website (http://scar.gmu.edu/academics/maltaprogram/). US and Canadian students apply through the Mason graduate admissions process and indicate they want to participate in the Malta program. All other students should apply through the University of Malta. (http://www.um.edu.mt/imp/)

Conflict Analysis and Resolution, MS and Social Work, MSW Dual Degree

The Department of Social Work and the Jimmy and Rosalynn Carter School for Peace and Conflict Resolution have joined forces to offer a three year dual-degree program. Students can earn both an MSW and an MS in Conflict Analysis and Resolution while taking advantage of the diversity of the Washington, D.C., metropolitan area and the university's proximity to the nation's capital. This is the only dual-degree program of its kind.

Admission Requirements

Applicants must meet the admission standards and application requirements specified in Graduate Admissions and apply using the online Application for Graduate Admission (http://admissions.gmu.edu/). The application process is competitive, and applications are considered for the fall semester only.

Students interested in the 3-year dual degree program submit one online Application for Graduate Admission (http://admissions.gmu.edu/), select the MSW in Social Work as a primary program, and submit all application support materials to the Office of Graduate Admission in the College of Health and Human Services. Applicants should communicate their interest in completing the dual degree program in their essays, and recommendations should address the dual program interest. Students must be admitted to both programs in the same semester (fall only) to be admitted to the dual degree program.

For application deadlines and detailed application requirements please refer to the CHHS Admissions website (https://chhs.gmu.edu/admissions/graduate-admissions/standards-requirements-and-deadlines/). Interested students should consult the MSW program website (https://socialwork.gmu.edu/program/view/19658/), the MSW program, and the MSW program director for additional information prior to applying.

Transfer of Credit

Transfer credit is governed AP.6.5.3 Transfer of Credit and AP.6 Graduate Policies. Transfer credits must be approved by the program director and the dean. Students who enroll initially through non-degree studies should seek course advising through the department prior to taking a course and plan to submit their application to the dual degree program as soon as possible.

Please refer to the Transfer of Credit policy for the MSW in Social Work for departmental policy governing courses taken at another institution and the maximum number of credits allowed.

MSW-MS Degree Requirements

Total credits: 78

Social Work Courses

Code	Title	Credits
SOCW 600	Foundations of Social Work and Social Welfare	3
SOCW 623	Human Behavior and Social Systems	3
SOCW 644	Community Practice Across the Life Course	3
SOCW 650	Advanced Social Work Policy Practice Skills	3
SOCW 656	Poverty, Oppression, and Inequity	3
SOCW 659	Organizing and Advocating for Change	3
SOCW 660	Foundations of Direct Practice	3
SOCW 672	Generalist Field Practicum and Seminar I	3
SOCW 673	Generalist Field Practicum and Seminar II	3
SOCW 674	Psychopathology	3
SOCW 688	Program Evaluation for Social Workers [1]	3
or CONF 660	Conflict Assessment and Program Evaluation	
Total Credits		33

[1] Students complete only one of SOCW 688 or CONF 660.

Specialization in Children, Youth, and Families (CYF)

Code	Title	Credits
SOCW 630	Clinical Social Work in Forensic Settings	3
SOCW 696	Specialized Practice Field Practicum and Seminar I	3
SOCW 698	Specialized Practice Field Practicum and Seminar II	3
Select two courses from the following. At least one course must be a Macro Elective Course.		6
Macro Elective Courses		
SOCW 653	Immigration Policy	
SOCW 654	Social Policy for Children and Youth	
SOCW 655	Aging Programs and Policies	
SOCW 663	Global Human Rights Policy	
SOCW 676	Selected Topics in Social Work and Social Change	
SOCW 684	Social Work and the Law	
SOCW 685	Organizational Leadership for Social Workers	
Clinical Elective Courses		
SOCW 664	Creative Arts in Social Work Practice	
SOCW 667	Advanced Group Theory and Practice	
SOCW 675	Selected Topics in Clinical Practice	
SOCW 677	Family Therapy	
SOCW 678	Trauma and Recovery	
SOCW 679	Military Social Work	
SOCW 682	Substance Abuse Interventions	
SOCW 640	Clinical Practice with Adults	
SOCW 689	Clinical Practice with Older Adults	
Total Credits		15

Specialization in Adults and Healthy Aging (AHA)

Code	Title	Credits
SOCW 640	Clinical Practice with Adults	3
SOCW 689	Clinical Practice with Older Adults	3
SOCW 696	Specialized Practice Field Practicum and Seminar I	3
SOCW 698	Specialized Practice Field Practicum and Seminar II	3
Select two courses from the following. At least one course must be a Macro Elective Course.		6
Macro Elective Courses		
SOCW 653	Immigration Policy	
SOCW 654	Social Policy for Children and Youth	

SOCW 655	Aging Programs and Policies	
SOCW 663	Global Human Rights Policy	
SOCW 676	Selected Topics in Social Work and Social Change	
SOCW 684	Social Work and the Law	
SOCW 685	Organizational Leadership for Social Workers	
Clinical Elective Courses		
SOCW 630	Clinical Social Work in Forensic Settings	
SOCW 664	Creative Arts in Social Work Practice	
SOCW 667	Advanced Group Theory and Practice	
SOCW 675	Selected Topics in Clinical Practice	
SOCW 677	Family Therapy	
SOCW 678	Trauma and Recovery	
SOCW 679	Military Social Work	
SOCW 682	Substance Abuse Interventions	
Total Credits		18

Conflict Analysis and Resolution Courses

Code	Title	Credits
CONF 600	Foundations of Conflict Analysis and Resolution	6
CONF 610	Conflict Inquiry	3
CONF 657	Facilitation Skills	3
CONF 625	Engaging Conflict [1]	3
Total Credits		15

[1] CONF 657 Facilitation Skills should be completed before a student takes CONF 625 Engaging Conflict.

Electives

Code	Title	Credits
Select 12 credits of CONF Electives with approval from Carter School		12
Total Credits		12

Accelerated Master's

Bachelor's Degree (any)/Conflict Analysis and Resolution, Accelerated MS

Overview

This accelerated Master's option is designed for highly qualified and motivated undergraduate students that have completed at least 6 credit hours of CONF coursework at the time of application. If accepted, students may take up to 12 credits of graduate coursework before undergraduate degree conferral and will be able to earn an undergraduate BA or BS and the Conflict Analysis and Resolution, MS after satisfactory completion of at least 147 credits. The time period for the combined program is typically five years. It provides a streamlined MS application process with no additional application fee.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies.

Application Requirements

For specific application requirements and information for the accelerated Conflict Analysis and Resolution, MS, see Eligibility, Policies, and Deadlines (http://scar.gmu.edu/undergraduate/degrees/accelerated-masters/). Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions (https://catalog.gmu.edu/admissions/graduate-policies/).

Students must have a minimum undergraduate cumulative GPA of 3.25 at the time of application.

Accelerated Master's Requirements

- During the *first semester* in *senior status* admitted students may take up to 6 credits (1-2 classes) that will count towards both their undergraduate AND graduate degrees. During the *second semester of senior status*, students may take up to 6 credits (1-2 classes) that will count towards the graduate degree only.
- At the beginning of the last semester of undergraduate study, the *Bachelor's/Accelerated Master's Transition Form* signed by an S-CAR undergraduate advisor is submitted to the Director of Graduate Student Services who will then forward to Graduate Admissions. Upon completion and conferral of the undergraduate degree the student is admitted to graduate status.
- Students must begin their master's program the semester immediately following conferral of the undergraduate degree and will be expected to complete all remaining graduate program requirements within five years.
- Additional policies can be found on the program website (https://scar.gmu.edu/academics/undergraduate/accelerated-masters/).

Course Requirements

- No grade below a B is permitted for any undergraduate or graduate CONF course taken after application to the accelerated master's program until completion of the undergraduate program.
- If a student receives a grade below a B in any CONF course after acceptance in the program, they will not be allowed to continue on to the master's program. Students that have received a grade below a B in a CONF course after acceptance into the program may re-apply to the master's program after conferral of the undergraduate degree; however, re-application does not guarantee admission.
- At the time of the undergraduate degree conferral, students' GPAs must meet the standard required for admission to the master's degree.
- Students may not take more than 12 credits a semester if taking two graduate courses or 15 credits a semester if taking one graduate course.

Conflict Analysis and Resolution, BA or BS/Conflict Analysis and Resolution, Accelerated MS

Overview

This accelerated Master's option is designed for highly qualified and motivated undergraduate students that have completed at least 6 credit hours of CONF coursework at the time of application. If accepted, students may take up to 12 credits of graduate coursework before undergraduate degree conferral and will be able to earn an undergraduate degree and the Conflict Analysis and Resolution, MS after satisfactory

completion of at least 147 credits. The time period for the combined program is typically five years. It provides a streamlined MS application process with no additional application fee.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies.

Application Requirements

For specific application requirements and information for the accelerated Conflict Analysis and Resolution, MS, see Eligibility, Policies, and Deadlines (http://scar.gmu.edu/undergraduate/degrees/accelerated-masters/). Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions.

Students must have a minimum undergraduate cumulative GPA of 3.25 at the time of application.

Accelerated Master's Requirements

- During the *first semester* in *senior status* admitted students may take up to 6 credits (1-2 classes) that will count towards both their undergraduate AND graduate degrees. During the *second semester of senior status*, students may take up to 6 credits (1-2 classes) that will count towards the graduate degree only.
- Students must begin their master's program the semester immediately following conferral of the undergraduate degree and will be expected to complete all remaining graduate program requirements within five years.
- See the program website (https://scar.gmu.edu/academics/undergraduate/accelerated-masters/) for additional information.

Accelerated MS Requirements

- No grade below a B is permitted for any undergraduate or graduate CONF course taken after application to the accelerated master's program until completion of the undergraduate program.
- If a student receives a grade below a B in any CONF course after acceptance in the program, they will not be allowed to continue on to the master's program. Students that have received a grade below a B in a CONF course after acceptance into the program may re-apply to the master's program after conferral of the undergraduate degree; however, re-application does not guarantee admission.
- At the time of the undergraduate degree conferral, students' GPAs must meet the standard required for admission to the master's degree.
- Students may not take more than 12 credits a semester if taking two graduate courses or 15 credits a semester if taking one graduate course.

Conflict Analysis and Resolution, PhD

Banner Code: CA-PHD-CONF

Academic Advising

Phone: 703-993-1300
Email: carter@gmu.edu
Website: https://carterschool.gmu.edu/

The Conflict Analysis and Resolution doctoral program, the first of its kind in the United States, provides advanced study for students in the field of conflict analysis and conflict resolution. Students are prepared for careers as researchers, theoreticians, and teachers in higher education, and as policy administrators, analysts, and consultants in the public and private sectors.

The program stresses a close link between knowledge of theory and process in the resolution of conflict. For this, training in the methods of research and analysis is emphasized. In addition, students are expected to obtain a background in a substantive area of conflict, usually related to the topic of the dissertation.

Admissions & Policies

Admissions

A master's or equivalent degree is required for admission to the PhD program.

Application Requirements

In addition to meeting all admission requirements for graduate study, applicants must submit:

- all undergraduate and graduate transcripts
- three letters of recommendation, one of which should be from a faculty member in the applicant's undergraduate or graduate major field
- a 750 to 1,000 word essay on goals and reasons for seeking admission to the program
- a written sample of work that shows the applicant's potential for completing dissertation research in a doctoral program
- a resume or curriculum vitae.

The Graduate Record Exam (GRE) or other standardized test scores are not required but may be submitted. The Test of English as a Foreign Language (TOEFL) is required of international students.

For more information, see the Admission of International Students. Although students may enroll on a full- or part-time basis, entry into the program is in the fall semester only.

Policies

For policies governing all graduate degrees, see AP.6.10 Requirements for Doctoral Degrees.

Reduction of Credit

Since a master's degree or equivalent is required for admission, students will automatically receive a 15 credit reduction to the number of credits required.

Students may have the required number of credits reduced by up to 15 additional credits based on relevant previous coursework. The actual number of applied credits is determined in consultation with the student's advisor and the Graduate Program Director after a review of courses taken, subsequent to a student's admission to the program

Completion Timelines

Students must satisfactorily complete their coursework, comprehensive paper, advance to candidacy, and complete the dissertation within 9 years of admission to the program. Students are expected to have advanced to candidacy within 6 years of admission to the program.

Plan of Study Guidelines

All doctoral students should meet with their faculty advisor before starting classes to develop a plan of study. This plan should show the sequence of courses anticipated. It should be based on a discussion between the student and the advisor about the student's interest and goals. The plan should ensure that the student completes coursework efficiently and is able to build toward candidacy. The student and the advisor should then meet at least once each semester thereafter to review and amend the plan. The Program Director should receive a copy of each new or revised plan of study.

Transfer of Non-Degree Credit

A maximum of 12 credits of S-CAR graduate courses taken at George Mason as a non-degree graduate student, or as part of S-CAR's graduate certificate program may be transferred into the PhD program. How credit will be counted will be determined in consultation with the student's advisor and the Graduate Program Director. A maximum of 6 credits of non-S-CAR courses taken as non-degree credit can be counted toward the PhD program. Courses counted toward another degree cannot be transferred.

Adding a S-CAR Certificate Program

Students may elect to complete a S-CAR graduate certificate in addition to the PhD program. Graduate certificates are opportunities for students to further tailor their academic program and specialize in a specific area of Conflict Resolution practice. Certain graduate certificate courses can be used to fulfill PhD program requirements. Students should consult with the Graduate Program Director for policies on counting certificate courses toward the PhD degree.

Requirements

Degree Requirements

Total credits: 72

Required Course

Code	Title	Credits
CONF 801	Introduction to Conflict Analysis and Resolution (Should be taken in the first semester of coursework)	3
Total Credits		3

Foundation Courses

Students complete 12 credits of foundation courses distributed as follows:

Code	Title	Credits
Theoretical Foundations		
Select two courses (6 credits) from the following:		6
CONF 802	Theories of the Person	
CONF 803	Structural Theories	
CONF 804	Alternate Theoretical Foundations	
Research Foundations		
Select two courses (6 credits) from the following:		6
CONF 811	Quantitative Foundations	
CONF 812	Qualitative Foundations: Social Sciences	
CONF 813	Qualitative Foundations: Humanities	
Total Credits		12

Specialization Courses

Code	Title	Credits
Students will take four courses (12 credits) of specialization courses. Three credits each in the areas of theory and research, and six credits of practice specialization. [1]		12
Total Credits		12

[1] The Doctoral Program Director must approve courses.

Electives

Code	Title	Credits
Select 18 credits from electives that are any 500-, 600-, and 700-level CONF courses that are not required		18
Total Credits		18

With the advisor's approval, each student may include a maximum of 6 credits of electives from outside the S-CAR Program, including courses in other Mason departments, consortium courses, and transfer courses from other universities. The intent is to allow students to have maximum flexibility in selecting courses to build skills and knowledge needed in dissertation work. CONF 897 Directed Reading may be taken to meet the requirement. Only two directed readings classes (6 credits) can be applied toward doctoral elective requirements.

Foreign Language Requirement

At the point of application to fulfill the comprehensive paper, students will indicate to the Director of the Doctoral Program the membership of their dissertation committee. This committee will determine, based on the scope and nature of the student's research, the specific language requirement a student must meet. This will be conveyed to the Graduate Program Director. This language requirement must be completed prior to graduation.

Comprehensive Paper

Students are eligible to complete the comprehensive paper when they have completed all the requirements of coursework in the doctoral program with the exception of CONF 998 Doctoral Dissertation Proposal and CONF 999 Doctoral Dissertation Research and the language requirement. A student is advanced to candidacy upon successful completion of the comprehensive paper. Papers can be submitted for evaluation twice each year, once in the winter and once in the summer. Students who do not pass initially should form a plan of study with the chair of their dissertation committee and the Graduate Program Director that will prepare them to resubmit. The comprehensive paper may be resubmitted two times for a total of three attempts. After three unsuccessful attempts, the student should consult with the Graduate Program Director about the possibility of transferring to a Master's degree program.

Advancement to Candidacy

Upon successfully completing coursework (except dissertation) listed on the Plan of Study and passing the comprehensive paper, students will be advanced to candidacy. Students are expected to advance to candidacy within 6 years of admission to the program. Students have a total of 9 years from admission to complete all course requirements, including the dissertation.

Dissertation Research

Students are required to complete 12 combined credits of CONF 998 Doctoral Dissertation Proposal and CONF 999 Doctoral Dissertation Research, including at least 3 credits of CONF 999 Doctoral Dissertation Research. Students must have a signed dissertation proposal in order to register for CONF 999 Doctoral Dissertation Research.

Code	Title	Credits
Select 12 credits from the following:		12
CONF 998	Doctoral Dissertation Proposal [1]	
CONF 999	Doctoral Dissertation Research [2]	
Total Credits		12

1. All CONF 998 courses are graded In Progress until completion of the proposal. At that time, a grade of Satisfactory is issued.
2. All CONF 999 courses are graded In Progress until the dissertation defense is successfully completed. At that time, a grade of Satisfactory is issued.

Dissertation Committee

Students should propose a Dissertation Committee to the Graduate Program Director and the Dean who then formally appoint the committee. This must be done prior to taking the comprehensive exam. The Dissertation Committee must include a chairperson from among S-CAR graduate faculty and at least two other members of the graduate faculty, one of whom must be a non-S-CAR Mason faculty member. The Dean will inform the student, committee members, and Graduate Program Director when the committee has been appointed.

Dissertation Proposal

After the student passes the comprehensive exam and advances to candidacy, the next job of the committee is to approve the candidate's dissertation proposal. The proposal is the candidate's description (in some detail) of his/her dissertation project, reflecting the successful work of the comprehensive examination paper. It will include an argument about the hypothesis/theory question being tackled and the specific methods of research to be used. It should be prepared in consultation with the chair of the committee, and must be approved by all committee members. After receiving permission from the full committee, the candidate makes an oral presentation of the dissertation proposal before the committee and the Graduate Program Director that is also open to other S-CAR faculty, fellow students, and other scholars. In scheduling the defense, it is the student's responsibility to ensure that all members of the committee are available and will be present for the defense.

A signed cover page from that proposal must be filed with the the Graduate Program DIrector. Failure to complete the formation of a committee and an approved proposal by the end of the 12-month period will result in the candidate's dismissal from the doctoral program. (Candidates may appeal to the Dean a further extension of this dissertation preparation period, but such appeals will be allowed only on grounds of documented illness, family emergency, or military deployment). Candidates should consult thesis.gmu.edu/ (http://thesis.gmu.edu/) to ensure the proposal is in the correct format and has been submitted to all the appropriate offices.

Writing the Dissertation and its Defense

The chair of the dissertation committee usually takes most of the responsibility for guiding the overall project and the writing of the dissertation, although all members (and other useful persons) should be consulted as appropriate. It is the committee's responsibility to ensure a quality piece of work. When advanced to candidacy, the *Guide for Preparing Graduate Thesis, Dissertation and Projects* tells exactly how to prepare an acceptable dissertation. Please visit thesis.gmu.edu/ (http://thesis.gmu.edu/) to ensure formatting guidelines are met and submission procedures followed.

It is essential that doctoral committee members have sufficient time to read and evaluate dissertation drafts with care prior to the dissertation defense date. The committee may require no more than one month to read the final draft and provide feedback. It is also essential that students have sufficient time after the defense to do final revisions, editing and formatting. If the University determines the deadlines for final library submission deadline is May 1, for example, the defense must take place prior to April 1 and the full draft dissertation must be delivered to the full committee before March 1.

The dissertation is to be orally defended in public, minimally with the entire committee present. The S-CAR faculty and students must receive public notice of the defense at least two weeks prior. Students are welcome to invite family and friends. The University may also send a representative. The public defense helps ensure that the University's standards are met, and offers an opportunity to learn from the students' research. After a successful defense, the cover page is signed by the members of the Dissertation Committee, Graduate Program Director and Dean; and the dissertation is filed with the University. An additional signed copy should be delivered to the S-CAR Burton Library.

Dissertations must be presented to the library in the proper format or they will not be accepted. Please visit the University Dissertation & Thesis Services web site at thesis.gmu.edu/ (http://thesis.gmu.edu/) for dissertation formatting requirements and submission deadlines. Mason's Dissertation and Thesis Coordinator may be reached at udts@gmu.edu or 703-993-2222.

Contemporary Dispute Resolution Graduate Certificate

Banner Code: CA-CERG-CDRE

Academic Advising

Phone: 703-993-1300
Email: carter@gmu.edu
Website: https://carterschool.gmu.edu/

Admissions & Policies

Admissions

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions (https://catalog.gmu.edu/admissions/graduate-policies/). Applicants to this certificate must submit an undergraduate transcript showing completion of an undergraduate degree or equivalent, a cover letter specifying interest in the program, two letters of recommendation, and a curriculum vitae or résumé indicating relevant work experience.

In addition, prior work experience in areas related to the chosen graduate certificate is desirable. GRE or other standardized test scores are not required but may be submitted. The TOEFL is required of international

students. For more information, see Admission of International Students (https://catalog.gmu.edu/admissions/international-students/).

Policies

For policies governing all graduate certificates, see AP.6.8 Requirements for Graduate Certificates.

Requirements

Certificate Requirements

Total credits: 15

This certificate may be pursued on a full-or part-time basis.

Code	Title	Credits
Required Coursework		
CONF 500	Frameworks for Ethical Dispute Resolution Practice	3
CONF 640	Practicum in Contemporary Dispute Resolution	3
Choose three courses from the following:		9
CONF 631	Mediation in Diverse Settings	
CONF 632	Coaching through Conflict	
CONF 657	Facilitation Skills	
CONF 741	Negotiating in Complex Systems	
Total Credits		15

Mass Atrocity and Genocide Prevention Graduate Certificate

Banner Code: CA-CERG-MAGP

Douglas Irvin-Erickson, Program Director

Email: dirviner@gmu.edu
Website: https://carterschool.gmu.edu/academic-programs/graduate-and-professional-certificates

This 15-credit program is tailored to provide students with practical knowledge of conflict analysis and resolution relevant to mass atrocity prevention, including genocide and mass violence prevention. Designed for mid-career professionals studying in a cohort environment, or graduate students seeking specialized, practical knowledge, the certificate program integrates conflict analysis and resolution theory, research, and practical techniques of preventing mass atrocities. Certificate courses include intensive sessions, lectures, seminars, and applied-mentored learning in real and simulated situations. Students consider strategies to prevent mass atrocities through policy planning, diplomacy, civil society building, democratization, development, education, and “up-streaming” prevention efforts that apply peace-building, dialogue, and conflict resolution approaches designed specifically for highly-escalated conflict contexts where mass atrocities seem likely to appear.

Admissions & Policies

Admissions

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions. Applicants to this certificate must submit an undergraduate transcript showing completion of an undergraduate degree or equivalent, a cover letter specifying interest in the program, two letters of recommendation, and a curriculum vitae or résumé indicating relevant work experience.

In addition, prior work experience in areas related to the chosen graduate certificate is desirable. GRE or other standardized test scores are not required but may be submitted. The TOEFL is required of international students. For more information, see Admission of International Students.

Policies

For policies governing all graduate certificates, see AP.6.8 Requirements for Graduate Certificates.

Class Schedule

Please note that some classes for this graduate certificate are offered only in Saturday and Sunday sessions. Please check the Schedule of Classes for each term to identify course meeting dates, and specific add/drop dates for these partial semester courses.

Requirements

Certificate Requirements

Total credits: 15

This certificate may be pursued on a full-or part-time basis.

Required Courses

Code	Title	Credits
CONF 501	Introduction to Conflict Analysis and Resolution	3
CONF 625	Engaging Conflict	3
CONF 654	Mass Atrocity: Early Warning and Prevention	3
Select two courses from the following:		6
CONF 706	Ethics and Conflict	
CONF 707	Gender and Violence	
CONF 708	Identity and Conflict	
CONF 721	Conflict and Race	
CONF 733	Law and Justice from a Conflict Perspective	
CONF 751	Dynamics of Civil Wars	
Total Credits		15

Organizational Conflict Resolution Minor

Banner Code: ORGC

Academic Advising

Phone: 703-993-4165
Email: ugradcar@gmu.edu
Website: https://carterschool.gmu.edu/

Advising

Advisors help students create a course of study that meets their interests and career goals. All majors and minors are strongly encouraged to meet regularly with an academic advisor from the School who will help students develop and follow a coherent plan of study and complete the degree in a timely manner.

Admissions & Policies

Admissions

For policies governing all minors, see AP.5.3.4 Minors.

Policies

At least eight credits of the minor courses must be unique to the Organizational Conflict Resolution Minor and not applied toward any other major, minor, certificate, or concentration. Students must achieve a grade of C or better in each course that is applied toward the minor.

Requirements

Minor Requirements

Total credits: 15

Core Courses

Code	Title	Credits
Select three (3) of the following courses:		9
CONF 300	Conflict Resolution Techniques and Practice	
CONF 330	Community, Group, and Organizational Conflict Analysis and Resolution	
MGMT 303	Principles of Management	
MGMT 464	Teamwork and Interpersonal Skills	
Total Credits		9

Electives

Code	Title	Credits
Select two (2) of the following courses:		6
CONF 320	Interpersonal Conflict Analysis and Resolution	
CONF 325	Dialogue and Difference	
CONF 326	Negotiation	
CONF 329	Community Engagement and Collaborative Problem Solving	
CONF 425	Mediating Conflict	
FNAN 444	Sustainable and ESG Investments	
INTS 404	Ethics and Leadership	
INTS 435	Leadership in a Changing Environment	
MGMT 313	Organizational Behavior	
MGMT 321	Introduction to Human Resource Management	
MGMT 412	Diversity in Organizations	
MGMT 431	The Legal Environment for Employee and Labor Relations	
MGMT 461	Cross Cultural and Global Management	
MGMT 463	Negotiations in Organizations	
Total Credits		6

Sport and Conflict Resolution Minor (TCS)

Banner Code: SCNR

Academic Advising

Phone: 703-993-1300
Email: carter@gmu.edu
Website: https://carterschool.gmu.edu/

There has been a real growth in the establishment of non-profit organizations that use 'sport for development', sport to bring diverse communities together and also 'sport for peace' organizations in high conflict areas of the world. This minor will help prepare students to work for organizations dedicated to using sports for development, community building and peace. It provides students with a cross section of courses in sports management and conflict resolution. Courses in sports management frame the sports industry in a philosophical, ethical, cultural and business context. Conflict resolution courses will introduce students to foundational concepts in the study of human conflict, the analysis of conflict and problem solving techniques for helping to resolve conflict.

This is an interdisciplinary minor offered by the Jimmy and Rosalynn Carter School for Peace and Conflict Resolution and the School of Sport, Recreation and Tourism Management.

Admissions & Policies

Admissions

This minor is available to all Mason undergraduate students.

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 18

Required Courses

Code	Title	Credits
SPMT 201	Introduction to Sport Management	3
SPMT 302	Philosophical and Ethical Dimensions of Sport	3
SPMT 304	Sport, Culture, and Society	3
CONF 101	Conflict and Our World (Mason Core)	3
CONF 300	Conflict Resolution Techniques and Practice	3
Total Credits		15

Elective Courses

Code	Title	Credits
Choose one of the following:		3
CONF 302	Culture, Identity, and Conflict	
CONF 435	Building Peace in Divided Societies	
Total Credits		3

School of Business

Enterprise Hall
Fairfax Campus

Phone: 703-993-1880
Website: business.gmu.edu

Administration

- Maury Peiperl, Dean
- Anne Magro, Senior Associate Dean, Strategy and Impact
- Cheryl Druehl, Associate Dean, Faculty
- Brett Josephson, Associate Dean, Executive Development
- Richard Klimoski, Associate Dean, Research
- Nirup Menon, Associate Dean, Arlington Ventures
- Patrick Soleymani, Associate Dean, Undergraduate Programs
- Paige Wolf, Associate Dean, Graduate Programs
- Diane Spence, Executive Director, Finance and Administration

College Code: BU

The mission of the School of Business is to prepare a diverse student body to succeed in a global business environment. Through the faculty's creation and dissemination of business knowledge, practice, and pedagogy, we enable our students to develop analytical and communication skills and to practice ethical business behavior.

Business leaders and organizations are actively involved with the School of Business through executive development programs, speaker engagements, classroom lectures, case competitions, internships, and career placement. The School of Business also maintains close connections to the business community through its 12 advisory boards and councils. More than 360 business leaders representing 295 different companies serve as advisory board or council members.

The School of Business enrolls more than 4,500 undergraduate students and more than 600 graduate students in its programs.

The School of Business's programs offer students a variety of opportunities to enhance their professional endeavors.

- Our innovative curriculum meets the demands of the marketplace, going beyond business fundamentals to focus on the contexts of business, analytics, strategic thinking, and teamwork.
- Our distinguished faculty are cross-disciplinary collaborators and innovative practitioners who are passionate about education. They bring both theoretical and applied expertise to the classroom.
- Our outstanding career management professionals are dedicated to providing tailored support to promote our students' professional advancement and to leverage their degrees over the short- and long-term.
- Our diverse student population offers unique opportunities to network and learn from your fellow classmates. Students at Mason represent over 130 different countries and all 50 states.

Undergraduate

The programs in business education culminate in a BS degree with a concentration in one of eight areas: Accounting, Business Analytics, Finance, Financial Planning and Wealth Management, Management Information Systems, Management, Marketing, or Operations and Supply Chain Management.

Students also can enhance their specialization with one of our ten minors: Business, Business Analytics, Entrepreneurship, Finance, Government Contracting, International Business, Management Information Systems, Marketing (http://catalog.gmu.edu/colleges-schools/business/colleges-schools/business/marketing-minor/), Operations and Supply Chain Management, and Real Estate Development.

Graduate

The School of Business offers a PhD in Business, an MBA, and MS degrees in Accounting, Management, Finance, Real Estate Development, and Technology Management.

Accelerated Master's Degrees

- Mason Accounting majors may apply to the accelerated master's degree program and obtain both the Business, BS with a Concentration in Accounting (https://catalog.gmu.edu/colleges-schools/business/business-bs/#requirementstext) and Accounting, MS degrees after satisfactory completion of a total of 144 credits.
- Non-business undergraduate majors may apply to the accelerated master's degree in Management.

For policies governing all accelerated degree programs, see AP.6.7 Bachelor's/Accelerated Master's Degrees.

Graduate Certificates

Graduate certificates are offered in Business Analytics, Business Fundamentals, Accounting Analytics, Accounting for Government Contracts, Government Accounting, Forensic Accounting, IT Strategy and Digital Transformation, Chief Information Officer, and Global IT Leadership.

Centers

The School of Business houses six centers:

- The Center for Innovation and Entrepreneurship (https://business.gmu.edu/innovation/) provides experiential learning through academic programs as well as hands-on programs for Mason

students interested in innovation, invention, early stage startups, and entrepreneurship.

- The Center for Real Estate Entrepreneurship (https://business.gmu.edu/realestate/) focuses on real estate research and education in real estate development and finance.
- The Investor Protection & Corporate Fraud Research Center (https://business.gmu.edu/fraudcenter/) strives to provide thought leadership on investor protection and fraud risk by sponsoring, conducting, and disseminating research in these areas.
- The Center for Government Contracting (https://business.gmu.edu/govcon/) has established the first-in-the-nation university center to address business, policy, regulatory and other issues in government contracting.
- The Center for Retail Transformation (https://business.gmu.edu/retail/) aspires to be a go-to resource for startup, small, and medium sized retailers and other members of the retail ecosystem by developing strategic partnerships and alliances with retail sector leaders, trade associations, and key government entities with oversight and interaction with the retail sector.
- The Business for a Better World Center (https://business.gmu.edu/business-for-a-better-world/) is founded on the belief that business can be a force for good in the world, leading the charge to address the world's complex challenges. We engage leaders, shape business education, and prepare tomorrow's leaders to act with people, planet, and prosperity in mind.

Faculty

School Faculty

Accounting

Aier, L. Chen, Conaway, Douthett, Faughnan, Hasan, Ingram, Johnson, K. Jones, H. Kim, Y. Kim, Kitching, Koutney, Magro, Matthews, Nykyforoych, Polat, Rankin, Roberts, Shirley, Snyder, Stubing, Tsirigotis, Visvanathan, Wentland, Wiesen

Business Foundations

Austin, Brown, Demory, Gring-Pemble, Harris, Hendricks, K. King, Landoll, Lauer, Marshall, Mink, Moteabbed, Mungai, Perilla, Perry, Pierce, Plotnick, Viccora, Yuckenberg, Zylstra

Finance

Aldatmaz, Christophe, Drissi Messouak, Gallay, Hanweck, Horstmeyer, Hsieh, Hu, J. Li, Philipov, Pilloff, Requeijo, Sanders, Sun

Information Systems and Operations Management

Abdelfattah, Altug, Bellos, Cheema, M. Chen, Das, Deans, Diouf, Druehl, Dutta, Ganjalizadeh, Garcia, Greenwood, Karmegam, Jung, M. King, X. Li, Mehta, Menon, Ngac, Porter, Pyle, Ray, Ren, Sanyal, Singer, Yang, Yao, Ye

Management

Cronin, de Janasz, Grady, Hart, Joshi, Klimoski, Langfred, C. Lee, H. Lee, Mainkar, Miller, O'Neil, Parker, Peiperl, Rockmann, Rosenbusch, Song, Theeke, Vough, Wittman, Wolfe, Yang, Yasai

Marketing

Abratt, Cheng, Harvey, Hoppner, Joiner, S. Jones, Josephson, Kushwaha, Meamber, Mishra, Tretola, Vadakkepatt, Vlastara

Requirements & Policies

Policies

Undergraduate Academic Policies

Academic Policies

Students should become familiar with the university's general academic policies in addition to those specific to each academic unit.

E-mail

George Mason University uses only Mason e-mail accounts to communicate with enrolled students. Students should activate their Mason e-mail, use it to communicate with their school/department/program and other administrative units, and check it regularly for important information.

Study Elsewhere Policy

A student who has matriculated at Mason may transfer a limited number of hours (9 for undergraduates, 6 for graduates) of coursework in School of Business disciplines from another institution (not including registration through the Consortium of Universities of the Washington Metropolitan Area or coursework completed through the Center for Global Education). Students are permitted to take courses elsewhere under unusual circumstances—these circumstances do not include scheduling or commuting convenience, or financial (lower cost) reasons.

Special instructions for School of Business students: courses that are attempted at a two-year institution may not be used to fulfill upper-level requirements. Any course that a student wished to transfer to fulfill major or graduate-level course requirements in the School of Business must be attempted at an institution accredited by the Association to Advance Collegiate Schools of Business (AACSB).

For additional information, see AP.1.4.2 Permission to Study Elsewhere.

Undergraduate Internship Policy

The School of Business recognizes the importance of experiential education in both learning to apply theory to practice and positioning students for success in their careers. Because the School of Business is committed to supporting students' professional success, the School requires that all student internships for credit be registered with the School of Business as one of the following: ACCT 492, FNAN 492, MGMT 492, MIS 492, MKTG 492, or OSCM 492. Students may enroll in a maximum of 6 credits for these courses. Only three credits of an internship course may be taken at a time. For students in catalog years Fall 2016 and beyond, one internship course may apply to the major or concentration , and a second internship course would apply as general elective credit. For students in catalog years prior to Fall 2016, a maximum of 6 credits of internship may apply to general electives. See Internship for Academic Credit (https://business.gmu.edu/career/bus492/).

Termination from the Major

Students who do not earn a C or higher in three attempts of School of Business Foundations and Core courses will be terminated from the School of Business. Students terminated from the School of Business are prohibited from enrolling in any School of Business course and will not be eligible to receive a degree from the School of Business.

Courses required for School of Business Foundations: ACCT 203 Survey of Accounting, BUS 100 Business and Society (Mason Core), BUS 103 Develop Professional Skills I: Foundational Elements, BUS 200 Global Environment of Business (Mason Core), BUS 210 Business Analytics I, BUS 310 Business Analytics II, ECON 103 Contemporary Microeconomic Principles (Mason Core), ECON 104 Contemporary Macroeconomic Principles (Mason Core), and MATH 108 Introductory Calculus with Business Applications (Mason Core).

Courses required for School of Business Core: ACCT 303 Accounting for Decision Making , BULE 303 Legal Environment of Business, BUS 303 Develop Professional Skills II: Advanced Elements, FNAN 303 Financial Management, MGMT 303 Principles of Management, MKTG 303 Principles of Marketing, MIS 303 Introduction to Business Information Systems, and OSCM 303 Operations Management.

Once a student has attempted a School of Business Foundations and/or Core course twice unsuccessfully, they must meet with an academic advisor in order to receive an override to register for the third attempt. Students who do not successfully complete these core courses and foundations courses within three attempts will be terminated from the School of Business and will not be eligible to receive a degree from the School of Business. Students terminated from the School of Business are prohibited from enrolling in any School of Business course.

Students terminated from the School of Business are permitted to declare the business minor only, and are not able to declare any other School of Business minors. For more information about this, see AP.5.2.4 Termination from the Major. The School of Business Termination Policy is separate from the University Repeat Policy AP.1.3.4.

All School of Business courses require a C or higher with the exception of FNAN 303 Financial Management for Finance majors or those with a concentration in Finance (B- or higher is required). For those in the Financial Planning and Wealth Management concentration, a B- is needed in ACCT 303 Accounting for Decision Making and FNAN 303 Financial Management. No upper-level major required or elective course may be attempted for a C or higher more than three times. Once a third unsuccessful attempt is made in a School of Business major required or elective course, the student will be unable to pursue that major/concentration and must work with an academic advisor to declare a new major/concentration in the School of Business.

University Consortium

Students should review university policies regarding the University Consortium under Special Registration Procedures in the Academic Policies section of this catalog. Students who have attempted or failed a course at Mason are not permitted to take the equivalent course through the consortium under any circumstance. All consortium registration requests must be submitted to the dean's office at least 3 weeks prior to the first day of classes for the relevant semester at Mason.

Any consortium course that a student wishes to register for to fulfill major or graduate-level course requirements in the School of Business must be attempted at an institution accredited by the Association to Advance Collegiate Schools of Business (AACSB).

Non-Business School Student Credit Limitation

Enrolled undergraduate students who are not declared in a School of Business major are limited to 9 credits of upper-level business coursework within the School of Business. This policy applies to any student who is declared in another major or program at Mason. This policy does not apply to students who have declared a School of Business minor and are earning required credit toward that minor.

Undergraduate Course Overload Policy

The School of Business recommends that undergraduate students attempt no more than 18 credits in an academic semester and no more than 14 credits in a summer term. Students wishing to attempt more than 18 credits must submit a Permission to Overload form to their academic advisor.

To be eligible for a course overload, a student must fulfill all of the following criteria:

- At least a 3.0 cumulative GPA at Mason
- Have completed all courses successfully in his/her previous semester with no Fs or incompletes (IN)
- Complete the Permission to Overload form and obtain an academic advisor's signature

Freshmen and transfer students in their first semesters are not given permission for overloads as they have yet to establish an academic record at George Mason University.

If approved for an overload, the student is responsible for adding the additional class(es) and paying for the related tuition by the official university deadlines.

Transfer Credit Expiration Policy

Transfer credit is not awarded for any business (management, marketing, finance, accounting, management information systems, operations management, foundations, core, or any other School of Business course), courses completed more than ten years prior to Mason enrollment. This includes any older courses completed at RBC or the VCCS.

Laptop Policy

All School of Business Undergraduate Students must have access to a portable computing device that meets the following minimum standards. (https://business.gmu.edu/undergraduate/current-students/policiesproceduresforms/)

Appeals Process

The School of Business strives to maintain policies and procedures that are consistent with those of the University, as well as in the best interest of our students. If you have any questions concerning a particular policy or procedure, contact the Office of Student Success & Academic Services, Room 008 of Enterprise Hall (703-993-1880) or visit the website (http://business.gmu.edu).

Courses Excluded from any School of Business BS Degree

Transfer credit is not awarded for any School of Business courses completed more than ten years prior to Mason enrollment.

Code	Title	Credits
SWE 401	Internship Reflection	1
MUSI 394	Ethnomusicology Internship	1-4
COMM 450	Internship in Communication	3
FAVS 450	Internship in Film and Video Studies	3
GOVT 480	Internship	3
MUSI 496	Internship	2-6

CONF 370	Internship Field Experience	1-9
PHIL 306	Philosophy Internship	3
RELI 426	Religious Studies Internship	3
ARTH 393	Art History Internships	3-6
GCH 498	Global and Community Health Internship	3,6
GAME 491	Internship	3-4
HAP 498	Health Administration Internship (Mason Core)	4
HDFS 499	Advanced Internship and Analysis in Human Development and Family Science	3
EVPP 494	Internship	1-3
ENGH 459	Internship	1-3
MUSI 395	Teaching Internship	1-4
INTS 390	International Internship (Mason Core)	1-6
INTS 490	Internship	1-6
ASTR 409	Astronomy Internship	3
SPMT 490	Internship (Mason Core)	12
TOUR 490	Hospitality, Tourism, and Events Management Internship (Mason Core)	12
CLIM 409	Research Internship	3
CHIN 490	Internship in Chinese Studies	1-9
CONS 498	Internship	1-3
THR 455	Theater Education Internship	6-12
AFAM 490	Internship	2-6
KINE 490	Kinesiology Internship III (Mason Core)	12
AMGT 489	Internship in Arts Management	1-4
HDFS 498	Internship and Analysis in Human Development and Family Science	3
ANTH 495	Internship	1-6
PRLS 490	Recreation Management Internship (Mason Core)	12
GGS 480	GGS Internship	1-3
SPAN 490	Internship in Spanish	1-6
AVT 489	Internship in Art and Visual Technology	1-6
USST 490	Internship	3
WMST 400	Internship in Women and Gender Studies	1-3
CDS 491	Internship	1-3
HHS 480	Research Internship in Public Health	3
CRIM 480	Internship	6-12
HIST 399	Internship	1-9
RHBS 490	RS: Clinical Research Internship	3
KINE 341	Kinesiology Internship I	3
MUSI 495	Internship in Music Education (Mason Core)	6-12
KINE 441	Kinesiology Internship II	3
PHYS 409	Physics Internship	3
HHS 492	RS: Internship in Clinical Research	3
SOCI 416	Internship in Sociology I (Mason Core)	3-6
FRLN 490	Internship in Foreign Language Studies	1-6
ENGR 395	Engineering Internship	3
GEOL 480	Internship	1-3
AVT 453	Professional Practices	3
CVPA 489	Field Experience in the Arts	3-6
GLOA 495	Global Experiential Learning	1-18
KINE 330	Seminar in Kinesiology	3
ECED 490	Internship in Early Childhood Education (Mason Core)	3-6
FRSC 406	Forensic Internship	3

Graduate Academic Policies

The School of Business maintains policies and procedures that are consistent with those of the university, as well as in the best interest of our students. Graduate policies and procedures for business graduate students may be found here: https://business.gmu.edu/grad-policies-and-procedures/

If you have any questions concerning a particular policy or procedure, please contact your academic advisor (https://business.gmu.edu/grad-programs/contact-us-graduate-programs/).

Programs

- Accounting Analytics Graduate Certificate
- Accounting Undergraduate Certificate
- Accounting for Government Contracts Graduate Certificate
- Accounting, MS
- Business Administration, MBA
- Business Analytics Graduate Certificate
- Business Analytics Minor
- Business Fundamentals Graduate Certificate
- Business Minor
- Business, BS
- Business, PhD
- Chief Information Officer Graduate Certificate
- Entrepreneurship Minor
- Executive MBA
- Finance Minor
- Finance, MS
- Forensic Accounting Graduate Certificate
- Global IT Leadership Graduate Certificate
- Government Accounting Graduate Certificate
- Government Contracting Minor
- IT Strategy and Digital Transformation Graduate Certificate
- International Business Minor
- Management Information Systems Minor
- Management, MS
- Marketing Minor
- Operations and Supply Chain Management Minor
- Real Estate Development Minor
- Real Estate Development, MS
- Technology Management, MS

Accounting Undergraduate Certificate

Banner Code: BU-CERB-ACCT

Academic Advising

Phone: 703-993-1880
Email: masonbus@gmu.edu

This program provides an opportunity for nondegree-seeking students to earn the academic credit necessary to sit for the Uniform CPA Examination in Virginia.

This undergraduate certificate may be pursued on a part-time basis. Maintaining full-time status is not guaranteed. Students have four years to complete the certificate.

This certificate program qualifies for Title IV Federal Financial Aid.

Admissions & Policies

Admissions

The requirement for enrollment is a bachelor's degree or higher from an accredited college or university.

Policies

Certificate Completion

Students are required to complete a minimum of 30 credits of accounting courses. At least 16 required credits must be taken at Mason after acceptance to the certificate program. Students have four years to complete certificate requirements. Students who are given permission to re-enroll following an absence from Mason may not count the four-year time limit as beginning on the date of re-enrollment.

Successful completion of the certificate program requires a grade of C or better in accounting courses and a GPA of at least 2.00 in all courses. Students are only permitted three attempts to pass each course with a C or better, following a third unsuccessful attempt the student will no longer be able pursue the certificate program.

Virginia Uniform CPA Examination

All students who wish to sit for the Uniform CPA Examination in Virginia are required to have completed 150 college-level credits, including at least 30 credits of accounting with courses in financial accounting, auditing, taxation, and management accounting; and at least 24 credits of non-accounting business courses.

Requirements

Certificate Requirements

Total credits: 30

This certificate may be pursued on a part-time basis only.

Required Courses

Code	Title	Credits
ACCT 203	Survey of Accounting	3
ACCT 303	Accounting for Decision Making	3
or ACCT 330	Financial Accounting I	
ACCT 311	Managerial and Cost Accounting	3
ACCT 331	Intermediate Accounting I	3
ACCT 332	Intermediate Accounting II	3
ACCT 351	Taxation and Managerial Decision Making	3
ACCT 361	Accounting Analytics	3
ACCT 461	Assurance and Audit Services	3
Total Credits		24

Electives

Code	Title	Credits
Select six credits from the following:		6
ACCT 370	International Accounting	
ACCT 372	Financial Statement Analysis	
ACCT 411	Advanced Managerial Accounting	
ACCT 433	Advanced Financial Accounting	
ACCT 451	Advanced Federal Taxation	
ACCT 462	Honors Seminar in Accounting	
ACCT 472	Government and Not-for-Profit Accounting	
ACCT 491	Seminar in Accounting	
ACCT 492	Internship in Accounting	
ACCT 499	Independent Study	
FNAN 303	Financial Management	
BULE 402	Commercial Law	
Total Credits		6

Notes

Students with a previous degree in business or accounting are advised to take School of Business courses above the 303 level to complete the 16 Mason credits needed after acceptance to the certificate program.

Students who have not previously studied business are advised to take the following recommended courses:

Code	Title	Credits
BULE 303	Legal Environment of Business	3
BULE 402	Commercial Law	3
BUS 210	Business Analytics I	3
BUS 310	Business Analytics II	3
FNAN 341	Introduction to Firm Valuation	3
MIS 303	Introduction to Business Information Systems	3

Accounting, MS

Banner Code: BU-MS-ACCT

Graduate Program Office

Phone: 703-993-8006
Email: sbusgrad@gmu.edu

Administration

- Kevin Jones, MSA Program Director

The Master of Science in Accounting integrates fundamental business skills and specialized knowledge and acumen required by the accounting profession. The program is pursued as a face to face or an online option.

Admissions & Policies

Admissions

Admission and Eligibility Requirements

All students registering for School of Business graduate courses must have graduate standing. Non-degree student status is not available. To be eligible for the MS in Accounting (the full-time, part-time and accelerated accounting programs), you must have a bachelor's degree in accounting or equivalent from an accredited institution or have completed 27 college credits in accounting.

Applicants who have a business degree, but do not have an accounting degree or equivalent will be provisionally admitted until they have completed the following courses or equivalents with a grade of B- or better:

- ACCT 531 Foundations of Financial Reporting I
- ACCT 532 Foundations of Financial Reporting II
- ACCT 551 Foundations of Taxation of Business Entities
- ACCT 561 Foundations of Assurance Services

Applicants who do not have an accounting degree or business degree will be provisionally admitted until they have completed the following courses or equivalents with a grade of B- or better:

- ACCT 303 Accounting for Decision Making
- ACCT 531 Foundations of Financial Reporting I
- ACCT 532 Foundations of Financial Reporting II
- ACCT 551 Foundations of Taxation of Business Entities
- ACCT 561 Foundations of Assurance Services

International students with accounting degrees that lack a course in U.S. tax will be required to take ACCT 351 prior to matriculation.

Full admission requirements can be viewed at the school's website. (http://business.gmu.edu/masters-in-accounting/admissions/requirements/)

Policies

For policies governing all graduate degrees, see AP.6 Graduate Policies.

Requirements

Degree Requirements

Total credits: 30

Required Courses

Code	Title	Credits
ACCT 633	Advanced Issues in Financial Reporting	3
ACCT 636	Fraud Examination	3
ACCT 651	Advanced Issues in Taxation	3
ACCT 690	Professional Accounting Colloquium	3
ACCT 795	Global Accounting Environment	3
Total Credits		15

Electives

Code	Title	Credits
Select 15 credits of electives from any 600- or 700-level ACCT course [1]		15
Total Credits		15

[1] Electives cannot duplicate coursework taken as an undergraduate

Accelerated Master's

Accounting, BS/Accounting, Accelerated MS

Overview

Mason Accounting majors may be admitted to the bachelor's/accelerated master's program to obtain both Accounting, BS or Business, BS (https://catalog.gmu.edu/colleges-schools/business/business-bs/)with a Concentration in Accounting (https://catalog.gmu.edu/colleges-schools/business/business-bs/) and Accounting MS (https://catalog.gmu.edu/colleges-schools/business/accounting-ms/)degrees (MSAccel) in an accelerated time-frame after satisfactory completion of a minimum of 138 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) for policies related to this program.

Participation in this program enables students to start taking graduate courses while they are in undergraduate status and decreases the number of credits required during graduate status.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies. (https://catalog.gmu.edu/policies/academic/graduate-policies/#text)

MSAccel Pathway Application Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies. For information specific to the MSAccel pathway, see the School of Business website (https://business.gmu.edu/masters-in-accounting/msa-accelerated/) with other requirements.

Students will be considered for admission into the MSAccel pathway after completion of a minimum of 60 credits and meeting all academic requirements which can be found on the School of Business website (https://business.gmu.edu/masters-in-accounting/msa-accelerated/).

Students who are accepted into the MSAccel pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

Students already admitted in the MSAccel pathway will be admitted to the MS in Accounting program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- Overall GPA of 3.0
- Grades of C or above (on the first attempt) in all accounting major courses. *Students with an accounting grade below a C may transition to the MSA only with approval from the Program Director.*
- 3 credits of advanced standing with a grade of B or better from one graduate level ACCT courses listed in the MSAccel Pathway Requirements section below.
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

MSAccel Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Code	Title	Credits
Advanced Standing courses (up to 12 credits; grade of B or better required)		
ACCT 611	Advanced Issues in Managerial Accounting	
ACCT 630	Advanced Financial Accounting	
ACCT 670	International Accounting	
Reserve Credit courses (up to 6 credits):		
ACCT 621	GovCon Acquisition Regulations and Reporting	
ACCT 636	Fraud Examination	
ACCT 665	Advanced Accounting Analytics	
ACCT 671	Managing Data Quality and Integrity	
ACCT 672	Governmental and Nonprofit Accounting	

* other courses as approved by Program Director

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degree policies. (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7)

Accounting Analytics Graduate Certificate

Banner Code: BU-CERG-ACAN

Graduate Program Office

Phone: 703-993-8006
Email: sbusgrad@gmu.edu

The Accounting Analytics Graduate Certificate is for students and working professionals to pair their accounting knowledge and skills with data and analytical knowledge. The certificate program will provide a building block for Master's in Accounting students and working professionals seeking a career change or advancement and provides a foundation to compete for current accounting employment opportunities.

Admissions & Policies

Admissions

All students registering for School of Business graduate courses must have graduate standing. Non-degree student status is not available.

Full eligibility and admission requirements can be viewed on the program website (http://business.gmu.edu/masters-in-accounting/accounting-analytics-certificate/).

Policies

Students may use the credits completed as part of their graduate degree requirements in accordance with program requirements and AP.6 Graduate Policies. A maximum of 3 graduate credits taken at another institution can be transferred to the graduate certificate. The time limit for completion is six years from the date of admission to the graduate certificate. Students must have a minimum GPA of 3.00 to complete the certificate.

Requirements

Certificate Requirements

Total credits: 12

This certificate may be pursued on a part-time basis only.

Required Courses

Code	Title	Credits
Select four courses from the following:		12
ACCT 661	Accounting Analytics [1]	
ACCT 665	Advanced Accounting Analytics	
ACCT 671	Managing Data Quality and Integrity	
ACCT 771	Audit Analytics	
ACCT 781	Tax Analytics	
Total Credits		12

[1] ACCT 361 taken as a Mason undergraduate student will substitute for ACCT 661. Students must complete the four other courses from the menu listed above.

Accounting for Government Contracts Graduate Certificate

Banner Code: BU-CERG-ACGC

Graduate Program Office

Phone: 703-993-8006
Email: sbusgrad@gmu.edu

Admissions & Policies

Admissions

Candidates must have a minimum GPA of 3.00 in coursework presented on the certificate application, which may include no more than 3 credits of C. (Grades of C+, C-, and D do not apply to graduate courses.)

Policies

For policies governing all graduate certificates, please see AP.6.8 Requirements for Graduate Certificates.

Requirements

Certificate Requirements

Total credits: 12

This certificate may be pursued on a part-time basis only.

Required Courses

Code	Title	Credits
ACCT 621	GovCon Acquisition Regulations and Reporting	3
ACCT 623	Project Accounting and Cost Management	3
ACCT 624	GovCon Business Systems and Control	3
ACCT 625	GovCon Audit and Compliance	3
Total Credits		12

Business Administration, MBA

Banner Code: BU-MBA-BUAD

Graduate Program Office

Phone: 703-993-8006
Email: sbusgrad@gmu.edu

Administration

- Pallab Sanyal, Director, MBA Program

This degree prepares the next generation of world leaders through a rigorous, stimulating business and management curriculum based on a global perspective, industry demand and leadership.

The MBA core curriculum effectively integrates functional areas with the use of IT, oral and written communication, and teamwork. The MBA program requires 48 credits: 30 credits of core courses, 3 credits of Global coursework and 15 credits of elective courses. The MBA program operates on an 8 week module structure and can be pursued either as a face to face or an online format.

JD/MBA Dual Degree students can apply 15 credits of Law elective coursework toward the MBA elective degree requirement. See the Antonin Scalia Law School (http://www.law.gmu.edu/academics/degrees/) for more details.

Admissions & Policies

Admissions

Admissions and Eligibility Requirements

- All students registering for School of Business graduate courses must have graduate standing. Non-degree student status is not available.
- An earned baccalaureate degree from a regionally-accredited institution of higher education, or international equivalent, verified from official transcripts.
- A minimum of two years of full-time, post-baccalaureate professional employment.
- One college-level calculus course prior to enrolling (recommended but not required).

Full admission requirements can be viewed are available on the program website (http://business.gmu.edu/mba-programs/admissions/).

Policies

For policies governing all graduate degrees, see AP.6 Graduate Policies.

Requirements

Degree Requirements

Total credits: 48

Core Courses

Code	Title	Credits
MBA 603	Managerial Economics and Decisions of the Firm	3
MBA 612	Managing Costs and Evaluating Performance	3
MBA 613	Financial Reporting and Decision Making	3
MBA 623	Marketing Management	3
MBA 633	Statistics for Business Decision Making	3
MBA 638	Operations Management	3
MBA 643	Managerial Finance	3
MBA 653	Organizational Behavior	3
MBA 662	Management of Information Technology	3
MBA 678	Strategic Management	3
Total Credits		30

Global Requirement

Code	Title	Credits
Students must take one of the following global courses:		3
MBA 795	Global Business Perspectives [1]	
MBA 716	International Business Strategy	
MBA 717	International Finance	
MBA 718	International Marketing	
Total Credits		3

[1] Travel outside the United States is required. Most travel costs, excluding cost of airfare, are included in the MBA program tuition and fees.

Electives

Code	Title	Credits
Select 15 credits of market-driven electives (MBA 700-level) [1, 2, 3]		15
Total Credits		15

[1] 6 credit hours of electives may be taken outside the MBA Program or through the Consortium of Universities of the Washington Metropolitan Area with the permission of the program director.

[2] JD/MBA Dual Degree Students can apply 15 credits of Law Elective coursework toward the MBA Elective degree requirement. See the Antonin Scalia Law School (http://www.law.gmu.edu/academics/degrees/) for more details.

[3] Course options not used to fulfill the global requirement may be applied towards the electives requirement.

Business Analytics Graduate Certificate

Banner Code: BU-CERG-BUSA

Graduate Program Office

Phone: 703-993-8006
Email: sbusgrad@gmu.edu

Administration

- Pallab Sanyal, Director, MBA Program

The Graduate Certificate in Business Analytics will help analysts and professionals from diverse domains to effectively analyze data through the hands-on use of decision modeling and other techniques using popular software tools. The program covers a wide array of methodologies and techniques — from data collection, organization, reporting and mining to extraction of useful and actionable information for decision makers.

Courses (grades of B or better) taken as part of the Graduate Certificate in Business Analytics can be applied toward the Mason MBA upon acceptance into the degree program.

Non-MBA students enroll in GBUS courses while MBA students enroll in MBA courses.

This certificate qualifies for Title IV Federal Financial Aid.

Admissions & Policies

Admissions

Eligibility Requirements

All students registering for School of Business graduate courses must have graduate standing. Non-degree student status is not available.

Full eligibility and admission requirements can be viewed on the program website (http://business.gmu.edu/mba-programs/analytics/).

Policies

Students may use the credits completed as part of their graduate degree requirements in accordance with program requirements and AP.6 Graduate Policies. A maximum of 3 graduate credits taken at another institution can be transferred to the graduate certificate. The time limit for completion is six years from the date of admission to the graduate certificate. Students must have a minimum GPA of 3.00 to complete the certificate.

Requirements

Certificate Requirements

Total credits: 12

This certificate may be pursued on a full-or part-time basis.

Required Course

Code	Title	Credits
MBA 738	Data Mining for Business Analytics	3
or GBUS 738	Data Mining for Business Analytics	
Total Credits		3

Electives

Code	Title	Credits
Select three courses from the following:		9
MBA 720	Marketing Analytics	
or GBUS 720	Marketing Analytics	
MBA 721	Marketing Research	
or GBUS 721	Marketing Research	
MBA 739	Advanced Data Mining for Business Analytics	
or GBUS 739	Advanced Data Mining for Business Analytics	
MBA 740	People Analytics	
or GBUS 740	People Analytics	
MBA 744	Fraud Examination	
or GBUS 744	Fraud Examination	
Total Credits		9

Business Analytics Minor

Banner Code: ABUS

Academic Advising

Phone: 703-993-1880
Email: masonbus@gmu.edu

Administration

- Jeremy Plotnick, Director of Minor Programs

The amount of data flowing from, to, and through enterprises of all sorts is enormous, and growing rapidly—more rapidly than the capabilities of organizations to use it. Successful enterprises are those that make

effective use of the abundance of data to which they have access: to make better predictions, better decisions, and form better strategies. Business analytics—which encompasses a variety of techniques to extract useful information from different sources of data—is being embraced at an increasing rate by organizations that need to gain actionable and forward-looking insight from their data. The minor in business analytics will provide students with the cutting-edge knowledge and skills they need to use and gather data to identify, understand, and deliver insights that internal and external clients find vital to organizational success.

Admissions & Policies

Policies

At least eight credits must be unique to the minor and not applied toward any other major, minor, or concentration. Students must achieve a grade of C or better in each course that is applied toward the minor.

For policies governing all minors, see AP.5.3.4 Minors. The School of Business residency requirement for this minor supersedes the university requirement: at least nine credits must be earned at Mason.

Requirements

Minor Requirements

Total credits: 15

Required Course

Code	Title	Credits
MIS 431	Data Mining for Business Applications	3
Total Credits		3

Electives

Code	Title	Credits
Select four courses from the following:		12
ACCT 361	Accounting Analytics	
ACCT 465	Advanced Accounting Analytics	
FNAN 430	Empirical Methods in Finance	
FNAN 436	Probability Methods for Finance	
MIS 310	Database Management Systems	
MIS 350	Introduction to Programming for Business Applications	
MIS 430	Data Warehousing	
MIS 432	Advanced Data Mining	
MIS 433	Programming for Analytics	
MKTG 351	Marketing Research	
MKTG 352	Marketing Analytics for New Product Development	
OM 352	Management Science	
OM 452	Business Forecasting	
STAT 362	Introduction to Computer Statistical Packages	
STAT 456	Applied Regression Analysis	
Total Credits		12

Business Fundamentals Graduate Certificate

Banner Code: BU-CERG-BUSF

Graduate Program Office

Phone: 703-993-8006
Email: sbusgrad@gmu.edu

The Graduate Certificate in Business Fundamentals provides students with foundational knowledge in four key areas of business: accounting, finance, management, and marketing. This introduction will augment students' skillsets from their own academic and professional disciplines with a fundamental understanding of effective business practices.

Courses (grades of B or better) taken as part of the Graduate Certificate in Business Fundamentals can be applied toward the Mason MBA upon acceptance into the degree program.

Currently, this certificate does not qualify for Title IV Federal Financial Aid.

Admissions & Policies

Admissions

All students registering for School of Business graduate courses must have graduate standing. Non-degree student status is not available.

Full eligibility and admission requirements can be viewed on the program website. (http://business.gmu.edu/mba-programs/business-fundamentals-certificate/)

Policies

Students may use the credits completed as part of their graduate degree requirements in accordance with program requirements and AP.6 Graduate Policies.

A maximum of 3 graduate credits taken at another institution can be transferred to the graduate certificate. The time limit for completion is six years from the date of admission to the graduate certificate. Students must have a minimum GPA of 3.00 to complete the certificate.

Requirements

Certificate Requirements

Total credits: 12

This certificate may be pursued on a full-or part-time basis.

Coursework

Code	Title	Credits
GBUS 613	Financial Reporting and Decision Making	3
GBUS 623	Marketing Management	3
GBUS 643	Managerial Finance	3
GBUS 653	Organizational Behavior	3
Total Credits		12

Business Minor

Banner Code: BUS

Academic Advising

Phone: 703-993-1880
Email: masonbus@gmu.edu

Administration

- Jeremy Plotnick, Director of Minor Programs

The business minor provides an introduction to the skills needed for success in the rapidly changing and evolving world of business. Because it is designed for non-business students who seek to learn business essentials to enhance their own area of expertise, the minor provides broad exposure to business concepts and theories. The minor also presents and integrates the major functional areas in business to solve management problems through the use of IT. Strong written and oral communication skills are expected.

Admissions & Policies

Policies

At least eight credits must be unique to the minor and not applied toward any other major, minor, or concentration. Students must achieve a grade of C or better in each course that is applied toward the minor.

For policies governing all minors, see AP.5.3.4 Minors. The School of Business residency requirement for this minor supersedes the university requirement: at least nine credits must be earned at Mason.

Requirements

Minor Requirements

Total credits: 15

Required Courses

Code	Title	Credits
Select at least four courses from the following:		12-15
MBUS 300	Accounting in a Global Economy	
MBUS 301	Managing People and Organizations in a Global Economy	
MIS 303	Introduction to Business Information Systems	
MBUS 303	Marketing in a Global Economy	
MBUS 308	Corporate Finance and Investments in a Global Economy	
Total Credits		12-15

Electives

Code	Title	Credits
Select the fifth course from the following:		3
Courses from the preceding list		
MBUS 304	Entrepreneurship: Starting and Managing a New Enterprise	
MBUS 305	Introduction to International Business (Mason Core)	
MBUS 306	Managing Projects and Operations	
MBUS 491	Special Topics: Business Minor	
Total Credits		3

Business, BS

Banner Code: BU-BS-BUS

Academic Advising

Phone: 703-993-1880
Email: masonbus@gmu.edu

The School of Business is ranked in the top 10 percent of the nation's undergraduate business schools and offers a Bachelor of Science in Business with innovative concentrations. The School of Business also offers several options for a minor for business and non-business majors, as well as an undergraduate certificate program in accounting. The School of Business programs are designed to prepare graduates for work in a rapidly changing and competitive marketplace with local, regional, and global companies. With Mason's location in Northern Virginia and proximity to Washington, D.C., combined with the assistance of the School of Business's own Career Services staff and Student Success and Academic Services staff, students are also afforded exceptional opportunities to gain practical experience and global engagement opportunities to complement their academic coursework. Students admitted spring 2020 and later will graduate with a Bachelor of Science in Business degree.

Requirements

Degree Requirements

Total credits: 120

School of Business students pursuing a BS degree must complete a minimum of 120 credits, including the Mason Core requirements, business foundations, business core and concentration requirements. In addition, the following requirements must be met:

- A minimum of 45 credits at the 300- or 400-level.
- A minimum of 30 credits of School of Business core and concentration courses at Mason.
- At least 9 credits required for the specific concentration and BUS 498 Capstone Course: Advanced Business Models (Mason Core) taken at Mason.
- A grade of C or higher earned in the business foundations, business core and concentration requirements.

Students should carefully follow prerequisites for School of Business courses. Students may be removed from a course if they enroll without having fulfilled the prerequisites.

Mason Core Requirements

Some Mason Core requirements may already be fulfilled by concentration requirements listed below. Students are strongly encouraged to consult their advisors to ensure they fulfill all remaining Mason Core requirements.

Code	Title	Credits
Foundation Requirements		
Written Communication		6
Oral Communication		3
Core Requirements		
Arts		3
Literature		3
Natural Science [1]		7
Western Civilization/World History		3
Total Credits		25

[1] The School of Business natural science requirement must be fulfilled by completing one 4-credit laboratory science and one 3 credit non-lab science.

Note: Remaining Mason Core requirements are fulfilled with concentration course work.

Business Foundations

Those who do not successfully complete these courses within three attempts will be terminated from the School of Business and will not be eligible to receive a degree from the School of Business. Students terminated from the School of Business are prohibited from enrolling in any School of Business course. For more information about this, see AP.5.2.4 Termination from the Major.

Code	Title	Credits
ACCT 203	Survey of Accounting	3
BUS 100	Business and Society (Mason Core) [2]	3
BUS 103	Develop Professional Skills I: Foundational Elements	3
BUS 200	Global Environment of Business (Mason Core) [2]	3
BUS 210	Business Analytics I	3
BUS 310	Business Analytics II	3
ECON 103	Contemporary Microeconomic Principles (Mason Core)	3
ECON 104	Contemporary Macroeconomic Principles (Mason Core)	3
Select one course from the following: [1]		3-4
MATH 108	Introductory Calculus with Business Applications (Mason Core)	
MATH 113	Analytic Geometry and Calculus I (Mason Core)	
MATH 114	Analytic Geometry and Calculus II	
HNRT 225	Applied Calculus	
Total Credits		27-28

[1] MATH 108 or MATH 113 satisfies the Mason Core Quantitative Reasoning requirement.

[2] BUS 200 satisfies Mason Core Global Understanding requirement, and BUS 100 satisfies the Mason Core Social and Behavioral Sciences requirement.

Business Core

Those who do not successfully complete these courses within three attempts will be terminated from the School of Business and will not be eligible to receive a degree from the School of Business. Students terminated from the School of Business are prohibited from enrolling in any School of Business course. For more information about this, see AP.5.2.4 Termination from the Major.

Code	Title	Credits
ACCT 303	Accounting for Decision Making	3
BULE 303	Legal Environment of Business	3
BUS 303	Develop Professional Skills II: Advanced Elements	3
FNAN 303	Financial Management	3
MGMT 303	Principles of Management	3
MIS 303	Introduction to Business Information Systems [1]	3
MKTG 303	Principles of Marketing	3
OSCM 303	Operations Management	3
Total Credits		24

[1] MIS 303 Introduction to Business Information Systems satisfies the Mason Core Information Technology and Computing requirement.

General Electives

Code	Title	Credits
Select 19-20 Credits [1]		19-20
Total Credits		19-20

[1] General electives may be selected from any University or School of Business course, except courses designated for the Business Minor (MBUS). Credits awarded as Associate Degree Elective Credit (ADEC) as part of a student's transfer evaluation are also excluded from general electives.

Capstone

Students must have 90 graded credits and successfully complete all Business Core courses and BUS 310 Business Analytics II to be eligible to enroll in BUS 498 Capstone Course: Advanced Business Models (Mason Core).

Code	Title	Credits
BUS 498	Capstone Course: Advanced Business Models (Mason Core)	3
Total Credits		3

Concentration in Accounting (ACCT)

The concentration in Accounting prepares students for professional careers in the private and public sectors. The accounting concentration is designed to produce accounting professionals who can both generate and apply financial information to solve business problems. Our students learn principles of business and accounting as well as the specific skills and specialized technical knowledge necessary for success in the dynamic field of accounting. Our program emphasizes ethics, critical thinking, written and verbal communication, and effective use and understanding of technology. Our graduates are employed by the assurance, tax advisory, and consulting groups of the top accounting firms as well as Fortune 100 companies. Our proximity to the nation's capital provides unique opportunities for our graduates to work in government and in the federal practices of public accounting firms. The accounting concentration program is separately accredited by AACSB International. Students interested in CPA certification can apply

to the MSA (https://catalog.gmu.edu/colleges-schools/business/accounting-ms/) degree to meet the 150 hour requirement for CPA certification in most states. The MSA (https://catalog.gmu.edu/colleges-schools/business/accounting-ms/) allows students to meet the 150 hour requirement for CPA certification in most states in only nine months.

Also available for eligible students, the Accelerated Advanced Accounting Pathway (A++) is a pathway that provides the ability to complete a bachelor and master's degree in accounting in four years. For more information, please meet with an academic advisor in the School of Business.

Code	Title	Credits
Required Courses		
ACCT 311	Managerial and Cost Accounting	3
ACCT 331	Intermediate Accounting I	3
ACCT 332	Intermediate Accounting II	3
ACCT 351	Taxation and Managerial Decision Making	3
ACCT 361	Accounting Analytics	3
ACCT 461	Assurance and Audit Services [3]	3
Electives		
Select one course from the following: [1]		3
ACCT 370	International Accounting	
ACCT 372	Financial Statement Analysis	
ACCT 408	Taxes Insurance and Risk Management	
ACCT 411	Advanced Managerial Accounting	
ACCT 433	Advanced Financial Accounting	
ACCT 441	Estate Planning	
ACCT 451	Advanced Federal Taxation	
ACCT 462	Honors Seminar in Accounting	
ACCT 465	Advanced Accounting Analytics	
ACCT 472	Government and Not-for-Profit Accounting	
ACCT 491	Seminar in Accounting	
ACCT 492	Internship in Accounting	
ACCT 499	Independent Study	
BULE 402	Commercial Law	
ACCT 611	Advanced Issues in Managerial Accounting [2]	
ACCT 621	GovCon Acquisition Regulations and Reporting [2]	
ACCT 630	Advanced Financial Accounting [2]	
ACCT 633	Advanced Issues in Financial Reporting [2]	
ACCT 636	Fraud Examination [2]	
ACCT 651	Advanced Issues in Taxation [2]	
ACCT 665	Advanced Accounting Analytics [2]	
ACCT 670	International Accounting [2]	
ACCT 671	Managing Data Quality and Integrity [2]	
ACCT 672	Governmental and Nonprofit Accounting [2]	
ACCT 690	Professional Accounting Colloquium [2]	
ACCT 696	Directed Studies in Accounting [2]	
ACCT 697	Special Topics in Accounting [2]	
Total Credits		21

1 Students who anticipate taking the CPA, CMA, CIA or other professional exam should consult the applicable regulations and meet with their advisor. State regulations regarding professional examinations may dictate course selections.

2 Students in the Accelerated Master's program and select high performing undergraduates may take graduate courses for undergraduate credit. Enrollment in a graduate level course is not guaranteed. Please contact an academic advisor for additional information.

3 Satisfies Writing Intensive requirement

Second Concentration in Accounting

Code	Title	Credits
Required Courses		
ACCT 311	Managerial and Cost Accounting	3
ACCT 331	Intermediate Accounting I	3
ACCT 332	Intermediate Accounting II	3
ACCT 351	Taxation and Managerial Decision Making	3
ACCT 361	Accounting Analytics	3
ACCT 461	Assurance and Audit Services	3
Total Credits		18

Concentration in Business Analytics (BUSA)

Business analytics encompasses a wide array of methodologies and techniques, from collection, organization, reporting and mining of data to extraction of useful and actionable information for the decision makers. As the field matures, more organizations are turning to business analytics as part of their core function to assist decision making and strategy development. Business analytics is grounded in an understanding of business and uses knowledge and skills related to analytic tools to identify business questions that can be answered by data, identify appropriate data to answer the questions, evaluate the quality of the data, analyze the data, form conclusions, and meaningfully communicate those conclusions to relevant parties. Business analysts will work in practice with data scientists with backgrounds in engineering, math, or computer science whose expertise in data analytics is centered on data architecture or developing data analysis tools.

Code	Title	Credits
Required Courses		
MIS 310	Database Management Systems	3
MIS 430	Data Warehousing	3
MIS 431	Data Mining for Business Applications [1]	3
MIS 433	Programming for Analytics	3
Electives		
Select three courses from the following:		9
ACCT 465	Advanced Accounting Analytics	
FNAN 430	Empirical Methods in Finance	
FNAN 436	Probability Methods for Finance	
MIS 432	Advanced Data Mining	
MKTG 351	Marketing Research	
MKTG 352	Marketing Analytics for New Product Development	
OSCM 352	Management Science	
OSCM 452	Business Forecasting	
STAT 463	Introduction to Exploratory Data Analysis	
SYST 473	Decision and Risk Analysis	

MIS 492	Internship in Management Information Systems	
or OSCM 492	Internship in Operations and Supply Chain Management	
Total Credits		21

[1] Satisfies Writing Intensive requirement

Second Concentration in Business Analytics
Students declaring a second concentration in Business Analytics must complete the four required courses and two elective courses for the concentration (listed above).

Concentration in Finance (FNAN)

The concentration in Finance prepares students for professional careers by providing a solid foundation in the principles necessary to make operating decisions for an organization and in financial market analysis. We educate our finance students to understand, evaluate, and manage risk. In addition, students learn to conduct and effectively present financial analysis and research valuing complex projects, assets, securities, and firms. Students in the finance concentration explore the relationships among investors, firms, financial institutions, markets, and regulators. Students with a concentration in Finance have a unique opportunity to compete globally, as well as regionally, for unique and diverse job opportunities, including government (U.S. Treasury and the Board of Governors), large financial corporations (Fannie Mae and Freddie Mac), international organizations (World Bank and IMF), and other careers related to Finance.

Code	Title	Credits
Required Courses		
Select three courses from the following: [1]		9
FNAN 311	Principles of Investment	
FNAN 321	Financial Institutions	
FNAN 341	Introduction to Firm Valuation	
FNAN 401	Advanced Financial Management	
Select one of the required Writing Intensive Courses below:		3
FNAN 477	Student Managed Investment Fund	
FNAN 498	RS: Contemporary Topics in Finance	
Electives		
Select three courses from the following:		9
FNAN 311	Principles of Investment	
FNAN 321	Financial Institutions	
FNAN 341	Introduction to Firm Valuation	
FNAN 351	Principles of Real Estate	
FNAN 401	Advanced Financial Management	
FNAN 411	Investment Analysis and Portfolio Management	
FNAN 412	Futures and Options Markets	
FNAN 421	Money and Capital Markets	
FNAN 430	Empirical Methods in Finance	
FNAN 431	Venture Capital and Private Financing of Startups	
FNAN 432	Fixed-Income Securities	
FNAN 436	Probability Methods for Finance	
FNAN 440	International Financial Management	
FNAN 441	Advanced Topics in Firm Valuation	
FNAN 444	Sustainable and ESG Investments	
FNAN 451	Real Estate Finance	
FNAN 454	Real Estate Development	
FNAN 462	Honors Seminar in Finance	
FNAN 472	Fintech and Blockchain in Finance	
FNAN 477	Student Managed Investment Fund	
FNAN 483	Ethical and Professional Standards in Finance	
FNAN 491	Special Topics in Finance	
FNAN 492	Internship in Finance	
FNAN 498	RS: Contemporary Topics in Finance	
FNAN 499	Independent Study	
Any other 300-400 level FNAN courses [2]		
Total Credits		21

[1] Completion of FNAN 303 with a grade of B- or higher is a required prerequisite for FNAN 311, FNAN 321, FNAN 341,FNAN 401 and FNAN 440

[2] With the exception of FNAN 300 and FNAN 303

Second Concentration in Finance
Students declaring a second concentration in Finance must complete the four required courses and two elective courses for the concentration (listed above).

Concentration in Financial Planning and Wealth Management (FPWM)

Consumers increasingly seek professional advice on managing their finances from professionals with wide-ranging knowledge from taxes and estate planning to insurance and retirement planning to portfolio management. In a recent article title, Forbes described Financial Planning as “One of the Fastest Growing Careers” and noted that the field “is in Desperate Need of Young Talent.” The article went on to explain that the field is expected to grow at a 32% rate over the next decade according to the Bureau of Labor Statistics while the average growth rate for all occupations is 14%.” (Touryalai, 2012). The field of financial planning includes several certifications including the Certified Financial Planner certification (CFP) through the CFP Board and Personal Financial Specialist (PFS) certification through the AICPA. The national CFP Board and regional FPA leadership have reached out to Mason to work with us to develop a CFP-registered program in Financial Planning due to the significant need in our region for graduates with this specialization.

Code	Title	Credits
Required Courses		
FNAN 390	Introduction to Financial Planning and Wealth Management [1]	3
or ACCT 390	Introduction to Financial Planning and Wealth Management	
FNAN 311	Principles of Investment [1]	3
ACCT 351	Taxation and Managerial Decision Making	3
ACCT 408	Taxes Insurance and Risk Management	3
ACCT 441	Estate Planning	3
ACCT 493	Financial Planning and Wealth Management Capstone [2]	3
or FNAN 493	Financial Planning and Wealth Management Capstone	

Electives		
Select one course from the following:		3
FNAN 341	Introduction to Firm Valuation [1]	
FNAN 411	Investment Analysis and Portfolio Management	
FNAN 444	Sustainable and ESG Investments	
FNAN 483	Ethical and Professional Standards in Finance	
ACCT 315	Personal Financial Planning	
ACCT 372	Financial Statement Analysis	
ACCT 451	Advanced Federal Taxation	
FNAN 492	Internship in Finance [1]	
or ACCT 492	Internship in Accounting	
Total Credits		21

1 Completion of FNAN 303 Financial Management with a grade of B- or higher is a required prerequisite for FNAN 311 , FNAN 341 , FNAN 390 Introduction to Financial Planning and Wealth Management, and FNAN 492 Internship in Finance or ACCT 492 Internship in Accounting. Completion of ACCT 303 Accounting for Decision Making and FNAN 303 Financial Management with a grade of B- or higher are required prerequisites for ACCT 408 Taxes Insurance and Risk Management

2 Satisfies Writing Intensive requirement

Second concentration in Financial Planning and Wealth Management

Code	Title	Credits
Required Courses		
FNAN 390	Introduction to Financial Planning and Wealth Management	3
or ACCT 390	Introduction to Financial Planning and Wealth Management	
FNAN 311	Principles of Investment	3
ACCT 351	Taxation and Managerial Decision Making	3
ACCT 408	Taxes Insurance and Risk Management	3
ACCT 441	Estate Planning	3
ACCT 493	Financial Planning and Wealth Management Capstone	3
or FNAN 493	Financial Planning and Wealth Management Capstone	
Total Credits		18

Concentration in Management (MGMT)

The concentration in Management prepares students to take leadership, management, and entrepreneurial roles in the public and private sectors. Students learn such skills as strategic thinking, motivating and managing nationally and internationally diverse work forces, building and leading team efforts, negotiating successfully, and instituting planned change in organizations.

Code	Title	Credits
Required Courses		
MGMT 313	Organizational Behavior [2]	3
MGMT 321	Introduction to Human Resource Management	3
Electives		
Select five courses from the following:		15
MGMT 412	Diversity in Organizations	
MGMT 413	Organizational Development and Management Consulting	
MGMT 421	Advanced Human Resource Management	
MGMT 431	The Legal Environment for Employee and Labor Relations	
MGMT 441	International Strategy	
MGMT 451	Introduction to Entrepreneurship	
MGMT 452	Experiential Entrepreneurship	
MGMT 453	Starting a Business	
MGMT 454	Social Impact and Entrepreneurship	
MGMT 461	Cross Cultural and Global Management	
MGMT 462	Honors Seminar in Management (Topic Varies)	
MGMT 463	Negotiations in Organizations	
MGMT 464	Teamwork and Interpersonal Skills	
MGMT 471	Competitive Strategy	
MGMT 491	Current Topics in Management	
MGMT 492	Internship in Management	
BULE 402	Commercial Law	
MGMT 499	Independent Study	
Any other 300-400 level MGMT courses [1]		
Total Credits		21

1 With the exception of MGMT 303 and MGMT 313

2 Satisfies Writing Intensive requirement

Students with a concentration in management may focus their careers in several areas. In selecting five elective courses, students may want to consider a likely career path. Recommended courses for three possible careers are provided below.

Code	Title	Credits
Human Resources Management		
MGMT 421	Advanced Human Resource Management	3
MGMT 431	The Legal Environment for Employee and Labor Relations	3
Management Consulting		
MGMT 412	Diversity in Organizations	3
MGMT 463	Negotiations in Organizations	3
MGMT 464	Teamwork and Interpersonal Skills	3
Entrepreneurship		
MGMT 451	Introduction to Entrepreneurship	3
MGMT 452	Experiential Entrepreneurship	3
MGMT 454	Social Impact and Entrepreneurship	3
BULE 402	Commercial Law	3

Second concentration in Management

Students declaring a second concentration in Management must complete the two required courses and four elective courses for the concentration (listed above).

Concentration in Management Information Systems (MIS)

The concentration in Management Information Systems encompasses analysis, design, implementation, and management of information

systems, to support business processes and decision making in all functional areas of an organization. The curriculum highlights not only the fundamental building blocks of information systems, but also the interaction of technology, people and business processes. MIS students learn about designing, building, maintaining, and securing information systems to meet organizational goals. They also acquire skills to use data and information through business analytics to support better managerial decision making in areas such as marketing, accounting and finance. MIS graduates are capable of translating business needs into technology-based solutions, and new technological advances into business capabilities. The MIS concentration prepares students for diverse technology based careers including Business Analyst, System Analyst, Security Analyst, Data Analyst, IT Project Management, IT Quality Management, Cloud Management, IS Audit and Control, Government Contracting, and Consulting.

Code	Title	Credits
Required Courses		
MIS 310	Database Management Systems	3
MIS 320	Networks and Security	3
MIS 330	Systems Analysis and Design [1]	3
Electives		
Select four courses from the following (at least two must be MIS):		12
MIS 341	Cloud Computing Essentials	
MIS 350	Introduction to Programming for Business Applications [2]	
MIS 410	Advanced Database Systems	
MIS 412	E-Business Systems Development	
MIS 415	Information Systems Audit and Control	
MIS 420	Information Security and Assurance	
MIS 430	Data Warehousing	
MIS 431	Data Mining for Business Applications	
MIS 432	Advanced Data Mining	
MIS 433	Programming for Analytics	
MIS 441	Cloud System Management	
MIS 462	Honors Seminar in Management Information Systems (Topic Varies)	
MIS 491	Seminar in Management Information Systems	
MIS 492	Internship in Management Information Systems	
MIS 499	Independent Study in Management Information Systems	
OSCM 352	Management Science	
OSCM 435	Business Process Analysis and Simulation	
OSCM 456	Quality Management	
OSCM 465	Government Contracting and Procurement	
OSCM 493	Management of Technology Projects	
Total Credits		21

[1] Satisfies Writing Intensive requirement

[2] It is strongly recommended that students planning a concentration in Management Information Systems take MIS 350 as part of their program.

Second Concentration in Management Information Systems
Students declaring a second concentration in Management Information Systems must complete the three required courses and three elective courses for the concentration (listed above). At least 2 of the electives must be MIS courses.

Concentration in Marketing (MKTG)

The concentration in Marketing prepares students for a broad range of global and domestic career options in corporations, small businesses, government, and nonprofits. A marketing concentration provides students with a solid foundation in marketing management for understanding the needs of the customer, the value organizations create for their customers, and opportunities and threats in the global marketplace. Students learn marketing concepts and practices related to consumer behavior, marketing research and analytics, and marketing planning and strategy (product development, pricing, distribution, and advertising and promotions). Our graduates work in such diverse fields as advertising and marketing communications, product and brand management, customer relationship management, new product/service development, new market and business development, sales, retail management, marketing research and analytics, and digital and social media marketing.

Code	Title	Credits
Required Courses		
MKTG 312	Consumer Behavior	3
MKTG 351	Marketing Research	3
MKTG 471	Marketing Management [1]	3
Electives		
Select four courses from the following:		12
MKTG 307	Federal Government Marketing	
MKTG 310	Consultative Selling	
MKTG 311	Sales Management	
MKTG 313	Advertising and Marketing Communications	
MKTG 315	Digital Marketing	
MKTG 316	Social Media Marketing Strategy	
MKTG 332	Retailing and E-Commerce Management	
MKTG 333	Business to Business Marketing	
MKTG 335	Strategic Brand Management	
MKTG 352	Marketing Analytics for New Product Development	
MKTG 353	New Product Development	
MKTG 355	Direct Marketing	
MKTG 407	Global Marketing	
MKTG 455	Ethnic and Multicultural Marketing	
MKTG 462	Honors Seminar in Marketing (Topic Varies)	
MKTG 481	RS: Marketing in the Nonprofit Sector [3]	
MKTG 491	Seminar in Marketing	
MKTG 492	Internship in Marketing	
MKTG 499	Independent Study	

Any other 300-400 level MKTG courses [2]	
Total Credits	21

[1] Satisfies the Writing Intensive requirement

[2] With the exception of MKTG 303

[3] Research and scholarship intensive course.

Second Concentration in Marketing
Students declaring a second concentration in Marketing must complete the three required courses and three elective courses for the concentration (listed above).

Concentration in Operations and Supply Chain Management (OSCM)

Operations and Supply Chain Management (OSCM) is the business function devoted to the management of resources and processes used by a firm to produce goods or services. Students with an OSCM concentration learn how to perform strategic and tactical planning, enabling them to efficiently and effectively manage the activities involved in transforming organizational resources into customer value. OSCM students acquire modeling, business analytics, and information technology skills for addressing a range of business problems. OSCM knowledge and skills are applicable to every business, spanning services, manufacturing, consulting, public sector (including government contracting), and not- for- profit organizations. The OSCM concentration is designed to prepare students for a career in the areas of: Supply Chain Management, Government Contracting (including procurement, logistics, and distribution), Project Management, Quality Management, Socially Responsible Operations, Product and Services Design, Process Analysis and Design, and, Planning and Control of Operations.

Code	Title	Credits
Required Courses		
OSCM 320	Supply Chain Management in a Global Economy	3
OSCM 456	Quality Management [1]	3
OSCM 493	Management of Technology Projects	3
Electives		
Select four courses from the following (at least two must be OSCM):		12
OSCM 330	Service Operations	
OSCM 352	Management Science	
OSCM 430	Design Thinking for Innovative Operations	
OSCM 435	Business Process Analysis and Simulation	
OSCM 440	Public Sector Operations	
OSCM 452	Business Forecasting	
OSCM 460	Management of Product and Process Technologies	
OSCM 462	Honors Seminar in Operations Management (Topic Varies)	
OSCM 465	Government Contracting and Procurement	
OSCM 491	Seminar in Operations Management	
OSCM 492	Internship in Operations and Supply Chain Management	
OSCM 499	Independent Study in Operations Management	
MIS 310	Database Management Systems	
MIS 350	Introduction to Programming for Business Applications	
MIS 412	E-Business Systems Development	
MIS 430	Data Warehousing	
MIS 431	Data Mining for Business Applications	
MIS 432	Advanced Data Mining	
MIS 433	Programming for Analytics	
Total Credits		21

[1] Satisfies Writing Intensive requirement

Second Concentration in Operations and Supply Chain Management
Students declaring a second concentration in Operations and Supply Chain Management must complete the three required courses and three elective courses for the concentration (listed above). At least 2 of the electives must be OSCM courses.

Honors

Honors in the Concentration Overview

The School of Business Honors Program provides highly motivated business students with an enriched academic experience integrating curricular, co-curricular, and extra-curricular development. Admission to the Honors Program is by invitation only.

Admission Requirements

- Minimum 3.0 cumulative Mason GPA
- A- or higher on first attempt at the core course for the concentrations
  - ACCT: A- or higher in ACCT 303 Accounting for Decision Making
  - BUSA: A- or higher in MIS 303 Introduction to Business Information Systems
  - FNAN: A- or higher in FNAN 303 Financial Management
  - FPWM: A- or higher in FNAN 303 Financial Management
  - MGMT: A- or higher in MGMT 303 Principles of Management
  - MIS: A- or higher in MIS 303 Introduction to Business Information Systems
  - MKTG: A- or higher in MKTG 303 Principles of Marketing
  - OSCM: A- or higher in OSCM 303 Operations Management
- Submission of a personal statement/essay
- Two recommendations from faculty within the School of Business

Curricular Requirements

- 3.0 cumulative Mason GPA
- 3.5 GPA in the concentration or 95th percentile GPA within the concentration
- B- or higher on first attempt at every concentration course

Co-Curricular Requirements

Students must complete **ONE** of the following to satisfy the co-curricular requirements for graduating with honors:

1. Honors section of BUS 498 Capstone Course: Advanced Business Models (Mason Core)
2. A concentration-specific honors course (See list below)
3. Completion of an honors project with faculty approval (the honors project as approved should be separate from work in other courses)

Code	Title	Credits
BUS 498	Capstone Course: Advanced Business Models (Mason Core) (Honors Section)	3
Honors Concentration Course		
ACCT		
ACCT 462	Honors Seminar in Accounting	3
BUSA		
MIS 462	Honors Seminar in Management Information Systems (Topic Varies)	3
FNAN		
FNAN 462	Honors Seminar in Finance	3
FPWM		
FNAN 462	Honors Seminar in Finance	3
MGMT		
MGMT 462	Honors Seminar in Management (Topic Varies)	3
MIS		
MIS 462	Honors Seminar in Management Information Systems (Topic Varies)	3
MKTG		
MKTG 462	Honors Seminar in Marketing (Topic Varies)	3
OSCM		
OSCM 462	Honors Seminar in Operations Management (Topic Varies)	3

Extra-Curricular Requirements

Attendance at a minimum of two honors events, as determined by the Honors Faculty Coordinator.

Requirements for Students to Obtain the Honors Designation

Honors students must meet all curricular, co-curricular, and extracurricular requirements mentioned above at the time of graduation.

Accelerated Master's

Accounting, BS/Accounting, Accelerated MS

Overview

Mason Accounting majors may be admitted to the bachelor's/accelerated master's program to obtain both Accounting, BS or Business, BS (https://catalog.gmu.edu/colleges-schools/business/business-bs/)with a Concentration in Accounting (https://catalog.gmu.edu/colleges-schools/business/business-bs/) and Accounting MS (https://catalog.gmu.edu/colleges-schools/business/accounting-ms/)degrees (MSAccel) in an accelerated time-frame after satisfactory completion of a minimum of 138 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) for policies related to this program.

Participation in this program enables students to start taking graduate courses while they are in undergraduate status and decreases the number of credits required during graduate status.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies. (https://catalog.gmu.edu/policies/academic/graduate-policies/#text)

MSAccel Pathway Application Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies. For information specific to the MSAccel pathway, see the School of Business website (https://business.gmu.edu/masters-in-accounting/msa-accelerated/) with other requirements.

Students will be considered for admission into the MSAccel pathway after completion of a minimum of 60 credits and meeting all academic requirements which can be found on the School of Business website (https://business.gmu.edu/masters-in-accounting/msa-accelerated/).

Students who are accepted into the MSAccel pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

Students already admitted in the MSAccel pathway will be admitted to the MS in Accounting program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- Overall GPA of 3.0
- Grades of C or above (on the first attempt) in all accounting major courses. *Students with an accounting grade below a C may transition to the MSA only with approval from the Program Director.*
- 3 credits of advanced standing with a grade of B or better from one graduate level ACCT courses listed in the MSAccel Pathway Requirements section below.
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

MSAccel Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Code	Title	Credits
Advanced Standing courses (up to 12 credits; grade of B or better required)		
ACCT 611	Advanced Issues in Managerial Accounting	
ACCT 630	Advanced Financial Accounting	
ACCT 670	International Accounting	
Reserve Credit courses (up to 6 credits):		

ACCT 621	GovCon Acquisition Regulations and Reporting
ACCT 636	Fraud Examination
ACCT 665	Advanced Accounting Analytics
ACCT 671	Managing Data Quality and Integrity
ACCT 672	Governmental and Nonprofit Accounting

* other courses as approved by Program Director

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degree policies. (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7)

Business, PhD

Banner Code: BU-PHD-BUS

Graduate Program Office

Phone: 703-993-8006
Email: sbusgrad@gmu.edu

Administration

- Kevin Rockmann, Director, PhD Program

In an increasingly globalized world characterized by rapid change and progress, business communities need innovative scholarship that challenges established convention and gives practitioners, policymakers, and cultural influencers cutting-edge, evidence-based findings and tools to help them manage, lead, innovate, and excel in their careers and organizations. Scholarship such as this is produced at business schools with a vibrant, innovative PhD program in Business.

The PhD program in Business is designed to address such needs. The PhD Program in Business will enhance GMU's mission by increasing the number of doctoral programs, research intensity, and university-wide interdisciplinary research and collaboration. By providing access to regional research sites and the diverse Mason community, our students will emerge from the program prepared to study many of the organizational problems within the Commonwealth as well as the world.

This program is designed as an overarching degree with four concentrations from which the students must pick one. The concentrations will be in Organizational Behavior, Strategic Management, Information Systems, and Operations Management. Each student will declare their concentration prior to admission, in order for the school and faculty to properly prepare courses for degree completion. While some courses will be in common for all students taking the PhD in Business, each concentration will contain unique courses. The goal with this model is both to simplify the overall administration of the program (one degree), but allowing the students the relevant domain knowledge to succeed in their specific field (required concentration).

Admissions & Policies

Admissions

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions (https://catalog.gmu.edu/admissions/graduate-policies/).

In addition to the University's requirements for graduate admission, the School of Business will require applicants to the proposed program to submit the following:

- Scores from the Graduate Management Admissions Test (GMAT) or Graduate Record Examination (GRE) taken within the last five years. Minimum scores are as follows:
  - GMAT: 600
  - GRE Verbal: 155
  - GRE Quantitative: 155
  - GRE Analytical: 3.5
- Three letters of recommendation, including at least one letter from a current or former professor, and one letter from a current or former supervisor.
- Resume, including relevant work and/or research experience.
- Statement of professional and academic mission and goals.
- Personal interview for selected applicants.

Policies

For policies governing all graduate degrees, see AP.6 Graduate Policies.

Requirements

Degree Requirements

Total credits: 72

The PhD in Business includes courses in the Business Core, within each concentration, and then credits towards dissertation research. Within each concentration there are required and elective courses.

PhD in Business Core

All students pursuing the PhD in Business will take the following courses:

Code	Title	Credits
BUS 701	Professional Practicum	3
BUS 702	Writing for Business PhD Students	3
BUS 703	Research Project	3
BUS 801	Field Research in Business [1]	6
Total Credits		15

[1] Must be repeated for a total of 6 credits.

Concentration in Organizational Behavior (ORGB)

All students pursuing the concentration in Organizational Behavior will be required to take courses in the domain, research methods courses, and specialization or elective courses.

Code	Title	Credits
Required Courses		
MGMT 711	Seminar in Organizational Behavior	3
MGMT 712	Seminar in Strategic Management	3
MGMT 893	Special Topics in Organizational Behavior [1]	6
Total Credits		12

[1] Must be repeated for a total of 6 credits.

Concentration in Strategic Management (STMT)

All students pursuing the concentration in Strategic Management will be required to take courses in the domain, research methods courses, and specialization or elective courses.

Code	Title	Credits
Required Courses		
MGMT 711	Seminar in Organizational Behavior	3
MGMT 712	Seminar in Strategic Management	3
MGMT 892	Special Topics in Strategic Management [1]	6
Total Credits		12

[1] Must be repeated for a total of 6 credits.

Concentration in Information Systems (ISY)

All students pursuing the concentration in Information Systems will be required to take courses in the domain, research methods courses, and specialization or elective courses.

Code	Title	Credits
Required Courses		
MIS 721	Seminar in Information Systems	1.5
OSCM 721	Seminar in Operations and Supply Chain Management	1.5
MIS 722	Seminar in Economics of Information Systems	3
MIS 723	Seminar in Technology Research in Information Systems	3
MIS 892	Special Topics in Information Systems [1]	3
Total Credits		12

[1] May be repeated for different topics.

Concentration in Operations Management (OMGT)

All students pursuing the concentration in Operations Management will be required to take courses in the domain, research methods courses, and specialization or elective courses.

Code	Title	Credits
Required Courses		
MIS 721	Seminar in Information Systems	1.5
OSCM 721	Seminar in Operations and Supply Chain Management	1.5
OSCM 731	Seminar in Supply Chain Management	3
OSCM 732	Seminar in Innovation and New Product Development	3
OSCM 893	Special Topics in Operations Management [1]	3
Total Credits		12

[1] May be repeated for different topics.

Research Methods

Research methods courses are designed to prepare students to evaluate and investigate a range of research approaches including data collection and analysis, data mining and econometrics, and empirical and analytical modeling. All courses must be approved by a faculty advisor.

Code	Title	Credits
Select 15 credits from the following:		15
ECON 611	Microeconomic Theory	
ECON 637	Econometrics I	
ECON 838	Econometrics II	
OR 641	Linear Programming	
OR 642	Integer Programming	
OR 645	Stochastic Processes	
PSYC 754	Multiple Regression	
PSYC 756	Quantitative Methods IV: Multivariate Techniques in Psychology	
PSYC 892	Special Topics in Psychology	
SOCI 631	Survey Research	
SOCI 634	Qualitative Research Methods	
SOCI 655	Ethnography	
SOCI 670	Social Networks, New Media, and Inequality	
SOCI 730	Analytic Techniques of Social Research	
STAT 525	Nonparametric Statistics and Categorical Data Analysis	
STAT 526	Applied Regression Analysis	
STAT 554	Applied Statistics I	
STAT 634	Case Studies in Data Analysis	
STAT 652	Statistical Inference	
STAT 654	Applied Statistics II	
STAT 656	Regression Analysis	
STAT 662	Multivariate Statistical Methods	
Total Credits		15

Specialization

Students must choose a specialization area closely related to their concentration, which consists of 15 credits of approved coursework. A student may select a specialization with a second concentration in Business, or may develop a specialization with the approval of the academic advisor. No more than one Independent Study course with a faculty member may be used toward satisfying the specialization requirement.

Examples of acceptable specialization areas include psychology (for students in the Organizational Behavior concentration), industrial engineering and statistics (for students in the Operations Management concentration), sociology (for students in the Strategic Management concentration), and economics and computer science (for students in the Information Systems concentration). Courses taken to fulfill the specialization must be in addition to any other requirements for the concentration.

Electives

Code	Title	Credits
Students complete the remaining credits through additional elective courses chosen in consultation with an advisor.		0-3

Advancement to Candidacy

To advance to candidacy, students must complete all courses required by the program. Students must also successfully complete and pass written and/or oral comprehensive exams.

Dissertation Research

All PhD in Business students must satisfactorily complete a doctoral dissertation. A PhD in Business dissertation culminates doctoral study. Such work must clearly demonstrate the candidates' abilities to apply principles of business-related problems within one's chosen concentration. It must integrate knowledge of various disciplines with knowledge of relevant practice and theory. The dissertation must also make a significant contribution to existing knowledge or practice within one's chosen concentration.

Students must register for 3 or 6 credits the first semester enrolled in BUS 998 Doctoral Dissertation Proposal. Students must register for at least 1 credit of BUS 998 thereafter until they are permitted to register for BUS 999 Doctoral Dissertation Research. Students must register for 3 credits the first semester enrolled in BUS 999 and must register for at least 1 credit of BUS 999 thereafter until all work has been completed, including the semester in which the degree is received. Students must apply a minimum of 12 dissertation credits (BUS 998 and BUS 999 combined) to the degree.

Chief Information Officer Graduate Certificate

Banner Code: BU-CERG-CIO

Graduate Program Office

Phone: 703-993-8006
Email: sbusgrad@gmu.edu

Administration

- Candace Deans, Director, MS in Technology Management Program

The Chief Information Officer Graduate Certificate helps Information Technology (IT) professionals gain core competencies necessary for advancement into executive level roles that manage IT resources and strategy within organizations. The program specifically focuses on Enterprise Architecture and IT Governance, Management of Information Security, IT Project Management, Managing IT Investments, Managing IT Operations, and Emerging Technologies.

Admissions & Policies

Admissions

Applicants are required to be current students in the MS Technology Management program.

Policies

This is a 12 credit program and students may use the credits completed as part of their graduate degree requirements in accordance with AP.6.8.1 Students in Master's or Doctoral Programs also Pursuing Graduate Certificates.

Requirements

Certificate Requirements

Total credits: 12

This certificate may be pursued on a full-or part-time basis.

Coursework

Code	Title	Credits
TECM 601	Business Models	1
TECM 745	Leading and Managing IT Operations	2
TECM 746	Enterprise Architecture and IT Governance	2
TECM 747	Information Assurance and Security Management	2
TECM 749	Developing and Emerging Technologies	2
TECM 760	CIO Applied Project	3
Total Credits		12

Entrepreneurship Minor

Banner Code: ENTR

Academic Advising

Phone: 703-993-1880
Email: masonbus@gmu.edu

Administration

- Jeremy Plotnick, Director of Minor Programs

The Entrepreneurship Minor provides students with an interest in learning more about elements of new venture creation the ability to gain a strong set of entrepreneurship acumen. In combination with the school's expanding co-curricular entrepreneurship programs, the minor in entrepreneurship will provide an experiential platform to grow student skill sets, networks and professional portfolios.

Admissions & Policies

Policies

At least eight credits must be unique to the minor and not applied toward any other major, minor, or concentration. Students must achieve a grade of C or better in each course that is applied toward the minor.

For policies governing all minors, see AP.5.3.4 Minors. The School of Business residency requirement for this minor supersedes the university requirement: at least nine credits must be earned at Mason.

Requirements

Minor Requirements

Total credits: 15

Required Courses

Business major students should take:

Code	Title	Credits
MGMT 451	Introduction to Entrepreneurship	3
MGMT 452	Experiential Entrepreneurship	3
Total Credits		6

Non-business major students should take:

Code	Title	Credits
MBUS 304	Entrepreneurship: Starting and Managing a New Enterprise	3
MGMT 452	Experiential Entrepreneurship	3
Total Credits		6

Electives

Code	Title	Credits
Select three courses from any of the following interests:		9
Commercial Entrepreneurship Courses:		
ACCT 311	Managerial and Cost Accounting	
ACCT 351	Taxation and Managerial Decision Making	
FNAN 341	Introduction to Firm Valuation	
FNAN 431	Venture Capital and Private Financing of Startups	
MGMT 453	Starting a Business	
MKTG 313	Advertising and Marketing Communications	
MKTG 352	Marketing Analytics for New Product Development	
MKTG 353	New Product Development	
OSCM 320	Supply Chain Management in a Global Economy	
OSCM 493	Management of Technology Projects	
Social Innovation Courses:		
EVPP 480	Sustainability in Action (Mason Core)	
GOVT 353	Social Entrepreneurship	
GOVT 358	Nonprofit Financial Planning	
INTS 331	The Nonprofit Sector (Mason Core)	
INTS 431	Principles of Fund Raising	
INTS 450	Social Innovation in Action	
MGMT 454	Social Impact and Entrepreneurship	
PHIL 305	Business Ethics	
PSYC 335	Psychology of Creativity and Innovation	
Other Entrepreneurship Electives:		
BENG 451	Translation and Entrepreneurship in Bioengineering	
IT 343	IT Project Management	
Total Credits		9

Executive MBA

Banner Code: BU-MBA-BUEX

Graduate Program Office

Phone: 703-993-2136
Email: emba@gmu.edu

Administration

- Claus Langfred, Academic Director, Executive MBA Program

The Executive MBA is designed for those with a minimum of 7 years of significant business or military/professional experience. The program's focus is management decision making, strategic management of business resources, and leadership – all in the context of National Security and Government Contracting firms. Dedicated faculty, an innovative and relevant curriculum for the D.C. area, a student-centered program team, and great colleagues contribute to the learning experience of a lifetime. The program is carefully designed to help students master a broad range of executive-level competencies while cultivating expert business-related knowledge of the National Security business environment. Students complete the program as a cohort, resulting in strong bonds and networking opportunities. The program is completed in 16 months, starting in January and classes are held approximately one Saturday and one Friday per month.

Diversity in Learning

Students encounter multiple approaches to learning in the program. Classroom discussions, team projects, individual reading, team presentations, team problem solving, business simulations, business case analyses, coaching, and a D.C. residency all contribute to the creative learning environment delivered by the Mason Executive MBA Program.

National Security Focus

With America's role in the world continually evolving to meet new global challenges, the role of leadership in the security industry has never been more vital. The need for military leaders, government executives and corporate defense contractors who can provide mission critical products and services - and who understand the unique demands of the complex and dynamic national security sector - has never been more critical. Dedicated faculty from the Mason School of Business and adjunct faculty (working faculty working in specialty areas of the security sector) as well as accomplished government, military, and corporate guest speakers, technical experts, and Mason alumni employed in the security industry, are a part of the National Security focus on this program. The dynamic learning environment brings contemporary challenges of the national security industry right into the classroom.

Admissions & Policies

Admissions

Full eligibility and admission requirements can be viewed at the program's website. (http://business.gmu.edu/graduate/)

Policies

All students registering for School of Business graduate courses must have graduate standing. Non-degree student status is not available.

Requirements

Degree Requirements

Total credits: 48

Modules

Students complete eight 8-week modules. During each eight-week module, students complete two courses (one in-person and one on-line) in an applications-oriented sequence that takes them from developing core management skills through the understanding and application of the tools of business performance to the talents of leadership.

Required Courses

Code	Title	Credits
EMBA 603	Managerial Economics	3
EMBA 612	Managing Costs and Evaluating Performance	3
EMBA 613	Financial Accounting	3
EMBA 623	Marketing	3
EMBA 633	Statistics for Business Decision Making	3
EMBA 638	Services and Operations Management	3
EMBA 643	Managerial Finance	3
EMBA 653	Organizational Behavior and Teams	3
EMBA 660	Management of Information Technology	3
EMBA 678	Business Strategy	3
EMBA 718	Strategic Leadership in National Security Firms	3
EMBA 729	Critical Infrastructure Protection and Resilience	3
EMBA 740	Global Issues for National Security Firms	3
EMBA 741	The Business of National Security	3
EMBA 743	Growth Strategies for National Security Firms	3
EMBA 790	National Security Residency	3
Total Credits		48

Finance Minor

Banner Code: FNAN

Academic Advising

Phone: 703-993-1880
Email: masonbus@gmu.edu

Administration

- Jeremy Plotnick, Director of Minor Programs

The Finance minor provides students with a strong foundation in areas related to corporate financial management, investment analysis and management, risk management, management consulting, banking and other financial institution administration. The minor is well suited not only for non-Finance business majors, but also for students who are not business majors and are interested in a possible career in finance.

Admissions & Policies

Policies

At least eight credits must be unique to the minor and not applied toward any other major, minor, or concentration. Students must achieve a grade of C or better in each course that is applied toward the minor.

For policies governing all minors, see AP.5.3.4 Minors. The School of Business residency requirement for this minor supersedes the university requirement: at least nine credits must be earned at Mason.

Requirements

Minor Requirements

Total credits: 15

Required Courses

Code	Title	Credits
FNAN 303	Financial Management	3
FNAN 311	Principles of Investment [1]	3
FNAN 321	Financial Institutions [1]	3
FNAN 341	Introduction to Firm Valuation [1]	3
Total Credits		12

[1] FNAN 311, FNAN 321, and FNAN 341 all require a prerequisite of a B- or higher in FNAN 303.

Electives

Code	Title	Credits
Select one course from the following:		3
ECON 306	Intermediate Microeconomics	
ECON 310	Money and Banking	
ECON 330	Public Finance	
ECON 420	International Money and Finance	
ECON 421	Financial Economics	
FNAN 401	Advanced Financial Management	
FNAN 411	Investment Analysis and Portfolio Management	
FNAN 412	Futures and Options Markets	
FNAN 421	Money and Capital Markets	
FNAN 430	Empirical Methods in Finance	
FNAN 432	Fixed-Income Securities	
FNAN 440	International Financial Management	
FNAN 436	Probability Methods for Finance	
SYST 488	Financial Systems Engineering	
Total Credits		3

Finance, MS

Banner Code: BU-MS-FNAN

Graduate Program Office

Phone: 703-993-8006
Email: sbusgrad@gmu.edu

The purpose of the Finance, MS program is to prepare students for successful careers in financial industries and private sectors with finance-related job functions.

This degree will provide the opportunity for prospective students to further their education by offering a specialized program that helps them develop technical financial skills to fill the projected market demand and have a successful career in a global economy.

Overall, the Finance, MS program is ideal for students who have limited work experience or have decided to pursue a finance-related career path after receiving their undergraduate degrees. The program is designed to equip students with advanced knowledge and abilities essential for the highly skilled financial work environment.

Admissions & Policies

Admissions

All students registering for School of Business graduate courses must have graduate standing. Non degree student status is not available.

Full eligibility and admission requirements can be viewed here (https://business.gmu.edu/).

Policies

For policies governing all graduate degrees, see AP.6 Graduate Policies.

Requirements

Degree Requirements

Total credits: 33

Required Courses

Code	Title	Credits
MSF 603	Managerial Economics and Decisions of the Firm	3
MSF 632	Statistical and Quantitative Methods for Finance	3
MSF 643	Financial Management in a Global Environment	3
MSF 702	Corporate Financial Policy and Valuation	3
MSF 705	Venture Capital and Private Finance	3
MSF 706	Investment Analysis	3
MSF 707	Futures, Options and Other Derivatives	3
MSF 717	International Finance	3
MSF 732	Fixed Income	3
MSF 777	Student Managed Investment Fund	3
MSF 783	CFA Ethics and Preparation	3
Total Credits		33

Forensic Accounting Graduate Certificate

Banner Code: BU-CERG-FACC

Graduate Program Office

Phone: 703-993-8006
Email: sbusgrad@gmu.edu

The Graduate Certificate in Forensic Accounting provides an opportunity for students to acquire education in the emerging field of forensic accounting.

Admissions & Policies

Admissions

All students registering for School of Business graduate courses must have graduate standing. Non-degree student status is not available. Full eligibility and admission requirements can be viewed at the school's website (http://business.gmu.edu/masters-in-accounting/forensic-accounting/).

Policies

For policies governing all graduate certificates, see AP.6.8 Requirements for Graduate Certificates.

Students are responsible for familiarization and compliance with the university's Graduate Policies contained in this catalog. A maximum of 3 graduate credits taken at another institution can be transferred to the graduate certificate. The time limit for completion is six years from the date of admission to the graduate certificate. Students must have a minimum GPA of 3.0 to complete the certificate.

Requirements

Certificate Requirements

Total credits: 12

This certificate may be pursued on a part-time basis only.

Required Courses

Code	Title	Credits
ACCT 636	Fraud Examination	3
ACCT 737	Fraud and the Law	3
ACCT 738	Advanced Topics in Fraud	3
Total Credits		9

Elective

Code	Title	Credits
Select 3 credits from the following:		3
ACCT 701	Business Valuation	
ACCT 742	Governance and Ethics	
Total Credits		3

Global IT Leadership Graduate Certificate

Banner Code: BU-CERG-GITL

Graduate Program Office

Phone: 703-993-8006

Email: sbusgrad@gmu.edu

Administration

- Candace Deans, Director, MS in Technology Management Program

The graduate certificate in Global IT Leadership is designed to help students gain an understanding of emerging markets and innovation opportunities, enhance student knowledge at the intersection of global business and technology, and expose students to global challenges through an international residency. Students will participate in a 7-10 day study abroad trip as a part of this certificate where they will be exposed to C-suite business executives and government leaders to learn about doing business in a foreign country. Courses taken in the Global IT Leadership graduate certificate can be applied toward the MS in Technology Management program upon acceptance into the degree program.

Admissions & Policies

Admissions

All students registering for School of Business graduate courses must have graduate standing. Non-degree student status is not available.

Full eligibility and admission requirements can be viewed on the program website. (http://business.gmu.edu/masters-in-technology-management/global-it-leadership-certificate/)

Policies

Students may use the credits completed as part of their graduate degree requirements in accordance with program requirements and AP.6 Graduate Policies. A maximum of 3 graduate credits taken at another institution can be transferred to the graduate certificate. The time limit for completion is four years from the date of admission to the graduate certificate. Students must have a minimum GPA of 3.00 to complete the certificate.

Requirements

Certificate Requirements

Total credits: 12

This certificate may be pursued on a full-or part-time basis.

Coursework

Code	Title	Credits
TECM 603	IT Leadership and the Global CIO	1
TECM 620	Economics of Global Technology Management	1
TECM 702	Building High Performance Global Teams	2
TECM 752	Global Technology Management	3
TECM 753	Global Leadership Perspectives	2
TECM 761	Global IT Leadership Applied Project	3
Total Credits		12

Government Accounting Graduate Certificate

Banner Code: BU-CERG-GACT

Graduate Program Office

Phone: 703-993-8006
Email: sbusgrad@gmu.edu

Admissions & Policies

Admissions

Eligibility Requirements

All students registering for School of Business graduate courses must have graduate standing. Non-degree student status is not available.

Full eligibility and admission requirements can be viewed on the program website (http://business.gmu.edu/masters-in-accounting/government-accounting-certificate/).

Policies

Students may use the credits completed as part of their graduate degree requirements in accordance with program requirements and AP.6 Graduate Policies. A maximum of 3 graduate credits taken at another institution can be transferred to the graduate certificate. The time limit for completion is six years from the date of admission to the graduate certificate. Students must have a minimum GPA of 3.00 to complete the certificate.

Requirements

Certificate Requirements

Total credits: 12

This certificate may be pursued on a part-time basis only.

Required Courses

Code	Title	Credits
ACCT 672	Governmental and Nonprofit Accounting [1]	3
or ACCT 792	Seminar in Accounting	
ACCT 611	Advanced Issues in Managerial Accounting	3
ACCT 742	Governance and Ethics	3
ACCT 772	Federal Accounting and Reporting	3
Total Credits		12

[1] Students who completed ACCT 672 or equivalent in their undergraduate or other graduate program must take ACCT 792 Seminar in Accounting instead.

Government Contracting Minor

Banner Code: GOVC

Academic Advising

Phone: 703-993-1880
Email: masonbus@gmu.edu

Administration

- Jeremy Plotnick, Director of Minor Programs

The government contracting market sector is huge. At the federal level, alone, the U.S. General Accountability Office reported that annual obligations through contracts for goods and services exceeded $430 billion. Many of the federal agencies that contract for goods and services, as well as the contractors that carry out those contracts, are in the Washington DC metropolitan area. There is a need to prepare those Business School students who seek careers in government agencies or with government contractors with the skills and knowledge to promote success in their careers. A minor in government contracting will meet this need by providing students with an understanding of the best practices, processes, and methodologies of government contracting. Students will gain this understanding from a government agency's perspective, as well as from a government contractor's perspective.

Admissions & Policies

Policies

At least eight credits must be unique to the minor and not applied toward any other major, minor, or concentration. Students must achieve a grade of C or better in each course that is applied toward the minor.

For policies governing all minors, see AP.5.3.4 Minors. The School of Business residency requirement for this minor supersedes the university requirement: at least nine credits must be earned at Mason.

Requirements

Minor Requirements

Total credits: 15

Required Courses

Code	Title	Credits
BUS 315	Introduction to the Government Contracting Industry	3
MKTG 307	Federal Government Marketing	3
Total Credits		6

Electives

Code	Title	Credits
Choose 3 of the following courses:		
ACCT 320	Introduction to Government Accounting [1]	
ACCT 472	Government and Not-for-Profit Accounting [1]	
FNAN 341	Introduction to Firm Valuation	
MGMT 413	Organizational Development and Management Consulting	
MIS 431	Data Mining for Business Applications	
OSCM 320	Supply Chain Management in a Global Economy	
OSCM 465	Government Contracting and Procurement	
Total Credits		9

[1] Students may not earn elective credit for both ACCT 320 and ACCT 472 (students must choose one). ACCT 320 is recommended for non-Accounting students and ACCT 472 is recommended for Accounting students.

International Business Minor

Banner Code: IB

Academic Advising

Phone: 703-993-1880
Email: masonbus@gmu.edu

Administration

- Jeremy Plotnick, Director of Minor Programs

The minor in International Business provides an introduction for those students interested in learning more about elements of business unique to international organizations or in pursuing a career in international business. With a strong set of business skills developed through the core undergraduate curriculum and their majors, students in the International Business Minor can further develop their skills in managing and communicating across different cultures, improve their understanding of how specific business disciplines vary in an international setting, and cultivate an appreciation for international monetary issues.

Admissions & Policies

Policies

At least eight credits must be unique to the minor and not applied toward any other major, minor, or concentration. Students must achieve a grade of C or better in each course that is applied toward the minor.

For policies governing all minors, see AP.5.3.4 Minors. The School of Business residency requirement for this minor supersedes the university requirement: at least nine credits must be earned at Mason.

Requirements

Minor Requirements

Total credits: 15

Required Courses

Code	Title	Credits
MGMT 461	Cross Cultural and Global Management	3
Total Credits		3

Electives

Code	Title	Credits
Select four electives from the following: [1]		12
ACCT 370	International Accounting	

ECON 360	Economics of Developing Areas (Mason Core)
ECON 361	Economic Development of Latin America (Mason Core)
ECON 362	African Economic Development (Mason Core)
ECON 380	Economies in Transition (Mason Core)
ECON 390	International Economics
ECON 420	International Money and Finance
FNAN 440	International Financial Management
GOVT 343	International Political Economy
GOVT 367	Money, Markets and Economic Policy (Mason Core)
MGMT 441	International Strategy
MKTG 407	Global Marketing
OM 320	Supply Chain Management in a Global Economy
Total Credits	12

[1] A maximum of one ECON or GOVT course may count towards the minor. The other three electives must be School of Business coursework.

Co-Curricular Requirement

Students must complete one of the following in addition to the curriculum requirements:

Global Experience

- Global residency course;
- An international internship abroad;
- A domestic internship with significant international experience;
- An approved study abroad program; or
- Study at a Mason campus or a Mason joint program overseas

OR

Foreign Language

- One language study course; or
- A course taught in foreign literature when taught in a foreign language

IT Strategy and Digital Transformation Graduate Certificate

Banner Code: BU-CERG-ITDT

Graduate Program Office

Phone: 703-993-8006
Email: sbusgrad@gmu.edu

Administration

- Candace Deans, Director, MS in Technology Management Program

The graduate certificate in IT Strategy and Digital Transformation is designed to develop skills for designing a digital transformation strategy, enhance knowledge at the intersection of emerging technologies and digital transformation, and expose students to real world applications through company use cases. Courses taken in the IT Strategy and Digital Transformation graduate certificate can be applied toward the MS in Technology Management program upon acceptance into the degree program.

Admissions & Policies

Admissions

All students registering for School of Business graduate courses must have graduate standing. Non-degree student status is not available.

Full eligibility and admission requirements can be viewed on the program website. (http://business.gmu.edu/masters-in-technology-management/it-strategy-and-digital-transformation-certificate/)

Policies

Students may use the credits completed as part of their graduate degree requirements in accordance with program requirements and AP.6 Graduate Policies. A maximum of 3 graduate credits taken at another institution can be transferred to the graduate certificate. The time limit for completion is four years from the date of admission to the graduate certificate. Students must have a minimum GPA of 3.00 to complete the certificate.

Requirements

Certificate Requirements

Total credits: 12

This certificate may be pursued on a full-or part-time basis.

Coursework

Code	Title	Credits
TECM 611	Leadership and Change Management	2
TECM 641	Negotiation and Conflict Management	1
TECM 711	Deriving Strategic Value from IT Investments	2
TECM 720	Competitive Strategy in Technology Industries	2
TECM 721	Digital Transformation	2
TECM 762	IT Strategy and Digital Transformation Applied Project	3
Total Credits		12

Management, MS

Banner Code: BU-MS-MGMT

Graduate Program Office

Phone: 703-993-2136
Email: msmgt@gmu.edu

Administration

- Victoria Grady, Director, MS in Management Program

The program prepares recent graduates of non-business majors for success in business fields. The Master of Science in Management offers the fundamentals of business management in a global environment and is composed of the core discipline areas common to all business graduate programs that are accredited by the Association to Advance Collegiate Schools of Business (AACSB). It is a full time, daytime program. Students will enter as a cohort and complete all degree requirements within 11 months.

Admissions & Policies

Admissions

Admissions and Eligibility Requirements

Admission to the Master of Science in Management is contingent on applicants having completed an undergraduate degree program within 24 months prior to when they would enroll in the program.

Policies

For policies governing all graduate degrees, see AP.6 Graduate Policies.

Requirements

Degree Requirements

Total credits: 36

Required Courses

Code	Title	Credits
BMGT 603	Economics for Successful Firm Management	3
BMGT 612	Performance Evaluation Through Cost Management	3
BMGT 613	Financial Reporting and Firm Analysis	3
BMGT 623	Marketing and Firm Performance	3
BMGT 633	Statistical Analysis for Management	3
BMGT 638	Managing Business Operations in a Global Environment	3
BMGT 643	Financial Management in a Global Environment	3
BMGT 653	Fundamentals of Behavior in Organizations	3
BMGT 662	Management of Information Technology	3
BMGT 678	Business Strategy and Firm Leadership	3
Total Credits		30

Global Requirement

Code	Title	Credits
Students must take ONE of the following global courses:		**3**
BMGT 695	Global Business Perspectives	
MBA 716	International Business Strategy	
MBA 718	International Marketing	
MBA 717	International Finance	
Total Credits		3

Elective

Code	Title	Credits
Select one from the following: [1]		**3**
BMGT 692	Professional Development Experience	
700-level MBA course, as approved by department		
600 or 700 level ACCT course, as approved by department		
Total Credits		3

[1] Course options not used to fulfill the Global requirement can be applied toward the Elective requirement.

Accelerated Master's

Bachelor's Degree (any)/Management, Accelerated MS

Overview

Qualified undergraduates may be admitted to a Bachelor's/Accelerated Master's program (BAM) and obtain a BS/BA and an MS in Management (MSM) after satisfactory completion of a minimum of 144 credits. In keeping with the MSM admissions policy, the Bachelor's/Accelerated Master's in Management (BAM-MSM) program will focus primarily on non-business majors who seek a foundation in business management. Program benefits include reduced tuition, a lighter 5th year course load, and access to earlier advising and career coaching.

See AP.6.7 Bachelor's/Accelerated Master's degrees for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the Master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM-MSM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree Policies. For information specific to this Accelerated Master's program, see the School of Business website. (https://business.gmu.edu/masters-in-management/)

Generally, Mason undergraduates from any non-School of Business program will be eligible. Students will be considered for admission into the BAM-MSM Pathway after completion of a minimum of 60 credits, and an overall GPA of 3.0 or above. Full admission requirements can be viewed at the School of Business website. (https://business.gmu.edu/)

Students who are accepted into the BAM-MSM pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and all course-specific pre-requisites.

Students admitted in the BAM-MSM pathway will be admitted to the MS in Management program if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form and university transcript:

- 3.0 Overall GPA
- Interview with Program Director

- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

BAM-MSM Pathway Courses

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses choose from the following:

Code	Title	Credits
GBUS 613	Financial Reporting and Decision Making	
BMGT 623	Marketing and Firm Performance	
GBUS 643	Managerial Finance [1]	
BMGT 662	Management of Information Technology	

[1] GBUS 613 is a prerequisite.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degree policies.

Management Information Systems Minor

Banner Code: MIS

Phone: 703-993-1880
Website: business.gmu.edu

Administration

- Jeremy Plotnick, Director of Minor Programs

With the growth in Internet-based companies and the digitization of processes and data in traditional companies, the demand for business analysts, data analysts, and information systems professionals is growing in most economies. The MIS minor offers Business and other Mason undergraduate students a focused set of courses that provide them foundational knowledge and skills in management information systems. The focus is on applying information systems solutions to business problems. The minor is not intended for MIS/IT/CS majors. It is intended for students who could benefit from a deeper understanding of MIS as it relates to their major. The benefit of being able to apply information systems solutions in their chosen career would make the students more marketable/attractive to employers in an increasingly digital economy. The MIS minor offers a useful and attractive option for both business and non-business students.

Admissions & Policies

Policies

At least eight credits must be unique to the minor and not applied toward any other major, minor, or concentration. Students must achieve a grade of C or better in each course that is applied toward the minor.

For policies governing all minors, see AP.5.3.4 Minors. The School of Business residency requirement for this minor supersedes the university requirement: at least nine credits must be earned at Mason.

Requirements

Minor Requirements

Total credits: 15

Required Courses

Code	Title	Credits
MIS 303	Introduction to Business Information Systems	3
MIS 310	Database Management Systems	3
or IT 214	Database Fundamentals	
MIS 320	Networks and Security	3
MIS 330	Systems Analysis and Design	3
Total Credits		12

Electives

Code	Title	Credits
Choose one course from the following:		3
CS 112	Introduction to Computer Programming	
IT 106	Introduction to IT Problem Solving Using Computer Programming	
IT 109	Introduction to Computer Programming	
IT 322	Health Data Challenges	
IT 324	Health Information Technology Fundamentals	
MIS 350	Introduction to Programming for Business Applications	
MIS 410	Advanced Database Systems	
MIS 412	E-Business Systems Development	
MIS 415	Information Systems Audit and Control	
MIS 420	Information Security and Assurance	
MIS 430	Data Warehousing	
MIS 431	Data Mining for Business Applications	
MIS 491	Seminar in Management Information Systems	
Total Credits		3

Marketing Minor

Banner Code: MKTG

Academic Advising

Phone: 703-993-1880
Email: masonbus@gmu.edu

Administration

- Jeremy Plotnick, Director of Minor Programs

The Marketing Minor provides any student who is interested in marketing a solid foundation for understanding the needs of the customer and in the principles of marketing management. This includes understanding new product development, creating marketing communications and promotions, managing customer relationships, and analyzing consumer and market trends. Learning outcomes also include the value

organizations create for their customers, and opportunities and threats in the global marketplace.

This minor provides a wide range of marketing classes that can enhance major coursework in other academic disciplines. In the required courses, students learn about the voice of the consumer and customer behavior, and explore fundamental marketing principles. In the elective courses, students can tailor their focus with a variety of specialized topics.

Admissions & Policies

Policies

At least eight credits must be unique to the minor and not applied toward any other major, minor, or concentration. Students must achieve a grade of C or better in each course that is applied toward the minor.

For policies governing all minors, see AP.5.3.4 Minors. The School of Business residency requirement for this minor supersedes the university requirement: at least nine credits must be earned at Mason.

This minor is available to all non-Marketing majors at the University with a minimum of sophomore standing.

Requirements

Minor Requirements

Total credits: 15

Required Courses

Code	Title	Credits
MKTG 303	Principles of Marketing	3
MKTG 312	Consumer Behavior	3
Total Credits		6

Electives

Code	Title	Credits
Select three courses from the following:		9
MKTG 307	Federal Government Marketing	
MKTG 310	Consultative Selling	
MKTG 311	Sales Management	
MKTG 313	Advertising and Marketing Communications	
MKTG 315	Digital Marketing	
MKTG 316	Social Media Marketing Strategy	
MKTG 332	Retailing and E-Commerce Management	
MKTG 333	Business to Business Marketing	
MKTG 335	Strategic Brand Management	
MKTG 351	Marketing Research	
MKTG 352	Marketing Analytics for New Product Development	
MKTG 353	New Product Development	
MKTG 355	Direct Marketing	
MKTG 407	Global Marketing	
MKTG 455	Ethnic and Multicultural Marketing	
MKTG 481	RS: Marketing in the Nonprofit Sector	
MKTG 491	Seminar in Marketing	
Total Credits		9

Operations and Supply Chain Management Minor

Banner Code: OSCM

Phone: 703-993-1880
Website: business.gmu.edu

Administration

- Jeremy Plotnick, Director of Minor Programs

With the expanding global marketplace, multi-echelon supply chains span countries across the globe. The fusion of online and offline channels have given rise to omni-channel strategies adopted by major companies and there is a large demand for analysts and professionals in procurement, distribution, process improvement, logistics, and supply chain management. Specifically, the Metro DC region with its enormous federal government footprint and concomitant supply chain/logistics providers, demands professionals with supply chain management related skills; even in those who may not be majoring in that area. The OSCM minor offers students a focused set of courses that provide them the knowledge, training, and skills in supply chain management. Students with an OSCM minor will learn how to efficiently and effectively manage the activities involved in transforming organizational resources into customer value. They will be able to provide innovative and value-added solutions to organizations in the areas of process improvement, quality management, project management, supply chain analytics, and global supply chain design, coordination, and implementation.

Admissions & Policies

Policies

At least eight credits must be unique to the minor and not applied toward any other major, minor, or concentration. Students must achieve a grade of C or better in each course that is applied toward the minor.

For policies governing all minors, see AP.5.3.4 Minors. The School of Business residency requirement for this minor supersedes the university requirement: at least nine credits must be earned at Mason.

Requirements

Minor Requirements

Total credits: 15

Required Courses

Code	Title	Credits
OSCM 303	Operations Management	3
OSCM 320	Supply Chain Management in a Global Economy	3
OSCM 456	Quality Management	3
or HAP 430	Process Improvement in Healthcare Organizations	

OSCM 493	Management of Technology Projects	3
or SYST 371	Systems Engineering Management	
or HAP 460	Information Technology Project Management	
Total Credits		12

Electives

Code	Title	Credits
Choose one of the following:		3
OSCM 352	Management Science	
OSCM 435	Business Process Analysis and Simulation	
OSCM 452	Business Forecasting	
OSCM 330	Service Operations	
OSCM 430	Design Thinking for Innovative Operations	
OSCM 440	Public Sector Operations	
OSCM 460	Management of Product and Process Technologies	
OSCM 462	Honors Seminar in Operations Management (Topic Varies)	
OSCM 491	Seminar in Operations Management	
SYST 335	Discrete Systems Modeling and Simulation	
Total Credits		3

Real Estate Development Minor

Banner Code: REAL

Academic Advising

Phone: Phone: 703-993-1880
Email: masonbus@gmu.edu

Administration

- Jeremy Plotnick, Director of Minor Programs

The Real Estate Development Minor provides a range of courses that delve into core aspects of the real estate industry including finance, urban planning, negotiations and selling, and construction. In addition to the two required courses, students can select from multiple elective courses offered by several schools. The electives are divided into three primary tracks, which are: Real Estate Development, Entrepreneurship, and Urban Planning.

Admissions & Policies

Policies

At least eight credits must be unique to the minor and not applied toward any other major, minor, or concentration. Students must achieve a grade of C or better in each course that is applied toward the minor.

For policies governing all minors, see AP.5.3.4 Minors. The School of Business residency requirement for this minor supersedes the university requirement: at least nine credits must be earned at Mason.

Requirements

Minor Requirements

Total credits: 15

Required Courses

Code	Title	Credits
FNAN 351	Principles of Real Estate	3
FNAN 454	Real Estate Development	3
Total Credits		6

Electives

Code	Title	Credits
Select three courses from the following: [1]		9
Real Estate Development Track		
BUS 492	Internship in Business	
CEIE 370	Construction Systems	
FNAN 451	Real Estate Finance	
GGS 357	Urban Planning	
MGMT 463	Negotiations in Organizations	
MKTG 310	Consultative Selling	
Entrepreneurship Track		
BUS 492	Internship in Business	
MGMT 451	Introduction to Entrepreneurship	
MGMT 453	Starting a Business	
MGMT 463	Negotiations in Organizations	
MGMT 464	Teamwork and Interpersonal Skills	
MKTG 310	Consultative Selling	
Urban Planning Track		
BUS 492	Internship in Business	
GGS 357	Urban Planning	
or GOVT 357	Urban Planning	
GGS 463	RS: GIS Analysis and Application	
GOVT 464	Issues in Public Policy and Administration	
Total Credits		9

[1] Students may select three elective courses from one track, or from a combination of tracks.

Real Estate Development, MS

Banner Code: BU-MS-REAL

Graduate Program Office

Phone: 703-993-8006
Email: sbusgrad@gmu.edu

Administration

- Carolyn Grimsley, Director, MS in Real Estate Development

The Master of Science in Real Estate Development is designed to provide real estate professionals with the knowledge essential to assume increasingly responsible leadership roles within the development

industry. Areas of emphasis include real estate finance, investment analysis, project management, sustainability and economic development. The distinctiveness of this degree program lies in its multi-disciplinary curriculum, which incorporates coursework from the domains of business, engineering and public policy. Created in consultation with leading real estate development companies, the curriculum has been designed to strengthen the employment potential and upward mobility of industry professionals working in the areas of development, architecture, engineering, public planning, construction management, real estate finance, mortgage lending, property management, real estate law and related fields.

Admissions & Policies

Admissions

Requirements

All students registering for School of Business graduate courses must have graduate standing. Non degree student status is not available.

Full eligibility and admission requirements can be viewed here (http://business.gmu.edu/masters-in-real-estate-development/admissions/).

Policies

The 36-hour curriculum includes 21 hours of required courses and 15 hours of electives. Students are responsible for familiarization and compliance with AP.6 Graduate Policies.

Requirements

Degree Requirements

Total credits: 36

Required Courses

Code	Title	Credits
REAL 605	Policy and Planning of the Built Environment	3
REAL 615	Brokerage and Market Analysis	3
REAL 625	Financial Analysis and Valuation	3
REAL 635	The Development Process	3
REAL 645	Law and Entitlements	3
REAL 655	Design and Construction	3
REAL 750	MSRED Capstone	3
Total Credits		21

Electives

Code	Title	Credits
Select 15 credits of electives [1]		15
Total Credits		15

[1] Electives may be selected from other REAL courses (see below) and available offerings in appropriate areas including the Schar School of Policy and Government; the School of Business; the Volgenau School of Engineering; the College of Humanities and Social Sciences; the College of Science; and the Carter School for Peace and Conflict Resolution.

Students wishing to choose a field for emphasis may select, with the approval of a faculty advisor, 3 elective courses within the field that together constitute an emphasis area. They must also then take 3 courses outside the selected emphasis to reach the required elective total of 15. With prior approval of an advisor, students may design their own emphasis. The following are examples of fields for emphasis and courses within each field which may be selected.

Organizational Issues Emphasis

Code	Title	Credits
Select 3 courses from the following:		9
PUBP 781	Entrepreneurship and Economic Development	
EVPP 638	Corporate Environmental Management and Policy	
COMM 632	Persuasion Theory	
COMM 635	Organizational Communication	
COMM 634	Theories of Interpersonal Communication	
COMM 706	Strategic Communication	
CONF 501	Introduction to Conflict Analysis and Resolution	
PHIL 644	Business and Organizational Ethics	
MBA 725	Leadership	
MBA 726	Negotiations	
REAL 710	Real Estate Entrepreneurship	
REAL 720	Real Estate Leadership and Project Management	
Total Credits		9

Project Feasibility Emphasis

Code	Title	Credits
Select 3 courses from the following:		9
PUBP 602	Regional Economic Development: Strategies and Applications	
PUBP 714	Topics in Transportation Policy, Operations, and Logistics	
PUBP 752	Infrastructure Finance	
EVPP 524	Introduction to Environmental and Resource Economics	
CEIE 607	Public Infrastructure Management and Finance	
CEIE 667	Multi-modal Transportation Systems	
CEIE 573	Legal Aspects of the Construction Process	
CONF 741	Negotiating in Complex Systems	
REAL 730	Financing Real Estate Projects	
REAL 740	Real Estate Investments	
GBUS 540	Analysis of Financial Decisions	
Total Credits		9

Special Topics Impacting Development

The following courses may be included as electives by all students:

Code	Title	Credits
PUBP 745	Transportation and the Environment	3
EVPP 505	Selected Topics in Environmental Science	4
EVPP 670	Environmental Law	3

EVPP 533	Energy Policy	3
EVPP 635	Environment and Society	3
GGS 507	Geographic Approaches for Sustainable Development	3
PHIL 643	Environmental Ethics	3
REAL 790	Special Topics in Real Estate	3
REAL 796	Directed Reading	1-6

Technology Management, MS

Banner Code: BU-MS-TECM

Graduate Program Office

Phone: 703-993-8006
Email: sbusgrad@gmu.edu

Administration

- Candace Deans, Director, MS in Technology Management Program

The Master of Science in Technology Management is designed to provide students with a graduate management education that will help them further their leadership careers in technology and technology-oriented businesses and organizations. With technology innovation and commercialization occurring at an increasing pace and industries becoming more networked and global, business success depends on the successful management of technology. Companies are succeeding with rapid innovation, insightful technology integration, creation of focused technology organizations, and skillful management of complexity. The program addresses how to succeed in this marketplace and emphasizes leadership and management; special considerations of technology innovation, commercialization, introduction, and integration; and methods and approaches of systems thinking.

The program, designed for working professionals, starts in January and lasts for 16 months. Classes are held on the Arlington Campus on Saturdays from 8 a.m. to 5 p.m. The program is 36 credits and includes a capstone project and an international residency. The international residency is approximately 8 days abroad focusing on global topics in technology management.

Admissions & Policies

Admissions

All students registering for School of Business graduate courses must have graduate standing. Non-degree student status is not available.

Full eligibility and admission requirements can be viewed here (http://business.gmu.edu/masters-in-technology-management/admissions/).

Policies

Students are responsible for familiarization and compliance with the university's Graduate Policies.

Requirements

Degree Requirements

Total credits: 36

Coursework

Code	Title	Credits
TECM 601	Business Models	1
TECM 603	IT Leadership and the Global CIO	1
TECM 611	Leadership and Change Management	2
TECM 614	Financial and Cost Accounting	2
TECM 620	Economics of Global Technology Management	1
TECM 635	Decision Models for Technology Management	1
TECM 641	Negotiation and Conflict Management	1
TECM 643	Managerial Finance	2
TECM 702	Building High Performance Global Teams	2
TECM 704	Management of Technology Projects and Portfolios	2
TECM 711	Deriving Strategic Value from IT Investments	2
TECM 720	Competitive Strategy in Technology Industries	2
TECM 721	Digital Transformation	2
TECM 735	Technology Management Capstone Project	0
TECM 741	Marketing of Innovations and Technology	2
TECM 745	Leading and Managing IT Operations	2
TECM 746	Enterprise Architecture and IT Governance	2
TECM 747	Information Assurance and Security Management	2
TECM 749	Developing and Emerging Technologies	2
TECM 752	Global Technology Management	3
TECM 753	Global Leadership Perspectives	2
Total Credits		36

Volgenau School of Engineering

Graduate
2400 Nguyen Engineering Building
703-993-1505
vsegadm@gmu.edu

Undergraduate
2500 Nguyen Engineering Building
703-993-1511
vseugrad@gmu.edu

Website: engineering.gmu.edu

Administration

- Kenneth S. Ball, P.E. (Texas), Dean
- Sharon A. Caraballo, Associate Dean for Undergraduate Programs
- Liza Wilson Durant, Associate Dean for Strategic Initiatives and Community Engagement
- Deborah Goodings, Associate Dean for Graduate Programs
- Art Pyster, Associate Dean for Research
- Ariela Sofer, Associate Dean for Administration and Faculty Affairs
- Sanjeev Setia, Associate Dean for Computing Programs and Initiatives
- Kim Goodwin-Slater, Director of Finance
- Christopher Carr, Chief Diversity Officer

College Code: VS

The Volgenau School of Engineering delivers a transformative learning experience to its students by integrating engineering and technology with other areas of scholarship. We produce visionary stewards of society who are prepared to discover solutions to complex global challenges and make the world safer, cleaner, and more prosperous. A faculty of engaged educators lead high-impact research in critical areas, including sustainability, big data, cybersecurity, robotics and artificial intelligence, signals and communications, and healthcare technology. These existing and emerging areas of expertise span departmental and disciplinary boundaries and reflect the breadth of the scholarly activities of our faculty and students.

The Volgenau School of Engineering prepares students to solve complex, multidisciplinary, global challenges by leveraging innovative learning tools, the inventive capacity of our region, and Mason's global presence. The faculty and administration support the needs of the 21st century learner by providing multiple paths to success, a diverse and inclusive academic community, and real time integration of new data and technology in the classroom.

A proposal for a reorganization of the Volgenau School of Engineering to the College of Engineering and Computing, comprised of the School of Computing and Volgenau School of Engineering, is pending approval. As of April 1st, the proposal for the College of Engineering and Computing has been approved. The remaining reorganization is still pending.

Undergraduate Programs

Bachelor of Science Programs

Our undergraduate degree programs prepare students to enter directly into professional employment or continue studies at the graduate level. The requirements for the bachelor's degrees include required and elective courses in mathematics, humanities, Mason Core, and specialty courses applicable to the major. Each program strongly emphasizes English composition and communication.

The Volgenau School offers the following Bachelor of Science programs:

- Applied Computer Science
- Bioengineering
- Civil and Infrastructure Engineering
- Computer Engineering
- Computer Science
- Cyber Security Engineering
- Electrical Engineering
- Information Technology
- Mechanical Engineering
- Statistics
- Systems Engineering

Minors

Minors are available in aviation flight training and management, bioengineering, computer science, data analysis, environmental engineering, information technology, mechanical engineering, software engineering, statistics, and systems engineering.

BS/Accelerated MS Programs

Accelerated master's degree programs offer high-achieving Mason undergraduates the opportunity to complete their bachelor's and master's degrees within five years. Qualified candidates take advantage of a streamlined master's application process with no application fee and the ability to take up to 12 graduate credits at the undergraduate tuition rate.

- Applied Computer Science, BS/Computer Science, Accelerated MS
- Applied Computer Science, BS/Data Analytics Engineering, Accelerated MS
- Applied Computer Science, BS/Information Security and Assurance, Accelerated MS
- Applied Computer Science, BS/Information Systems, Accelerated MS
- Applied Computer Science, BS/Software Engineering, Accelerated MS
- Applied Science, BAS Cyber Security Concentration/Applied Information Technology, Accelerated MS (https://catalog.gmu.edu/colleges-schools/interdisciplinary-programs-courses/applied-science-bas/#acceleratedmasterstext)
- Applied Science, BAS Cyber Security Concentration/Digital Forensics, Accelerated MS
- Applied Science, BAS Data Analytics Concentration/Applied Information Technology, Accelerated MS (https://catalog.gmu.edu/colleges-schools/interdisciplinary-programs-courses/applied-science-bas/#acceleratedmasterstext)
- Applied Science, BAS Data Analytics Concentration/Data Analytics Engineering, Accelerated MS (https://catalog.gmu.edu/colleges-schools/interdisciplinary-programs-courses/applied-science-bas/#acceleratedmasterstext)
- BS (selected)/Operations Research, Accelerated MS
- BS (selected)/Statistical Science, Accelerated MS
- BS (selected)/Systems Engineering, Accelerated MS
- Bachelor's Degree (Green Leaf)/Environmental Science and Policy, Accelerated MS
- Bioengineering, BS/Data Analytics Engineering, Accelerated MS
- Bioengineering, BS/Operations Research, Accelerated MS
- Bioengineering, BS/Systems Engineering, Accelerated MS
- Civil and Infrastructure Engineering, BS/Civil and Infrastructure Engineering, Accelerated MS
- Civil and Infrastructure Engineering, BS/Operations Research, Accelerated MS
- Civil and Infrastructure Engineering, BS/Systems Engineering, Accelerated MS
- Computer Engineering, BS/Computer Engineering, Accelerated MS

- Computer Engineering, BS/Electrical Engineering, Accelerated MS (https://catalog.gmu.edu/colleges-schools/engineering/electrical-computer/computer-engineering-bs/#acceleratedmasterstext)
- Computer Engineering, BS/Operations Research, Accelerated MS (https://catalog.gmu.edu/colleges-schools/engineering/electrical-computer/computer-engineering-bs/#acceleratedmasterstext)
- Computer Engineering, BS/Systems Engineering, Accelerated MS (https://catalog.gmu.edu/colleges-schools/engineering/electrical-computer/computer-engineering-bs/#acceleratedmasterstext)
- Computer Science, BS/Computer Engineering, Accelerated MS
- Computer Science, BS/Computer Science, Accelerated MS
- Computer Science, BS/Curriculum and Instruction, Accelerated MEd (Secondary Education Computer Science Concentration) (https://catalog.gmu.edu/colleges-schools/engineering/computer-science/computer-science-bs/#acceleratedmasterstext)
- Computer Science, BS/Data Analytics Engineering, Accelerated MS
- Computer Science, BS/Information Security and Assurance, Accelerated MS
- Computer Science, BS/Information Systems, Accelerated MS
- Computer Science, BS/Operations Research, Accelerated MS (https://catalog.gmu.edu/colleges-schools/engineering/computer-science/computer-science-bs/#acceleratedmasterstext)
- Computer Science, BS/Software Engineering, Accelerated MS
- Computer Science, BS/Systems Engineering, Accelerated MS (https://catalog.gmu.edu/colleges-schools/engineering/computer-science/computer-science-bs/#acceleratedmasterstext)
- Cyber Security Engineering, BS/Computer Engineering, Accelerated MS
- Cyber Security Engineering, BS/Cyber Security Engineering, Accelerated MS (https://catalog.gmu.edu/colleges-schools/engineering/cyber-security-engineering/cyber-security-engineering-bs/#acceleratedmasterstext)
- Cyber Security Engineering, BS/Digital Forensics, Accelerated MS
- Cyber Security Engineering, BS/Operations Research, Accelerated MS
- Cyber Security Engineering, BS/Systems Engineering, Accelerated MS
- Electrical Engineering, BS/Computer Engineering, Accelerated MS (https://catalog.gmu.edu/colleges-schools/engineering/electrical-computer/electrical-engineering-bs/#acceleratedmasterstext)
- Electrical Engineering, BS/Electrical Engineering, Accelerated MS
- Electrical Engineering, BS/Operations Research, Accelerated MS (https://catalog.gmu.edu/colleges-schools/engineering/electrical-computer/electrical-engineering-bs/#acceleratedmasterstext)
- Electrical Engineering, BS/Systems Engineering, Accelerated MS (https://catalog.gmu.edu/colleges-schools/engineering/electrical-computer/electrical-engineering-bs/#acceleratedmasterstext)
- Electrical Engineering, BS/Telecommunications, Accelerated MS
- Individualized Study, BIS/Telecommunications, Accelerated MS
- Individualized Study, BIS/Applied Information Technology, Accelerated MS
- Information Technology, BS/Applied Information Technology, Accelerated MS
- Information Technology, BS/Digital Forensics, Accelerated MS
- Information Technology, BS/Information Security and Assurance, Accelerated MS
- Information Technology, BS/Information Systems, Accelerated MS
- Information Technology, BS/Software Engineering, Accelerated MS
- Information Technology, BS/Telecommunications, Accelerated MS
- Mechanical Engineering, BS/Applied and Engineering Physics, Accelerated MS
- Mechanical Engineering, BS/Applied Information Technology, Accelerated MS (https://catalog.gmu.edu/colleges-schools/engineering/mechanical/mechanical-engineering-bs/#acceleratedmasterstext)
- Mechanical Engineering, BS/Civil and Infrastructure Engineering, Accelerated MS
- Mechanical Engineering, BS/Computational Science, Accelerated MS
- Mechanical Engineering, BS/Data Analytics Engineering, Accelerated MS
- Mechanical Engineering, BS/Electrical Engineering, Accelerated MS
- Mechanical Engineering, BS/Operations Research, Accelerated MS
- Mechanical Engineering, BS/Systems Engineering, Accelerated MS
- Statistics, BS/Biostatistics, Accelerated MS
- Statistics, BS/Data Analytics Engineering, Accelerated MS
- Statistics, BS/Operations Research, Accelerated MS
- Statistics, BS/Statistical Science, Accelerated MS
- Statistics, BS/Systems Engineering, Accelerated MS
- Systems Engineering, BS/Data Analytics Engineering, Accelerated MS
- Systems Engineering BS/Operations Research, Accelerated MS
- Systems Engineering BS/Systems Engineering, Accelerated MS
- Systems Engineering, BS/Telecommunications, Accelerated MS

Graduate Programs

Master of Science Programs

The ever-increasing complexity and technical challenges in engineering, computer science, and information technology demand studies beyond the bachelor's degree.

The Volgenau School offers the following master's programs:

- Applied Information Technology
- Bioengineering
- Biostatistics
- Civil and Infrastructure Engineering
- Computer Engineering
- Computer Science
- Cyber Security Engineering
- Data Analytics Engineering
- Digital Forensics
- Electrical Engineering
- Information Security and Assurance
- Information Systems
- Operations Research
- Software Engineering
- Statistical Science
- Systems Engineering
- Telecommunications

Doctor of Philosophy Programs

PhD students will gain comprehensive knowledge in their area of study and will be prepared for careers in higher education and scientific research. They are required to demonstrate a comprehensive

understanding and complete research that adds significantly to the body of knowledge in engineering, computer science, information technology, or statistics.

The Volgenau School offers seven doctoral programs:

- Bioengineering
- Civil and Infrastructure Engineering
- Computer Science
- Electrical and Computer Engineering
- Information Technology
- Mechanical Engineering (program in development)
- Statistical Science
- Systems Engineering and Operations Research

Cardinal Education

Cardinal Education (formerly the Commonwealth Graduate Engineering Program/CGEP) is the premier provider of high-quality post-baccalaureate online engineering education in the Commonwealth of Virginia. It is designed for practicing engineers, computing, and information scientists interested in maintaining and enhancing their skills through the pursuit of an online degree or certificate. Participating universities are: George Mason University, Old Dominion University, University of Virginia, Virginia Commonwealth University, Virginia State University, and Virginia Tech. Offerings include master's degrees and certificate programs.

While each program is based at one of the six participating universities, the collaboration between universities allows students more flexibility, potential shorter time to completion, and greater variety in course offerings. A substantial number of course requirements can be taken at any of the six participating universities to satisfy the degree or certificate program.

Students interested should begin by applying directly to the university offering the degree of interest. Mason has a number of degree and certificate programs available through Cardinal Education. These programs follow all policies stated in this catalog for the program, while also allowing up to 50 percent of non-core required credits to be completed at other Cardinal Education participating universities. Faculty advisor approval is needed when taking courses at a partner university.

Policies for other universities' programs and courses are determined by those institutions. Please consult with the university offering the program or course of interest for details.

For more information including the Mason programs available through this partnership, visit the Cardinal Education website.

Requirements & Policies

Undergraduate Requirements

Degree Requirements

The following general requirements must be completed by all undergraduate students:

- At least 120 credits of academic work including at least 45 credits of upper-level courses (numbered 300 or above);
- At least 6 credits of English composition, 3 credits of literature, and 3 credits of oral communication (Mason Core courses);
- At least 3 credits of arts, 3 credits of Western civilization or world history, 3 credits of social and behavioral science, and 3 credits of global understanding issues (Mason Core courses);

All requirements are listed in the sections for specific Volgenau School majors. These include university requirements for mathematics, natural science, information technology and computing, and synthesis. Sample schedules that fulfill degree requirements for individual programs within the Volgenau School are available from the departments.

Undergraduate Policies

Academic Policies

Students should become familiar with the Academic Policies in the University Catalog in addition to policies specific to each academic unit. The Academic Policies also list additional university requirements for minor programs and double majors.

Academic Appeal of Policies and Actions

A student's instructor, academic advisor and/or department can resolve most academic issues. If, however, an undergraduate student disagrees with a decision at the department level and feels that there may be reasonable grounds for appeal, the student should contact the Volgenau School Undergraduate Student Services Office at 703-993-1511 for guidance in preparing a request to the Associate Dean for Undergraduate Programs or other offices as appropriate. Information about grade appeals is found in AP.3.9 Grade Appeals.

Academic Progression

Students majoring in Volgenau School programs are expected to have an acceptable plan of study on file, formulated with assistance from their departmental advisor. They are expected to make reasonable progress toward their degree during each semester in which they are enrolled.

Termination from a major—or from all majors in a college—may be imposed as a result of excessive repeating of required courses without achieving the minimum standard, and for other evidence of continued failure to make adequate progress toward declaration or completion of the major. For more information, see AP.5.2.4 Termination from the Major (https://catalog.gmu.edu/policies/academic/undergraduate-policies/#ap-5-2-4)

Sample Schedules

Sample schedules that fulfill degree requirements for individual programs within the Volgenau School are available from the departments.

Change of Major

1. Criteria for freshman students in their first semester at Mason

Freshman students who have been admitted to any VSE engineering or computer science program may change their major to any other engineering or computer science program before the final drop deadline of their first semester at Mason.

Freshman students who have been admitted to Information Technology, Statistics, VSE Undeclared, VSE Undecided, or any non-VSE major must have departmental approval to change their major to a VSE program before the final drop deadline of their first semester at Mason.

Any change of major requests made after this deadline are bound to the change of major criteria outlined in section 3 and require the completion of at least one semester at Mason.

2. Criteria for transfer students in their first semester at Mason

Transfer students who have been admitted to any VSE engineering program may change their major to any other engineering program before the final drop deadline of their first semester at Mason.

Transfer students who have been admitted to Computer Science, Information Technology, Statistics, VSE Undeclared, or any non-VSE major must have department approval to change their major to a VSE program before the final drop deadline of their first semester at Mason.

Any change of major requests made after this deadline are bound to the change of major criteria outlined in section 3 and require the completion of at least one semester at Mason.

3. Criteria for students who have completed at least one semester at Mason

Students who have completed at least one semester at Mason and who are considering changing their major to any VSE engineering program should consult with the Volgenau School of Engineering Coordinator of Undergraduate Advising, 2500 Nguyen Engineering Building. These students must have successfully completed MATH 114, PHYS 160 and PHYS 161 (with a grade of at least C) and should have a minimum Mason GPA of 2.75* in all technical coursework. Technical coursework refers to any math, physics, engineering, statistics and computer sciences courses completed thus far at Mason and that are applicable to the intended engineering major. At least 6 credits of these technical courses should have been completed successfully at Mason.

*Students considering changing their major to Bioengineering with a Pre-Health concentration need to meet the above VSE engineering program requirements furthermore with a minimum Mason GPA of 3.00.

Students considering changing their major to Applied Computer Science, Computer Science, Information Technology, or Statistics should consult with the Volgenau School of Engineering Coordinator of Undergraduate Advising, 2500 Nguyen Engineering Building. These students need to meet the criteria for that program as defined in the change of major section for that program in the catalog. Minimum GPA requirements stated for those programs are based on courses taken at Mason.

Exceptions to the policy may only be granted at the discretion of the chair or associate chair of the department.

Undecided Students in the Volgenau School of Engineering

Students who are undecided about their specific major may select Volgenau School Undecided as their major. This should be done as soon as possible after a student enrolls at Mason. Students will be advised to follow an initial semester or two of courses that could be applicable to majors that are of interest to them. This may involve taking courses that help the student better understand different engineering and computing areas, but which may not contribute to the total credits needed for the major they eventually choose.

VSE Undecided students are advised by the VSE Undeclared Academic Advisor and occasionally by the Coordinator of Undergraduate Academic Advising in the Student Services Office. Students should seek advising at least once each semester.

Undeclared Students in the Volgenau School of Engineering

Students who apply to a VSE major but do not meet major admissions criteria will be accepted into VSE Undeclared. These students will become eligible to declare a VSE major after meeting specific requirements as determined by that particular major. Students will be advised to follow an initial semester or two of courses that would be applicable to the major they plan to declare.

VSE Undeclared students are advised by the VSE Undeclared Academic Advisor and occasionally by the Coordinator of Undergraduate Academic Advising in the Student Services Office. Students should seek advising at least once each semester.

Writing-Intensive Requirement

The university requires all undergraduate students to successfully complete a course, or a combination of courses, designated "writing intensive" in their majors at the 300 level or above. To determine the writing-intensive course requirements for specific degrees, refer to the major program descriptions in the following department sections.

Restricted Courses

Students are encouraged to take advantage of the many excellent courses available to broaden their educational experience or strengthen their background; however, some credits earned may not satisfy any degree requirements. Degree requirements for Volgenau School undergraduate programs may not include credits earned in military science. At most 3 credits of 100-level RECR coursework may be taken to satisfy the degree requirements of those VSE programs that allow general electives. Whenever there is uncertainty, students must consult with an academic advisor in their department.

Online Education Programs

In order to increase access to Volgenau School education while meeting the needs of the School's student population, select degree programs and courses may be completed via online education. All academic policies and procedures apply to online education programs and courses as referred to in the appropriate sections of this catalog. Some instructors may require exams and/or other meetings to take place in a proctored or on-campus environment. Students should contact the instructor concerning these requirements if not explicitly stated on Patriot Web. Space permitting and if desired, students enrolled in the online sections are also permitted to attend the instructor's campus-based classroom section if offered during the same semester.

For more information about the Volgenau School programs available online, visit Mason Online (http://masononline.gmu.edu/).

Termination from the Major

No math, science, or Volgenau School of Engineering course that is required for the major may be attempted more than three times. Those students who do not successfully complete such a course within three attempts will be terminated from the major. Undeclared students in the Volgenau School who do not successfully complete a course required for a Volgenau School major within three attempts will also be terminated.

In addition, students in the Volgenau School with evidence of continued failure to make adequate progress toward declaring or completing a Volgenau School major will be terminated from the school. Adequate progress is determined by the major program. For more information, see AP.5.2.4 Termination from the Major (https://catalog.gmu.edu/policies/academic/undergraduate-policies/#ap-5-2-4).

Once a student has attempted one of these courses twice unsuccessfully, the third attempt must be no later than the next semester of enrollment, excluding summers. Failure to take the course at that time will result

in termination from the major. A third attempt of a Volgenau School of Engineering course requires support by the student's major department as well as permission by the department offering the course. This permission is not guaranteed. If the student is unable to take the course when required, the student may request an extension to a future semester; extensions require approval of the student's advisor, their department, and the Associate Dean for Undergraduate Programs. The deadline for extension requests is the add deadline for the semester in which the course is required.

Students who have been terminated from a Volgenau School of Engineering major may not register for a Volgenau School course without permission of the department offering the course. This applies to all undergraduate courses offered by the Volgenau School except IT 104 Introduction to Computing and STAT 250 Introductory Statistics I (Mason Core).

A student may not declare any major in the Volgenau School of Engineering if the student has previously met the termination criteria for that major at any time, regardless of what the student's major was at the time the courses were taken.

Graduate Policies

Admission

Admission decisions are made by the faculty committee or graduate coordinator of the respective graduate program. Denial of admission is not subject to appeal. Applicants denied admission to a program are not permitted to enroll in courses in that graduate program, though they may apply for either non-degree status or admission to another degree program.

If an applicant is offered graduate admission, the college reserves the right to withdraw that offer of admission if:

- During his or her academic studies, the admitted applicant has a significant drop in academic performance in the degree required for completion prior to admission to VSE graduate studies, or fails to graduate with a degree prior to the first day of classes for the term admitted.
- There has been a misrepresentation in the application process.
- Prior to the first day of classes for the term admitted, the school learns that the admitted applicant has engaged in behavior that indicates a serious lack of judgment or integrity, irrespective of the outcome of any disciplinary process related to such behavior.
- Students admitted to an accelerated master's program do not maintain satisfactory progress in his or her undergraduate program, do not receive a minimum grade of "B" in the graduate classes taken as an undergraduate, or otherwise does not meet the conditions specified on the application and admission letter.

The university further reserves the right to require the applicant to provide additional information (and/or authorization for the release of information) about any such matter.

Academic Policies

Students are responsible for becoming familiar and complying with the Academic Policies (https://catalog.gmu.edu/policies/academic/) in the University Catalog in addition to policies specific to the School. A handbook for VSE Graduate Students is maintained online (https://volgenau.gmu.edu/about/current-student-resources/vse-graduate-student-handbook/) with graduate-specific Volgenau information.

Academic Progression

Graduate students must make satisfactory progress toward a degree. At a minimum, this requires maintaining enrollment in at least one term per academic year and achieving a cumulative GPA of 3.0 or higher. Inability to make satisfactory progress toward a degree may result in academic termination (https://catalog.gmu.edu/policies/academic/graduate-policies/). Academic programs of study are entitled to enforce more stringent criteria which may include specific grade requirements in courses, successful completion of doctoral qualifying exams, etc. Please refer to your program for additional information.

Concentration

Students electing a degree concentration, post-admission, must do so in consultation with the graduate program advisor, via formal paperwork approved by the department/school, submitted and processed by the Registrar. It is the student's responsibility to ensure that their intended concentration is reflected on their transcript prior to graduation.

Doctoral Change of Program

Students in Volgenau School of Engineering doctoral programs are not permitted to change doctoral programs without a new, formal PhD admission application submitted in accordance with the established requirements and deadlines.

Non-degree

Students may decide to apply for Non-Degree status for a number of reasons, including for life-long learning, to take pre-requisite courses, to reacclimate to the environment of higher education or to begin taking classes while they apply to a specific degree program.

University Policy on Non-Degree Student Status can be found in AP.6.4.1. (https://catalog.gmu.edu/policies/academic/graduate-policies/) The Volgenau School of Engineering allows a maximum of 12 credits taken in non-degree status can be transferred to a Master's degree program; but only 3 credits to a Certificate program and does not permit non-degree graduate students to take classes numbered 700 or higher.

Readmission

Graduate students who have been terminated or have resigned from a program in the Volgenau School and want to reapply to the same program must wait five (5) semesters (Fall/Spring) before submitting a new application for admission. A full application for admission as well as all application materials required of that program must be submitted (or resubmitted). GRE scores, if required, cannot be older than five years. Previous admission to a program does not guarantee readmission to the same program. The circumstances of the prior termination or resignation will be a factor in the decision-making process. Graduate credit earned prior to termination may be applied to the degree program subject to meeting the requirements are satisfied for Transfer of Credit (https://catalog.gmu.edu/policies/academic/graduate-policies/#text).

Online Education Programs

In order to increase access to Volgenau School education while meeting the needs of the School's student population, select degree programs and courses may be completed via online education. All academic policies and procedures apply to online education programs and courses as referred to in the appropriate sections of this catalog. Some instructors may require exams and/or other meetings to take place in a proctored or on-campus environment. Students should contact the instructor concerning these requirements if not explicitly stated on Patriot Web. Space permitting and if desired, students enrolled in the online sections

are also permitted to attend the instructor's campus-based classroom section if offered during the same semester.

For more information about the Volgenau School programs available online, visit Mason Online (http://masononline.gmu.edu/).

Termination

University policy on Academic Termination can be found in AP.6.6.2 (https://catalog.gmu.edu/policies/academic/graduate-policies/). School specific process and criteria can be found in the VSE Graduate Student Handbook. (https://volgenau.gmu.edu/about/current-student-resources/vse-graduate-student-handbook/)

Academic Units

- Department of Bioengineering
- Department of Computer Science
- Department of Cyber Security Engineering
- Department of Electrical and Computer Engineering
- Department of Information Sciences and Technology
- Department of Mechanical Engineering
- Department of Statistics
- Department of Systems Engineering and Operations Research
- Sid and Reva Dewberry Department of Civil, Environmental, and Infrastructure Engineering

Interdisciplinary Programs

- Data Analytics Engineering, MS
- Data Analytics Graduate Certificate
- Information Technology, PhD
- STEM in Society Minor (VSE)

Interdisciplinary Programs, Volgenau School of Engineering

Data Analytics Graduate Certificate

Banner Code: VS-CERG-DNIC

Phone: 703-993-6269
Email: datamine@gmu.edu

The Data Analytics Graduate Certificate allows students to obtain a basic foundation of knowledge and skills in data analytics engineering. These foundation courses provide the student with an understanding of the following concepts:

• Data, data quality, and large volumes of data

• Data management and data mining

• Modeling and model usage for making decisions

• Statistical methods and visualization

Admissions & Policies

Admissions

Applicants must have completed a baccalaureate degree from a regionally accredited program with an earned GPA of 3.00 or better in their 60 highest-level credits. Applicants are expected to have completed a degree in engineering, business, computer science, statistics, mathematics, or information technology, with demonstrated foundational competence in calculus, statistics, and computer programming. Applicants without that formal academic preparation but with clear evidence of strong and extensive work experience in data or analytics, may also be considered on a case by case basis. Current graduate students in the Volgenau School of Engineering and the School of Business can elect this certificate with the Graduate Secondary Certificate Program Application from the Office of the University Registrar (http://registrar.gmu.edu).

Policies

For policies governing all graduate certificates, see AP.6.8 Requirements for Graduate Certificates.

Requirements

Certificate Requirements

Total credits: 12

This certificate may be pursued on a part-time basis only.

Coursework

Students must achieve a total GPA of at least 3.00, with no more than three credits of a grade of C from the following courses.

Code	Title	Credits
AIT 580	Analytics: Big Data to Information	3
CS 504	Principles of Data Management and Mining	3
OR 531	Analytics and Decision Analysis	3
STAT 515	Applied Statistics and Visualization for Analytics	3
Total Credits		12

Data Analytics Engineering, MS

Banner Code: VS-MS-DAEN

Phone: 703-993-6269
Email: datamine@gmu.edu

The MS in Data Analytics Engineering is a multidisciplinary degree program in the Volgenau School of Engineering, and is designed to provide students with an understanding of the technologies and methodologies necessary for data-driven decision-making. Students study topics such as data mining, information technology, statistical modeling, predictive analytics, optimization, risk analysis, and data visualization. It is aimed at students who wish to become data scientists and analysts in finance, marketing, operations, business/government

intelligence and other information intensive groups generating and consuming large amounts of data.

Admissions & Policies

Admissions

Applicants must have completed a baccalaureate degree from a regionally accredited program with an earned GPA of 3.00 or better in their 60 highest-level credits. Applicants are expected to have completed a degree in engineering, business, computer science, statistics, mathematics, or information technology, with demonstrated foundational competence in calculus, statistics, and computer programming. Applicants without that formal academic preparation but with clear evidence of strong and extensive work experience in data or analytics, may also be considered on a case by case basis. DAEN 500 Data Analytics Fundamentals may be required for domestic students without a basic foundation in Data Analytics.

For each of the concentrations there are additional admission requirements. These are listed in the descriptions of the individual concentrations.

In addition to fulfilling Mason's admission requirements for graduate study, applicants must provide:

- Two letters of recommendation, preferably from academic references or references in industry or government who are familiar with the applicant's professional or academic accomplishments.
- Resume.
- Detailed statement of career goals and professional aspirations.
- Completed self-evaluation form.
- If the applicant's native language is not English, proof of English Proficiency Exam Score (https://www2.gmu.edu/admissions-aid/apply-now/how-apply/graduate/standardized-test-information/), if applicable.

Policies

Students are strongly encouraged to meet with their academic advisor during their first semester and design an approved plan of study. Students should seek out their advisor when questions arise and when their plan of study needs to be revised. Any changes to the plan of study are to be approved by the DAEN advisor.

Requirements

Degree Requirements

Total credits: 30

Core Courses

The following core coursework covers the basic elements of data analytics at the graduate level.

Code	Title	Credits
AIT 580	Analytics: Big Data to Information	3
CS 504	Principles of Data Management and Mining [1]	3
or CS 584	Theory and Applications of Data Mining	
DAEN 690	Data Analytics Project	3
OR 531	Analytics and Decision Analysis	3
or OR 541	Operations Research: Deterministic Models	
STAT 515	Applied Statistics and Visualization for Analytics [2]	3
or STAT 554	Applied Statistics I	
Total Credits		15

1 CS 504 Principles of Data Management and Mining (for all concentrations except Data Mining) or CS 584 Theory and Applications of Data Mining (for the Data Mining concentration only)

2 STAT 515 Applied Statistics and Visualization for Analytics (for all concentrations except Statistics for Analytics) or STAT 554 Applied Statistics I (for the Statistics for Analytics concentration only)

Concentrations

Students can elect a concentration that corresponds to a specialized technical area. Students not interested in a concentration can work with an advisor to select 15 credits of electives from among courses allowed in all the concentrations.

Available Concentrations

- Concentration in Applied Analytics (APAN)
- Concentration in Bioengineering (BIOE)
- Concentration in Business Analytics (BUSA)
- Concentration in Cyber Analytics (CYBA)
- Concentration in Data Mining (DTM)
- Concentration in Financial Engineering (FNNE)
- Concentration in Health Data Analytics (HDAN)
- Concentration in the Internet of Things (INOT)
- Concentration in Predictive Analytics (PRAN)
- Concentration in Statistical Analytics (STLA)

Concentration in Applied Analytics (APAN)

Focuses on the practical elements of adapting big data approaches to common analytic problems and government operations.

Additional Admission Requirements

Students entering the program should have completed the following George Mason undergraduate courses or their equivalents:

Code	Title	Credits
IT 106	Introduction to IT Problem Solving Using Computer Programming	3
MATH 108	Introductory Calculus with Business Applications (Mason Core)	3
STAT 250	Introductory Statistics I (Mason Core)	3

Required Concentration Courses

Code	Title	Credits
AIT 524	Database Management Systems	3
Select four from the following:		12
AIT 582	Metadata Analytics for Big Data	
AIT 590	Topics in Applied Information Technology	
AIT 614	Big Data Essentials	
AIT 622	Determining Needs for Complex Big Data Systems	
AIT 624	Knowledge Mining from Big-Data	

AIT 664	Information: Representation, Processing and Visualization
AIT 726	Natural Language Processing with Deep Learning
AIT 736	Applied Machine Learning
DAEN 698	Data Analytics Research Project
Total Credits	15

Concentration in Bioengineering (BIOE)

Focuses on data collection from medical devices/sensors and conditioning, filtering, extraction, and preparing the data.

Additional Admission Requirements

Students entering the program should have completed the following George Mason undergraduate courses or their equivalents:

Code	Title	Credits
BENG 320	Bioengineering Signals and Systems	3
MATH 113	Analytic Geometry and Calculus I (Mason Core)	4
MATH 114	Analytic Geometry and Calculus II	4
MATH 213	Analytic Geometry and Calculus III	3
MATH 214	Elementary Differential Equations	3
STAT 346	Probability for Engineers	3

Note:

Domestic students with some deficiencies in preparation may be admitted provisionally pending completion of foundation courses in mathematics or computer science. Undergraduate credit earned for this purpose may not be applied toward the graduate degree.

Required Concentration Courses

Code	Title	Credits
BENG 501	Bioengineering Research Methods	3
BENG 575	Intellectual Property, Regulatory Concepts and Product Development	3
ECE 528	Introduction to Random Processes in Electrical and Computer Engineering	3
ECE 535	Digital Signal Processing	3
Select one from the following:		3
BENG 526	Neural Engineering	
BENG 538	Medical Imaging	
BENG 550	Advanced Biomechanics	
DAEN 698	Data Analytics Research Project	
ECE 537	Introduction to Digital Image Processing (DIP)	
Total Credits		15

Concentration in Business Analytics (BUSA)

Students will learn to effectively analyze data through the hands-on use of decision modeling and other techniques using popular software tools. This concentration utilizes a wide array of methodologies and techniques — from data collection, organization, reporting and mining to extraction of useful and actionable information for decision makers.

Additional Admission Requirements

Students entering the program must have successfully completed STAT 515 Applied Statistics and Visualization for Analytics or STAT 554 Applied Statistics I with a grade of B or better.

Required Concentration Courses

Code	Title	Credits
GBUS 738	Data Mining for Business Analytics	3
Select four from the following:		12
GBUS 720	Marketing Analytics	
GBUS 721	Marketing Research	
GBUS 739	Advanced Data Mining for Business Analytics	
GBUS 740	People Analytics	
GBUS 744	Fraud Examination	
Total Credits		15

Concentration in Cyber Analytics (CYBA)

Deals with the process of acquiring, extracting, integrating, transforming, and modeling data with the goal of deriving useful information that is suitable for presentation in a court of law. Digital forensics is a key component in criminal, civil, intelligence, and counter-terrorism matters. Students will be able to apply data analytics to such areas as digital media, intercepted (network) data, mobile media, unknown code, and leverage that analysis in order to determine, intent, attribution, cause, effect, and context.

Additional Admission Requirements

Students entering the program should have completed the following George Mason undergraduate courses or their equivalents:

Code	Title	Credits
Computer Operating Systems		
CYSE 211	Operating Systems and Lab	3
Computer Networking		
IT 341	Data Communications and Network Principles	3
or TCOM 535	The TCP/IP Suite of Internet Protocols	
IT 445	Advanced Networking Principles	3
or TCOM 515	Internet Protocol Routing: Lecture and Laboratory Course	

Note:

Domestic students with some deficiencies in preparation may be admitted provisionally pending completion of foundation courses in mathematics or computer science. Undergraduate credit earned for this purpose may not be applied toward the graduate degree.

Required Concentration Courses

Code	Title	Credits
DFOR 510	Digital Forensics Analysis	3
DFOR 660	Network Forensics	3
Select three from the following:		9
DAEN 698	Data Analytics Research Project	
DFOR 661	Digital Media Forensics	
DFOR 663	Operations of Intrusion Detection for Forensics	
DFOR 664	Incident Response Forensics	

DFOR 698	Independent Reading and Research
DFOR 761	Malware Reverse Engineering
DFOR 762	Mobile Device Forensics
DFOR 763	Registry Forensics - Windows
DFOR 767	Penetration Testing in Digital Forensics
DFOR 768	Digital Warfare
DFOR 780	Advanced Topics in Digital Forensics
ECE 527	Learning From Data
Total Credits	15

Concentration in Data Mining (DTM)

Aimed at students who are interested in understanding data mining, advanced database systems, MapReduce programming, pattern recognition, decision guidance systems, and Bayesian inference as they relate to data analytics.

Additional Admission Requirements

Students entering the program should have completed the following George Mason undergraduate courses or their equivalents:

Code	Title	Credits
CS 310	Data Structures	3
CS 330	Formal Methods and Models	3
CS 367	Computer Systems and Programming	4
CS 465	Computer Systems Architecture	3
MATH 125	Discrete Mathematics I (Mason Core)	3

Note:

Domestic students with some deficiencies in preparation may be admitted provisionally pending completion of foundation courses in mathematics or computer science. Undergraduate credit earned for this purpose may not be applied toward the graduate degree.

Required Concentration Courses

Code	Title	Credits
CS 657	Mining Massive Datasets with MapReduce	3
Select four from the following: [1]		12
CS 550	Database Systems	
CS 580	Introduction to Artificial Intelligence	
CS 650	Advanced Database Management	
CS 688	Machine Learning	
CS 775	Advanced Pattern Recognition	
CS 782	Advanced Machine Learning	
CS 787	Decision Guidance Systems	
DAEN 698	Data Analytics Research Project	
INFS 623	Web Search Engines and Recommender Systems	
INFS 740	Database Programming for the World Wide Web	
SYST 664	Bayesian Inference and Decision Theory	
Total Credits		15

[1] Note: all prerequisites must be met.

Concentration in Financial Engineering (FNNE)

The concentration emphasizes both analytical and practical aspects of financial and econometric data analytics. Students are expected to demonstrate proficiency in several quantitative modeling disciplines. Students are also expected to understand issues relevant to practical aspects of investment and hedging decision making, derivative valuation, and risk analysis. Students will learn the techniques to analyze large financial and economic data to derive meaningful knowledge, which will be useful for developing effective business and risk mitigation strategies and making sound financial, marketing, and investment decisions. The concentration prepares students for careers in business analytics with a focus on practical applications in financial operations, investment, and risk mitigation strategy development.

Additional Admission Requirements

Students entering the program should have completed the following George Mason undergraduate courses or their equivalents:

Code	Title	Credits
CS 112	Introduction to Computer Programming	4
MATH 113	Analytic Geometry and Calculus I (Mason Core)	4
STAT 344	Probability and Statistics for Engineers and Scientists I	3

Required Concentration Courses

Code	Title	Credits
SYST/OR 538	Analytics for Financial Engineering and Econometrics	3
SYST/OR 588	Financial Systems Engineering I: Introduction to Options, Futures, and Derivatives	3
SYST/OR 688	Financial Systems Engineering II: Derivative Products and Risk Management	3
Select two from the following:		6
DAEN 698	Data Analytics Research Project	
OR 541	Operations Research: Deterministic Models	
OR 542	Operations Research: Stochastic Models	
OR 604	Practical Optimization	
OR 645	Stochastic Processes	
SYST/OR 568	Applied Predictive Analytics	
SYST 573	Decision and Risk Analysis	
SYST 664	Bayesian Inference and Decision Theory	
Total Credits		15

Concentration in Health Data Analytics (HDAN)

This concentration focuses on analytics for health care. It provides coverage across several data analytics areas with specific application to the health care domain.

Code	Title	Credits
HAP 720	Health Data Integration	3
HAP 725	Statistical Process Control in Healthcare	3
HAP 780	Data Mining in Health Care	3
or HAP 880	Advanced Health Data Mining	
Select two from the following:		6
DAEN 698	Data Analytics Research Project	

HAP 671	Health Care Databases
HAP 719	Advanced Statistics in Health Services Research I
HAP 730	Health Care Decision Analysis
or HAP 770	Medical Decision Making and Decision Support Systems
HAP 819	Advanced Statistics in Health Services Research II
HAP 823	Comparative Effectiveness Analysis using Observational Data
Total Credits	15

Concentration in the Internet of Things (INOT)

The focus of this concentration is driven by sensors that collect the staggering amount of data that exists today. The Internet of Things (IoT) is expanding, at a geometric level, the number of devices that collect, forward, and offer for analysis data. IOTA looks at Data Analytics from the perspective of IoT and sensors. Analog and digital sensing design and deployment, hardware options, power consumption, security, sampling and quantization, Fourier transform, time analysis, and synchronization are topics covered in this concentration.

Additional Admission Requirements

Students entering the program should have completed the following George Mason undergraduate courses or their equivalents:

Code	Title	Credits
CS 222	Computer Programming for Engineers	3
ECE 301	Digital Electronics	3
ECE 321	Continuous-Time Signals and Systems	3
MATH 113	Analytic Geometry and Calculus I (Mason Core)	4
MATH 114	Analytic Geometry and Calculus II	4
STAT 346	Probability for Engineers	3

Required Concentration Courses

Code	Title	Credits
Select five courses from the following:		15
DAEN 698	Data Analytics Research Project	
ECE 508	Internet of Things	
ECE 510	Real-Time Concepts	
ECE 527	Learning From Data	
ECE 530	Sensor Engineering	
ECE 535	Digital Signal Processing	
ECE 612	Real-Time Embedded Systems	
Total Credits		15

Concentration in Predictive Analytics (PRAN)

The ultimate goal of analytics of Big Data is to derive value by suggesting effective actions for the future. Predictive analytics focuses on the methods for deciding on the best course of action, taking into account possible constraints and risks. The concentration will provide students with skills that drive effective decision making and optimization. Students will learn the techniques to analyze both structured and unstructured data to derive meaningful knowledge, which will be useful for developing effective strategies and making optimal decisions.

The concentration emphasizes both analytical and practical aspects of predictive analytics. Students are expected to master the practical aspects of modeling and methods for optimization. Students are also expected to demonstrate proficiency in decision making, design of decision support systems, and risk analysis. The program prepares students for careers in big data analytics with a focus on strategic decision making in practical applications including financial engineering, health care, transportation, and intelligence.

Additional Admission Requirements

Students entering the program should have completed the following George Mason undergraduate courses or their equivalents:

Code	Title	Credits
CS 112	Introduction to Computer Programming	4
MATH 113	Analytic Geometry and Calculus I (Mason Core)	4
STAT 344	Probability and Statistics for Engineers and Scientists I	3

Required Concentration Courses

Code	Title	Credits
OR 604	Practical Optimization	3
SYST 542	Decision Support Systems Engineering	3
SYST 568	Applied Predictive Analytics	3
or OR 568	Applied Predictive Analytics	
SYST 573	Decision and Risk Analysis	3
Select one from the following:		3
DAEN 698	Data Analytics Research Project	
OR 541	Operations Research: Deterministic Models	
OR 542	Operations Research: Stochastic Models	
OR 603	Sports Analytics	
OR 610	Deep Learning for Predictive Analytics	
STAT 663	Statistical Graphics and Data Exploration I	
SYST 508	Complex Systems Engineering Management	
SYST 584	Heterogeneous Data Fusion	
SYST 664	Bayesian Inference and Decision Theory	
SYST 670	Metaheuristics for Optimization	
or OR 670	Metaheuristics for Optimization	
Total Credits		15

Concentration in Statistical Analytics (STLA)

Provides students with skills necessary for gaining insight from data. Enables students to evaluate large data-sets from a rigorous statistical perspective, including theoretical, computational, and analytical techniques. Emphasis will be placed on developing deep analytical talent in the two areas of statistical modeling and data visualization. "Big Data" are well-known to encompass high levels of uncertainty and complex interactions and relationships. To gain knowledge from these data and hence inform decisions, elucidation of the core interactions and relationships must be done in a manner that acknowledges uncertainties in order to both minimize false signals and maximize true discoveries. Statistical modeling does exactly this – it accounts for uncertainty while identifying relationships. Visualization is often a critical component of modeling, but visualization also stands alone as an important tool for presentation of information, decision analysis, and process improvement.

Additional Admission Requirements
Students entering the program should have completed the following George Mason undergraduate courses or their equivalents:

Code	Title	Credits
MATH 203	Linear Algebra	3
MATH 213	Analytic Geometry and Calculus III	3
STAT 346	Probability for Engineers	3
or MATH 351	Probability	

Required Concentration Courses

Code	Title	Credits
STAT 544	Applied Probability	3
Select four from the following:		12
DAEN 698	Data Analytics Research Project	
STAT 654	Applied Statistics II	
STAT 662	Multivariate Statistical Methods	
STAT 663	Statistical Graphics and Data Exploration I	
STAT 672	Statistical Learning and Data Analytics	
Total Credits		15

Accelerated Master's

Applied Computer Science, BS/Data Analytics Engineering, Accelerated MS

Overview

Highly-qualified students in the Applied Computer Science, BS can complete both a BS-ACS and a Data Analytics Engineering, MS in five years through the BS-MS accelerated (BAM) program.

General BAM policies are in the catalog under AP.6.7 Bachelor's/Accelerated Master's Degrees. Policies governing all graduate degrees are in the catalog under AP.6 Graduate Policies.

Admission Requirements

Students in the Applied Computer Science, BS program are encouraged to apply to the BAM program after earning 60 undergraduate credits with an overall GPA of at least 3.30. Students must also have successfully completed CS 310 Data Structures and CS 330 Formal Methods and Models.

Accelerated Option Requirements

Students accepted to the BAM program may earn up to 9 credits of graduate coursework that count towards both the BS and MS degrees. They may begin taking graduate courses after completing 75 undergraduate credits and successfully completing CS 367 Computer Systems and Programming.

The following graduate courses can replace the corresponding undergraduate courses. For all students in the Applied Computer Science, BS program:

Code	Title	Credits
CS 584	Theory and Applications of Data Mining (to replace CS 484)	3

Students in the Software Engineering and Bioinformatics concentrations of the Applied Computer Science, BS program may also register for:

Code	Title	Credits
CS 550	Database Systems (to replace CS 450)	3

Students in the Computer Game Design and Geography concentrations of the Applied Computer Science, BS program may also register for one or both of the following courses:

Code	Title	Credits
CS 550	Database Systems (to replace CS 450)	3
CS 580	Introduction to Artificial Intelligence (to replace CS 480)	3

Notes:

- For students in the Computer Game Design and Geography concentrations of the Applied Computer Science, BS program, one of the 500 level courses will count as an elective towards their undergraduate degree.
- Students may not use both the graduate course and the undergraduate alternative for their BS degree.
- Students must satisfy all recommended and required prerequisites for the graduate courses they take.
- Students must still take the DAEN core courses (AIT 580 Analytics Big Data to Information, OR 531 Analytics and Decision Analysis, and STAT 515 Applied Statistics and Visualization for Analytics).
- Students also have the option to take up to 6 additional credits of graduate coursework *on reserve*, which can be used for the MS degree only.

Degree Conferral

Students must apply for degree conferral the semester before they expect to complete their BS requirements. At the beginning of their final undergraduate semester, students must submit a completed Bachelor's-Accelerated Master's Transition form to the CS department office. The master's degree will be conferred after the student completes the MS requirements.

Applied Science, BAS Data Analytics Concentration/Data Analytics Engineering, Accelerated MS

Overview

Highly-qualified students in the Applied Science, BAS, Data Analytics Concentration (https://catalog.gmu.edu/colleges-schools/interdisciplinary-programs-courses/applied-science-bas/) have the option of obtaining an accelerated Data Analytics Engineering, MS. (https://catalog.gmu.edu/colleges-schools/engineering/data-analytics-engineering-ms/#text)

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7). For policies governing all graduate degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/).

Admission Requirements

Students in the Applied Science, BAS Data Analytics (https://catalog.gmu.edu/colleges-schools/interdisciplinary-programs-courses/

applied-science-bas/#text) concentration may apply to this option if they have earned 60 undergraduate credits with an overall GPA of at least 3.30. Students may begin taking the master's level courses once they have earned 75 undergraduate credits.

Accelerated Option Requirements

Students must complete all credits that satisfy requirements for the BAS and MS programs. The following six credits may overlap:

Code	Title	Credits
AIT 580	Analytics: Big Data to Information	3
CS 504	Principles of Data Management and Mining	3
or CS 584	Theory and Applications of Data Mining	
OR 531	Analytics and Decision Analysis	3
or OR 541	Operations Research: Deterministic Models	
STAT 515	Applied Statistics and Visualization for Analytics	3
or STAT 554	Applied Statistics I	

In addition to the six credits above, students may select up to 6 additional credits to overlap. These credits must be selected in consultation with both the BAS and DAEN advisors. Credits selected will depend on which DAEN concentration the student intends to pursue.

Bioengineering, BS/Data Analytics Engineering, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BS in Bioengineering (https://catalog.gmu.edu/colleges-schools/engineering/bioengineering/bioengineering-bs/) and MS in Data Analytics Engineering (https://catalog.gmu.edu/colleges-schools/engineering/data-analytics-engineering-ms/) with a concentration in Bioengineering in an accelerated time-frame.

See AP.6.7 Bachelor's/Accelerated Master's Degrees for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in the Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Students majoring in the Bioengineering, BS will be considered for admission into the BAM Pathway after completion of a minimum of 60 undergraduate credits with an overall GPA of at least 3.0. Students must have successfully completed CS 222 Computer Programming for Engineers and BENG 320 Bioengineering Signals and Systems. Criteria for admission are identical to criteria for admission to the Bioengineering concentration of the Data Analytics Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/data-analytics-engineering-ms/) program.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the Data Analytics Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/data-analytics-engineering-ms/) program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- A GPA of 3.0 or better in their 60 highest-level credits
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students must complete all credits that satisfy requirements for both the BS and MS programs, with up to three classes (nine credits) overlap depending on their bioengineering concentration chosen from the following graduate courses:

Code	Title	Credits
AIT 580	Analytics: Big Data to Information	3
BENG 501	Bioengineering Research Methods	3
CS 504	Principles of Data Management and Mining (in place of BENG 420)	3
OR 531	Analytics and Decision Analysis	3
STAT 515	Applied Statistics and Visualization for Analytics	3
Total Credits		15

All graduate course prerequisites must be completed prior to enrollment. Each graduate course must be completed with a grade of B or better to apply toward the MS program. The graduate courses may be counted as Technical Electives or, in the case of CS 504 Principles of Data Management and Mining, for BENG 420 Biomedical Data Analytics towards the Bioengineering, BS program requirements with approval by the academic advisors of both the BS and MS programs.

While still in undergraduate status, a maximum of six additional graduate credits may be taken as reserve graduate credit and applied to the master's program. Reserve graduate credits do not apply to the undergraduate degree. These reserve credits can be chosen from the list of graduate level courses given above with approval by the academic advisors of both the BS and MS programs.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees policies.

Students are permitted to take additional graduate basic courses in their undergraduate programs. In such cases, those classes cannot be counted toward requirements for the MS.

Degree Conferral

Students are recommended to meet with the Bioengineering academic advisor one year before and must apply to the program one semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final

undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and the VSE Graduate Admissions Office. At the completion of MS requirements, a master's degree is conferred.

Computer Science, BS/Data Analytics Engineering, Accelerated MS

Overview

Highly-qualified students in the Computer Science, BS can complete both a BS-CS and a Data Analytics Engineering, MS in five years through the BS-MS accelerated (BAM) program.

General BAM policies are in the catalog under AP.6.7 Bachelor's/Accelerated Master's Degrees. Policies governing all graduate degrees are in the catalog under AP.6 Graduate Policies.

Admission Requirements

Students in the Computer Science, BS program are encouraged to apply to the BAM program after earning 60 undergraduate credits with an overall GPA of at least 3.30. Students must have successfully completed CS 310 Data Structures and CS 330 Formal Methods and Models .

Accelerated Option Requirements

Students accepted to the BAM program may earn up to 9 credits of graduate coursework that count towards both the BS and MS degrees. They may begin taking graduate courses after completing 75 undergraduate credits and successfully completing CS 367 Computer Systems and Programming.

The following graduate courses can replace the corresponding undergraduate courses.

Code	Title	Credits
CS 584	Theory and Applications of Data Mining (to replace CS 484)	3
CS 550	Database Systems (to replace CS 450)	3
CS 580	Introduction to Artificial Intelligence (to replace CS 480)	3

Notes:

- Students may not use both the graduate course and the undergraduate alternative for their BS degree.
- Students must satisfy all recommended and required prerequisites for the graduate courses they take.
- Students must still take the DAEN core courses (AIT 580 Analytics Big Data to Information, OR 531 Analytics and Decision Analysis, and STAT 515 Applied Statistics and Visualization for Analytics).
- Students also have the option to take up to 6 additional credits of graduate coursework *on reserve*, which can be used for the MS degree only.

Degree Conferral

Students must apply for degree conferral the semester before they expect to complete their BS requirements. At the beginning of their final undergraduate semester, students must submit a completed Bachelor's-Accelerated Master's Transition form to the CS department office. The master's degree will be conferred after the student completes the MS requirements.

Mechanical Engineering, BS/Data Analytics Engineering, Accelerated MS

Overview

Highly-qualified students in the Mechanical Engineering, BS program have the option of applying to the accelerated Data Analytics Engineering, MS program.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies.

Admission Requirements

Students in the Mechanical Engineering, BS program may apply to the accelerated Data Analytics Engineering, MS program if they have earned 60 undergraduate credits with an overall GPA of at least 3.30.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Option Requirements

Students must complete all credits that satisfy requirements for the BS and MS programs, with up to twelve credits overlap chosen from the following courses:

Code	Title	Credits
AIT 580	Analytics: Big Data to Information	3
CS 504	Principles of Data Management and Mining	3
OR 531	Analytics and Decision Analysis	3
STAT 515	Applied Statistics and Visualization for Analytics	3

All graduate course prerequisites must be completed prior to enrollment. Each 500-level course must be completed with a grade of B or better to apply toward the MS program. The graduate courses selected for overlap must be approved by the academic advisors of both the BS and MS programs. The graduate courses may be counted as Electives toward the Mechanical Engineering, BS program requirements, with approval of the Mechanical Engineering Department.

Degree Conferral

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form (https://registrar.gmu.edu/forms/) that is submitted to the Office of the University Registrar and the VSE Graduate Admissions and Recruitment office. At the completion of MS requirements, a master's degree is conferred.

Statistics, BS/Data Analytics Engineering, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program (BAM) and obtain the Statistics, BS and

the Data Analytics Engineering, MS in an accelerated time-frame after satisfactory completion of a minimum of 138 credits.

Admitted students are able to use up to 12 graduate credits in partial satisfaction of requirements for the undergraduate degree. Upon completion and conferral of the bachelor's degree and with satisfactory performance (grade of 'B' or better) in each of the graduate courses, students are given advanced standing in the master's program.

See AP.6.7 Bachelor's/Accelerated Master's Degrees for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits with an overall GPA of at least 3.0.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific prerequisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the Data Analytics Engineering, MS program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- Completion of Mason's requirements for undergraduate degree conferral (graduation) and completion of application for graduation.
- An overall GPA of at least 3.0.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, students complete all credits that satisfy requirements for the BS and MS programs, with up to twelve credits overlap chosen from the following graduate courses:

Code	Title	Credits
CS 504	Principles of Data Management and Mining	3
or CS 584	Theory and Applications of Data Mining	
OR 541	Operations Research: Deterministic Models (Credit may not be received for both OR 441 and OR 541.)	3
or OR 531	Analytics and Decision Analysis	
STAT 515	Applied Statistics and Visualization for Analytics	3
or STAT 554	Applied Statistics I	
STAT 663	Statistical Graphics and Data Exploration I	3

All graduate course prerequisites must be completed prior to enrollment. Each graduate course must be completed with a grade of B or better to apply toward the MS program.

The graduate courses may be counted as Technical Electives toward the Statistics, BS program requirements, with approval of the Statistics Department undergraduate coordinator.

While still in undergraduate status, a maximum of six additional graduate credits may be taken as reserve graduate credit and applied to the master's program. Reserve graduate credits do not apply to the undergraduate degree.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees policies.

Degree Conferral

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form (https://registrar.gmu.edu/forms/) that is submitted to the Office of the University Registrar and the VSE Graduate Admissions and Recruitment office. At the completion of MS requirements, a master's degree is conferred.

Systems Engineering, BS/Data Analytics Engineering, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a Systems Engineering, BS and a Data Analytics Engineering, MS in an accelerated time-frame after satisfactory completion of a minimum of 141 credits.

Admitted students are able to use up to 12 graduate credits in partial satisfaction of requirements for the undergraduate degree. Upon completion and conferral of the bachelor's degree and with satisfactory performance (grade of 'B' or better) in each of the graduate courses, students are given advanced standing in the master's program.

See AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/).

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Systems Engineering, BS students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits with an overall GPA of at least 3.0.

For the predictive analytics and financial engineering concentrations, students must submit evidence of:

- Satisfactory completion of courses in calculus, applied probability and statistics, and a scientific programming language.
- Familiarity with analytical modeling software, such as spreadsheets or math packages.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the Data Analytics Engineering, MS program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- An overall GPA of at least 3.0
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing course: Students must complete all credits that satisfy requirements for both the BS and MS programs. Up to four courses (12 credits) of approved master's level courses taken as part of the undergraduate degree may be applied to the graduate degree.

These courses may be chosen from the list of graduate courses in the following table. For Systems Engineering, BS students, these graduate courses replace the corresponding undergraduate courses listed in the table. The undergraduate version of these courses may *not* be applied toward the Systems Engineering, MS.

Undergraduate	Graduate	
SYST 473	SYST 573	This course applies to only certain concentrations; Credit may not be received for both courses.
OR 441	OR 541	Satisfies OR 531 core requirement in the graduate program. Credit may not be received for both courses.
SYST 438	SYST 538	This course applies to only certain concentrations; Credit may not be received for both courses
SYST 468	SYST 568	This course applies to only certain concentrations; Credit may not be received for both courses
SYST 488	SYST 588	This course applies to only certain concentrations; Credit may not be received for both courses

For the predictive analytics and financial engineering concentration, any other 500-level course may be applied to both the undergraduate and graduate degrees with approval of the advisor and SEOR department chair.

OR 541 Operations Research: Deterministic Models will substitute for the OR 531 Analytics and Decision Analysis core requirement in the MS DAE program. Students Bachelor of Science in Systems Engineering program are not permitted to take OR 531 Analytics and Decision Analysis.

Students must pay attention to the prerequisites required for a course, and the master's degree concentration that the course may satisfy.

While still in undergraduate status, a maximum of 6 additional graduate credits may be taken as reserve graduate credit and applied to the master's program. Reserve graduate credits do not apply to the undergraduate degree.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text).

Degree Conferral

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and the VSE Graduate Admissions Office. At the completion of MS requirements, a master's degree is conferred.

Information Technology, PhD

Banner Code: VS-PHD-INFT

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The Information Technology (INFT) PhD is a signature degree of the Volgenau School of Engineering. The program focuses on the science, engineering, and technology of information processing, an area of study ripe for innovation in a world driven more and more by data. The PhD in INFT accommodates rigorous and cross-disciplinary PhD study that does not fit with PhD program requirements of a single VSE department. The PhD in INFT includes several concentrations to provide program focus.

Admissions & Policies

Admissions

Admission is competitive. An undergraduate degree in an information technology-related area, such as engineering, computer science, operations research, mathematics, or the physical sciences is typically

required for admission. The undergraduate preparation should include, at a minimum, calculus, differential equations, linear algebra, discrete structures, probability, and statistics, in addition to computational proficiency, including experience with a variety of languages and computer hardware. Additional requirements depend on the proposed study focus.

Most successful applicants complete their master's degree before admission with a minimum GPA of 3.5. Applicants can also be considered directly from their undergraduate studies with a minimum GPA of 3.25.

Applicants wishing to switch fields from non-information technology-related academic backgrounds, especially those with extensive work experience in information technology, are encouraged to discuss opportunities for study. This path into the Information Technology, PhD program typically requires academic preparation in the formal framework and underpinning theory of information technology. Those applicants are referred to the VSE departments offering the concentrations and courses of greatest interest, prior to application.

Applicants are required to submit: an online application for admission, undergraduate and graduate transcripts from previous colleges and universities, three letters of reference (preferably from college instructors), goals statement and a résumé. Applicants are also required to submit a brief personal goals statement including the proposed research areas of interest. Admission for cross-disciplinary Information Technology, PhD study will depend on alignment with VSE faculty research expertise.

International applicants are referred to the university's English Proficiency Requirements (https://www2.gmu.edu/admissions-aid/how-apply/international/english-proficiency-requirements/). In addition, international transcripts must be translated and evaluated (course-by-course preferred) by a member of the National Association of Credential Evaluation Services (NACES). Transcripts can be evaluated by George Mason University at no extra cost to the applicant; this typically adds 6-8 weeks to the application processing time. Please review George Mason University's Policy on International Transcript Submission (https://catalog.gmu.edu/admissions/international-students/). Applications must be completed and submitted before an admission decision is made.

Policies

The general doctoral requirements of Mason apply to this program.

Degree Requirements Overview

Students must complete a minimum of 72 graduate credits. This requirement may be reduced by a maximum of 30 credits from an approved and completed master's degree. That determination requires the evaluation by, and approval of, the program director or VSE Dean or their designee, and depends on alignment of the master's degree with the proposed study focus.

Within those 72 credit hours, the program requires:

- Specialized coursework comprised of 48 credits for students with no credit for previous MS coursework. This specialized coursework requirement may be reduced to a minimum of 18 credit hours, depending on the approved credit reduction for previous graduate coursework.
- Breadth requirement, requiring completion of two Fundamental Knowledge courses, and two Qualifying Exams.
- Comprehensive exam (oral) after completion of specialized coursework.
- Development and acceptance of a research proposal plus execution of the research culminating in a public final defense. This research phase of the PhD requires 24 credit hours of:

Code	Title	Credits
Research Requirement		24
IT 990	Dissertation Topic Presentation	1
23 additional credits from the following:		
IT 998	Doctoral Dissertation Proposal	1-12
IT 999	Doctoral Dissertation (Mininimum of 12 credits required)	12

- Approval by the dissertation committee of the defense of the dissertation research in written and oral forms.

Requirements

Degree Requirements

Total credits: minimum 72

Plan of Study

Students are strongly encouraged, but are not required, to select a concentration by the end of their first year. Concentration areas are based on broad areas of faculty expertise. Students who do not choose an established concentration must be flexible in their research focus, recognizing that not all faculty are available to accept doctoral students.

Concentrations

Available Concentrations

- Information Sciences and Technology (ISTC)
- Information Security and Assurance (ISA)
- Information Systems (ISYS)
- Mechanical Engineering (ME)
- Software Engineering (SWE)

Specialized Coursework

Each student works with his or her faculty advisor or dissertation director to develop a plan of study. Successful coursework completion includes:

- A cumulative GPA of 3.50 in courses included on the plan of study, and all grades must be a B- or better.
- At least 12 credits on the plan of study must be courses numbered 700 or higher. No 500 level courses are permitted. The suggested courses for each concentration is as follows. Specific courses should be chosen with advisement of your faculty advisor.

Information Sciences and Technology (ISTC)

Code	Title	Credits
AIT 602	Introduction to Research in Applied Information Technology	
AIT 614	Big Data Essentials	
AIT 624	Knowledge Mining from Big-Data	
AIT 681	Secure Software Development	
AIT 682	Network and Systems Security	
AIT 701	Cyber Security: Emerging Threats and Countermeasures	

AIT 702	Incident Handling and Penetration Testing
AIT 711	Rapid Development of Scalable Applications
AIT 712	Applied Biometric Technologies
AIT 716	Human Computer Interaction
AIT 724	Data Analytics in Social Media
AIT 726	Natural Language Processing with Deep Learning
AIT 734	Advanced Web Analytics Using Semantics
AIT 736	Applied Machine Learning
Other VSE courses with the approval of an advisor or program director.	

Information Security and Assurance (ISA)

Code	Title	Credits
ISA 673	Operating Systems Security	
ISA 674	Intrusion Detection	
ISA 681	Secure Software Design and Programming	
ISA 697	Topics in Information Security	
ISA 763	Security Protocol Analysis	
ISA 764	Security Experimentation	
ISA 796	Directed Readings in Information Security	
ISA 862	Models for Computer Security	
ISA 863	Advanced Topics in Computer Security	
CS 700	Research Methodology in Computer Science	
Any CS, INFS or SWE course numbered 700 or higher, subject to the approval of the student's academic advisor		

Information Systems (ISYS)

Code	Title	Credits
At least 12 credits in INFS or ISA courses numbered 700 or higher as follows:		
INFS 623	Web Search Engines and Recommender Systems	
INFS 740	Database Programming for the World Wide Web	
INFS 760	Advanced Database Management	
INFS 770	Knowledge Management for E-Business	
INFS 772	Intelligent Agents and the Semantic Web	
INFS 774	Enterprise Architecture	
INFS 796	Directed Readings in Information Systems	
ISA 656	Network Security	
ISA 797	Advanced Topics in Information Security	
At least 6 credits from SWE and CS courses in Software Engineering and Computer Science: [1]		
SWE 721	Reusable Software Architectures	
SWE 763	Software Engineering Experimentation	
SWE 796	Directed Readings in Software Engineering	
SWE 821	Software Engineering Seminar	
CS 657	Mining Massive Datasets with MapReduce	
CS 688	Machine Learning	
CS 700	Research Methodology in Computer Science	
CS 782	Advanced Machine Learning	
CS 787	Decision Guidance Systems	

[1] Students without a credit reduction should select the remaining credits from any 600 level or higher INFS, ISA, CS or SWE courses or courses approved in advance by the student's academic advisor.

Mechanical Engineering (ME)

Code	Title	Credits
600/700-level courses outside the ME department (typically physics, mathematics, etc.)		
700-level courses within the ME department in subjects within the student's area of specialization		
700-level courses within the ME department in subjects outside the student's area of specialization		
ME 620	Mechanical Engineering Decision Making	
Available courses include:		
ME 621	Foundations of Fluid Mechanics	
ME 714	Fracture Mechanics	
ME 715	Impact Dynamics	
ME 721	Advanced Fluid Mechanics	
ME 722	Introduction to Turbulence	
ME 723	Compressible Flow	
ME 724	Viscoelastic Flow	
ME 725	Introduction to Computational Fluid Dynamics for Engineers	
ME 728	Foundations of Heat Transfer	
ME 732	Advanced Thermodynamics	
ME 740	Introduction to Continuum Mechanics	
ME 741	Theory of Elasticity	
ME 742	Finite Element Analysis for Solids	
ME 745	Mechanics and Properties of Materials	
ME 750	Nanomaterials Enabled Renewable Energy	
ME 751	Advanced Materials for Water Treatment	
ME 753	Tribology	
ME 754	Introduction to Nano-Materials	
ME 755	Optofluidics	
ME 762	Biosensors	

Software Engineering (SWE)

Code	Title	Credits
SWE 763	Software Engineering Experimentation	
or CS 700	Research Methodology in Computer Science	
SWE 721	Reusable Software Architectures	
SWE 737	Advanced Software Testing	
SWE 760	Software Analysis and Design of Real-Time Systems	
SWE 795	Advanced Topics in Software Engineering	

SWE 796	Directed Readings in Software Engineering
SWE 798	Research Project
Select at least 6 credits from the following:	
SWE 619	Object-Oriented Software Specification and Construction
SWE 620	Software Requirements Analysis and Specification
SWE 621	Software Design and Architecture
SWE 622	Distributed Software Engineering
SWE 631	Software Design Patterns
SWE 632	User Interface Design and Development
SWE 637	Software Testing
SWE 642	Software Engineering for the World Wide Web
SWE 645	Component-Based Software Development
SWE 681	Secure Software Design and Programming
CS 706	Concurrent Software Systems
INFS 740	Database Programming for the World Wide Web
INFS 760	Advanced Database Management
INFS 770	Knowledge Management for E-Business
INFS 797	Advanced Topics in Information Systems
ISA 656	Network Security
ISA 763	Security Protocol Analysis
ISA 764	Security Experimentation
ISA 862	Models for Computer Security

Breadth Requirement

To satisfy the breadth requirements of the PhD INFT, a student must demonstrate his/her proficiency in the foundational knowledge specific to her/his program of study. This is satisfied through completion of two Fundamental Knowledge courses, and two Qualifying Exams. The Fundamental Knowledge courses and the Qualifying Exams are described in the online guide maintained by the Volgenau School of Engineering Office of Graduate Academic Affairs. Selection of the two Fundamental Knowledge courses and the two Qualifying Exams must be approved by the student's PhD advisor and filed with the Volgenau School of Engineering Office of Graduate Academic Affairs.

Students must complete the breadth requirements within the following time limits. Students who enter the program with a 24-30 credit reduction from a prior Master's degree must satisfy all breadth requirements no later than twelve months following the end of their fourth semester in the program. Students who enter the program with a reduction of less than 24 credits must satisfy all breadth requirements no later than twelve months following the end of their sixth semester in the program. In both instances, these time limits include all attempts at the Fundamental Knowledge courses and the Qualifying Exams. Time limits apply to all PhD INFT students, regardless of their part-time or full-time study status. Failure to satisfy all breadth requirements by the specified time is cause for termination from the PhD INFT program.

Fundamental Knowledge Course Requirement:

Students are required to complete two Fundamental Knowledge courses within the first 24 months of their PhD enrollment, regardless of their part-time or full-time study status and regardless of credit reductions from previous coursework. Fundamental Knowledge courses are listed in the study guide maintained by the VSE Office of Graduate Academic Affairs. Fundamental Knowledge courses must be approved by the PhD advisor; must be specific to the student's program of study; and must be submitted to the VSE Office of Graduate Academic Affairs. These courses can be used as credit toward the student's plan of study, but will not count toward his/her 700 level minimum requirement.

Students must earn a grade of A- or better in both Fundamental Knowledge courses on their first attempt to satisfy this component of the breadth requirement. Students failing to earn a grade of A- or better on their first attempt in one or both Fundamental Knowledge courses are required to take and pass, in one attempt, supplementary Qualifying Exams described below

Qualifying Exam Requirement:

Students are required to take and pass two Qualifying Exams within the time limit defined for the breadth requirement. Qualifying Exams are listed in the study guide maintained by the VSE Office of Graduate Academic Affairs. Selection of Qualifying Exams must be approved by the PhD advisor; must be specific to the student's program of study; must not duplicate the bodies of knowledge of the student's Fundamental Knowledge courses; and must be submitted to the VSE Office of Graduate Academic Affairs.

Qualifying Exams are offered twice a year, just before the fall and spring semesters. Each exam is allocated two hours and graded on a pass or fail basis. Students must take all required Qualifying Exams in their first attempt. Students failing one or both of their Qualifying Exams on the first attempt are required to retake the Qualifying Exams they did not pass the next time the Qualifying Exams are offered. Students failing Qualifying Exams may not subsequently satisfy the breadth requirement by completing Fundamental Knowledge courses.

Students failing to earn a grade of A- or better in one or both Fundamental Knowledge courses are required to take and pass supplementary Qualifying Exams in the bodies of knowledge covered by the Fundamental Knowledge courses in which they earned a grade of less than A-. Supplementary Qualifying Exams are in addition to the two required Qualifying Exams described above. Students must pass supplementary Qualifying Exams in one attempt only.

Failure to satisfy all breadth requirements, within established time limits, regardless of part-time or full-time study status, may be terminated from the PhD INFT program.

Comprehensive Exam

The comprehensive exam is an oral exam taken after students have satisfactorily completed all coursework requirements in their approved plan of study. To initiate the exam process, the student meets with his/her dissertation advisor to prepare an Oral Comprehensive Exam Request form. This Request must be approved by the entire dissertation supervisory committee and forwarded to the associate dean for final approval. The permission form must be submitted with:

- a one page description of the intended area of research; and
- a reading list on which the student will be examined.

The reading list should include articles and/or books that cover the fundamentals, state-of-the-art, and tools needed to perform research in the intended area.

The objective of the comprehensive exam is to allow the dissertation supervisory committee to assess the student's readiness to complete doctoral research in the chosen area of concentration. The duration of the oral exam is typically two hours. Students must pass the comprehensive exam and dissertation proposal defense before advancing to candidacy. The comprehensive exam must be attempted for the first time no later than one year after completing all coursework requirements and starting the IT 998 Doctoral Dissertation Proposal sequence.

Students who fail the exam are permitted to retake it once within six weeks of notification of failure of the first attempt. Failure in the second attempt will result in termination from the program.

Research Component

Research Credit Hours

Code	Title	Credits
Research Requirement		24
IT 990	Dissertation Topic Presentation	1
23 additional credits from the following:		
IT 998	Doctoral Dissertation Proposal	1-12
IT 999	Doctoral Dissertation (Mininimum of 12 credits required)	12

Once enrolled in Dissertation Research, students must maintain continuous registration in IT 998 Doctoral Dissertation Proposal until advancement and IT 999 Doctoral Dissertation until the dissertation is complete and has been successfully submitted to the library, excluding summers, unless conferring in August. For more information please see AP.6.10.6.

Faculty Advisement

On admission to the program, students are assigned a temporary faculty advisor aligned with the research area that the student identified in his/her application. The temporary faculty advisor advises on and approves the student's initial course selection.

Ultimately, all INFT PhD students require a dissertation director who will direct the student's PhD studies, including the research. This arrangement, by mutual consent, should be agreed on before the student begins their research. Topics of potential research are determined by the expertise and interests of the faculty. The student is responsible to identify, communicate and offer proof of his/her research skills to the faculty under whom (s)he wishes to work. A student's engagement, excitement, commitment and initiative are all attributes a potential dissertation director will consider before making the decision to formally commit. The university does not manage this matching process, nor does it compel any faculty member to undertake this role for a student.

Dissertation directors and their students should arrive at an understanding of the dissertation director's expectations. This must include a clear understanding of the research topic and the courses the student must complete in support of that research. It should also include, at a minimum, a timeline for the overall planned program of study, expectations regarding technical publications and presentations arising from the research, availability of graduate student support, advising style, and the location where the student will conduct the research and when. A successful dissertation depends on shared understanding.

Students have the right to change dissertation directors. Changing dissertation directors slows academic progress, and students are discouraged from changing more than once, since demonstration of satisfactory progress on the PhD is one criterion for continuation in the program. Dissertation directors also have the right to decline or to discontinue supervising students.

Doctoral Supervisory Committee

After a student and his/her dissertation director agree to work together and file this information with the VSE Office of Graduate Academic Affairs, the doctoral supervisory committee can be formed. The doctoral supervisory committee includes the dissertation director, who must be a member of the Mason graduate faculty, and at least three other people from the Mason graduate faculty. The dissertation director and chair of a PhD INFT dissertation committee must have at least a 50% appointment in the Volgenau School. This rule does not apply to a co-director. At least three committee members must be from the Volgenau School, and at least two of the departments in the Volgenau School must be represented. Representatives from industry or government with key, related expertise may also be considered as a fifth member. However, all members of the committee must hold a terminal degree.

The doctoral supervisory committee administers the comprehensive exam, the dissertation proposal presentation evaluation, and the dissertation predefense and defense. Permission for the comprehensive exam and dissertation defense are requested from the associate dean of graduate programs within the Volgenau School by submitting the appropriate committee approved forms.

Dissertation Proposal Presentation

After successful completion of the Comprehensive Exam, doctoral students prepare a written dissertation proposal to present to the doctoral supervisory committee. Students must continuously enroll in IT 998 Doctoral Dissertation Proposal to complete this effort. While in the IT 998 Doctoral Dissertation Proposal sequence, the student should enroll in IT 990 Dissertation Topic Presentation. The dissertation proposal presentation must be at least one week after passing the comprehensive exam. After successfully completing the dissertation-proposal requirement, the student is formally admitted as a candidate for the PhD degree and must begin to continuously register for IT 999 Doctoral Dissertation. The application for candidacy is submitted to the associate dean of graduate programs on a standard form.

Dissertation and Final Defense

With the concurrence of the dissertation supervisory committee and associate dean, students proceed with the doctoral research, during which time they must be continuously enrolled in IT 999 Doctoral Dissertation. When the central portions of the research have been completed to the point that students are able to describe the original contributions of the dissertation effort, they submit the written dissertation to the committee and schedule an oral predefense to the committee. Once the committee believes the student is ready, a final public oral defense may be scheduled allowing a minimum of two weeks for the defense notification as required by the University, AP.6.10.8 (https://catalog.gmu.edu/policies/academic/graduate-policies/#text). The entire dissertation committee and the associate dean must be present at the defense, unless an exception is approved by the associate dean of graduate programs in advance of the defense.

With satisfactory evaluation of the oral defense of the dissertation by the committee, the student must submit to the library a final publishable dissertation that represents a definitive contribution to

knowledge in INFT. If the candidate successfully defends the dissertation, the dissertation committee recommends that the final form of the dissertation be completed and the Volgenau School faculty and the graduate faculty of Mason accept the candidate for the PhD degree.

If the student fails to successfully defend the dissertation, the student may request a second defense, following the same procedures as for the initial defense. There is no time limit for this request other than general time limits for the doctoral degree. An additional predefense is not required, but students are strongly advised to consult with the committee before scheduling a second defense. If the student fails on the second attempt to defend the dissertation, the student will be terminated from the program.

STEM in Society Minor (VSE)

Banner Code: STEM

The STEM in Society minor develops strategic and critical thinking capabilities to better understand how science, technology, engineering, and mathematics (STEM), as well as medicine, impact the human experience - past, present, and future. It provides a broad perspective of the STEM fields, to include how advances are developed, how they fit into the wider context of society and culture, and how historical contexts have in turn shaped advances in these fields.

The skills and competencies gained from this minor are useful to those seeking work in the tech and health care industries, as well as fields like international development and public policy or in non-profits, the government, or think tanks.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must earn a minimum grade of 2.00 in all courses applied to the minor. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 15

Required Course

Code	Title	Credits
HIST 315	STEM and Society: A History	3
Total Credits		3

Electives

Code	Title	Credits
Select 12 credits from any of the following courses		12
Historical		
HIST 202	Freshman/Sophomore Seminar in Global History	
HIST 378	History of Aviation	
HIST 390	The Digital Past	
BIOL 301	Biology and Society (Mason Core)	
COS 301	Great Ideas in Science (Mason Core)	
Medicine and Health		
PHIL 344	Ethical Issues in Global Health	
ANTH 363	Humans, Disease, and Death (Mason Core)	
ANTH 365	Scientific Racism and Human Variation	
ANTH 381	Medical Anthropology	
GCH 445	Social Determinants of Health	
or SOCW 445	Social Determinants of Health	
GCH 205	Global Health (Mason Core)	
GCH 360	Health and Environment	
Environment		
PHIL 243	Global Environmental Ethics (Mason Core)	
ANTH 370	Environment and Culture	
CEIE 100	Environmental Engineering around the World (Mason Core)	
CLIM 101	Global Warming: Weather, Climate, and Society (Mason Core)	
EVPP 436	The Human Dimensions of Global Climate Change	
GGS 307	Geographic Approaches for Sustainable Development	
Science and Technology		
PHIL 377	Darwin: Biology and Beyond (Mason Core)	
ANTH 395	Work, Technology, and Society: An IT Perspective	
ANTH 314	Zombies	
SOCI 391	Big Data, Technology, and Society	
INTS 301	Science in the News (Mason Core)	
INTS 348	Digital Futures	
IT 304	IT in the Global Economy	
COS 400	Problem Solving and Leadership in STEAM	
Policy		
EVPP 432	Energy Policy	
EVPP 361	Introduction to Environmental Policy	
NUTR 318	Global Nutrition and Food Security	
NUTR 440	Nutrition Policy	
BENG 475		
Special Topics Courses (with permission of minor director when topic is related to STEM in Society)		
HIST 387	Topics in Global History (Mason Core)	
ANTH 396	Issues in Anthropology: Social Sciences (Mason Core)	
ANTH 399	Issues in Anthropology	
SOCI 395	Special Topics in Sociology	
GLOA 400	Global Affairs Capstone (Mason Core)	
GLOA 450	Topics in Global Affairs	
ENGR 499	Special Topics in Engineering	
INTS 375	Special Topics	
INTS 475	Special Topics	
NUTR 495	Nutrition and Food Studies Capstone	

GCH 494	Special Topics in Global and Community Health	
Total Credits		12

Department of Bioengineering

Phone: 703-993-5846
Email: bioeng@gmu.edu
Website: bioengineering.gmu.edu

Bioengineering involves the application of engineering tools and concepts to solve problems in biology or medicine. The impact of engineering on biomedicine is wide ranging, from advanced biomedical imaging technologies to discovering new diagnostic devices and targeted therapeutics. With an aging population, the growing costs of health care, and the impact of novel technology to fundamental understanding in biosciences, the demand for bioengineers is growing. This program provides students with a solid foundation in engineering while offering in-depth exposure to the life sciences. Bioengineering faculty members collaborate with colleagues at George Mason University and nearby institutions including Inova Health Center, and federal laboratories such as the Naval Research Laboratory, the National Institutes of Health Clinical Center, and the National Institute of Standards and Technology. Research areas include:

- biomechanics
- biomedical imaging
- neuroengineering
- computational neuroscience
- microfabricated devices
- nanomedicines
- biomaterials
- tissue engineering

Available Programs

Bioengineering, BS

The BS in Bioengineering is a challenging multidisciplinary training program with the goal of enabling graduates to be competitive for an entry-level position in the biomedical industry or to continue their education in graduate school or medical school. The curriculum provides a strong background in the biological and engineering fundamentals of bioengineering as well as upper level courses in areas of biomedical measurements, biomedical systems modeling, and bioinformatics. The department offers six concentrations: Bioengineering Healthcare Informatics, Bioengineering Prehealth, Biomaterial and Nanomedicine, Biomedical Imaging and Devices, Computational Biomedical Engineering, and Neurotechnology and Computational Neuroscience. In addition the Bioengineering, BS program offers an Honors Program to outstanding students. Entry is by invitation and based on academic performance achieved at Mason.

Bioengineering, MS

The Bioengineering, MS prepares students for research and professional practice in bioengineering and related fields. The program comprises four core areas: Biomaterial and Nanomedicine, Biomedical Imaging and Devices, Computational Biomedical Engineering, and Neurotechnology and Computational Neuroscience while offering three different options. Students can choose to focus their graduate work toward a career in academia (thesis option), or in industry (practicum or coursework option).

Bioengineering, PhD

The Bioengineering, PhD is a research-intensive, multifaceted program which is comprised of four different concentrations: Biomaterial and Nanomedicine, Biomedical Imaging and Devices, Computational Biomedical Engineering, or Neurotechnology and Computational Neuroscience. Students can choose to focus their graduate work in one of the above mentioned concentrations.

Faculty

Department Faculty

Professors

Ascoli, Blackwell, Buschmann (chair), Cebral, Hoemann, Sikdar,

Associate Professors

Bray, Chitnis, Ikonomidou, Peixoto, Wei

Assistant Professors

Kim, Ross, Veneziano

Affiliated Professors

Alshiek, Caldwell, Chung, Cortes, Cressman, Demeter, Hamilton, Joiner, Kang, Katona, Komendantov, Liotta, Marr, Medintz, Moran, Pierobon, Polavaram, Rangwala, Reyes-Hernandez, Scorcioni, Seshaiyer, Shah, Shehu, Shobeiri, Thompson, Vora, Wiener

Programs

- Bioengineering Minor
- Bioengineering, BS
- Bioengineering, MS
- Bioengineering, PhD

Bioengineering Minor

Banner Code: BIOE

Website: bioengineering.gmu.edu/

The minor in Bioengineering is available to both engineering and non-engineering majors. It provides considerable opportunities in a highly cross-disciplinary field involving the application of engineering concepts and tools to solve problems in biomedicine. The minor in Bioengineering prepares students to gain and reinforce their knowledge of biology and engineering fundamentals, and develop and apply skills to clinically-relevant challenges.

Admissions & Policies

Admissions

Students must have completed MATH 114 Analytic Geometry and Calculus II with a grade of B- or better to be admitted to the minor.

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 19-21

Required Courses

Code	Title	Credits
BENG 101	Introduction to Bioengineering	3
BIOL 213	Cell Structure and Function (Mason Core) [1]	4
BENG 214	Physiology for Engineers	3
Total Credits		10

[1] All students in the Bioengineering minor program are recommended to register for the specific section of BIOL 213 Cell Structure and Function (Mason Core).

Technical Electives

Code	Title	Credits
Select at least nine credits from the following list:		9-11
Computational Biomedicine		
BENG 420	Biomedical Data Analytics	
BENG 430	Continuum Biomechanics and Biotransport II	
BENG 435	Multi-scale Modeling and Simulation in Biomedicine	
Biomedical Imaging & Devices		
BENG 437	Medical Image Processing	
BENG 438	Advanced Biomedical Imaging	
BENG 470	Bioinstrumentation and Devices II	
Biomaterials & Nanomedicine		
BENG 413	Molecular Engineering Laboratory	
BENG 421	Cell and Tissue Engineering	
BENG 441	Nanomedicine and Drug Delivery	
Neurotechnology & Computational Neuroscience		
BENG 327	Cellular, Neurophysiological, and Pharmacological Neuroscience	
BENG 426	Neural Engineering	
BENG 434	Computational Modelling of Neurons and Networks	
BENG 487	Neuroinformatics	
BENG 429	Mason-Inova Applied Technologies	
Study Abroad		
BENG 417	Bioengineering World Health	
Research Experience		
BENG 395	RS: Mentored Research in Bioengineering (Research Experience)	
Students may choose to substitute two of the technical electives (up to 6 credits) from the following:		
ECE courses		
ECE 370	Robot Design	
ECE 410	Applications of Discrete-Time Signal Processing	
ECE 431	Digital Circuit Design	
ECE 470	Introduction to Humanoid Robotics	
ME courses		
ME 221	Thermodynamics	
ME 322	Fluid Mechanics	
ME 313	Material Science	
ME 432	Control Engineering	
SYST courses		
OR 442	Stochastic Operations Research	
SYST 468	Applied Predictive Analytics	
SYST 470	Human Factors Engineering	
NEUR courses		
NEUR 327	Cellular, Neurophysiological, and Pharmacological Neuroscience	
NEUR 461	Special Topics in Neuroscience	
BIOL courses		
BIOL 311	General Genetics	
BIOL 385	Biotechnology and Genetic Engineering	
BIOL 484	Cell Signaling and Disease	
BIOL 486	Molecular Biology and Biotechnology Laboratory	
CHEM courses		
CHEM 313	Organic Chemistry I	
CHEM 314	Organic Chemistry II	
CHEM 463	General Biochemistry I	
Total Credits		9-11

Bioengineering, BS

Banner Code: VS-BS-BIOE

Academic Advising

Phone: 703-993-4190
Email: cborke@gmu.edu
Website: https://bioengineering.gmu.edu/academics/bachelor-science-bioengineering

Bioengineering, also referred to as biomedical engineering, is the application of engineering tools and approaches to solve problems in biology and medicine. It is a broad and growing field that draws upon rapid advances in technology and computation, as well as on unprecedented growth in basic biological understanding.

This program provides i) a scientific foundation in math, physics, biology, chemistry and physiology; ii) broad introductions to bioengineering technology platforms of medical imaging, devices, computational biomedical engineering, computational neuroscience and neurotechnology, biomaterials and nanomedicine, and health care informatics followed by a deepening of knowledge in at least one of these areas through a chosen concentration; and iii) translational courses

showing how new technologies can be implemented in clinical medicine and be commercialized by industry partners.

Engineering design experiences are built into each year of the curriculum culminating in a senior design project. The impact of engineering, technologies and computer science on biomedicine is immense, and can only be harnessed through integrative multidisciplinary training in Bioengineering. With the growing demand for better health care, the need for bioengineers is expected to be high.

The multidisciplinary training in this field makes graduates competitive for positions in government and in biomedical industry. The BS in Bioengineering also enables students to continue their education in graduate school or medical school.

Accreditation

The bachelor's program in Bioengineering is accredited by the Engineering Accreditation Commission of ABET, http://www.abet.org (https://www.abet.org/).

Program Educational Objectives

Graduates of the Bioengineering bachelor's program are expected within 3-5 years of graduation to:

1. Contribute to the development or application of health-related products or processes that are a benefit to society.
2. Continue their formal education by making demonstrable progress toward an advanced degree or professional development milestone.
3. Communicate and perform effectively as members and/or leaders of multidisciplinary teams.

Concentrations

The concentrations in the BS Bioengineering program are:

- Bioengineering Healthcare Informatics (BHI)
- Bioengineering Prehealth (BMPH)
- Biomaterials and Nanomedicine (BNM)
- Biomedical Imaging and Devices (BMID)
- Computational Biomedical Engineering (CBME)
- Neurotechnology and Computational Neuroscience (NTCN)

Admissions & Policies

Policies

For policies governing all undergraduate degrees, see AP.5 Undergraduate Policies.

Advising

All Bioengineering students are required to meet with their departmental academic advisor prior to course registration each semester. Students who are considering bioengineering as their major must meet with the Volgenau School of Engineering Coordinator of Undergraduate Advising in 2500 Nguyen Engineering Building.

Change of Major

See Change of Major for more information.

Writing-Intensive Requirement

Mason's writing-intensive requirement is satisfied by BENG 360 Biomedical Imaging, in which faculty provide feedback on student writing assignments.

Termination from the Major

No math, science, or Volgenau School of Engineering course that is required for the major may be attempted more than three times. Those students who do not successfully complete such a course within three attempts will be terminated from the major. Undeclared students in the Volgenau School who do not successfully complete a course required for a Volgenau School major within three attempts will also be terminated.

In addition, students in the Volgenau School with evidence of continued failure to make adequate progress toward declaring or completing a Volgenau School major will be terminated from the school. Adequate progress is determined by the major program. For more information, see AP.5.2.4 Termination from the Major (https://catalog.gmu.edu/policies/academic/undergraduate-policies/#ap-5-2-4).

Once a student has attempted one of these courses twice unsuccessfully, the third attempt must be no later than the next semester of enrollment, excluding summers. Failure to take the course at that time will result in termination from the major. A third attempt of a Volgenau School of Engineering course requires support by the student's major department as well as permission by the department offering the course. This permission is not guaranteed. If the student is unable to take the course when required, the student may request an extension to a future semester; extensions require approval of the student's advisor, their department, and the Associate Dean for Undergraduate Programs. The deadline for extension requests is the add deadline for the semester in which the course is required.

Students who have been terminated from a Volgenau School of Engineering major may not register for a Volgenau School course without permission of the department offering the course. This applies to all undergraduate courses offered by the Volgenau School except IT 104 Introduction to Computing (Mason Core) and STAT 250 Introductory Statistics I (Mason Core).

A student may not declare any major in the Volgenau School of Engineering if the student has previously met the termination criteria for that major at any time, regardless of what the student's major was at the time the courses were taken.

Requirements

Degree Requirements

Total credits: 122-134

Students must complete each BENG, BIOL, CHEM, CS, ECE, ME course presented as part of the required credits for the degree with a grade of C or better.

Required Courses

Bioengineering

Code	Title	Credits
BENG 101	Introduction to Bioengineering	3
BENG 214	Physiology for Engineers	3
BENG 230	Continuum Biomechanics and Transport I	3

BENG 240	Biomaterials	3
BENG 241	Biomechanics and Biomaterials Laboratory	1
BENG 320	Bioengineering Signals and Systems	3
BENG 330	Computational Methods in Bioengineering	3
BENG 331	Computational Methods in Bioengineering Laboratory	1
BENG 350	Neural System Designs	3
BENG 360	Biomedical Imaging	3
BENG 370	Bioinstrumentation and Devices I	3
BENG 371	Bioinstrumentation and Devices Laboratory	1
BENG 375	Intellectual Property, Regulatory Concepts and Product Development	3
BENG 391	Bioengineering Professional Development	1
BENG 492	Senior Advanced Design Project I (Mason Core)	3
BENG 493	RS: Senior Advanced Design Project II	3
Total Credits		40

Biology

Code	Title	Credits
BIOL 213	Cell Structure and Function (Mason Core) [1]	4
Total Credits		4

Computer Science

Code	Title	Credits
CS 112	Introduction to Computer Programming	4
Total Credits		4

Mathematics and Statistics

Code	Title	Credits
MATH 113	Analytic Geometry and Calculus I (Mason Core)	4
MATH 114	Analytic Geometry and Calculus II [2]	4
MATH 203	Linear Algebra [3]	3
MATH 213	Analytic Geometry and Calculus III	3
MATH 214	Elementary Differential Equations [2]	3
STAT 360	Introduction to Statistical Practice II	3
Total Credits		20

1. All students in the Bioengineering program are required to register for the specific section of BIOL 213.
2. All students in the Bioengineering program need a grade of B- or better in MATH 114 and MATH 214, which are a pre-requisite requirement for some BENG courses
3. All students in the Bioengineering program are required to register for the specific section of MATH 203 that includes a 1-hour recitation with Matlab applications.

Physics

Code	Title	Credits
PHYS 160	University Physics I (Mason Core)	3
PHYS 161	University Physics I Laboratory (Mason Core)	1
PHYS 260	University Physics II (Mason Core)	3
PHYS 261	University Physics II Laboratory (Mason Core)	1
Total Credits		8

Communication

Code	Title	Credits
COMM 100	Public Speaking (Mason Core)	3
or COMM 101	Fundamentals of Communication (Mason Core)	
Total Credits		3

Concentrations

Available Concentrations

- Concentration in Bioengineering Healthcare Informatics (BHI)
- Concentration in Bioengineering Prehealth (BMPH)
- Concentration in Biomaterials and Nanomedicine (BNM)
- Concentration in Biomedical Imaging and Devices (BMID)
- Concentration in Computational Biomedical Engineering (CBME)
- Concentration in Neurotechnology and Computational Neuroscience (NTCN)

Select one concentration and complete all requirements therein.

Concentration in Bioengineering Healthcare Informatics (BHI)

Code	Title	Credits
Chemistry		
CHEM 271 & CHEM 272	General Chemistry for Engineers Lecture (Mason Core) and General Chemistry for Engineers Lab (Mason Core)	4
CHEM 310	Survey of Organic Chemistry	3
Social and Behavioral Science		
Choose one of the following:		3
PSYC 100	Basic Concepts in Psychology (Mason Core)	
SOCI 101	Introductory Sociology (Mason Core)	
ECON 103	Contemporary Microeconomic Principles (Mason Core)	
Concentration Specialization		
HAP 360	Introduction to Health Information Systems	3
HAP 361	Health Databases	3
or IT 214	Database Fundamentals	
HAP 464	Electronic Health Record Configuration and Data Analysis	3
Technical Electives		
Select 6 credits from the following:		6
BENG 314	Pathophysiology and the Role of New Technologies in Human Diseases	
BENG 327	Cellular, Neurophysiological, and Pharmacological Neuroscience	
BENG 395	RS: Mentored Research in Bioengineering	
BENG 413	Molecular Engineering Laboratory	
BENG 417	Bioengineering World Health	
BENG 420	Biomedical Data Analytics	
BENG 421	Cell and Tissue Engineering	

BENG 426	Neural Engineering	
BENG 429	Mason-Inova Applied Technologies	
BENG 430	Continuum Biomechanics and Biotransport II	
BENG 434	Computational Modelling of Neurons and Networks	
BENG 435	Multi-scale Modeling and Simulation in Biomedicine	
BENG 437	Medical Image Processing	
BENG 438	Advanced Biomedical Imaging	
BENG 441	Nanomedicine and Drug Delivery	
BENG 451	Translation and Entrepreneurship in Bioengineering	
BENG 470	Bioinstrumentation and Devices II	
BENG 487	Neuroinformatics	
BENG 499	Special Topics in Bioengineering	
BENG 501	Bioengineering Research Methods	
BENG 526	Neural Engineering	
BENG 538	Medical Imaging	
BENG 541	Biomaterials	
BENG 550	Advanced Biomechanics	
Total Credits		25

Students may choose to substitute one of the technical electives with one of the following:

Code	Title	Credits
CS 211	Object-Oriented Programming	
CS 222	Computer Programming for Engineers	
CS 310	Data Structures	
ECE 301	Digital Electronics	
ECE 305	Electromagnetic Theory	
ECE 421	Classical Systems and Control Theory	
ME 313	Material Science	
BIOL 305 & BIOL 306	Biology of Microorganisms and Biology of Microorganisms Laboratory	
BIOL 311	General Genetics	
CHEM 313 & CHEM 315	Organic Chemistry I and Organic Chemistry Lab I	
PSYC 372	Biopsychology	
HAP 440	Mobile Health	
HAP 459	Health Data Standards and Interoperability	

Concentration in Bioengineering Prehealth (BMPH)

Code	Title	Credits
Biology		
BIOL 483	General Biochemistry	4
or CHEM 463	General Biochemistry I	
Chemistry		
CHEM 211 & CHEM 213	General Chemistry I (Mason Core) and General Chemistry Laboratory I (Mason Core)	4
CHEM 212 & CHEM 214	General Chemistry II (Mason Core) and General Chemistry Laboratory II (Mason Core)	4
CHEM 313 & CHEM 315	Organic Chemistry I and Organic Chemistry Lab I	5
CHEM 314 & CHEM 318	Organic Chemistry II and Organic Chemistry Lab II	5
Psychology and Sociology		
PSYC 100	Basic Concepts in Psychology (Mason Core)	3
SOCI 101	Introductory Sociology (Mason Core)	3
Technical Electives		
Select 9 credits from the following:		9
Computational Biomedical Engineering Specialization		
BENG 420	Biomedical Data Analytics	
BENG 430	Continuum Biomechanics and Biotransport II	
BENG 435	Multi-scale Modeling and Simulation in Biomedicine	
BENG 550	Advanced Biomechanics	
Biomedical Imaging and Devices Specialization		
BENG 437	Medical Image Processing	
BENG 438	Advanced Biomedical Imaging	
BENG 470	Bioinstrumentation and Devices II	
BENG 538	Medical Imaging	
Biomaterials and Nanomedicine Specialization		
BENG 413	Molecular Engineering Laboratory	
BENG 421	Cell and Tissue Engineering	
BENG 441	Nanomedicine and Drug Delivery	
BENG 541	Biomaterials	
Neurotechnology & Computational Neuroscience Specialization		
BENG 426	Neural Engineering	
BENG 429	Mason-Inova Applied Technologies	
BENG 434	Computational Modelling of Neurons and Networks	
BENG 487	Neuroinformatics	
BENG 526	Neural Engineering	
Research and Design Specialization		
BENG 314	Pathophysiology and the Role of New Technologies in Human Diseases	
BENG 395	RS: Mentored Research in Bioengineering	
BENG 417	Bioengineering World Health	
BENG 499	Special Topics in Bioengineering	
BENG 501	Bioengineering Research Methods	
Total Credits		37

Note: Students under the Bioengineering PreHealth Concentration should take BIOL 311 General Genetics as an additional Biology Technical Elective Course.

Concentration in Biomaterials and Nanomedicine (BNM)

Code	Title	Credits
Chemistry		
CHEM 271 & CHEM 272	General Chemistry for Engineers Lecture (Mason Core) and General Chemistry for Engineers Lab (Mason Core)	4
CHEM 310	Survey of Organic Chemistry	3
Social and Behavioral Science		
Choose one of the following:		3
PSYC 100	Basic Concepts in Psychology (Mason Core)	
SOCI 101	Introductory Sociology (Mason Core)	
ECON 103	Contemporary Microeconomic Principles (Mason Core)	
Concentration Specialization		
BENG 413	Molecular Engineering Laboratory	3
BENG 421	Cell and Tissue Engineering	3
BENG 441	Nanomedicine and Drug Delivery	3
Technical Electives		
Select 6 credits from the following:		6
BENG 314	Pathophysiology and the Role of New Technologies in Human Diseases	
BENG 327	Cellular, Neurophysiological, and Pharmacological Neuroscience	
BENG 395	RS: Mentored Research in Bioengineering	
BENG 417	Bioengineering World Health	
BENG 420	Biomedical Data Analytics	
BENG 426	Neural Engineering	
BENG 429	Mason-Inova Applied Technologies	
BENG 430	Continuum Biomechanics and Biotransport II	
BENG 434	Computational Modelling of Neurons and Networks	
BENG 435	Multi-scale Modeling and Simulation in Biomedicine	
BENG 437	Medical Image Processing	
BENG 438	Advanced Biomedical Imaging	
BENG 451	Translation and Entrepreneurship in Bioengineering	
BENG 470	Bioinstrumentation and Devices II	
BENG 487	Neuroinformatics	
BENG 499	Special Topics in Bioengineering	
BENG 501	Bioengineering Research Methods	
BENG 538	Medical Imaging	
BENG 526	Neural Engineering	
BENG 541	Biomaterials	
BENG 550	Advanced Biomechanics	
Total Credits		25

Students may choose to substitute one of the technical electives with one of the following:

Code	Title	Credits
CS 211	Object-Oriented Programming	
CS 222	Computer Programming for Engineers	
CS 310	Data Structures	
ECE 301	Digital Electronics	
ECE 305	Electromagnetic Theory	
ECE 421	Classical Systems and Control Theory	
ME 313	Material Science	
BIOL 305 & BIOL 306	Biology of Microorganisms and Biology of Microorganisms Laboratory	
BIOL 311	General Genetics	
CHEM 313 & CHEM 315	Organic Chemistry I and Organic Chemistry Lab I	
PSYC 372	Biopsychology	

Concentration in Biomedical Imaging and Devices (BMID)

Code	Title	Credits
Chemistry		
CHEM 271 & CHEM 272	General Chemistry for Engineers Lecture (Mason Core) and General Chemistry for Engineers Lab (Mason Core)	4
CHEM 310	Survey of Organic Chemistry	3
Social and Behavioral Science		
Choose one of the following:		3
PSYC 100	Basic Concepts in Psychology (Mason Core)	
SOCI 101	Introductory Sociology (Mason Core)	
ECON 103	Contemporary Microeconomic Principles (Mason Core)	
Concentration Specialization		
BENG 420	Biomedical Data Analytics	3
Select 6 credits from the following:		6
BENG 437	Medical Image Processing	
BENG 438	Advanced Biomedical Imaging	
BENG 470	Bioinstrumentation and Devices II	
BENG 538	Medical Imaging	
Technical Electives		
Select 6 credits from the following:		6
BENG 314	Pathophysiology and the Role of New Technologies in Human Diseases	
BENG 327	Cellular, Neurophysiological, and Pharmacological Neuroscience	
BENG 395	RS: Mentored Research in Bioengineering	
BENG 413	Molecular Engineering Laboratory	
BENG 417	Bioengineering World Health	
BENG 421	Cell and Tissue Engineering	
BENG 426	Neural Engineering	
BENG 429	Mason-Inova Applied Technologies	
BENG 430	Continuum Biomechanics and Biotransport II	
BENG 434	Computational Modelling of Neurons and Networks	

BENG 435	Multi-scale Modeling and Simulation in Biomedicine
BENG 441	Nanomedicine and Drug Delivery
BENG 451	Translation and Entrepreneurship in Bioengineering
BENG 487	Neuroinformatics
BENG 499	Special Topics in Bioengineering
BENG 501	Bioengineering Research Methods
BENG 526	Neural Engineering
BENG 541	Biomaterials
BENG 550	Advanced Biomechanics
Total Credits	25

Students may choose to substitute one of the technical electives with one of the following:

Code	Title	Credits
CS 211	Object-Oriented Programming	
CS 222	Computer Programming for Engineers	
CS 310	Data Structures	
ECE 301	Digital Electronics	
ECE 305	Electromagnetic Theory	
ECE 421	Classical Systems and Control Theory	
ME 313	Material Science	
BIOL 305 & BIOL 306	Biology of Microorganisms and Biology of Microorganisms Laboratory	
BIOL 311	General Genetics	
CHEM 313 & CHEM 315	Organic Chemistry I and Organic Chemistry Lab I	
PSYC 372	Biopsychology	

Concentration in Computational Biomedical Engineering (CBME)

Code	Title	Credits
Chemistry		
CHEM 271 & CHEM 272	General Chemistry for Engineers Lecture (Mason Core) and General Chemistry for Engineers Lab (Mason Core)	4
CHEM 310	Survey of Organic Chemistry	3
Social and Behavioral Science		
Choose one of the following:		3
PSYC 100	Basic Concepts in Psychology (Mason Core)	
SOCI 101	Introductory Sociology (Mason Core)	
ECON 103	Contemporary Microeconomic Principles (Mason Core)	
Concentration Specialization		
BENG 420	Biomedical Data Analytics	3
BENG 430	Continuum Biomechanics and Biotransport II	3
BENG 435	Multi-scale Modeling and Simulation in Biomedicine	3
Technical Electives		
Select 6 credits from the following:		6
BENG 314	Pathophysiology and the Role of New Technologies in Human Diseases	
BENG 395	RS: Mentored Research in Bioengineering	
BENG 413	Molecular Engineering Laboratory	
BENG 417	Bioengineering World Health	
BENG 421	Cell and Tissue Engineering	
BENG 426	Neural Engineering	
BENG 429	Mason-Inova Applied Technologies	
BENG 434	Computational Modelling of Neurons and Networks	
BENG 437	Medical Image Processing	
BENG 438	Advanced Biomedical Imaging	
BENG 441	Nanomedicine and Drug Delivery	
BENG 451	Translation and Entrepreneurship in Bioengineering	
BENG 470	Bioinstrumentation and Devices II	
BENG 487	Neuroinformatics	
BENG 499	Special Topics in Bioengineering	
BENG 501	Bioengineering Research Methods	
BENG 526	Neural Engineering	
BENG 538	Medical Imaging	
BENG 541	Biomaterials	
BENG 550	Advanced Biomechanics	
Total Credits		25

Students may choose to substitute one of the technical electives with one of the following:

Code	Title	Credits
CS 211	Object-Oriented Programming	
CS 222	Computer Programming for Engineers	
CS 310	Data Structures	
ECE 301	Digital Electronics	
ECE 305	Electromagnetic Theory	
ECE 421	Classical Systems and Control Theory	
ME 313	Material Science	
BIOL 305 & BIOL 306	Biology of Microorganisms and Biology of Microorganisms Laboratory	
BIOL 311	General Genetics	
CHEM 313 & CHEM 315	Organic Chemistry I and Organic Chemistry Lab I	
PSYC 372	Biopsychology	

Concentration in Neurotechnology and Computational Neuroscience (NTCN)

Code	Title	Credits
Chemistry		
CHEM 271 & CHEM 272	General Chemistry for Engineers Lecture (Mason Core) and General Chemistry for Engineers Lab (Mason Core)	4
CHEM 310	Survey of Organic Chemistry	3
Social and Behavioral Science		
Choose one of the following:		3

PSYC 100	Basic Concepts in Psychology (Mason Core)	
SOCI 101	Introductory Sociology (Mason Core)	
ECON 103	Contemporary Microeconomic Principles (Mason Core)	
Concentration Specialization		
BENG 327	Cellular, Neurophysiological, and Pharmacological Neuroscience	3
Select 6 credits from the following:		6
BENG 426	Neural Engineering	
BENG 429	Mason-Inova Applied Technologies	
BENG 434	Computational Modelling of Neurons and Networks	
BENG 487	Neuroinformatics	
BENG 526	Neural Engineering	
Technical Electives		
Select 6 credits from the following:		6
BENG 314	Pathophysiology and the Role of New Technologies in Human Diseases	
BENG 395	RS: Mentored Research in Bioengineering	
BENG 413	Molecular Engineering Laboratory	
BENG 417	Bioengineering World Health	
BENG 420	Biomedical Data Analytics	
BENG 421	Cell and Tissue Engineering	
BENG 430	Continuum Biomechanics and Biotransport II	
BENG 435	Multi-scale Modeling and Simulation in Biomedicine	
BENG 437	Medical Image Processing	
BENG 438	Advanced Biomedical Imaging	
BENG 441	Nanomedicine and Drug Delivery	
BENG 451	Translation and Entrepreneurship in Bioengineering	
BENG 470	Bioinstrumentation and Devices II	
BENG 499	Special Topics in Bioengineering	
BENG 501	Bioengineering Research Methods	
BENG 538	Medical Imaging	
BENG 541	Biomaterials	
BENG 550	Advanced Biomechanics	
Total Credits		25

Students may choose to substitute one of the technical electives with one of the following:

Code	Title	Credits
CS 211	Object-Oriented Programming	
CS 222	Computer Programming for Engineers	
CS 310	Data Structures	
ECE 301	Digital Electronics	
ECE 305	Electromagnetic Theory	
ECE 421	Classical Systems and Control Theory	
ME 313	Material Science	
BIOL 305 & BIOL 306	Biology of Microorganisms and Biology of Microorganisms Laboratory	
BIOL 311	General Genetics	
CHEM 313 & CHEM 315	Organic Chemistry I and Organic Chemistry Lab I	
PSYC 372	Biopsychology	

Additional Mason Core

Students must complete all Mason Core requirements not fulfilled by major requirements. BENG 492 Senior Advanced Design Project I (Mason Core) and BENG 493 RS: Senior Advanced Design Project II are approved to meet the Synthesis/Capstone requirement.

Code	Title	Credits
Written Communication		6
Literature		3
Arts		3
Western Civilization/World History		3
Global Understanding		3
Total Credits		18

4-Year Plan

Bachelor of Science in Bioengineering Sample Plan of Study

Detailed four year plans and degree planning checklists can be found at https://advising.gmu.edu/current-student/majors-at-mason/.

Honors

Honors in the Major

The Department of Bioengineering offers an Honors Program that creates a community of outstanding scholars in bioengineering who share a commitment to learning, service, and leadership. The Program is based on the bioengineering curriculum, and is distinct from the University Honors Curriculum.

Eligibility

Entry to the Honors Program is by invitation, extended to students with a declared major in Bioengineering who have completed a minimum of 30 credit hours at Mason with a minimum cumulative GPA of 3.50 and a minimum GPA of 3.20 in each prior semester. Only one course may be repeated to raise the GPA.

Honors Requirements

The Honors Program is challenging and designed for the highly motivated student with interests in any of the bioengineering concentrations. Honors students must satisfy requirements in addition to those of the normal BS degree in bioengineering, including:

- Successful completion of BENG 395 RS: Mentored Research in Bioengineering or a Mason ASSIP research experience or at least 60 certified research project hours in a Mason bioengineering lab.
- Successful completion of three credits of BENG 5XX/6XX level courses. With permission of the Department of Bioengineering, 5XX/6XX level courses from other Volgenau School of Engineering programs may be considered.

Once admitted to the Honors Program, students must remain in good standing and maintain a minimum cumulative GPA of 3.50 and a minimum GPA of 3.20 in each semester for all courses counting toward the BS degree in bioengineering, maintain continuous enrollment working towards the degree, and abide by the Mason Honor Code.

Accelerated Master's

BS (selected)/Statistical Science, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program (BAM) and obtain an undergraduate BS degree and the Statistical Science, MS in an accelerated time-frame after satisfactory completion of a minimum of 138 credits.

Admitted students are able to use up to 12 graduate credits in partial satisfaction of requirements for the undergraduate degree. Upon completion and conferral of the bachelor's degree and with satisfactory performance (grade of 'B' or better) in each of the graduate courses, students are given advanced standing in the master's program.

See AP.6.7 Bachelor's/Accelerated Master's Degrees for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements

No specific undergraduate BS degree is required. Students enrolled in any BS degree may apply to the accelerated Statistical Science, MS program **if such an accelerated** Statistical Science, MS **pathway is allowable from the student's BS program, which will be determined by the academic advisors of both the BS and MS programs.**

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits with an overall GPA of 3.0.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific prerequisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the Statistical Science, MS program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- Completion of Mason's requirements for undergraduate degree conferral (graduation) and completion of application for graduation.
- An overall GPA of 3.00.
- Completion of the following Mason courses each with a grade of C or better:

Code	Title	Credits
MATH 213	Analytic Geometry and Calculus III	3
MATH 203	Linear Algebra	3
or MATH 321	Abstract Algebra	
STAT 250	Introductory Statistics I (Mason Core)	3
or STAT 344	Probability and Statistics for Engineers and Scientists I	
STAT 346	Probability for Engineers	3
or MATH 351	Probability	
STAT 362	Introduction to Computer Statistical Packages	3

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, students complete all credits satisfying degree requirements for the BS and MS programs, with up to twelve credits overlap chosen from the following graduate courses:

Code	Title	Credits
STAT 544	Applied Probability	3
STAT 554	Applied Statistics I	3
STAT 560	Biostatistical Methods	3
STAT 574	Survey Sampling I	3
STAT 663	Statistical Graphics and Data Exploration I	3

All graduate course prerequisites must be completed prior to enrollment. Each graduate course must be completed with a grade of B or better to apply toward the MS degree.

While still in undergraduate status, a maximum of 6 additional graduate credits may be taken as reserve graduate credit and applied to the master's program. Reserve graduate credits do not apply to the undergraduate degree.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees policies.

Degree Conferral

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and Graduate Recruitment and Enrollment Services. At the completion of MS requirements, a master's degree is conferred.

Bioengineering, BS/Bioengineering, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BS in Bioengineering (https://catalog.gmu.edu/colleges-schools/engineering/bioengineering/bioengineering-bs/) and a MS in Bioengineering (https://catalog.gmu.edu/colleges-schools/engineering/bioengineering/bioengineering-ms/) in an accelerated time-frame after satisfactory completion of a minimum of 140 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/).

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in the Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Students majoring in Bioengineering, BS will be considered for admission into the BAM Pathway after completion of a minimum of 60 undergraduate credits with an overall GPA of at least 3.0 and have completed all MATH and PHYS requirements. Criteria for admission are identical to criteria for admission to the Bioengineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/bioengineering/bioengineering-ms/) program.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the Bioengineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/bioengineering/bioengineering-ms/) program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- A GPA of 3.0 or better in their 60 highest-level credits
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students must complete all credits that satisfy requirements for both the BS and MS programs, with up to four classes (twelve credits) overlap chosen from the following graduate courses:

Code	Title	Credits
BENG 520	Biomedical Data Analytics	3
BENG 521	Cell and Tissue Engineering	3
or BENG 541	Biomaterials	
BENG 526	Neural Engineering	3
BENG 537	Medical Image Processing	3
or BENG 538	Medical Imaging	
BENG 501	Bioengineering Research Methods	3
BENG 514	Pathophysiology and the Role of New Technologies in Human Diseases	3
BENG 575	Intellectual Property, Regulatory Concepts and Product Development	3

All graduate course prerequisites must be completed prior to enrollment. Each graduate course must be completed with a grade of B or better to apply toward the MS program. The graduate courses may be counted as Technical Electives or Concentration Core courses towards the Bioengineering, BS (https://catalog.gmu.edu/colleges-schools/engineering/bioengineering/bioengineering-bs/) program requirements with approval by the academic advisor of the BS program and the program director of the MS program (or the bioengineering department chair).

While still in undergraduate status, a maximum of six additional graduate credits may be taken as reserve graduate credit and applied to the master's program. Reserve graduate credits do not apply to the undergraduate degree. These reserve credits can be chosen from the list of graduate level courses given above with approval by the academic advisor of the BS program and the program director of the MS program (or the bioengineering department chair).

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees policies.

Degree Conferral

Students are recommended to meet with the Bioengineering academic advisor one year before and must apply to the program one semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and the VSE Graduate Admissions Office. At the completion of MS requirements, a MS degree is conferred.

Bioengineering, BS/Biostatistics, Accelerated MS

Overview:

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program (BAM) and obtain the Bioengineering, BS and the Biostatistics, MS in an accelerated time-frame after satisfactory completion of a minimum of 146 credits.

Admitted students are able to use up to 6 graduate credits in partial satisfaction of requirements for the undergraduate degree. Upon completion and conferral of the bachelor's degree and with satisfactory performance (grade of 'B' or better) in each of the graduate courses, students are given advanced standing in the master's program.

See AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/).

BAM Pathway Admission Requirements:

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits with an overall GPA of at least 3.0.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific prerequisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the Biostatistics, MS program if they meet the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- Completion of Mason's requirements for undergraduate degree conferral (graduation) and completion of application for graduation.
- An overall GPA of at least 3.0.
- Completion of the following Mason courses each with a grade of C or better.

Code	Title	Credits
MATH 213	Analytic Geometry and Calculus III	3
BENG 320	Bioengineering Signals and Systems	3

Accelerated Pathway Requirements:

To maintain the integrity and quality of both the undergraduate and graduate degree programs, students complete all credits that satisfy requirements for the BS and MS programs. Students can take up to six credits of the following approved graduate level courses listed below as part of their undergraduate degree that will also be applied to the graduate degree.

Code	Title	Credits
BENG 501	Bioengineering Research Methods	3
STAT 554	Applied Statistics I	3
STAT 560	Biostatistical Methods	3
STAT 663	Statistical Graphics and Data Exploration I	3

All graduate course prerequisites must be completed prior to enrollment. Each graduate course must be completed with a grade of B or better to apply toward the MS program. The graduate courses may be counted as Technical Electives toward Bioengineering, BS program requirements, with approval of the Bioengineering Department undergraduate coordinator.

While still in undergraduate status, a maximum of six additional graduate credits may be taken as reserve graduate credit and applied to the master's program. Reserve graduate credits do not apply to the undergraduate degree.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees policies.

Degree Conferral:

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form (https://registrar.gmu.edu/forms/) that is submitted to the Office of the University Registrar and the VSE Graduate Admissions and Recruitment. At the completion of MS requirements, a master's degree is conferred.

Bioengineering, BS/Data Analytics Engineering, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BS in Bioengineering (https://catalog.gmu.edu/colleges-schools/engineering/bioengineering/bioengineering-bs/) and MS in Data Analytics Engineering (https://catalog.gmu.edu/colleges-schools/engineering/data-analytics-engineering-ms/) with a concentration in Bioengineering in an accelerated time-frame.

See AP.6.7 Bachelor's/Accelerated Master's Degrees for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in the Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Students majoring in the Bioengineering, BS will be considered for admission into the BAM Pathway after completion of a minimum of 60 undergraduate credits with an overall GPA of at least 3.0. Students must have successfully completed CS 222 Computer Programming for Engineers and BENG 320 Bioengineering Signals and Systems. Criteria for admission are identical to criteria for admission to the Bioengineering concentration of the Data Analytics Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/data-analytics-engineering-ms/) program.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the Data Analytics Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/data-analytics-engineering-ms/) program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- A GPA of 3.0 or better in their 60 highest-level credits
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students must complete all credits that satisfy requirements for both the BS and MS programs, with up to three classes (nine credits) overlap depending on their bioengineering concentration chosen from the following graduate courses:

Code	Title	Credits
AIT 580	Analytics: Big Data to Information	3
BENG 501	Bioengineering Research Methods	3

CS 504	Principles of Data Management and Mining (in place of BENG 420)	3
OR 531	Analytics and Decision Analysis	3
STAT 515	Applied Statistics and Visualization for Analytics	3
Total Credits		15

All graduate course prerequisites must be completed prior to enrollment. Each graduate course must be completed with a grade of B or better to apply toward the MS program. The graduate courses may be counted as Technical Electives or, in the case of CS 504 Principles of Data Management and Mining, for BENG 420 Biomedical Data Analytics towards the Bioengineering, BS program requirements with approval by the academic advisors of both the BS and MS programs.

While still in undergraduate status, a maximum of six additional graduate credits may be taken as reserve graduate credit and applied to the master's program. Reserve graduate credits do not apply to the undergraduate degree. These reserve credits can be chosen from the list of graduate level courses given above with approval by the academic advisors of both the BS and MS programs.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees policies.

Students are permitted to take additional graduate basic courses in their undergraduate programs. In such cases, those classes cannot be counted toward requirements for the MS.

Degree Conferral

Students are recommended to meet with the Bioengineering academic advisor one year before and must apply to the program one semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and the VSE Graduate Admissions Office. At the completion of MS requirements, a master's degree is conferred.

Bioengineering, BS/Operations Research, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a Bioengineering, BS and an Operations Research, MS in an accelerated time-frame after satisfactory completion of a minimum of 140 credits.

Admitted students are able to use up to 12 graduate credits in partial satisfaction of requirements for the undergraduate degree. Upon completion and conferral of the bachelor's degree and with satisfactory performance (grade of 'B' or better) in each of the graduate courses, students are given advanced standing in the master's program.

See AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/).

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Bioengineering, BS students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits with an overall GPA of at least 3.3, and completion of all MATH and PHYS requirements. Students must additionally complete MATH 203 Linear Algebra prior to applying for the graduate program.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

The criteria for admission are identical to criteria for admission to the Operations Research, MS program. Students already admitted in the BAM Pathway will be admitted to the Operations Research, MS program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- An overall GPA of at least 3.3
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing course: Students must complete all credits that satisfy requirements for both the BS and MS programs. Up to four courses (12 credits) of approved master's level courses taken as part of the undergraduate degree may be applied to the graduate degree. The courses selected for this purpose must be approved by the academic advisors of both the BS and MS programs and by the SEOR department chair. For the BS programs that allow undergraduate electives from the department of system engineering and operations research, the students may choose the graduate version of such elective courses to replace the corresponding undergraduate courses.

- Students selecting up to two courses (6 credits) of approved master's level courses may select from the Bioengineering courses given below.
- Students selecting up to three or four courses (9 or 12 credits) of approved master's level courses may select at most two courses from the Bioengineering course list and select the remaining courses from the Systems Engineering and Operations Research course list given below. Students are highly recommended to select courses marked as core courses because it applies to the master's degree regardless of the graduate-level concentration chosen in the Operations Research, MS. The undergraduate version of these courses, if any, may *not* be applied toward the Operations Research, MS. Credit may not be received for both the undergraduate and graduate version of these courses.
- Some of the courses in the Systems Engineering and Operations Research course list applies only to certain concentrations in the Operations Research, MS program.

- Students must pay attention to the prerequisites required for a course, and the master's degree concentration that the course may satisfy.

Select from the following Bioengineering courses:

Code	Title	Credits
Required course:		
BENG 575	Intellectual Property, Regulatory Concepts and Product Development	
Select at most one from the following Bioengineering courses:		
BENG 501	Bioengineering Research Methods	
BENG 514	Pathophysiology and the Role of New Technologies in Human Diseases	
BENG 520	Biomedical Data Analytics	
BENG 521	Cell and Tissue Engineering	
or BENG 541	Biomaterials	
BENG 526	Neural Engineering	
BENG 537	Medical Image Processing	
or BENG 538	Medical Imaging	

Select the remaining from the following Systems Engineering and Operations Research courses:

Code	Title	Credits
SYST 521	Network Analysis	
OR 538	Analytics for Financial Engineering and Econometrics	
OR 541	Operations Research: Deterministic Models (Core)	
OR 542	Operations Research: Stochastic Models (Core)	
OR 568	Applied Predictive Analytics (Core)	
OR 588	Financial Systems Engineering I: Introduction to Options, Futures, and Derivatives	

While still in undergraduate status, a maximum of 6 additional graduate credits may be taken as reserve graduate credit and applied to the master's program. Reserve graduate credits do not apply to the undergraduate degree.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text).

Degree Conferral

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and the VSE Graduate Admissions Office. At the completion of MS requirements, a master's degree is conferred.

Bioengineering, BS/Systems Engineering, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a Bioengineering, BS and a Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) in an accelerated time-frame after satisfactory completion of a minimum of 140 credits.

Admitted students are able to use up to 12 graduate credits in partial satisfaction of requirements for the undergraduate degree. Upon completion and conferral of the bachelor's degree and with satisfactory performance (grade of 'B' or better) in each of the graduate courses, students are given advanced standing in the master's program.

See AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/).

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Bioengineering, BS students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits with an overall GPA of at least 3.3, and completion of all MATH and PHYS requirements.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

The criteria for admission are identical to criteria for admission to the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program. Students already admitted in the BAM Pathway will be admitted to the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- An overall GPA of at least 3.3
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing course: Students must complete all credits that satisfy requirements for both the BS and MS programs. Up to four

courses (12 credits) of approved master's level courses taken as part of the undergraduate degree may be applied to the graduate degree. The courses selected for this purpose must be approved by the academic advisors of both the BS and MS programs and by the SEOR department chair. For the BS programs that allow undergraduate electives from the department of system engineering and operations research, the students may choose the graduate version of such elective courses to replace the corresponding undergraduate courses.

- Students selecting up to two courses (6 credits) of approved master's level courses may select from the Bioengineering courses given below.
- Students selecting up to three or four courses (9 or 12 credits) of approved master's level courses may select at most two courses from the Bioengineering course list and select the remaining courses from the Systems Engineering and Operations Research course list given below. Students are highly recommended to select courses marked as core courses because it applies to the master's degree regardless of the graduate-level concentration chosen in the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program. The undergraduate version of these courses, if any, may *not* be applied toward the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/). Credit may not be received for both the undergraduate and graduate version of these courses.
- Except for the courses marked as core, any course chosen from either course list can be used to satisfy SYST 505 Systems Engineering Principles core requirement in the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program.
- Some of the courses in the Systems Engineering and Operations Research course list applies only to certain concentrations in the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program.
- Students must pay attention to the prerequisites required for a course, and the master's degree concentration that the course may satisfy.

Select from the following Bioengineering courses:

Code	Title	Credits
Required course:		
BENG 575	Intellectual Property, Regulatory Concepts and Product Development	
Select at most one from the following Bioengineering courses:		
BENG 501	Bioengineering Research Methods	
BENG 514	Pathophysiology and the Role of New Technologies in Human Diseases	
BENG 520	Biomedical Data Analytics	
BENG 521	Cell and Tissue Engineering	
or BENG 541	Biomaterials	
BENG 526	Neural Engineering	
BENG 537	Medical Image Processing	
or BENG 538	Medical Imaging	

Select the remaining from the following Systems Engineering and Operations Research courses:

Code	Title	Credits
SYST 510	Systems Definition and Cost Modeling (Core)	
SYST 514	Systems Thinking	
SYST 520	System Engineering Design (Core)	
SYST 530	Systems Engineering Management I (Core)	
SYST 542	Decision Support Systems Engineering	
SYST 573	Decision and Risk Analysis	
SYST 538	Analytics for Financial Engineering and Econometrics	
SYST 560	Introduction to Air Traffic Control	
SYST 563	Evidence-Based Systems Engineering	
SYST 568	Applied Predictive Analytics	
SYST 584	Heterogeneous Data Fusion	
SYST 588	Financial Systems Engineering I: Introduction to Options, Futures, and Derivatives	

While still in undergraduate status, a maximum of 6 additional graduate credits may be taken as reserve graduate credit and applied to the master's program. Reserve graduate credits do not apply to the undergraduate degree.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text).

Degree Conferral

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and the VSE Graduate Admissions Office. At the completion of MS requirements, a master's degree is conferred.

Bioengineering, MS

Banner Code: VS-MS-BIOE

Academic Advisor: Shani Ross, PhD

Phone: 703-993-5934
Email: sross20@gmu.edu
Website: https://bioengineering.gmu.edu/academics/master-science-bioengineering

The MS in Bioengineering prepares students for research and professional practice in bioengineering and related fields. The program includes both fundamentals and advanced work to apply engineering techniques to solve problems in biology and medicine. A major distinguishing feature of the curriculum is that it is designed to educate leaders who understand and appreciate how biomedical technology is translated from bench to bedside. Graduates from this program will eventually work in universities, industry or government in a variety of

roles due to the breadth of this program and its content specific clinical translation of new technologies.

Admissions & Policies

Admissions

Applicants must have completed a baccalaureate degree in engineering or the sciences from an accredited program and an earned GPA of 3.0 or better in their 60 highest-level credits.

In addition to fulfilling Mason's admission requirements for graduate study, applicants seeking to be admitted must demonstrate or provide the following:

- Demonstrate strong knowledge in ordinary differential equations cell biology and general chemistry as demonstrated by the BS degree, course selection, or project work.
- Additional knowledge in molecular biology, physiology, organic chemistry, linear algebra, and/or statistics is recommended.
- Provide two letters of recommendation, from references who are familiar with the applicant's professional accomplishments.
- Provide a resume and detailed statement of career goals and professional aspirations.
- If their native language is not English, students must take the English Proficiency exam. Test score minimum requirements are available at https://www2.gmu.edu/admissions-aid/how-apply/graduate/standardized-test-information (https://www2.gmu.edu/admissions-aid/how-apply/graduate/standardized-test-information/)
- Provide official GRE scores.

Requirements

Degree Requirements

Total credits: 30-33

Students complete the Core Bioengineering requirements, and requirements within one selected option: thesis, practicum or coursework.

Core Bioengineering

Code	Title	Credits
BENG 520	Biomedical Data Analytics	3
BENG 521	Cell and Tissue Engineering	3
or BENG 541	Biomaterials	
BENG 526	Neural Engineering	3
BENG 537	Medical Image Processing	3
or BENG 538	Medical Imaging	
Choose two courses from the following:		6
BENG 501	Bioengineering Research Methods	
BENG 514	Pathophysiology and the Role of New Technologies in Human Diseases	
BENG 575	Intellectual Property, Regulatory Concepts and Product Development	
BENG 601	Collaborative Bioengineering Basic Science Research	
BENG 602	Collaborative Bioengineering Clinical Science Research	
STAT 535	Analysis of Experimental Data	
STAT 560	Biostatistical Methods	
Total Credits		18

Thesis Option

Code	Title	Credits
Research Thesis		**6**
BENG 799	Master's Thesis [1]	
Total Credits		6

[1] Students are expected to complete 6 credits of BENG 799 Master's Thesis towards their degree. Students cannot enroll in BENG 799 Master's Thesis until the completion of their second semester of coursework. Once enrolled students must maintain continuous registration in thesis research until graduation, excluding summers. Students who defend in the summer must be registered for at least 1 credit of thesis research during that summer term.

Students choose from a restricted list of technical specialization courses below and/or from the list of core courses that are not already being taken as part of their core requirement to increase technical depth in an area of their interest, under the guidance and with the approval of the student's advisor. Students must choose six credits from these courses. At least half of the selected classes must be at the 600 or 700 level.

Code	Title	Credits
Technical Specialization		**6**
Bioengineering		
BENG 699	Advanced Topics in Bioengineering	
BENG 725	Computational Motor Control	
BENG 738	Advanced Medical Image Processing	
Electrical, Computer & Mechanical Engineering		
ECE 511	Computer Architecture	
ECE 528	Introduction to Random Processes in Electrical and Computer Engineering	
ECE 530	Sensor Engineering	
ECE 550	System Engineering Design	
ECE 635	Adaptive Signal Processing	
ME 621	Foundations of Fluid Mechanics	
Bioinformatics		
BINF 631	Molecular Cell Biology for Bioinformatics	
BINF 641	Biomolecular Modeling	
BINF 690	Numerical Methods for Bioinformatics	
BINF 701	Systems Biology	
BINF 731	Protein Structure Analysis	
BINF 740	Introduction to Biophysics	
BINF 741	Introduction to Computer Simulations of Biomolecules	
BINF 751	Biochemical and Cellular Systems Modeling	
BINF 760	Machine Learning for Bioinformatics	
Biology and Chemistry		
BIOL 562	Personalized Medicine	
BIOL 563	Virology	

BIOL 566	Cancer Genomics
BIOL 572	Human Genetics
BIOL 583	General Biochemistry
BIOL 682	Advanced Eukaryotic Cell Biology
CHEM 563	General Biochemistry I
CHEM 568	Bioorganic Chemistry
CHEM 613	Modern Polymer Chemistry
CHEM 660	Protein Biochemistry
Physics	
PHYS 510	Computational Physics I
PHYS 612	Physics of Modern Imaging
PHYS 640	Finite Element Analysis of Solids and Fluids
PHYS 694	Applied Mechanics of Solids
PHYS 695	Applied Fluid Mechanics
Mathematics and Statistics	
MATH 685	Numerical Analysis
STAT 517	Experimental Design
STAT 522	Applied Multivariate Statistics
STAT 526	Applied Regression Analysis
STAT 560	Biostatistical Methods
STAT 662	Multivariate Statistical Methods
STAT 672	Statistical Learning and Data Analytics
Neurotechnology and Neuroscience	
NEUR 601	Developmental Neuroscience
NEUR 602	Cellular Neuroscience
NEUR 651	Molecular Neuropharmacology
NEUR 734	Computational Neurobiology

Committee Selection

Each student must form a master's committee comprising three individuals. A minimum of two members of the committee must be tenured or tenure-track faculty in the Department of Bioengineering. The other member must be from outside the department.

Thesis Research Proposal

Each student must prepare a written thesis proposal, and it must be presented before the completion of the second semester. The proposal must be made available to the committee at least two weeks in advance of the presentation. The proposal must be presented to and approved by the committee. The committee determines whether the proposal has merit and can lead to significant contributions to the area and whether the student has the knowledge and skills to complete the proposed work successfully and in a timely manner. If the student fails to defend the proposal, the student may present a proposal a second time, no later than 60 days from the first attempt. Failure in the second attempt results in dismissal from the program.

Thesis Preparation and Defense

While preparing the thesis, the candidate enrolls in thesis research. The candidate can proceed to a public defense of the thesis once it has been approved by the committee.

The defense must be announced at least two weeks in advance. The thesis draft must be submitted to the library and made publicly available at least two weeks in advance of the defense. The entire committee must be present at the defense. If the candidate fails to defend the thesis, the candidate may request a second defense, following the same procedures as for the initial defense. A candidate who fails a second attempt to defend the thesis is terminated from the program.

Practicum Option

Code	Title	Credits
Internship/Co-Op		**6**
BENG 798	Independent Reading and Research in Bioengineering [1]	
Total Credits		6

[1] Students are expected to complete 6 credits of BENG 798 Independent Reading and Research in Bioengineering towards their degree. Students cannot enroll in BENG 798 Independent Reading and Research in Bioengineering until the completion of their second semester of coursework. These credits must be taken along with an internship/co-op opportunity. Therefore, a letter from the specific employer must be provided on behalf of the student.

Students choose from a restricted list of technical specialization courses below and/or from the list of core courses that are not already being taken as part of their core requirement to increase technical depth in an area of their interest, under the guidance and with the approval of the student's advisor. Students must choose six credits from these courses. At least half of the selected classes must be at the 600 or 700 level.

Code	Title	Credits
Technical Specialization		**6**
Bioengineering		
BENG 699	Advanced Topics in Bioengineering	
BENG 725	Computational Motor Control	
BENG 738	Advanced Medical Image Processing	
Electrical, Computer & Mechanical Engineering		
ECE 511	Computer Architecture	
ECE 528	Introduction to Random Processes in Electrical and Computer Engineering	
ECE 530	Sensor Engineering	
ECE 550	System Engineering Design	
ECE 635	Adaptive Signal Processing	
ME 621	Foundations of Fluid Mechanics	
Bioinformatics		
BINF 631	Molecular Cell Biology for Bioinformatics	
BINF 641	Biomolecular Modeling	
BINF 690	Numerical Methods for Bioinformatics	
BINF 701	Systems Biology	
BINF 731	Protein Structure Analysis	
BINF 740	Introduction to Biophysics	
BINF 741	Introduction to Computer Simulations of Biomolecules	
BINF 751	Biochemical and Cellular Systems Modeling	
BINF 760	Machine Learning for Bioinformatics	
Biology and Chemistry		
BIOL 562	Personalized Medicine	
BIOL 563	Virology	
BIOL 566	Cancer Genomics	

BIOL 572	Human Genetics
BIOL 583	General Biochemistry
BIOL 682	Advanced Eukaryotic Cell Biology
CHEM 563	General Biochemistry I
CHEM 568	Bioorganic Chemistry
CHEM 613	Modern Polymer Chemistry
CHEM 660	Protein Biochemistry
Physics	
PHYS 510	Computational Physics I
PHYS 612	Physics of Modern Imaging
PHYS 640	Finite Element Analysis of Solids and Fluids
PHYS 694	Applied Mechanics of Solids
PHYS 695	Applied Fluid Mechanics
Mathematics and Statistics	
MATH 685	Numerical Analysis
STAT 517	Experimental Design
STAT 522	Applied Multivariate Statistics
STAT 526	Applied Regression Analysis
STAT 560	Biostatistical Methods
STAT 662	Multivariate Statistical Methods
STAT 672	Statistical Learning and Data Analytics
Neurotechnology and Neuroscience	
NEUR 601	Developmental Neuroscience
NEUR 602	Cellular Neuroscience
NEUR 651	Molecular Neuropharmacology
NEUR 734	Computational Neurobiology

Committee Selection

Each student must form a master's committee, comprising two or three individuals. In this case, the committee will help identify the goals of the internship and make sure that they are in line with the MS program's objectives. The committee will also be responsible to evaluate a final report and presentation to assess the successful completion of the internship. A minimum of one member of the committee must be tenured or tenure-track faculty in the Department of Bioengineering. The other two members must be representatives from the internship program.

Project Preparation and Presentation

During the internship, the candidate enrolls in BENG 798 Independent Reading and Research in Bioengineering (Internship/Co-op) and prepares the project report and presentation. The candidate can proceed to the final presentation of the project once it has been approved by the committee.

The presentation must be announced at least two weeks in advance. The report draft must be submitted to the library and made publicly available at least two weeks in advance of the defense. The entire committee must be present at the presentation. If the candidate fails to defend the project, the candidate may request a second attempt, following the same procedures as for the initial one. A candidate who fails a second attempt is terminated from the program.

Coursework Option

Students choose from a restricted list of technical specialization courses below and/or from the list of core courses that are not already being taken as part of their core requirement to increase technical depth in an area of their interest, under the guidance and with the approval of the student's advisor. Students must choose 15 credits from these courses. At least half of the selected classes must be at the 600 or 700 level.

Code	Title	Credits
Technical Specialization		**15**
Bioengineering		
BENG 699	Advanced Topics in Bioengineering	
BENG 725	Computational Motor Control	
BENG 738	Advanced Medical Image Processing	
Electrical, Computer & Mechanical Engineering		
ECE 511	Computer Architecture	
ECE 528	Introduction to Random Processes in Electrical and Computer Engineering	
ECE 530	Sensor Engineering	
ECE 550	System Engineering Design	
ECE 635	Adaptive Signal Processing	
ME 621	Foundations of Fluid Mechanics	
Bioinformatics		
BINF 631	Molecular Cell Biology for Bioinformatics	
BINF 641	Biomolecular Modeling	
BINF 690	Numerical Methods for Bioinformatics	
BINF 701	Systems Biology	
BINF 731	Protein Structure Analysis	
BINF 740	Introduction to Biophysics	
BINF 741	Introduction to Computer Simulations of Biomolecules	
BINF 751	Biochemical and Cellular Systems Modeling	
BINF 760	Machine Learning for Bioinformatics	
Biology and Chemistry		
BIOL 562	Personalized Medicine	
BIOL 563	Virology	
BIOL 566	Cancer Genomics	
BIOL 572	Human Genetics	
BIOL 583	General Biochemistry	
BIOL 682	Advanced Eukaryotic Cell Biology	
CHEM 563	General Biochemistry I	
CHEM 568	Bioorganic Chemistry	
CHEM 613	Modern Polymer Chemistry	
CHEM 660	Protein Biochemistry	
Physics		
PHYS 510	Computational Physics I	
PHYS 612	Physics of Modern Imaging	
PHYS 640	Finite Element Analysis of Solids and Fluids	
PHYS 694	Applied Mechanics of Solids	
PHYS 695	Applied Fluid Mechanics	
Mathematics and Statistics		
MATH 685	Numerical Analysis	
STAT 517	Experimental Design	
STAT 522	Applied Multivariate Statistics	
STAT 526	Applied Regression Analysis	
STAT 560	Biostatistical Methods	

STAT 662	Multivariate Statistical Methods
STAT 672	Statistical Learning and Data Analytics
Neurotechnology and Neuroscience	
NEUR 601	Developmental Neuroscience
NEUR 602	Cellular Neuroscience
NEUR 651	Molecular Neuropharmacology
NEUR 734	Computational Neurobiology

Note: Students who elect to the coursework option will complete a minimum of 33 credit hours.

Additional Training Requirement

Bioengineering Seminar

All MS students are required to attend a minimum of two departmental seminars per semester. Students will sign an attendance sheet available at the end of each seminar.

Accelerated Master's

Bioengineering, BS/Bioengineering, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BS in Bioengineering (https://catalog.gmu.edu/colleges-schools/engineering/bioengineering/bioengineering-bs/) and a MS in Bioengineering (https://catalog.gmu.edu/colleges-schools/engineering/bioengineering/bioengineering-ms/) in an accelerated time-frame after satisfactory completion of a minimum of 140 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/).

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in the Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Students majoring in Bioengineering, BS will be considered for admission into the BAM Pathway after completion of a minimum of 60 undergraduate credits with an overall GPA of at least 3.0 and have completed all MATH and PHYS requirements. Criteria for admission are identical to criteria for admission to the Bioengineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/bioengineering/bioengineering-ms/) program.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the Bioengineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/bioengineering/bioengineering-ms/) program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- A GPA of 3.0 or better in their 60 highest-level credits
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students must complete all credits that satisfy requirements for both the BS and MS programs, with up to four classes (twelve credits) overlap chosen from the following graduate courses:

Code	Title	Credits
BENG 520	Biomedical Data Analytics	3
BENG 521 or BENG 541	Cell and Tissue Engineering Biomaterials	3
BENG 526	Neural Engineering	3
BENG 537 or BENG 538	Medical Image Processing Medical Imaging	3
BENG 501	Bioengineering Research Methods	3
BENG 514	Pathophysiology and the Role of New Technologies in Human Diseases	3
BENG 575	Intellectual Property, Regulatory Concepts and Product Development	3

All graduate course prerequisites must be completed prior to enrollment. Each graduate course must be completed with a grade of B or better to apply toward the MS program. The graduate courses may be counted as Technical Electives or Concentration Core courses towards the Bioengineering, BS (https://catalog.gmu.edu/colleges-schools/engineering/bioengineering/bioengineering-bs/) program requirements with approval by the academic advisor of the BS program and the program director of the MS program (or the bioengineering department chair).

While still in undergraduate status, a maximum of six additional graduate credits may be taken as reserve graduate credit and applied to the master's program. Reserve graduate credits do not apply to the undergraduate degree. These reserve credits can be chosen from the list of graduate level courses given above with approval by the academic advisor of the BS program and the program director of the MS program (or the bioengineering department chair).

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees policies.

Degree Conferral

Students are recommended to meet with the Bioengineering academic advisor one year before and must apply to the program one semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of

the University Registrar and the VSE Graduate Admissions Office. At the completion of MS requirements, a MS degree is conferred.

Mechanical Engineering, BS / Bioengineering, Accelerated MS

Overview

Highly-qualified students in the Mechanical Engineering, BS have the option of obtaining an accelerated Bioengineering, MS.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies.

Admission Requirements

Mason undergraduate students majoring in Mechanical Engineering, BS may apply to this option if they have earned 60 undergraduate credits with an overall GPA of at least 3.20, completed all MATH and PHYS requirements, and passed BENG 320 Bioengineering Signals and Systems and BIOL 213 Cell Structure and Function (Mason Core) with the grade of C or better. It is also recommended that students take BENG 214 Physiology for Engineers and are proficient in MATLAB. Criteria for admission are identical to criteria for admission to the Bioengineering, MS program.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Options Requirement

Students must complete all credits that satisfy requirements for both the BS and MS programs. Students take up to 9 credits of approved MS level BENG courses as part of their undergraduate degree that will also be applied to the graduate degree. The courses selected for this purpose must be approved by the academic advisor of both the BS and MS programs and by the Bioengineering department chair.

Specifically, students are encouraged to take up to three of the following courses to apply towards both their undergraduate and graduate degree.

Code	Title	Credits
BENG 520	Biomedical Data Analytics	3
BENG 521	Cell and Tissue Engineering	3
or BENG 541	Biomaterials	
BENG 526	Neural Engineering	3
BENG 537	Medical Image Processing	3
or BENG 538	Medical Imaging	
BENG 501	Bioengineering Research Methods	3
BENG 514	Pathophysiology and the Role of New Technologies in Human Diseases	3
BENG 575	Intellectual Property, Regulatory Concepts and Product Development	3

Degree Conferral

Students are recommended to meet with their undergraduate academic advisor one year before and must apply to the program one semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and the VSE Graduate Admissions Office. At the completion of MS requirements, a MS degree is conferred.

Bioengineering, PhD

Banner Code: VS-PHD-BIOE

Academic Advisor: Parag Chitnis, PhD

Phone: 703-993-5039
Email: pchitnis@gmu.edu
Website: https://bioengineering.gmu.edu/academics/phd-bioengineering

Rapid technologically driven advances in understanding and treating human disease have opened up vast opportunities to advance human health through research that integrates engineering, basic sciences, medical sciences, and knowledge of industry practices. The doctoral program will prepare leaders in bioengineering in this broader, integrative sense of the discipline. A major distinguishing feature of the curriculum is its emphasis on understanding how biomedical technology is translated from bench to bedside. Graduates from this program will eventually work in universities, industry or government in a variety of roles, including scientific research, technology development, and regulatory affairs.

Admissions & Policies

Admissions

Application Requirements

In addition to fulfilling Mason's admission requirements for graduate study, applicants should:

- Have a baccalaureate degree in engineering or the sciences from an accredited program with a reputation for high academic standards and an earned GPA of 3.3 or better in their highest-level engineering-related credits.
- Provide official GRE Scores.
- Provide three letters of recommendation, preferably from academic references or references in industry or government who are familiar with the applicant's aptitude for research.
- Provide a resume and detailed statement of career goals and professional aspirations, including why they want to study at Mason, and two faculty with whom they want to work.
- Demonstrate interest in combining engineering and the natural sciences with discovery and application in the life science; i.e., via a degree which reflects the desired combination (such as bioengineering, biomedical engineering, biophysics); a degree in engineering or the natural sciences which includes coursework in life sciences; a degree in biology which includes coursework in mathematics, physics, or engineering; a project or research experience with combined complementary expertise.
- If their native language is not English, students must take the English Proficiency exam. Test score minimum requirements are available at https://www2.gmu.edu/admissions-aid/how-apply/graduate/standardized-test-information (https://www2.gmu.edu/admissions-aid/how-apply/graduate/standardized-test-information/).

Policies

Reduction of Credit

Students must complete a minimum of 72 graduate credits, which may be reduced by a maximum of 30 credits from a related master's degree. Reduction of credit requires the approval of the program director or designee and the dean or designee of the school. They determine how many credits are eligible for the reduction of credit.

Program Requirements

The Bioengineering PhD program requires successful completion of coursework detailed in a plan of study, qualifying examination, dissertation proposal, and final dissertation defense. Additional training requirements include seminar attendance, ethics training, and mentoring and teaching experience. All the general requirements for doctoral degrees at Mason apply to this program as well.

For students to remain eligible for the PhD program, they must maintain a "B" average. Grades of "C" or lower in courses cannot be counted towards degree completion. Refer to the University policy AP 6.6.2 (https://catalog.gmu.edu/policies/academic/graduate-policies/) and the Mason Engineering Graduate Student Resources (https://mymasonportal.gmu.edu/webapps/blackboard/content/listContent.jsp?course_id=_336120_1&content_id=_7643583_1) regarding academic termination policies.

Requirements

Degree Requirements

Total credits: 72

Complementary Background

Code	Title	Credits
Students choose 6 credits of complimentary courses [1]		**6**
Students with a background in engineering or related field select:		
BINF 531	Molecular Cell Biology for Bioinformatics	
NEUR 600	Chemistry and the Brain	
Students with a background in a non-engineering or related field select:		
MATH 446	Numerical Analysis I	
or OR 481	Numerical Methods in Engineering	
SYST 500	Quantitative Foundations for Systems Engineering	
Total Credits		6

[1] Students who have taken courses equivalent to the complimentary courses may replace them with 6 credits of technical electives.

Core Bioengineering

Code	Title	Credits
BENG 801	Bioengineering Colloquium II [1]	3
Select 12 credits from the following bioengineering courses: [2]		12
BENG 501	Bioengineering Research Methods	
BENG 514	Pathophysiology and the Role of New Technologies in Human Diseases	
BENG 575	Intellectual Property, Regulatory Concepts and Product Development	
BENG 601	Collaborative Bioengineering Basic Science Research	
BENG 602	Collaborative Bioengineering Clinical Science Research	
STAT 554	Applied Statistics I [3]	3
or STAT 535	Analysis of Experimental Data	
or STAT 560	Biostatistical Methods	
Total Credits		18

[1] Students must first register for the 0-credit BENG 800 - Bioengineering Colloquium and attend at least 5 seminars per semester for 3 semesters before being able to take BENG 801. Note, students must continue to register for BENG 800 until they have attended the required number of seminars, then they can register for BENG 801 to receive credit.

[2] One of BENG 501, 514, 575, 601, and 602 can be replaced with a technical elective.

[3] Recommended option.

Concentrations

Select one concentration and complete the requirements therein.

- Biomedical Imaging and Devices (BMID)
- Computational Biomedical Engineering (CBME)
- Biomaterials and Nanomedicine (BNM)
- Neurotechnology and Computational Neuroscience (NTCN)

Biomedical Imaging and Devices (BMID)

Code	Title	Credits
BENG 538	Medical Imaging	3
BENG 537	Medical Image Processing	3
or BENG 570	Bioinstrumentation and Devices II	
BENG 704	Laboratory Rotations in Biomedical Imaging and Devices	3
BENG 738	Advanced Medical Image Processing	3
Total Credits		12

Computational Biomedical Engineering (CBME)

Code	Title	Credits
BENG 520	Biomedical Data Analytics	3
BENG 530	Continuum Biomechanics and Biotransport II	3
BENG 535	Multi-Scale Modeling and Simulation in Biomedicine	3
BENG 705	Laboratory Rotations in Computational Biomedical Engineering	3
Total Credits		12

Biomaterials and Nanomedicine (BNM)

Code	Title	Credits
BENG 521	Cell and Tissue Engineering	3
BENG 541	Biomaterials	3
BENG 641	Advanced Nanotechnology in Health	3

BENG 703	Laboratory Rotations in Biomaterials and Nanomedicine	3
Total Credits		12

Neurotechnology and Computational Neuroscience (NTCN)

Code	Title	Credits
BENG 526	Neural Engineering	3
NEUR 634	Neural Modeling	3
NEUR 689	Topics in Neuroscience	3
BENG 706	Laboratory Rotations in Neurotechnology and Computational Neuroscience	3
Total Credits		12

Technical Electives

These graduate courses develop additional technical expertise in a student's PhD concentration. Students must choose 12 credits from the following list and/or from the concentration courses that are not already being taken for the concentration requirement. At least half of the selected classes must be at or above the 600 level.

Code	Title	Credits
Technical Specialization		**12**
Bioengineering		
BENG 699	Advanced Topics in Bioengineering	
BENG 725	Computational Motor Control	
BENG 798	Independent Reading and Research in Bioengineering	
Electrical, Computer & Mechanical Engineering		
ECE 511	Computer Architecture	
ECE 528	Introduction to Random Processes in Electrical and Computer Engineering	
ECE 530	Sensor Engineering	
ECE 550	System Engineering Design	
ECE 635	Adaptive Signal Processing	
ME 621	Foundations of Fluid Mechanics	
Bioinformatics		
BINF 641	Biomolecular Modeling	
BINF 690	Numerical Methods for Bioinformatics	
BINF 701	Systems Biology	
BINF 731	Protein Structure Analysis	
BINF 740	Introduction to Biophysics	
BINF 741	Introduction to Computer Simulations of Biomolecules	
BINF 751	Biochemical and Cellular Systems Modeling	
BINF 760	Machine Learning for Bioinformatics	
Biology and Chemistry		
BIOL 562	Personalized Medicine	
BIOL 563	Virology	
BIOL 566	Cancer Genomics	
BIOL 572	Human Genetics	
BIOL 583	General Biochemistry	
BIOL 682	Advanced Eukaryotic Cell Biology	
CHEM 563	General Biochemistry I	
CHEM 568	Bioorganic Chemistry	
CHEM 613	Modern Polymer Chemistry	
CHEM 660	Protein Biochemistry	
Physics		
PHYS 510	Computational Physics I	
PHYS 612	Physics of Modern Imaging	
PHYS 640	Finite Element Analysis of Solids and Fluids	
PHYS 694	Applied Mechanics of Solids	
PHYS 695	Applied Fluid Mechanics	
Mathematics and Statistics		
MATH 685	Numerical Analysis	
STAT 517	Experimental Design	
STAT 522	Applied Multivariate Statistics	
STAT 526	Applied Regression Analysis	
STAT 662	Multivariate Statistical Methods	
STAT 672	Statistical Learning and Data Analytics	
Neuroscience		
NEUR 601	Developmental Neuroscience	
NEUR 602	Cellular Neuroscience	
NEUR 603	Mammalian Neuroanatomy	
NEUR 651	Molecular Neuropharmacology	
NEUR 734	Computational Neurobiology	
Total Credits		12

Program of Study

Upon starting the PhD program, the student should review the course requirements in the catalog and, in consultation with their advisor, define a plan of study and declare a concentration. The recommended timeline, milestones, instructions, and forms can all be found on the Bioengineering PhD program's website: https://bioengineering.gmu.edu/academics/phd-bioengineering (https://bioengineering.gmu.edu/academics/phd-bioengineering/).

Qualifying Examination

All students entering the Bioengineering PhD program are expected to pass a qualifying exam within one to two years of entering the program. Detailed instructions and forms can be found here (https://bioengineering.gmu.edu/academics/phd-bioengineering/). The goal of the qualifying exam is to test the student's preparation to undertake doctoral level research. The exam will test the student's research competency as well as knowledge of core bioengineering concepts and competency in complementary areas.

A committee identified by the student's advisor (dissertation director) will administer the exam. The exam consists of a written and oral component, times and dates of which are determined by the student's dissertation director. The candidate's dissertation director communicates with the committee to determine the four topics of the exam, completes the qualifying exam topics form and transmits the form to the candidate. At least two months prior to the written exam, the student will receive a reading list from each committee member. The committee members provide their written questions to the committee chair who puts them together into the final form of the written exam. The student will take the written exam and their answers will be transmitted to the committee members. The oral exam will take place about one week after the written exam.

Composition of the Qualifying Exam Committee:
The committees for the qualifying exam consists of four individuals:

- A minimum of two members, including the chair of the committee must be graduate faculty in the Department of Bioengineering.
- One member must be graduate faculty from outside the department.
- The chair of the committee is responsible for ensuring the correct forms are completed and procedures are followed.
- The dissertation director is the main scientist guiding the student's research and cannot be chair of the committee.

Written Exam:
A set of four topics, relevant to the student's concentration and research topic, will be assigned to the student as representing essential knowledge that the student should master to be successful in their research, at least two months prior to the qualifying exam. In addition, the qualifying exam committee will provide the student a list of readings for each topic that the student is expected to master. The list of readings can include specific articles, books or book chapters, or syllabus items (e.g. from a class at Mason) for each of the topics. Each of the committee members creates written questions for one of the topics which will be provided to the student on the day of the exam.

The written component is a four hour exam with questions from each of the four examiners. There will be one question per examiner and each question is expected to require one hour to answer. The exam is closed book. One question can be replaced by a computational assignment to be completed by the time of the oral. In that case, the total written exam time will be reduced to three hours.

Oral Exam:
At least one week after the written exam, the student will take the oral exam. The oral consists of answering questions by the qualifying committee related to the topics of the written exam.

Grading:
The committee determines whether the candidate has passed or failed the exam based on the written report and oral exam and reports the results in the qualifying exam results form. The committee optionally provides a list of recommendations, e.g. additional material the student needs to master. If the student fails the exam, the committee has the option of recommending that the student re-takes the exam, and if so, must specify what must be improved, e.g. knowledge of certain topics, oral presentation, and/or written exam. The committee can also specify a time frame for the second exam. The exam can only be repeated once. A student who fails to qualify on their second try will be removed from the program.

Dissertation Proposal
Each student must prepare and defend a written dissertation proposal to their dissertation committee. The student's dissertation director names the committee and chooses the date and time of the oral presentation. Detailed instructions, grading rubrics, and required forms are all found here (https://bioengineering.gmu.edu/academics/phd-bioengineering/). While preparing this proposal, the student enrolls in BENG 998 Doctoral Dissertation Proposal. The proposal must be made available to the committee at least two weeks in advance of the presentation. The proposal must be presented to and approved by the dissertation committee. All committee members assess the written proposal and oral presentation using the grading rubrics. The committee determines whether the proposal has merit and can lead to significant contributions to the area and whether the student has the knowledge and skills to complete the proposed work successfully and in a timely manner. Students may present their dissertation proposal only after passing the qualifying exam, and the presentation may not be on the same day as the qualifying exam. If the student fails to defend the proposal, the student may present a dissertation proposal a second time at a later date. Failure in the second attempt results in dismissal from the program.

Written Proposal:
The proposal should at a minimum clearly state the research question and the specific aims of the research, provide a critical review of the literature, present the hypotheses, the rationale and the significance of the research in addressing a gap in scientific knowledge, describe the research methods and study design in sufficient detail and present preliminary results demonstrating the feasibility of the research. Additional guidelines are provided in the written proposal rubric.

Oral Presentation and Exam:
The candidate must present the proposal to committee in a venue open to the public. The presentation should be 30 - 45 minutes long. Following the research presentation, the dissertation committee will ask the students a number of questions to evaluate the students understanding of the relevant literature and methods that are broadly related to the chosen area of research, and whether the student has the knowledge and skills to complete the proposed work successfully and in a timely manner. Additional guidelines are provided in the oral presentation rubric.

Grading:
The written proposal and oral presentation are graded according to rubrics and the results reported in the proposal results form. If the dissertation committee feels that the student is not adequately prepared, they may recommend remedial measures, including additional coursework to address any gaps in knowledge, or modification of the aims of the proposal. The proposal may be repeated once.

Advancement to Candidacy
The student is advanced to candidacy for the PhD degree once they have successfully presented and defended a written dissertation proposal, completed all 48 course credits, and completed a minimum of 6 credits of BENG 998 Doctoral Dissertation Proposal. The student should also submit the Advancement to Candidacy form. The instructions for advancement to candidacy and the required form can be found here (https://bioengineering.gmu.edu/academics/phd-bioengineering/).

Dissertation Research
Students are expected to complete 24 credits of BENG 998 Doctoral Dissertation Proposal and BENG 999 Doctoral Dissertation towards their degree. Students cannot enroll in BENG 998 Doctoral Dissertation Proposal before they have passed the qualifying exam. Students cannot enroll in BENG 999 Doctoral Dissertation before they have advanced to candidacy. Students who advanced to candidacy after the add period for a given semester must wait until the following semester to register for BENG 999 Doctoral Dissertation. Students cannot advance to candidacy and defend their dissertation during the same semester. Once enrolled in BENG 999 Doctoral Dissertation, students must maintain continuous registration in BENG 999 Doctoral Dissertation each semester until graduation, excluding summers. Students who defend in the summer must be registered for at least 1 credit of BENG 999 Doctoral Dissertation during that summer term.

Code	Title	Credits
Select 24 credits from the following:		24
BENG 998	Doctoral Dissertation Proposal (6 credit minimum, 12 credit maximum)	
BENG 999	Doctoral Dissertation (12 credit minimum)	
Total Credits		24

Dissertation Committee Selection

Each student must form a dissertation committee, comprising four or five individuals:

- A minimum of two members, including the chair of the committee must be graduate faculty in the Department of Bioengineering.
- One member must be graduate faculty from outside the department.
- The chair of the committee is responsible for ensuring the correct forms are completed and procedures are followed.
- The dissertation director is the main scientist guiding the student's research and cannot be the chair of the committee.
- It is strongly recommended that one of the committee members be external to the university.

Refer to https://catalog.gmu.edu/policies/academic/graduate-policies/#text for who is allowed to be on these committees (see section AP.6.10.5 Dissertation Committee). The dissertation proposal committee has the same requirements as the dissertation committee. It is recommended for continuity that the same faculty should be on the committee for the qualifying exam, dissertation proposal, and dissertation defense; however, committee membership can be changed if circumstances warrant.

Dissertation Preparation and Defense

The candidate must write and publicly defend their dissertation. The student's dissertation director names the committee and chooses the date and time of the oral defense. The committee must sign and submit a pre-defense form four weeks prior to the defense. Detailed instructions, grading rubrics, and required forms are all found here (https://bioengineering.gmu.edu/academics/phd-bioengineering/). While preparing the dissertation, the candidate enrolls in BENG 999 Doctoral Dissertation. The candidate can proceed to a public defense of the dissertation once their dissertation has been approved by the dissertation committee. The dissertation must make significant contributions to its area as evidenced by refereed journal and/or conference publications.

The candidate should begin early in the term to meet the deadlines (https://registrar.gmu.edu/students/graduation/timelines/). The candidate schedules a Format Review with University Dissertation & Thesis Services (UDTS) at least 2 - 3 weeks prior to the defense (https://library.gmu.edu/udts/process (https://library.gmu.edu/udts/process/)). The candidate provides the written dissertation to the committee at least 4 weeks before the defense. The defense must be announced at least two weeks in advance. The entire dissertation committee must be present at the defense, unless an exception is approved by the director of the PhD in Bioengineering Program in advance of the defense. If the candidate fails to defend the dissertation, the candidate may request a second defense, following the same procedures as for the initial defense. There is no time limit for this request other than general time limits for the doctoral degree. A candidate who fails a second attempt to defend the dissertation is terminated from the program.

Dissertation:

The dissertation should report on research performed by the candidate during their studies at Mason. Ideally, the main chapters of the dissertation are comprised of published manuscripts, submitted manuscripts, and the student's final manuscript in preparation. The dissertation should include an introductory chapter, which gives a broad overview of all the research, and a concluding chapter, which summarizes the main findings of the body of work, and outlines future directions suggested by the research. Additional guidelines are provided in the written dissertation rubric. Format of the dissertation is determined by University Dissertation & Thesis Services.

Oral Presentation and Exam:

The candidate must present the dissertation to committee in a venue open to the public. The oral presentation should last 30 - 45 minutes and include a general introduction and background to enable understanding by a broad audience. Explanation of the candidate's research should focus on the most significant results with easy to understand graphics. Additional guidelines for preparing the presentation are provided in the oral presentation rubric.

Following the research presentation, the dissertation committee will ask the candidate a number of questions to evaluate the student's understanding of research. The questioning generally begins with the external examiner and ends with the research director. Multiple rounds of questioning can occur. Once the committee's questions are complete, other attendees have an opportunity to ask questions of the candidate.

Grading:

Following the presentation and questions, the candidate and other attendees leave the room to allow the committee to deliberate. The deliberations are presided by the chair of the committee who begins by asking the external examiner to evaluate the candidate. Other committee members then provide their evaluations ending with the research supervisor's evaluation. All committee members assess the written dissertation and the oral presentation using the grading rubrics and the results are reported on the dissertation results form. If the dissertation committee feels the dissertation does not make a sufficient contribution, or that the oral presentation was inadequate, the committee may request further research or require a repeat of the oral presentation.

Additional Training Requirements

Bioengineering Seminar

All PhD students are required to attend a minimum of 5 departmental seminars per semester. Students will sign an attendance sheet available at the end of each seminar.

Ethics Training

Prior to beginning research studies in a Bioengineering laboratory, all PhD students must complete the on-line Collaborative Institutional Training Initiative (CITI) Responsible Conduct of Research course. CITI training modules provide students with an understanding of conflicts of interest, research misconduct, peer review, and authorship.

Bioengineering Mentorship

All PhD students are required to participate in mentoring at least one undergraduate Bioengineering senior design team for a duration of 1 year. PhD students work with the faculty advisor for the senior design team and are expected to apply translational and entrepreneurial concepts towards the mentorship of the team.

Teaching Requirement
For degree conferral all PhD students are required to participate in at least one teaching activity in consultation with their major advisors. Teaching opportunities include presenting lectures, conducting recitation sessions, serving as a teaching assistant, working as a laboratory assistant, participating in teaching workshops, preparing course materials, and other related activities approved by the student's advisor.

Department of Computer Science

PhD program: csphd@gmu.edu

MS programs: csgrad@gmu.edu

Undergraduate programs: csug@gmu.edu

General information: csinfo@gmu.edu

Phone: 703-993-1530
Fax: 703-993-1710

Website: cs.gmu.edu

The Computer Science discipline is concerned with the design, analysis, implementation, maintenance, and evolution of computer-based systems, and their associated theoretical foundations. Computer science is powering the information revolution of the 21st century, and computer-based systems are used in every scholarly discipline, every sector of industry, and every walk of human life.

Advanced computation tools and techniques are revolutionizing, transforming, and often automating the way we work, play, communicate, collaborate, and conduct business. Computational approaches are integral to a broad array of disciplines including computational natural and social sciences, bioinformatics, health informatics, digital humanities, and financial technology. In addition, the spread of computing throughout society has made the ethical use of computing a central concern to policymakers.

Computer scientists must be well-grounded in the theory of computing and in its application to diverse areas, and they must be able to work closely with members of other professions that use computing. The department therefore offers a broad array of programs in computer science at both the undergraduate and graduate levels. Students who study this discipline can learn about a wide variety of concepts and methods in computer science—algorithms, artificial intelligence, computer networking, cyber security, databases, data mining, data structures, machine learning, operating systems, programming languages, robotics, software engineering—and they will explore effective and ethical applications of these concepts and methods.

Faculty

Department Faculty

Professors

Aydin, Barbará, Brodsky, J. Chen, S. Chen, Das, Košecká (Associate Chair), Luke, Menascé, Offutt (Associate Chair), Rangwala, Rosenblum (Chair), Setia, Shehu, Simon, Tecuci, Wijesekera

Associate Professors

Ammann, Domeniconi, Durić, Gingold, Han, Kamberi, Li, Lien, Lin, Maddox, Plaku, Richards, Snyder (Associate Chair), X. Wang, White (Associate Chair), Zhong

Assistant Professors

Anastasopoulos, Avramovic, Baldimtsi, X. Chen, Cheng, Deng, Dimitriadis, González Hernández, Gordon, Hrolenok, Johnson, LaToza, Mengistu, Moran, Osterweil, Pathak, Russell, Soundararajan, Stein, Yao, Yaroslavtsev, Yu

Instructors

Andrea, Otten

Adjunct Professors

Abu Jbara, Bailey, Dubey, Ellis, Geldon, Greenwald, He, Katz, Kaznachey, King, Kodali, Kowalski, Kurtz, McDowall, Nidiffer, Pettit, Reep, Seymer, Smith, Styx, Tymann, Wheeler

Emeritus Faculty

DeJong, Gomaa, Hamburger, Pullen, Rine, Sood, P. Wang, Wechsler

Programs

- Applied Computer Science, BS
- Computer Science Minor
- Computer Science Undergraduate Certificate
- Computer Science, BS
- Computer Science, MS
- Computer Science, PhD
- Information Security and Assurance Graduate Certificate
- Information Security and Assurance, MS
- Information Systems, MS
- Software Engineering Graduate Certificate
- Software Engineering Minor
- Software Engineering, MS

Applied Computer Science, BS

Banner Code: VS-BS-ACS

Academic Advising

Phone: 703-993-1530
Email: csug@gmu.edu
Website: http://cs.gmu.edu/prospective-students/undergraduate-programs/bs-in-applied-computer-science/

This program presents an innovative approach to the integration of computer science with other disciplines that require expertise in computing techniques. These disciplines do not merely use computing but create new and interesting problems for computer scientists.

Admissions & Policies

Policies

Advanced Placement, Credit by Exam

A score of 4 on the Advanced Placement (AP) computer science exam qualifies students for credit in CS 112 Introduction to Computer Programming. A score of 4 on the International Baccalaureate (IB) computer science exam qualifies students for credits in CS 112 Introduction to Computer Programming, and a score of 5 or more qualifies students for credit in CS 211 Object-Oriented Programming.

Change of Major

Students requesting a change of major to Applied Computer Science must meet with the Volgenau School of Engineering Coordinator of Undergraduate Advising, 2500 Nguyen Engineering Building. Students requesting a change of major to Applied Computer Science must have a GPA of at least 2.75 in computer science and math courses and successfully completed one of CS 112 (http://catalog.gmu.edu/preview_course_nopop.php?catoid=29&coid=302778) or CS 211 (http://catalog.gmu.edu/preview_course_nopop.php?catoid=29&coid=302780), and one of MATH 113 (http://catalog.gmu.edu/preview_program.php?catoid=29&poid=28176#tt1999), MATH 114 (http://catalog.gmu.edu/preview_course_nopop.php?catoid=29&coid=305053), or MATH 125 (http://catalog.gmu.edu/preview_course_nopop.php?catoid=29&coid=305056), with a grade of B or better at Mason. See Change of Major for more information.

Grades

Students must earn a C or better in any course intended to satisfy a prerequisite for a computer science course. Applied Computer Science majors may not use more than one course with a grade of C- or D toward department requirements.

Program Requirements

For the BS ACS degree, students must complete 120 credits, including the Mason Core requirements. The program requires foundation, core, and concentration courses. These course requirements provide expertise in programming, computer systems, software requirements and modeling, formal methods, and analysis of algorithms.

Repeating Courses

Students may attempt an undergraduate course taught by the Volgenau School of Engineering twice. A third attempt requires approval of the department offering the course. This policy does not apply to STAT 250 Introductory Statistics I (Mason Core), which follows the normal university policy for repeating undergraduate courses.

The CS Department may not allow students to retake certain high-demand CS courses in which they have already earned a grade of C or better simply to improve their GPA.

Writing-Intensive Requirement

Computer science majors complete the writing-intensive requirement through a sequence of projects and reports in CS 306 Synthesis of Ethics and Law for the Computing Professional (Mason Core) and CS 321 Software Engineering. Faculty members provide feedback on students' expository writing.

Termination from the Major

No math, science, or Volgenau School of Engineering course that is required for the major may be attempted more than three times. Those students who do not successfully complete such a course within three attempts will be terminated from the major. Undeclared students in the Volgenau School who do not successfully complete a course required for a Volgenau School major within three attempts will also be terminated.

In addition, students in the Volgenau School with evidence of continued failure to make adequate progress toward declaring or completing a Volgenau School major will be terminated from the school. Adequate progress is determined by the major program. For more information, see AP.5.2.4 Termination from the Major (https://catalog.gmu.edu/policies/academic/undergraduate-policies/#ap-5-2-4).

Once a student has attempted one of these courses twice unsuccessfully, the third attempt must be no later than the next semester of enrollment, excluding summers. Failure to take the course at that time will result in termination from the major. A third attempt of a Volgenau School of Engineering course requires support by the student's major department as well as permission by the department offering the course. This permission is not guaranteed. If the student is unable to take the course when required, the student may request an extension to a future semester; extensions require approval of the student's advisor, their department, and the Associate Dean for Undergraduate Programs. The deadline for extension requests is the add deadline for the semester in which the course is required.

Students who have been terminated from a Volgenau School of Engineering major may not register for a Volgenau School course without permission of the department offering the course. This applies to all undergraduate courses offered by the Volgenau School except IT 104 Introduction to Computing (Mason Core) and STAT 250 Introductory Statistics I (Mason Core).

A student may not declare any major in the Volgenau School of Engineering if the student has previously met the termination criteria for that major at any time, regardless of what the student's major was at the time the courses were taken.

Requirements

Degree Requirements

Total credits: 120

Students must complete all foundation, core, elective, and communication requirements, and the requirements from one selected concentration.

Foundation

Code	Title	Credits
CS 110	Essentials of Computer Science (Mason Core) [1]	3
CS 112	Introduction to Computer Programming	4
CS 211	Object-Oriented Programming	3
MATH 113	Analytic Geometry and Calculus I (Mason Core)	4
or MATH 123 & MATH 124	Calculus with Algebra/Trigonometry, Part A and Calculus with Algebra/Trigonometry, Part B (Mason Core)	

MATH 114	Analytic Geometry and Calculus II	4
MATH 125	Discrete Mathematics I (Mason Core)	3
MATH 203	Linear Algebra	3
Total Credits		24

[1] Must be taken within a student's first year at the university.

Note:
MATH 104 Trigonometry and Transcendental Functions, MATH 105 Precalculus Mathematics, MATH 108 Introductory Calculus with Business Applications (Mason Core), and courses with an IT designation (and any associated cross-listed courses) cannot be counted toward this degree.

Core

Code	Title	Credits
CS 262	Introduction to Low-Level Programming	3
CS 310	Data Structures	3
CS 321	Software Engineering	3
CS 330	Formal Methods and Models	3
CS 367	Computer Systems and Programming	4
CS 471	Operating Systems	3
CS 483	Analysis of Algorithms	3
Total Credits		22

Elective

Code	Title	Credits
Select one CS course numbered above 400, except CS 498		3
Total Credits		3

Concentration in Bioinformatics (BNF)

Foundation

Code	Title	Credits
PHYS 160	University Physics I (Mason Core)	3
PHYS 161	University Physics I Laboratory (Mason Core)	1
BIOL 213	Cell Structure and Function (Mason Core)	4
CHEM 211	General Chemistry I (Mason Core)	3
CS 306	Synthesis of Ethics and Law for the Computing Professional (Mason Core) [1]	3
STAT 344	Probability and Statistics for Engineers and Scientists I	3
Total Credits		17

[1] Requires a grade of C or better to satisfy the Mason Core (http://catalog.gmu.edu/content.php?catoid=29&navoid=6253) synthesis requirement.

Core

Code	Title	Credits
BINF 450	Bioinformatics for Life Sciences	4
BIOL 482	Introduction to Molecular Genetics	3
BIOL 580	Computer Applications for the Life Sciences	3
CS 450	Database Concepts	3
BINF 401	Bioinformatics and Computational Biology I	3
or CS 444	Introduction to Computational Biology	
BINF 402	Bioinformatics and Computational Biology II	3
or CS 445	Computational Methods for Genomics	
Total Credits		19

Two Approved Electives Related to Bioinformatics

Code	Title	Credits
Select two approved electives (6 credits) related to bioinformatics with the student's advisor and approved by the CS department		6
Total Credits		6

Additional Mason Core

Code	Title	Credits
Oral Communication		3
COMM 100	Public Speaking (Mason Core)	
or COMM 101	Fundamentals of Communication (Mason Core)	
Written Communication		3
ENGH 100	Composition for Multilingual Writers (Mason Core)	
or ENGH 101	Composition (Mason Core)	
Advanced Composition		3
ENGH 302	Advanced Composition (Mason Core) (Natural Sciences section) [1]	
Literature		3
Arts		3
Western Civilization/World History		3
Social and Behavioral Sciences		3
Global Understanding		3
Total Credits		24

[1] Applied Computer Science majors must take the Natural Sciences section of ENGH 302 Advanced Composition (Mason Core).

Electives

Code	Title	Credits
Select 5 credits of electives		5
Total Credits		5

Concentration in Computer Game Design (CGDS)

Foundation

Code	Title	Credits
GAME 230	History of Computer Game Design	3
CS 306	Synthesis of Ethics and Law for the Computing Professional (Mason Core) [1]	3
CS 325	Introduction to Game Design	3
CS 351	Visual Computing	3
AVT 104	Two-Dimensional Design and Color (Mason Core)	3
STAT 344	Probability and Statistics for Engineers and Scientists I	3
Total Credits		18

[1] Requires a grade of C or better to satisfy the Mason Core (http://catalog.gmu.edu/content.php?catoid=29&navoid=6253) synthesis requirement.

Core

Code	Title	Credits
CS 425	Game Programming I	3
CS 426	Game Programming II	3
CS 451	Computer Graphics	3
AVT 382	2D Experimental Animation	3
AVT 383	3D Experimental Animation	3
Total Credits		15

Approved Elective Related to Game Design

Code	Title	Credits
Select one course from the following:		3
CS 332	Object-Oriented Software Design and Implementation	
or SWE 332	Object-Oriented Software Design and Implementation	
or SWE 419	Object-Oriented Software Design and Implementation	
CS 455	Computer Communications and Networking	
CS 475	Concurrent and Distributed Systems	
CS 477	Mobile Application Development	
CS 480	Introduction to Artificial Intelligence	
CS 485	Autonomous Robotics	
SWE 432	Web Application Development	
GAME 332	RS: Story Design for Computer Games	
AVT 370	Entrepreneurship in the Arts	
AVT 374	Sound Art I	
AVT 487	Advanced Topics: New Media Art	
JAPA 370	Video Games and Japan	
Total Credits		3

Natural Science

Code	Title	Credits
PHYS 160	University Physics I (Mason Core)	3
PHYS 161	University Physics I Laboratory (Mason Core)	1
Select one additional lab science		4
Total Credits		8

Additional Mason Core

Code	Title	Credits
Oral Communication		3
COMM 100	Public Speaking (Mason Core)	
or COMM 101	Fundamentals of Communication (Mason Core)	
Written Communication		3
ENGH 100	Composition for Multilingual Writers (Mason Core)	
or ENGH 101	Composition (Mason Core)	
Advanced Composition [1]		3
ENGH 302	Advanced Composition (Mason Core) (Natural Sciences section)	
Literature		3
Western Civilization/World History		3
Social and Behavioral Sciences		3
Global Understanding		3
Total Credits		21

[1] Applied Computer Science majors must take the Natural Sciences section of ENGH 302 Advanced Composition (Mason Core).

Electives

Code	Title	Credits
Select 6 credits of electives		6
Total Credits		6

Concentration in Geoinformatics (GINF)

Foundation

Code	Title	Credits
CS 306	Synthesis of Ethics and Law for the Computing Professional (Mason Core) [1]	3
GGS 102	Physical Geography (Mason Core)	3
GGS 103	Human Geography (Mason Core)	3
GGS 110	Introduction to Geoinformation Technologies	3
GGS 300	Spatial Quantitative Methods	3
STAT 250	Introductory Statistics I (Mason Core)	3
Total Credits		18

[1] Requires a grade of C or better to satisfy the Mason Core (http://catalog.gmu.edu/content.php?catoid=29&navoid=6253) synthesis requirement.

Core

Code	Title	Credits
GGS 210	Introduction to Spatial Computing	3
GGS 310	Cartographic Design	3
GGS 311	Geographic Information Systems	3
GGS 379	Remote Sensing	3
Select 12 credits from the following:		12
GGS 354	Data Analysis and Global Change Detection Techniques	
GGS 411	Geovisualization	
GGS 416	Satellite Image Analysis	
GGS 422	Drone Remote Sensing	
GGS 426	Physical Fundamentals of Remote Sensing	
GGS 429	Remote Sensing of the Environment and Earth System	
GGS 462	Web-based Geographic Information Systems	
GGS 463	RS: GIS Analysis and Application	
GGS 470	Special Topics in Geographic Techniques	
Total Credits		24

Additional Mason Core

Code	Title	Credits
Oral Communication		3
COMM 100	Public Speaking (Mason Core)	
or COMM 101	Fundamentals of Communication (Mason Core)	
Written Communication		3
ENGH 100	Composition for Multilingual Writers (Mason Core)	
or ENGH 101	Composition (Mason Core)	
Advanced Composition [1]		3
ENGH 302	Advanced Composition (Mason Core) (Natural Sciences section)	
Literature		3
Arts		3
Global Understanding		3
Western Civilization/World History		3
Lab Science		4
Total Credits		25

[1] Applied Computer Science majors must take the Natural Sciences section of ENGH 302 Advanced Composition (Mason Core).

Electives

Code	Title	Credits
Select 7 credits of electives		7
Total Credits		7

Concentration in Software Engineering (SWE)

Foundation

Code	Title	Credits
STAT 344	Probability and Statistics for Engineers and Scientists I	3
CS 306	Synthesis of Ethics and Law for the Computing Professional (Mason Core) [1]	3
Total Credits		6

[1] Requires a grade of C or better to satisfy the Mason Core (http://catalog.gmu.edu/content.php?catoid=29&navoid=6253) synthesis requirement.

Core

Code	Title	Credits
SWE 205	Software Usability Analysis and Design	3
SWE 301	Internship Preparation	0
SWE 401	Internship Reflection	1
CS 332	Object-Oriented Software Design and Implementation	3
or SWE 332	Object-Oriented Software Design and Implementation	
or SWE 419	Object-Oriented Software Design and Implementation	
SWE 437	Software Testing and Maintenance	3
Total Credits		10

SWE Related

Code	Title	Credits
Select 15 credits from the following:		15
CS 450	Database Concepts	
CS 455	Computer Communications and Networking	
CS 463	Comparative Programming Languages	
CS 465	Computer Systems Architecture	
CS 468	Secure Programming and Systems	
CS 475	Concurrent and Distributed Systems	
CS 477	Mobile Application Development	
CS 491	Industry-Sponsored Senior Design Project	
SWE 432	Web Application Development	
SWE 443	Software Architectures	
SYST 469	Human Computer Interaction	
Total Credits		15

Cross-Disciplinary

Code	Title	Credits
ENGH 388	Professional and Technical Writing	3
Select one from the following:		3
PSYC 333	Industrial and Organizational Psychology	
COMM 320	Business and Professional Communication	
COMM 335	Organizational Communication	
Total Credits		6

Additional Mason Core

Code	Title	Credits
Oral Communication		3
COMM 100	Public Speaking (Mason Core)	
or COMM 101	Fundamentals of Communication (Mason Core)	
Written Communication		3
ENGH 100	Composition for Multilingual Writers (Mason Core)	
or ENGH 101	Composition (Mason Core)	
Advanced Composition [1]		3
ENGH 302	Advanced Composition (Mason Core) (Natural Sciences section)	
Literature		3
Arts		3
Western Civilization/World History		3
Social and Behavioral Sciences		3
Global Understanding		3
Natural Science		7
Total Credits		31

[1] Applied Computer Science majors must take the Natural Sciences section of ENGH 302 Advanced Composition (Mason Core).

Electives

Code	Title	Credits
Select 3 credits of electives		3
Total Credits		3

4-Year Plan

Bachelor of Science in Applied Computer Science

Detailed four year plans and degree planning checklists can be found at https://advising.gmu.edu/current-student/majors-at-mason/.

Honors

CS Honors Program

The Department of Computer Science offers a CS Honors Program for students with strong computational foundations and the drive to delve deeper into computing. The program is based on the bachelor of science in computer science and applied computer science curriculum and is distinct from the University Honors College curriculum.

Entry Requirements

Students must be seeking a Bachelor of Science in Computer Science or a Bachelor of Science in Applied Computer Science and must apply for entry into the CS Honors Program after completing 12 credits of CS courses. Applicants must meet the GPA requirements outlined below to enter into the CS Honors Program.

Honors Requirements

CS Honors Program students must fulfill all standard courses required by the Bachelor of Science in Computer Science or Applied Computer Science degree as well as the following additional requirements:

- GPA Requirement: Students must maintain an overall GPA of at least 3.50 and a GPA of at least 3.50 for courses which count towards the BS/CS or BS/ACS major including math, natural sciences, and all CS/SWE courses.
- Research Project Requirement: Students must complete a significant research project prior to graduation. Students should seek out a CS faculty member willing to serve as their research advisor for the project. The project should comprise original work by the student and be demonstrated via two channels:
  a. a written project report that is approved by the student's research advisor and submitted to the department;
  b. a presentation of the project to an audience of students and/or faculty.
- Advanced Course Requirement: At least two Advanced Courses must be completed. A complete list of acceptable advanced courses is maintained by the CS department and is available on the department web site.

Accelerated Master's

Applied Computer Science, BS/Computer Science, Accelerated MS

Overview

Highly-qualified students in the Applied Computer Science, BS can complete both a BS-ACS and a Computer Science, MS in five years through the BS-MS accelerated (BAM) program.

General BAM policies are in the catalog under AP.6.7 Bachelor's/Accelerated Master's Degrees. Policies governing all graduate degrees are in the catalog under AP.6 Graduate Policies.

Admission Requirements

Students in the Applied Computer Science, BS program are encouraged to apply to the BAM program after earning 60 undergraduate credits with an overall GPA of at least 3.30. Students must have successfully completed CS 310 Data Structures and CS 330 Formal Methods and Models.

Accelerated Option Requirements

Students accepted to the BAM program may earn up to 12 credits of graduate coursework that count towards both the BS and MS degrees. They may begin taking graduate courses after completing 75 undergraduate credits and successfully completing CS 367 Computer Systems and Programming.

The following graduate courses can replace the corresponding undergraduate courses.

Code	Title	Credits
CS 540	Language Processors (to replace CS 440)	3
CS 550	Database Systems (to replace CS 450)	3
CS 551	Computer Graphics (to replace CS 451)	3
CS 555	Computer Communications and Networking (to replace CS 455)	3
CS 571	Operating Systems (to replace CS 471)	3
CS 580	Introduction to Artificial Intelligence (to replace CS 480)	3
CS 584	Theory and Applications of Data Mining (to replace CS 484)	3
CS 583	Analysis of Algorithms (to replace CS 483)	3
CS 587	Introduction to Cryptography (to replace CS 487)	3
SWE 619	Object-Oriented Software Specification and Construction (to replace SWE 419)	3
SWE 637	Software Testing (to replace SWE 437)	3
SWE 642	Software Engineering for the World Wide Web (to replace SWE 432)	3

Notes:

- Students may not use both the graduate course and the undergraduate alternative for their BS degree.
- Students must satisfy all recommended and required prerequisites for the graduate courses they take.
- Students also have the option to take up to 6 additional credits of graduate coursework *on reserve*, which can be used for the MS degree only.

Degree Conferral

Students must apply for degree conferral the semester before they expect to complete their BS requirements. At the beginning of their final undergraduate semester, students must submit a completed Bachelor's-Accelerated Master's Transition form to the CS department office. The master's degree will be conferred after the student completes the MS requirements.

Applied Computer Science, BS/Data Analytics Engineering, Accelerated MS

Overview

Highly-qualified students in the Applied Computer Science, BS can complete both a BS-ACS and a Data Analytics Engineering, MS in five years through the BS-MS accelerated (BAM) program.

General BAM policies are in the catalog under AP.6.7 Bachelor's/Accelerated Master's Degrees. Policies governing all graduate degrees are in the catalog under AP.6 Graduate Policies.

Admission Requirements

Students in the Applied Computer Science, BS program are encouraged to apply to the BAM program after earning 60 undergraduate credits with an overall GPA of at least 3.30. Students must also have successfully completed CS 310 Data Structures and CS 330 Formal Methods and Models.

Accelerated Option Requirements

Students accepted to the BAM program may earn up to 9 credits of graduate coursework that count towards both the BS and MS degrees. They may begin taking graduate courses after completing 75 undergraduate credits and successfully completing CS 367 Computer Systems and Programming.

The following graduate courses can replace the corresponding undergraduate courses. For all students in the Applied Computer Science, BS program:

Code	Title	Credits
CS 584	Theory and Applications of Data Mining (to replace CS 484)	3

Students in the Software Engineering and Bioinformatics concentrations of the Applied Computer Science, BS program may also register for:

Code	Title	Credits
CS 550	Database Systems (to replace CS 450)	3

Students in the Computer Game Design and Geography concentrations of the Applied Computer Science, BS program may also register for one or both of the following courses:

Code	Title	Credits
CS 550	Database Systems (to replace CS 450)	3
CS 580	Introduction to Artificial Intelligence (to replace CS 480)	3

Notes:

- For students in the Computer Game Design and Geography concentrations of the Applied Computer Science, BS program, one of the 500 level courses will count as an elective towards their undergraduate degree.
- Students may not use both the graduate course and the undergraduate alternative for their BS degree.
- Students must satisfy all recommended and required prerequisites for the graduate courses they take.
- Students must still take the DAEN core courses (AIT 580 Analytics Big Data to Information, OR 531 Analytics and Decision Analysis, and STAT 515 Applied Statistics and Visualization for Analytics).
- Students also have the option to take up to 6 additional credits of graduate coursework *on reserve*, which can be used for the MS degree only.

Degree Conferral

Students must apply for degree conferral the semester before they expect to complete their BS requirements. At the beginning of their final undergraduate semester, students must submit a completed Bachelor's-Accelerated Master's Transition form to the CS department office. The master's degree will be conferred after the student completes the MS requirements.

Applied Computer Science, BS/Information Security and Assurance, Accelerated MS

Overview

Highly-qualified students in the Applied Computer Science, BS program can complete both a BS-ACS and an Information Security and Assurance, MS in five years through the BS-MS accelerated (BAM) program.

General BAM policies are in the catalog under AP.6.7 Bachelor's/Accelerated Master's Degrees. Policies governing all graduate degrees are in the catalog under AP.6 Graduate Policies.

Admission Requirements

Students in the Applied Computer Science, BS program are encouraged to apply to the BAM program after earning 60 undergraduate credits with an overall GPA of at least 3.30. Students must also have successfully completed CS 310 Data Structures and CS 330 Formal Methods and Models.

Accelerated Option Requirements

Students accepted to the BAM program may earn up to 12 credits of graduate coursework that count towards both the BS and MS degrees. They may begin taking graduate courses after completing 75 undergraduate credits and successfully completing CS 367 Computer Systems and Programming.

The following graduate courses can replace the corresponding undergraduate courses.

Code	Title	Credits
CS 540	Language Processors (to replace CS 440)	3
CS 550	Database Systems (to replace CS 450)	3
CS 551	Computer Graphics (to replace CS 451)	3
CS 555	Computer Communications and Networking (to replace CS 455)	3
CS 571	Operating Systems (to replace CS 471)	3
CS 580	Introduction to Artificial Intelligence (to replace CS 480)	3
CS 583	Analysis of Algorithms (to replace CS 483)	3
CS 584	Theory and Applications of Data Mining (to replace CS 484)	3

CS 587	Introduction to Cryptography (to replace CS 487)	3
SWE 619	Object-Oriented Software Specification and Construction (to replace SWE 419)	3
SWE 637	Software Testing (to replace SWE 437)	3
SWE 642	Software Engineering for the World Wide Web (to replace SWE 432)	3

Notes:

- Students may not use both the graduate course and the undergraduate alternative for their BS degree.
- Students must satisfy all recommended and required prerequisites for the graduate courses they take.
- Students also have the option to take up to 6 additional credits of graduate coursework *on reserve*, which can be used for the MS degree only.

Degree Conferral

Students must apply for degree conferral the semester before they expect to complete their BS requirements. At the beginning of their final undergraduate semester, students must submit a completed Bachelor's-Accelerated Master's Transition form to the CS department office. The master's degree will be conferred after the student completes the MS requirements.

Applied Computer Science, BS/ Information Systems, Accelerated MS

Overview

Highly-qualified students in the Applied Computer Science, BS program can complete both a BS-ACS and an Information Systems, MS in five years through the BS-MS accelerated (BAM) program.

General BAM policies are in the catalog under AP.6.7 Bachelor's/ Accelerated Master's Degrees. Policies governing all graduate degrees are in the catalog under AP.6 Graduate Policies.

Admission Requirements

Students in the Applied Computer Science, BS program are encouraged to apply to the BAM program after earning 60 undergraduate credits with an overall GPA of at least 3.30. Students must also have successfully completed CS 310 Data Structures and CS 330 Formal Methods and Models.

Accelerated Option Requirements

Students accepted to the BAM program may earn up to 12 credits of graduate coursework that count towards both the BS and MS degrees. They may begin taking graduate courses after completing 75 undergraduate credits and successfully completing CS 367 Computer Systems and Programming.

The following graduate courses can replace the corresponding undergraduate courses.

Code	Title	Credits
CS 540	Language Processors (to replace CS 440)	3
CS 550	Database Systems (to replace CS 450)	3
CS 551	Computer Graphics (to replace CS 451)	3
CS 555	Computer Communications and Networking (to replace CS 455)	3
CS 571	Operating Systems (to replace CS 471)	3
CS 580	Introduction to Artificial Intelligence (to replace CS 480)	3
CS 583	Analysis of Algorithms (to replace CS 483)	3
CS 584	Theory and Applications of Data Mining (to replace CS 484)	3
CS 587	Introduction to Cryptography (to replace CS 487)	3
SWE 619	Object-Oriented Software Specification and Construction (to replace SWE 419)	3
SWE 637	Software Testing (to replace SWE 437)	3
SWE 642	Software Engineering for the World Wide Web (to replace SWE 432)	3

Notes:

- Students may not use both the graduate course and the undergraduate alternative for their BS degree.
- Students must satisfy all recommended and required prerequisites for the graduate courses they take.
- Students also have the option to take up to 6 additional credits of graduate coursework *on reserve*, which can be used for the MS degree only.

Degree Conferral

Students must apply for degree conferral the semester before they expect to complete their BS requirements. At the beginning of their final undergraduate semester, students must submit a completed Bachelor's-Accelerated Master's Transition form to the CS department office. The master's degree will be conferred after the student completes the MS requirements.

Applied Computer Science, BS/Software Engineering, Accelerated MS

Overview

Highly-qualified students in the Applied Computer Science, BS can complete both a BS-ACS and a Software Engineering, MS in five years through the BS-MS accelerated (BAM) program.

General BAM policies are in the catalog under AP.6.7 Bachelor's/ Accelerated Master's Degrees. Policies governing all graduate degrees are in the catalog under AP.6 Graduate Policies.

Admission Requirements

Students in the Applied Computer Science, BS program are encouraged to apply to the BAM program after earning 60 undergraduate credits with an overall GPA of at least 3.30. Students must also have successfully completed CS 310 Data Structures and CS 330 Formal Methods and Models.

Accelerated Option Requirements

Students accepted to the BAM program may earn up to 12 credits of graduate coursework that count towards both the BS and MS degrees. They may begin taking graduate courses after completing 75

undergraduate credits and successfully completing CS 367 Computer Systems and Programming.

The following graduate courses can replace the corresponding undergraduate courses.

Code	Title	Credits
CS 540	Language Processors (to replace CS 440)	3
CS 550	Database Systems (to replace CS 450)	3
CS 551	Computer Graphics (to replace CS 451)	3
CS 555	Computer Communications and Networking (to replace CS 455)	3
CS 571	Operating Systems (to replace CS 471)	3
CS 580	Introduction to Artificial Intelligence (to replace CS 480)	3
CS 583	Analysis of Algorithms (to replace CS 483)	3
CS 584	Theory and Applications of Data Mining (to replace CS 484)	3
CS 587	Introduction to Cryptography (to replace CS 487)	3
SWE 619	Object-Oriented Software Specification and Construction (to replace SWE 419)	3
SWE 637	Software Testing (to replace SWE 437)	3
SWE 642	Software Engineering for the World Wide Web (to replace SWE 432)	3

Notes:

- Students may not use both the graduate course and the undergraduate alternative for their BS degree.
- Students must satisfy all recommended and required prerequisites for the graduate courses they take
- Students also have the option to take up to 6 additional credits of graduate coursework *on reserve*, which can be used for the MS degree only.

Degree Conferral

Students must apply for degree conferral the semester before they expect to complete their BS requirements. At the beginning of their final undergraduate semester, students must submit a completed Bachelor's-Accelerated Master's Transition form to the CS department office. The master's degree will be conferred after the student completes the MS requirements.

Computer Science Undergraduate Certificate

Banner Code: VS-CERB-CS

Academic Advising

Phone: 703-993-1530
Email: csinfo@gmu.edu
Website: cs.gmu.edu/prospective-students/undergraduate-programs/undergraduate-certificate/

This certificate targets students who are working on or possess an undergraduate degree in a technical (science or engineering) field but lack a formal credential in the computer science field. The certificate also targets students who have shown an aptitude for graduate study but do not have the academic prerequisites required for admittance into a graduate MS computer science program.

The undergraduate certificate in computer science may be pursued on a full-time basis except when limited by prerequisite constraints.

Admissions & Policies

Admissions

Students must have programming experience at the level of CS 112 Introduction to Computer Programming and CS 211 Object-Oriented Programming, and either a BS in a technical field with a 3.00 GPA or higher or current enrollment in a technical undergraduate major.

Policies

For policies governing all undergraduate programs, see AP.5 Undergraduate Policies.

Requirements

Certificate Requirements

Total credits: 28

This certificate may be pursued on a full-time basis only.

Basic Computer Science

Code	Title	Credits
CS 262	Introduction to Low-Level Programming	3
CS 310	Data Structures	3
CS 330	Formal Methods and Models	3
CS 367	Computer Systems and Programming	4
CS 471	Operating Systems	3
Total Credits		16

Mathematics

Code	Title	Credits
MATH 125	Discrete Mathematics I (Mason Core)	3
Total Credits		3

Additional Coursework

Code	Title	Credits
Complete the following:		
CS 483	Analysis of Algorithms	3
AND two of the following		6
CS 321	Software Engineering	
CS 440	Language Processors and Programming Environments	
CS 450	Database Concepts	
CS 451	Computer Graphics	
CS 455	Computer Communications and Networking	
CS 465	Computer Systems Architecture	
CS 468	Secure Programming and Systems	

CS 480	Introduction to Artificial Intelligence	
CS 484	Data Mining	
Total Credits		9

Computer Science Minor

Banner Code: CS

Academic Advising

Phone: 703-993-1530
Email: csinfo@gmu.edu
Website: cs.gmu.edu/current-students/undergraduates/minors/

Admissions & Policies

Admissions

Declaring a CS Minor

Students requesting a Computer Science Minor must have completed CS 112 Introduction to Computer Programming or CS 211 Object-Oriented Programming with a grade of B or better.

Policies

Grades

No more than 3 credits of D grades may be used to satisfy requirements for the Computer Science Minor.

Program Requirements

The minor in computer science requires completion of at least 19 credits. Students should pay careful attention to prerequisites when selecting courses. Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00.

For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 19-20

Required Courses

Code	Title	Credits
CS 112	Introduction to Computer Programming	4
CS 211	Object-Oriented Programming	3
CS 310	Data Structures	3
Total Credits		10

Additional Computer Science Courses

Code	Title	Credits
Select three from the following:		9-10
CS 222	Computer Programming for Engineers	
or CS 262	Introduction to Low-Level Programming	
CS 306	Synthesis of Ethics and Law for the Computing Professional (Mason Core)	
CS 321	Software Engineering	
CS 325	Introduction to Game Design	
CS 330	Formal Methods and Models	
CS 332	Object-Oriented Software Design and Implementation	
CS 367	Computer Systems and Programming	
CS 450	Database Concepts	
CS 451	Computer Graphics	
CS 455	Computer Communications and Networking	
CS 463	Comparative Programming Languages	
CS 465	Computer Systems Architecture	
CS 468	Secure Programming and Systems	
CS 471	Operating Systems	
CS 480	Introduction to Artificial Intelligence	
CS 483	Analysis of Algorithms	
CS 484	Data Mining	
Total Credits		9-10

Computer Science, BS

Banner Code: VS-BS-CS

Academic Advising

Phone: 703-993-1530
Email: csug@gmu.edu
Website: http://cs.gmu.edu/prospective-students/undergraduate-programs/bs-in-computer-science/

The objectives of the Computer Science, BS program relate to the abilities of the graduates several years after graduation. Our graduates are expected within three to five years of graduation to have:

- Established themselves as successful and productive computing professionals or engaged in advanced study such as a graduate degree program.
- Worked effectively both in team environments and as individuals.
- Fulfilled their responsibilities in the areas of ethics, continuing professional development, and effective written and oral communications.

The bachelor's program in Computer Science is accredited by the Computing Accreditation Commission of ABET, http://www.abet.org.

Admissions & Policies

Policies

Advanced Placement, Credit by Exam

A score of 4 on the Advanced Placement (AP) computer science exam qualifies the student for credit in CS 112 Introduction to Computer Programming. A score of 4 on the International Baccalaureate (IB) computer science exam qualifies students for credit in CS 112 Introduction to Computer Programming, and a score of 5 or more qualifies students for credit in CS 211 Object-Oriented Programming.

Change of Major

Students who are considering computer science as their major must meet with the Volgenau School of Engineering Coordinator of Undergraduate Advising, 2500 Nguyen Engineering Building. Students considering a change of major to computer science must have a GPA of at least 2.75 in all computer science and math courses, and successfully completed one of CS 112 (http://catalog.gmu.edu/preview_course_nopop.php?catoid=29&coid=302778) or CS 211 (http://catalog.gmu.edu/preview_course_nopop.php?catoid=29&coid=302780), and one of MATH 113 (http://catalog.gmu.edu/preview_course_nopop.php?catoid=29&coid=305052), MATH 114 (http://catalog.gmu.edu/preview_course_nopop.php?catoid=29&coid=305053) or MATH 125 (http://catalog.gmu.edu/preview_course_nopop.php?catoid=29&coid=305056), with a grade of B or better. See Change of Major for more information.

Computer Science, Computer Engineering Double Major

Computer Science majors can earn a double major in Computer Science and Computer Engineering if they complete additional credits beyond the 120 credits required for the Computer Science degree. The additional credits must be part of an approved plan of study. For more information, visit the department website.

Cooperative Education

Students may participate in the Mason cooperative education program or a work-study program in the Washington, D.C. area.

Grades

Students must earn a C or better in any course intended to satisfy a prerequisite for a computer science course. Computer science majors may not use more than one course with grade of C- or lower toward department requirements.

Repeating Courses

Students may attempt an undergraduate course taught by the Volgenau School of Engineering twice. A third attempt requires approval of the department offering the course. This policy does not apply to STAT 250 Introductory Statistics I (Mason Core), which follows the normal university policy for repeating undergraduate courses.

The CS Department may not allow students to retake certain high-demand CS courses in which they have already earned a grade of C or better simply to improve their GPA.

Writing-Intensive Requirement

Computer science majors complete the writing-intensive requirement through a sequence of projects and reports in CS 306 Synthesis of Ethics and Law for the Computing Professional (Mason Core) and CS 321 Software Engineering. Faculty members provide feedback on students' expository writing.

Termination from the Major

No math, science, or Volgenau School of Engineering course that is required for the major may be attempted more than three times. Those students who do not successfully complete such a course within three attempts will be terminated from the major. Undeclared students in the Volgenau School who do not successfully complete a course required for a Volgenau School major within three attempts will also be terminated.

In addition, students in the Volgenau School with evidence of continued failure to make adequate progress toward declaring or completing a Volgenau School major will be terminated from the school. Adequate progress is determined by the major program. For more information, see AP.5.2.4 Termination from the Major (https://catalog.gmu.edu/policies/academic/undergraduate-policies/#ap-5-2-4).

Once a student has attempted one of these courses twice unsuccessfully, the third attempt must be no later than the next semester of enrollment, excluding summers. Failure to take the course at that time will result in termination from the major. A third attempt of a Volgenau School of Engineering course requires support by the student's major department as well as permission by the department offering the course. This permission is not guaranteed. If the student is unable to take the course when required, the student may request an extension to a future semester; extensions require approval of the student's advisor, their department, and the Associate Dean for Undergraduate Programs. The deadline for extension requests is the add deadline for the semester in which the course is required.

Students who have been terminated from a Volgenau School of Engineering major may not register for a Volgenau School course without permission of the department offering the course. This applies to all undergraduate courses offered by the Volgenau School except IT 104 Introduction to Computing (Mason Core) and STAT 250 Introductory Statistics I (Mason Core).

A student may not declare any major in the Volgenau School of Engineering if the student has previously met the termination criteria for that major at any time, regardless of what the student's major was at the time the courses were taken.

Requirements

Degree Requirements

Total credits: 120

Computer Science Core

Code	Title	Credits
CS 110	Essentials of Computer Science (Mason Core) [1]	3
CS 112	Introduction to Computer Programming	4
CS 211	Object-Oriented Programming	3
CS 262	Introduction to Low-Level Programming	3
CS 306	Synthesis of Ethics and Law for the Computing Professional (Mason Core)	3
CS 310	Data Structures	3
CS 321	Software Engineering	3
CS 330	Formal Methods and Models	3
CS 367	Computer Systems and Programming	4
CS 471	Operating Systems	3
CS 483	Analysis of Algorithms	3
Total Credits		35

[1] Must be taken within the first year as an Applied Computer Science or Computer Science major.

Senior Computer Science

Code	Title	Credits
Select one from the following:		3
CS 455	Computer Communications and Networking	
CS 468	Secure Programming and Systems	
CS 475	Concurrent and Distributed Systems	
CS 487	Introduction to Cryptography	
Select four additional courses from the following:		12
CS 425	Game Programming I	
CS 440	Language Processors and Programming Environments	
CS 450	Database Concepts	
CS 451	Computer Graphics	
CS 455	Computer Communications and Networking	
CS 463	Comparative Programming Languages	
CS 465	Computer Systems Architecture [1]	
CS 468	Secure Programming and Systems	
CS 469	Security Engineering	
CS 475	Concurrent and Distributed Systems	
CS 477	Mobile Application Development	
CS 480	Introduction to Artificial Intelligence	
CS 482	Computer Vision	
CS 484	Data Mining	
CS 485	Autonomous Robotics	
CS 487	Introduction to Cryptography	
CS 490	Design Exhibition [2]	
CS 491	Industry-Sponsored Senior Design Project [2]	
CS 499	Special Topics in Computer Science [3]	
MATH 446	Numerical Analysis I	
or OR 481	Numerical Methods in Engineering	
Total Credits		15

1 ECE 445 may be taken as a replacement for CS 465.

2 At most 3 credits total of CS 490 Design Exhibition and CS 491 Industry-Sponsored Senior Design Project may be counted toward the senior computer science requirement.

3 At most 3 credits total of CS 499 Special Topics in Computer Science may be counted toward the senior computer science requirement.

Mathematics

Code	Title	Credits
MATH 113	Analytic Geometry and Calculus I (Mason Core)	4
or MATH 123 & MATH 124	Calculus with Algebra/Trigonometry, Part A and Calculus with Algebra/Trigonometry, Part B (Mason Core)	
MATH 114	Analytic Geometry and Calculus II	4
MATH 125	Discrete Mathematics I (Mason Core)	3
MATH 203	Linear Algebra	3
MATH 213	Analytic Geometry and Calculus III	3
Total Credits		17

Note:

MATH 104 Trigonometry and Transcendental Functions, MATH 105 Precalculus Mathematics, MATH 108 Introductory Calculus with Business Applications (Mason Core), and courses with an IT designation (and any associated cross-listed courses) cannot be counted toward this degree.

Statistics

Code	Title	Credits
STAT 344	Probability and Statistics for Engineers and Scientists I [1]	3
Total Credits		3

1 Those planning to take MATH 352 Statistics may replace STAT 344 Probability and Statistics for Engineers and Scientists I with MATH 351 Probability.

Computer Science-Related Courses

Students may need to choose electives to satisfy prerequisites for the following courses:

Code	Title	Credits
Select 6 credits from the following:		6
STAT 354	Probability and Statistics for Engineers and Scientists II	
OR 335	Discrete Systems Modeling and Simulation	
OR 441	Deterministic Operations Research	
OR 442	Stochastic Operations Research	
ECE 301	Digital Electronics	
ECE 231	Digital System Design	
ECE 232	Digital System Design Lab	
ECE 350	Embedded Systems and Hardware Interfaces	
ECE 446	Device Driver Development	
ECE 447	Microcontrollers	
ECE 511	Computer Architecture	
SWE 419	Object-Oriented Software Design and Implementation	
SWE 432	Web Application Development	
SWE 437	Software Testing and Maintenance	
SWE 443	Software Architectures	
SYST 371	Systems Engineering Management	
SYST 470	Human Factors Engineering	
PHIL 371	Philosophy of Natural Sciences	
PHIL 376	Symbolic Logic	
ENGH 388	Professional and Technical Writing	
Any MATH or CS course numbered above 300 (except MATH 351) [1]		
Any SWE course numbered 300 or above except SWE 301, SWE 401 and SWE 510		
Total Credits		6

[1] Those planning to take MATH 352 Statistics may replace STAT 344 Probability and Statistics for Engineers and Scientists I with MATH 351 Probability.

Natural Science

Code	Title	Credits
Select 12 credits of natural science		12
Total Credits		12

The courses should be intended for science and engineering students and must include a two course sequence with laboratories. Some approved combinations have a total of more than 12 hours.

Approved Two-Course Sequences with Laboratories

Code	Title	Credits
Biology		
BIOL 102	Introductory Biology I-Survey of Biodiversity and Ecology (Mason Core)	4
BIOL 103 & BIOL 105	Introductory Biology II-Survey of Cell and Molecular Biology (Mason Core) and Introductory Biology II Laboratory (Mason Core)	4
Chemistry		
CHEM 211 & CHEM 213	General Chemistry I (Mason Core) and General Chemistry Laboratory I (Mason Core)	4
CHEM 212 & CHEM 214	General Chemistry II (Mason Core) and General Chemistry Laboratory II (Mason Core)	4
Geology		
GEOL 101	Introductory Geology I (Mason Core)	4
GEOL 102 & GEOL 104	Historical Geology (Mason Core) and Historical Geology Laboratory (Mason Core)	4
Physics		
PHYS 160 & PHYS 161	University Physics I (Mason Core) and University Physics I Laboratory (Mason Core)	4
PHYS 260 & PHYS 261	University Physics II (Mason Core) and University Physics II Laboratory (Mason Core)	4

Additional Mason Core

Students must complete all Mason Core requirements not fulfilled by major requirements.

Code	Title	Credits
Oral Communication		3
COMM 100	Public Speaking (Mason Core)	
or COMM 101	Fundamentals of Communication (Mason Core)	
Written Communication		3
ENGH 100	Composition for Multilingual Writers (Mason Core)	
or ENGH 101	Composition (Mason Core)	
Advanced Composition [1]		3
ENGH 302	Advanced Composition (Mason Core) (Natural Sciences section) [1]	
Literature		3
Arts		3
Western Civilization/World History		3
Social and Behavioral Sciences		3
Global Understanding		3
Total Credits		24

[1] CS majors must take the Natural Sciences section of ENGH 302 Advanced Composition (Mason Core).

Electives

Code	Title	Credits
Students must complete 8 elective credits		8
Total Credits		8

4-Year Plan

Bachelor of Science in Computer Science Sample Plan of Study

Detailed four year plans and degree planning checklists can be found at https://advising.gmu.edu/current-student/majors-at-mason/.

Honors

Honors in the Major

The Department of Computer Science offers a CS Honors Program for students with strong computational foundations and the drive to delve deeper into computing. The program is based on the bachelor of science in computer science and applied computer science curriculum and is distinct from the University Honors College curriculum.

Entry Requirements

Students must be seeking a Bachelor of Science in Computer Science or a Bachelor of Science in Applied Computer Science and must apply for entry into the CS Honors Program after completing 12 credits of CS courses. Applicants must meet the GPA requirements outlined below to enter into the CS Honors Program.

Honors Requirements

CS Honors Program students must fulfill all standard courses required by the Bachelor of Science in Computer Science or Applied Computer Science degree as well as the following additional requirements:

- GPA Requirement: Students must maintain an overall GPA of at least 3.50 and a GPA of at least 3.50 for courses which count towards the BS/CS or BS/ACS major including math, natural sciences, and all CS/SWE courses.
- Research Project Requirement: Students must complete a significant research project prior to graduation. Students should seek out a CS faculty member willing to serve as their research advisor for the project. The project should comprise original work by the student and be demonstrated via two channels:
  a. a written project report that is approved by the student's research advisor and submitted to the department;
  b. a presentation of the project to an audience of students and/or faculty.

- Advanced Course Requirement: At least two Advanced Courses must be completed. A complete list of acceptable advanced courses is maintained by the CS department and is available on the department web site.

Accelerated Master's

BS (selected)/Statistical Science, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program (BAM) and obtain an undergraduate BS degree and the Statistical Science, MS in an accelerated time-frame after satisfactory completion of a minimum of 138 credits.

Admitted students are able to use up to 12 graduate credits in partial satisfaction of requirements for the undergraduate degree. Upon completion and conferral of the bachelor's degree and with satisfactory performance (grade of 'B' or better) in each of the graduate courses, students are given advanced standing in the master's program.

See AP.6.7 Bachelor's/Accelerated Master's Degrees for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements

No specific undergraduate BS degree is required. Students enrolled in any BS degree may apply to the accelerated Statistical Science, MS program **if such an accelerated** Statistical Science, MS **pathway is allowable from the student's BS program, which will be determined by the academic advisors of both the BS and MS programs.**

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits with an overall GPA of 3.0.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific prerequisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the Statistical Science, MS program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- Completion of Mason's requirements for undergraduate degree conferral (graduation) and completion of application for graduation.
- An overall GPA of 3.00.
- Completion of the following Mason courses each with a grade of C or better.

Code	Title	Credits
MATH 213	Analytic Geometry and Calculus III	3
MATH 203	Linear Algebra	3
or MATH 321	Abstract Algebra	
STAT 250	Introductory Statistics I (Mason Core)	3
or STAT 344	Probability and Statistics for Engineers and Scientists I	
STAT 346	Probability for Engineers	3
or MATH 351	Probability	
STAT 362	Introduction to Computer Statistical Packages	3

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, students complete all credits satisfying degree requirements for the BS and MS programs, with up to twelve credits overlap chosen from the following graduate courses:

Code	Title	Credits
STAT 544	Applied Probability	3
STAT 554	Applied Statistics I	3
STAT 560	Biostatistical Methods	3
STAT 574	Survey Sampling I	3
STAT 663	Statistical Graphics and Data Exploration I	3

All graduate course prerequisites must be completed prior to enrollment. Each graduate course must be completed with a grade of B or better to apply toward the MS degree.

While still in undergraduate status, a maximum of 6 additional graduate credits may be taken as reserve graduate credit and applied to the master's program. Reserve graduate credits do not apply to the undergraduate degree.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees policies.

Degree Conferral

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and Graduate Recruitment and Enrollment Services. At the completion of MS requirements, a master's degree is conferred.

Computer Science, BS/Computer Engineering, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BS in Computer Science and an MS in Computer Engineering in an accelerated time-frame after satisfactory completion of a minimum of 138 credits.

See
AP.6.7 Bachelor's/Accelerated Master's Degrees for policies related to this program.

This accelerated option is offered jointly by the Computer Science Department and the Electrical and Computer Engineering Department.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see
AP.6 Graduate Policies.

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits with an overall GPA of 3.0.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific prerequisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MS program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form: 3.0 overall GPA, successfully meeting Mason's requirements for undergraduate degree conferral (graduation), and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced standing courses: Students may take up to 12 credits of graduate-level courses that will count as advanced standing (i.e., overlap between the BS/MS program) from the list below:

Code	Title	Credits
CS 571	Operating Systems (to replace CS 471)	3
ECE 508	Internet of Things	3
ECE 511	Computer Architecture	3
ECE 512	Computer Architecture Security	3
ECE 516	Mobile Systems and Applications	3
ECE 527	Learning From Data	3
ECE 542	Computer Network Architectures and Protocols	3

Reserve credit courses: Additional courses (up to 6 credits) may be selected from the above list as credits to be put on reserve to be later applied to the graduate program. Students can take these courses while undergraduates but these reserve courses will only count for the graduate degree program.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees.

Computer Science, BS/Computer Science, Accelerated MS

Overview

Highly-qualified students in the Computer Science, BS can complete both a BS-CS and a Computer Science, MS in five years through the BS-CS accelerated (BAM) program.

General BAM policies are in the catalog under AP.6.7 Bachelor's/Accelerated Master's Degrees. Policies governing all graduate degrees are in the catalog under AP.6 Graduate Policies.

Admission Requirements

Students in the Computer Science, BS program are encouraged to apply to the BAM program after earning 60 undergraduate credits with an overall GPA of at least 3.30. Students must also have successfully completed CS 310 Data Structures and CS 330 Formal Methods and Models.

Accelerated Option Requirements

Students accepted to the BAM program may earn up to 12 credits of graduate coursework that count towards both the BS and MS degrees. They may begin taking graduate courses after completing 75 undergraduate credits and successfully completing CS 367 Computer Systems and Programming.

The following graduate courses can replace the corresponding undergraduate courses.

Code	Title	Credits
CS 540	Language Processors (to replace CS 440)	3
CS 550	Database Systems (to replace CS 450)	3
CS 551	Computer Graphics (to replace CS 451)	3
CS 555	Computer Communications and Networking (to replace CS 455)	3
CS 571	Operating Systems (to replace CS 471)	3
CS 580	Introduction to Artificial Intelligence (to replace CS 480)	3
CS 583	Analysis of Algorithms (to replace CS 483)	3
CS 584	Theory and Applications of Data Mining (to replace CS 484)	3
CS 587	Introduction to Cryptography (to replace CS 487)	3
SWE 619	Object-Oriented Software Specification and Construction (to replace SWE 419)	3
SWE 637	Software Testing (to replace SWE 437)	3
SWE 642	Software Engineering for the World Wide Web (to replace SWE 432)	3

Notes:

- Students may not use both the graduate course and the undergraduate alternative for their BS degree.
- Students must satisfy all recommended and required prerequisites for the graduate courses they take.
- Students also have the option to take up to 6 additional credits of graduate coursework, on reserve, which can be used for the MS degree only.

Degree Conferral

Students must apply for degree conferral the semester before they expect to complete their BS requirements. At the beginning of their final undergraduate semester, students must submit a completed Bachelor's-Accelerated Master's Transition form to the CS department office. The master's degree will be conferred after the student completes the MS requirements.

Computer Science, BS/Curriculum and Instruction, Accelerated MEd (Secondary Education Computer Science Concentration)

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BS in Computer Science (degree without concentration) and an MEd in Curriculum and Instruction (Secondary Education Computer Science concentration) (https://catalog.gmu.edu/colleges-schools/education-human-development/school-education/curriculum-instruction-med/)in an accelerated time-frame after satisfactory completion of a minimum of 143 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degree for policies related to this program.

This accelerated option is offered jointly by the Department of Computer Science (https://catalog.gmu.edu/colleges-schools/engineering/computer-science/computer-science-bs/) and the School of Education (https://catalog.gmu.edu/colleges-schools/education-human-development/school-education/).

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies (https://catalog.gmu.edu/admissions/graduate-policies/) and Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies. For information specific to this accelerated master's program, see Application Requirements and Deadlines (https://cehd.gmu.edu/bachelors-accelerated-masters-program/).

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits, and additional unit-specific criteria.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MEd program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- 3.0 overall GPA
- Completion of specific undergraduate coursework
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following which can be taken as Advanced Standing or Reserve Graduate credit (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) (to be determined by the student and their advisor):

Code	Title	Credits
EDRD 619	Literacy in the Content Areas	3
SEED 522	Foundations of Secondary Education	3
SEED 540	Human Development and Learning: Secondary Education	3
SEED 566	Teaching Computer Science in the Secondary School	3
SEED 676	Advanced Methods of Teaching Computer Science in the Secondary School	3
SEED approved elective		

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies.

Computer Science, BS/Data Analytics Engineering, Accelerated MS

Overview

Highly-qualified students in the Computer Science, BS can complete both a BS-CS and a Data Analytics Engineering, MS in five years through the BS-MS accelerated (BAM) program.

General BAM policies are in the catalog under AP.6.7 Bachelor's/Accelerated Master's Degrees. Policies governing all graduate degrees are in the catalog under AP.6 Graduate Policies.

Admission Requirements

Students in the Computer Science, BS program are encouraged to apply to the BAM program after earning 60 undergraduate credits with an overall GPA of at least 3.30. Students must have successfully completed CS 310 Data Structures and CS 330 Formal Methods and Models .

Accelerated Option Requirements

Students accepted to the BAM program may earn up to 9 credits of graduate coursework that count towards both the BS and MS degrees. They may begin taking graduate courses after completing 75 undergraduate credits and successfully completing CS 367 Computer Systems and Programming.

The following graduate courses can replace the corresponding undergraduate courses.

Code	Title	Credits
CS 584	Theory and Applications of Data Mining (to replace CS 484)	3
CS 550	Database Systems (to replace CS 450)	3
CS 580	Introduction to Artificial Intelligence (to replace CS 480)	3

Notes:

- Students may not use both the graduate course and the undergraduate alternative for their BS degree.
- Students must satisfy all recommended and required prerequisites for the graduate courses they take.
- Students must still take the DAEN core courses (AIT 580 Analytics Big Data to Information, OR 531 Analytics and Decision Analysis, and STAT 515 Applied Statistics and Visualization for Analytics).
- Students also have the option to take up to 6 additional credits of graduate coursework *on reserve*, which can be used for the MS degree only.

Degree Conferral

Students must apply for degree conferral the semester before they expect to complete their BS requirements. At the beginning of their final undergraduate semester, students must submit a completed Bachelor's-Accelerated Master's Transition form to the CS department office. The master's degree will be conferred after the student completes the MS requirements.

Computer Science, BS/Information Security and Assurance, Accelerated MS

Overview

Highly-qualified students in the Computer Science, BS can complete both a BS-CS and a Information Security and Assurance, MS in five years through the BS-MS accelerated (BAM) program.

General BAM policies are in the catalog under AP.6.7 Bachelor's/Accelerated Master's Degrees. Policies governing all graduate degrees are in the catalog under AP.6 Graduate Policies.

Admission Requirements

Students in the Computer Science, BS program are encouraged to apply to the BAM program after earning 60 undergraduate credits with an overall GPA of at least 3.30. Students must have successfully completed CS 310 Data Structures and CS 330 Formal Methods and Models.

Accelerated Option Requirements

Students accepted to the BAM program may earn up to 12 credits of graduate coursework that count towards both the BS and MS degrees. They may begin taking graduate courses after completing 75 undergraduate credits and successfully completing CS 367 Computer Systems and Programming.

The following graduate courses can replace the corresponding undergraduate courses.

Code	Title	Credits
CS 540	Language Processors (to replace CS 440)	3
CS 550	Database Systems (to replace CS 450)	3
CS 551	Computer Graphics (to replace CS 451)	3
CS 555	Computer Communications and Networking (to replace CS 455)	3
CS 571	Operating Systems (to replace CS 471)	3
CS 580	Introduction to Artificial Intelligence (to replace CS 480)	3
CS 583	Analysis of Algorithms (to replace CS 483)	3
CS 584	Theory and Applications of Data Mining (to replace CS 484)	3
CS 587	Introduction to Cryptography (to replace CS 487)	3
SWE 619	Object-Oriented Software Specification and Construction (to replace SWE 419)	3
SWE 637	Software Testing (to replace SWE 437)	3
SWE 642	Software Engineering for the World Wide Web (to replace SWE 432)	3

Notes:

- Students may not use both the graduate course and the undergraduate alternative for their BS degree.
- Students must satisfy all recommended and required prerequisites for the graduate courses they take.
- Students also have the option to take up to 6 additional credits of graduate coursework *on reserve*, which can be used for the MS degree only.

Degree Conferral

Students must apply for degree conferral the semester before they expect to complete their BS requirements. At the beginning of their final undergraduate semester, students must submit a completed Bachelor's-Accelerated Master's Transition form to the CS department office. The master's degree will be conferred after the student completes the MS requirements.

Computer Science, BS/Information Systems, Accelerated MS

Overview

Highly-qualified students in the Computer Science, BS can complete both a BS-CS and an Information Systems, MS in five years through the BS-MS accelerated (BAM) program.

General BAM policies are in the catalog under AP.6.7 Bachelor's/Accelerated Master's Degrees. Policies governing all graduate degrees are in the catalog under AP.6 Graduate Policies.

Admission Requirements

Students in the Computer Science, BS program are encouraged to apply to the BAM program after earning 60 undergraduate credits with an overall GPA of at least 3.30. Students must have successfully completed CS 310 Data Structures and CS 330 Formal Methods and Models.

Accelerated Option Requirements

Students accepted to the BAM program may earn up to 12 credits of graduate coursework that count towards both the BS and MS degrees. They may begin taking graduate courses after completing 75

undergraduate credits and successfully completing CS 367 Computer Systems and Programming.

The following graduate courses can replace the corresponding undergraduate courses.

Code	Title	Credits
CS 540	Language Processors (to replace CS 440)	3
CS 550	Database Systems (to replace CS 450)	3
CS 551	Computer Graphics (to replace CS 451)	3
CS 555	Computer Communications and Networking (to replace CS 455)	3
CS 571	Operating Systems (to replace CS 471)	3
CS 580	Introduction to Artificial Intelligence (to replace CS 480)	3
CS 583	Analysis of Algorithms (to replace CS 483)	3
CS 584	Theory and Applications of Data Mining (to replace CS 484)	3
CS 587	Introduction to Cryptography (to replace CS 487)	3
SWE 619	Object-Oriented Software Specification and Construction (to replace SWE 419)	3
SWE 637	Software Testing (to replace SWE 437)	3
SWE 642	Software Engineering for the World Wide Web (to replace SWE 432)	3

Note:

- Students may not use both the graduate course and the undergraduate alternative for their BS degree.
- Students must satisfy all recommended and required prerequisites for the graduate courses they take.
- Students also have the option to take up to 6 additional credits of graduate coursework *on reserve*, which can be used for the MS degree only.

Degree Conferral

Students must apply for degree conferral the semester before they expect to complete their BS requirements. At the beginning of their final undergraduate semester, students must submit a completed Bachelor's-Accelerated Master's Transition form to the CS department office. The master's degree will be conferred after the student completes the MS requirements.

Computer Science, BS/Operations Research, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a Computer Science, BS and an Operations Research, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) in an accelerated time-frame after satisfactory completion of a minimum of 138 credits.

Admitted students are able to use up to 12 graduate credits in partial satisfaction of requirements for the undergraduate degree. Upon completion and conferral of the bachelor's degree and with satisfactory performance (grade of 'B' or better) in each of the graduate courses, students are given advanced standing in the master's program.

See AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/).

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Computer Science, BS students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits with an overall GPA of at least 3.3, and completion of all MATH and Science requirements. Students must additionally complete MATH 203 Linear Algebra prior to applying for the graduate program.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

The criteria for admission are identical to criteria for admission to the Operations Research, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program. Students already admitted in the BAM Pathway will be admitted to the Operations Research, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- An overall GPA of at least 3.3
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing course: Students must complete all credits that satisfy requirements for both the BS and MS programs. Up to four courses (12 credits) of approved master's level courses taken as part of the undergraduate degree may be applied to the graduate degree. The courses selected for this purpose must be approved by the academic advisors of both the BS and MS programs and by the SEOR department chair. For the BS programs that allow undergraduate electives from the department of system engineering and operations research, the students may choose the graduate version of such elective courses to replace the corresponding undergraduate courses.

- Students selecting up to two courses (6 credits) of approved master's level courses may select from the combined Computer

Science course list and Systems Engineering and Operations Research course list given below.

- Students selecting up to three or four courses (9 or 12 credits) of approved master's level courses may select at most two courses from the Computer Science course list and select the remaining courses from the Systems Engineering and Operations Research course list given below. Students are highly recommended to select courses marked as core courses because it applies to the master's degree regardless of the graduate-level concentration chosen in the Operations Research, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/). The undergraduate version of these courses, if any, may *not* be applied toward the Operations Research, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/). Credit may not be received for both the undergraduate and graduate version of these courses.
- Students must pay attention to the prerequisites required for a course, and the master's degree concentration that the course may satisfy.

Select at most two from the following Computer Science courses:

Code	Title	Credits
CS 540	Language Processors	
CS 550	Database Systems	
CS 551	Computer Graphics	
CS 555	Computer Communications and Networking	
CS 571	Operating Systems	
CS 580	Introduction to Artificial Intelligence	
CS 583	Analysis of Algorithms	
CS 584	Theory and Applications of Data Mining	

Select the remaining from the following Systems Engineering and Operations Research courses:

Code	Title	Credits
OR 541	Operations Research: Deterministic Models (Core)	
OR 542	Operations Research: Stochastic Models (Core)	

While still in undergraduate status, a maximum of 6 additional graduate credits may be taken as reserve graduate credit and applied to the master's program. Reserve graduate credits do not apply to the undergraduate degree.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text).

Degree Conferral

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and the VSE Graduate Admissions Office. At the completion of MS requirements, a master's degree is conferred.

Computer Science, BS/Software Engineering, Accelerated MS

Overview

Highly-qualified students in the Computer Science, BS program can complete both a BS-CS and a Software Engineering, MS in five years through the BS-MS accelerated (BAM) program.

General BAM policies are in the catalog under AP.6.7 Bachelor's/Accelerated Master's Degrees. Policies governing all graduate degrees are in the catalog under AP.6 Graduate Policies.

Admission Requirements

Students in the Computer Science, BS program are encouraged to apply to the BAM program after earning 60 undergraduate credits with an overall GPA of at least 3.30. Students must also have successfully completed CS 310 Data Structures and CS 330 Formal Methods and Models .

Accelerated Option Requirements

Students accepted to the BAM program may earn up to 12 credits of graduate coursework that count towards both the BS and MS degrees. They may begin taking graduate courses after completing 75 undergraduate credits and successfully completing CS 367 Computer Systems and Programming.

The following graduate courses can replace the corresponding undergraduate courses.

Code	Title	Credits
CS 540	Language Processors (to replace CS 440)	3
CS 550	Database Systems (to replace CS 450)	3
CS 551	Computer Graphics (to replace CS 451)	3
CS 555	Computer Communications and Networking (to replace CS 455)	3
CS 571	Operating Systems (to replace CS 471)	3
CS 580	Introduction to Artificial Intelligence (to replace CS 480)	3
CS 583	Analysis of Algorithms (to replace CS 483)	3
CS 584	Theory and Applications of Data Mining (to replace CS 484)	3
CS 587	Introduction to Cryptography (to replace CS 487)	3
SWE 619	Object-Oriented Software Specification and Construction (to replace SWE 419)	3
SWE 637	Software Testing (to replace SWE 437)	3
SWE 642	Software Engineering for the World Wide Web (to replace SWE 432)	3

Notes:

- Students may not use both the graduate course and the undergraduate alternative for their BS degree.
- Students must satisfy all recommended and required prerequisites for the graduate courses they take.
- Students also have the option to take up to 6 additional credits of graduate coursework *on reserve*, which can be used for the MS degree only.

Degree Conferral

Students must apply for degree conferral the semester before they expect to complete their BS requirements. At the beginning of their final undergraduate semester, students must submit a completed Bachelor's-Accelerated Master's Transition form to the CS department office. The master's degree will be conferred after the student completes the MS requirements.

Computer Science, BS/Systems Engineering, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a Computer Science, BS and a Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) in an accelerated time-frame after satisfactory completion of a minimum of 138 credits.

Admitted students are able to use up to 12 graduate credits in partial satisfaction of requirements for the undergraduate degree. Upon completion and conferral of the bachelor's degree and with satisfactory performance (grade of 'B' or better) in each of the graduate courses, students are given advanced standing in the master's program.

See AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/).

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Computer Science, BS students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits with an overall GPA of at least 3.3, and completion of all MATH and Science requirements.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

The criteria for admission are identical to criteria for admission to the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program. Students already admitted in the BAM Pathway will be admitted to the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- An overall GPA of at least 3.3
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing course: Students must complete all credits that satisfy requirements for both the BS and MS programs. Up to four courses (12 credits) of approved master's level courses taken as part of the undergraduate degree may be applied to the graduate degree. The courses selected for this purpose must be approved by the academic advisors of both the BS and MS programs and by the SEOR department chair. For the BS programs that allow undergraduate electives from the department of system engineering and operations research, the students may choose the graduate version of such elective courses to replace the corresponding undergraduate courses.

- Students selecting up to two courses (6 credits) of approved master's level courses may select from the combined Computer Science course list and Systems Engineering and Operations Research course list given below.
- Students selecting up to three or four courses (9 or 12 credits) of approved master's level courses may select at most two courses from the Computer Science course list and select the remaining courses from the Systems Engineering and Operations Research course list given below. The undergraduate version of these courses, if any, may *not* be applied toward the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/). Credit may not be received for both the undergraduate and graduate version of these courses.
- Any course chosen from either course list can be used to satisfy SYST 505 Systems Engineering Principles core requirement in the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program.
- Some of the courses in the Systems Engineering and Operations Research course list applies only to certain concentrations in the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program.
- Students must pay attention to the prerequisites required for a course, and the master's degree concentration that the course may satisfy.

Select at most two from the following Computer Science courses:

Code	Title	Credits
CS 540	Language Processors	
CS 550	Database Systems	
CS 551	Computer Graphics	
CS 555	Computer Communications and Networking	
CS 571	Operating Systems	
CS 580	Introduction to Artificial Intelligence	
CS 583	Analysis of Algorithms	
CS 584	Theory and Applications of Data Mining	

Select the remaining from the following Systems Engineering and Operations Research courses:

Code	Title	Credits
OR 541	Operations Research: Deterministic Models	
OR 542	Operations Research: Stochastic Models	

While still in undergraduate status, a maximum of 6 additional graduate credits may be taken as reserve graduate credit and applied to the master's program. Reserve graduate credits do not apply to the undergraduate degree.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text).

Degree Conferral

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and the VSE Graduate Admissions Office. At the completion of MS requirements, a master's degree is conferred.

Computer Science, MS

Banner Code: VS-MS-CS

Academic Advising

Phone: 703-993-1530
Email: csgrad@gmu.edu
Website: http://cs.gmu.edu/prospective-students/ms-programs/ms-in-cs/

The Computer Science graduate program prepares students for research and professional practice in computer science and related technologies. The program includes both fundamentals and advanced work in the areas of artificial intelligence and databases, programming languages and software engineering, systems and networks, theoretical computer science, and visual computing. Graduate classes are divided into basic classes, which have no graduate course prerequisite, and advanced classes, which have a graduate class as a prerequisite. Graduate classes are generally offered in the late afternoon and evening. Financial aid in the form of graduate assistantships may be available for full-time degree-seeking students.

Admissions & Policies

Admissions

In addition to fulfilling Mason's admission requirements for graduate study, applicants must meet the following requirements:

- Hold a baccalaureate degree that includes:
  - Data Structures and Algorithms (CS 310 Data Structures)
  - Automata Theory and Formal Languages (CS 330 Formal Methods and Models)
  - Computer Architecture including Assembly Language (CS 367 Computer Systems and Programming)
  - Calculus I and II
  - A substantial course in discrete mathematics such as MATH 125 Discrete Mathematics I (Mason Core)
- Earned a cumulative GPA of 3.00 or higher for the last two years of undergraduate work, preferably with a major in a technical field such as computer science, mathematics, physical sciences, engineering, or information systems.
- Submit transcripts of all post secondary education, complete the online application, including a goals statement, resume, and two letters of recommendation.
- A valid GRE score is required for those who have not earned a Bachelor's degree or higher from a US institution.
- English Proficiency Exam Score (https://www2.gmu.edu/admissions-aid/how-apply/graduate/standardized-test-information/), if applicable.

Requirements

Degree Requirements

Total credits: 30

Required Courses and Plan of Study

In addition to general university requirements, completion of the MS in CS requires 30 credits of graduate courses.

To ensure that students have uniform preparation for the core courses, all students are required to take CS 530 Mathematical Foundations of Computer Science and CS 531 Computer Systems and Fundamentals of Systems Programming as their first two courses in the program. Students with a strong academic background in computer science may have CS 530 and CS 531 substituted for other elective courses at the discretion of the program director. Students enrolled in PhD CS or the Bachelor's/Accelerated Master's program cannot take these courses for credit. Students also have the opportunity to indicate that they have the requisite knowledge corresponding to CS 530 and CS 531 by passing an exam. The exams are given before classes begin in January and August, and can only be taken once. Students failing either one of the exams must take the equivalent course in their first semester. Students who successfully test out of CS 530 or CS 531 will be required to fulfill the credit requirement with other coursework chosen under advisement.

Courses are grouped in the following five broad areas: Artificial Intelligence and Databases, Programming Languages and Software Engineering, Systems and Networks, Theoretical Computer Science, and Visual Computing. The list of pre-approved courses with their areas follows.

All the following requirements should be satisfied for the MS in CS degree:

- CS 583 Analysis of Algorithms (from the Theoretical Computer Science area) and two additional core courses from two other areas must be successfully completed with a grade of B- or higher. Students receiving lower than a B- must retake the course or face termination.
- At least four courses (12 credits) must be chosen from the advanced courses in the list of pre-approved courses from at least two different areas.

- At least six courses, including two advanced courses, must be designated CS.
- At least eight courses must be taken from the list of pre-approved courses. Up to two computer science-related courses that are not on the list of pre-approved courses may be taken with prior approval of the program director.

Plan of Study

Before the end of the first semester, students must have a plan of study approved by their academic advisor. This plan should be kept up to date by regular consultation with the academic advisor.

Core Courses by Area

Code	Title	Credits
Artificial Intelligence and Databases		
CS 550	Database Systems	
CS 580	Introduction to Artificial Intelligence	
CS 584	Theory and Applications of Data Mining	
Programming Languages and Software Engineering		
CS 540	Language Processors	
SWE 619	Object-Oriented Software Specification and Construction	
SWE 621	Software Design and Architecture	
Systems and Networks		
CS 555	Computer Communications and Networking	
CS 571	Operating Systems	
ISA 562	Information Security Theory and Practice	
Theoretical Computer Science		
CS 583	Analysis of Algorithms [1]	
Visual Computing		
CS 551	Computer Graphics	

[1] Must be successfully completed with a grade of B- or better

Preapproved Basic and Advanced MS CS Courses by Area

Code	Title	Credits
Artificial Intelligence and Databases		
Basic Courses:		
CS 550	Database Systems	
CS 580	Introduction to Artificial Intelligence	
CS 584	Theory and Applications of Data Mining	
INFS 623	Web Search Engines and Recommender Systems	
Advanced Courses:		
CS 595	Basic Topics in Computer Science	
CS 650	Advanced Database Management	
CS 657	Mining Massive Datasets with MapReduce	
CS 667	Biometrics and Identity Management	
CS 681	Instructable Cognitive Agents	
CS 685	Autonomous Robotics	
CS 687	Advanced Artificial Intelligence	
CS 688	Machine Learning	
CS 689	Planning Motions of Robots and Molecules	
CS 747	Deep Learning	
CS 782	Advanced Machine Learning	
CS 787	Decision Guidance Systems	
INFS 740	Database Programming for the World Wide Web	
INFS 760	Advanced Database Management	
INFS 772	Intelligent Agents and the Semantic Web	
INFS 774	Enterprise Architecture	
Programming Languages and Software Engineering		
Basic Courses:		
CS 540	Language Processors	
SWE 619	Object-Oriented Software Specification and Construction	
SWE 620	Software Requirements Analysis and Specification	
SWE 621	Software Design and Architecture	
SWE 622	Distributed Software Engineering	
Advanced Courses:		
CS 640	Advanced Compilers	
ISA 681	Secure Software Design and Programming	
SWE 631	Software Design Patterns	
SWE 632	User Interface Design and Development	
SWE 637	Software Testing	
SWE 642	Software Engineering for the World Wide Web	
SWE 645	Component-Based Software Development	
SWE 721	Reusable Software Architectures	
SWE 737	Advanced Software Testing	
SWE 760	Software Analysis and Design of Real-Time Systems	
Systems and Networks		
Basic Courses:		
CS 531	Computer Systems and Fundamentals of Systems Programming	
CS 555	Computer Communications and Networking	
CS 571	Operating Systems	
CS 587	Introduction to Cryptography	
ISA 562	Information Security Theory and Practice	
ISA 564	Security Laboratory	
Advanced Courses:		
CS 635	Foundations of Parallel Computation	
CS 655	Wireless and Mobile Computing	
CS 658	Networked Virtual Environments	
CS 672	Computer System Performance Evaluation	
CS 673	Multimedia Computing and Systems	
CS 675	Distributed Systems	
CS 706	Concurrent Software Systems	
CS 719	Scalable Internet Services	

CS 756	Performance Analysis of Computer Networks
CS 773	Real-Time Systems Design and Development
CS 779	Topics in Resilient and Secure Computer Systems
CS 788	Autonomic Computing
ISA 656	Network Security
ISA 673	Operating Systems Security
ISA 674	Intrusion Detection
ISA 697	Topics in Information Security
ISA 763	Security Protocol Analysis
ISA 764	Security Experimentation
ISA 785	Research in Digital Forensics
Theoretical Computer Science	
Basic Courses:	
CS 530	Mathematical Foundations of Computer Science
CS 583	Analysis of Algorithms
Advanced Courses:	
CS 600	Theory of Computation
CS 630	Advanced Algorithms
CS 633	Computational Geometry
CS 683	Parallel Algorithms
CS 684	Graph Algorithms
Visual Computing	
Basic Courses:	
CS 551	Computer Graphics
Advanced Courses:	
CS 662	Computer Graphics Game Technologies
CS 663	Computational Design
CS 667	Biometrics and Identity Management
CS 682	Computer Vision
CS 686	Image Processing and Applications
CS 752	Interactive Graphics Software
CS 774	Computational Vision
CS 777	Human-Computer Intelligent Interaction

Project or Thesis

Three to six credit hours of the advanced classes may be replaced by a project or thesis with consent of a faculty sponsor and faculty advisor. The project or thesis must be guided and approved by a committee of three appropriate faculty members and presented at an appropriate forum. The thesis must meet relevant university requirements.

Code	Title	Credits
Select one from the following:		
CS 798	Project Seminar (3 credits)	
CS 799	Thesis (6 credits)	

Additional Pre-approved CS Courses

These courses are not classified by area. Note that CS 695 Topics in Computer Science/CS 795 Advanced Topics in CS can be used to satisfy the breadth requirement if the area is listed in the syllabus for the course.

Code	Title	Credits
CS 595	Basic Topics in Computer Science	3
CS 695	Topics in Computer Science	3
CS 697	Independent Reading and Research	1-3
CS 795	Advanced Topics in CS	3
CS 798	Project Seminar	3
CS 799	Thesis	1-6
CS 895	Research Topics in CS	3

Concentration in Cyber Security (CYSC)

In addition to the existing program requirements, MS CS degree students must satisfy the following requirements.

Students must take 5 courses from the following categories:

Code	Title	Credits
Required:		
ISA 656	Network Security	3
ISA 562	Information Security Theory and Practice	3
Choose 2-3 elective courses:		6-9
CS 587	Introduction to Cryptography	
ISA 564	Security Laboratory	
ISA 673	Operating Systems Security	
ISA 674	Intrusion Detection	
ISA 681	Secure Software Design and Programming	
ISA 763	Security Protocol Analysis	
ISA 764	Security Experimentation	
Choose 0-1 related course:		0-3
CS 540	Language Processors	
CS 555	Computer Communications and Networking	
CS 571	Operating Systems	
CS 600	Theory of Computation	
CS 655	Wireless and Mobile Computing	

Thesis:

Students, with the consent of a faculty sponsor and faculty advisor, may also elect a 6-credit thesis (CS 799 Thesis). The thesis must be guided and approved by a committee of three appropriate faculty members and presented at an appropriate forum. If the faculty advisor and the program director agree that the thesis is appropriate for the concentration the students will need to complete the two courses from the category 1 and one course from the category 2 in addition to the thesis to complete the Concentration requirements.

Concentration in Machine Learning (ML)

In addition to the existing program requirements, MS CS degree students must satisfy the following requirements.

Students must take 5 courses from the following categories:

Code	Title	Credits
Required:		
CS 584	Theory and Applications of Data Mining	3
CS 688	Machine Learning	3
Choose 2-3 elective courses:		6-9

CS 657	Mining Massive Datasets with MapReduce	
CS 681	Instructable Cognitive Agents	
CS 747	Deep Learning	
CS 782	Advanced Machine Learning	
Choose 0-1 related course:		0-3
CS 580	Introduction to Artificial Intelligence	
CS 687	Advanced Artificial Intelligence	
CS 685	Autonomous Robotics	
CS 682	Computer Vision	

Thesis (optional):
Students, with the consent of a faculty sponsor and faculty advisor, may also elect a 6-credit thesis (CS 799 Thesis). The thesis must be guided and approved by a committee of three faculty members and presented to the committee. If the faculty advisor and the program director agree that the thesis is appropriate for the concentration the student will need to complete the two courses from category 1 and one course from category 2 in addition to the thesis to complete the concentration requirements.

Accelerated Master's

Applied Computer Science, BS/Computer Science, Accelerated MS

Overview

Highly-qualified students in the Applied Computer Science, BS can complete both a BS-ACS and a Computer Science, MS in five years through the BS-MS accelerated (BAM) program.

General BAM policies are in the catalog under AP.6.7 Bachelor's/Accelerated Master's Degrees. Policies governing all graduate degrees are in the catalog under AP.6 Graduate Policies.

Admission Requirements

Students in the Applied Computer Science, BS program are encouraged to apply to the BAM program after earning 60 undergraduate credits with an overall GPA of at least 3.30. Students must have successfully completed CS 310 Data Structures and CS 330 Formal Methods and Models.

Accelerated Option Requirements

Students accepted to the BAM program may earn up to 12 credits of graduate coursework that count towards both the BS and MS degrees. They may begin taking graduate courses after completing 75 undergraduate credits and successfully completing CS 367 Computer Systems and Programming.

The following graduate courses can replace the corresponding undergraduate courses.

Code	Title	Credits
CS 540	Language Processors (to replace CS 440)	3
CS 550	Database Systems (to replace CS 450)	3
CS 551	Computer Graphics (to replace CS 451)	3
CS 555	Computer Communications and Networking (to replace CS 455)	3
CS 571	Operating Systems (to replace CS 471)	3
CS 580	Introduction to Artificial Intelligence (to replace CS 480)	3
CS 584	Theory and Applications of Data Mining (to replace CS 484)	3
CS 583	Analysis of Algorithms (to replace CS 483)	3
CS 587	Introduction to Cryptography (to replace CS 487)	3
SWE 619	Object-Oriented Software Specification and Construction (to replace SWE 419)	3
SWE 637	Software Testing (to replace SWE 437)	3
SWE 642	Software Engineering for the World Wide Web (to replace SWE 432)	3

Notes:

- Students may not use both the graduate course and the undergraduate alternative for their BS degree.
- Students must satisfy all recommended and required prerequisites for the graduate courses they take.
- Students also have the option to take up to 6 additional credits of graduate coursework *on reserve*, which can be used for the MS degree only.

Degree Conferral

Students must apply for degree conferral the semester before they expect to complete their BS requirements. At the beginning of their final undergraduate semester, students must submit a completed Bachelor's-Accelerated Master's Transition form to the CS department office. The master's degree will be conferred after the student completes the MS requirements.

Computer Science, BS/Computer Science, Accelerated MS

Overview

Highly-qualified students in the Computer Science, BS can complete both a BS-CS and a Computer Science, MS in five years through the BS-CS accelerated (BAM) program.

General BAM policies are in the catalog under AP.6.7 Bachelor's/Accelerated Master's Degrees. Policies governing all graduate degrees are in the catalog under AP.6 Graduate Policies.

Admission Requirements

Students in the Computer Science, BS program are encouraged to apply to the BAM program after earning 60 undergraduate credits with an overall GPA of at least 3.30. Students must also have successfully completed CS 310 Data Structures and CS 330 Formal Methods and Models.

Accelerated Option Requirements

Students accepted to the BAM program may earn up to 12 credits of graduate coursework that count towards both the BS and MS degrees. They may begin taking graduate courses after completing 75 undergraduate credits and successfully completing CS 367 Computer Systems and Programming.

The following graduate courses can replace the corresponding undergraduate courses.

Code	Title	Credits
CS 540	Language Processors (to replace CS 440)	3
CS 550	Database Systems (to replace CS 450)	3
CS 551	Computer Graphics (to replace CS 451)	3
CS 555	Computer Communications and Networking (to replace CS 455)	3
CS 571	Operating Systems (to replace CS 471)	3
CS 580	Introduction to Artificial Intelligence (to replace CS 480)	3
CS 583	Analysis of Algorithms (to replace CS 483)	3
CS 584	Theory and Applications of Data Mining (to replace CS 484)	3
CS 587	Introduction to Cryptography (to replace CS 487)	3
SWE 619	Object-Oriented Software Specification and Construction (to replace SWE 419)	3
SWE 637	Software Testing (to replace SWE 437)	3
SWE 642	Software Engineering for the World Wide Web (to replace SWE 432)	3

Notes:

- Students may not use both the graduate course and the undergraduate alternative for their BS degree.
- Students must satisfy all recommended and required prerequisites for the graduate courses they take.
- Students also have the option to take up to 6 additional credits of graduate coursework, on reserve, which can be used for the MS degree only.

Degree Conferral

Students must apply for degree conferral the semester before they expect to complete their BS requirements. At the beginning of their final undergraduate semester, students must submit a completed Bachelor's-Accelerated Master's Transition form to the CS department office. The master's degree will be conferred after the student completes the MS requirements.

Computer Science, PhD

Banner Code: VS-PHD-CS

Academic Advising

Phone: 703-993-1530
Email: csphd@gmu.edu
Website: http://cs.gmu.edu/prospective-students/phd-program/

The PhD program in Computer Science prepares students to become technical leaders in their fields of research. We have a world-class faculty with research expertise in a diverse set of computer science areas and our program is nationally ranked. Additionally, we are located in in the suburbs of Washington, DC at the center of one of the largest computer science and information technology corridors in the nation and a major center for science and engineering research and funding. Our PhD graduates have been highly successful both in academic and industrial positions.

The Computer Science PhD program requires coursework, successful completion of a breadth requirement, comprehensive examination, and a doctoral dissertation that is first proposed and eventually defended. Mason's general doctoral requirements (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) apply to this program.

Admissions & Policies

Admissions

All applicants must have an undergraduate degree, and their prior academic work must show a strong academic background in computer science. In addition, the GRE General Test is required from every applicant. Finally, each applicant must provide a resume, brief statement of career goals and personal aspirations, as well as three letters of reference. Each application receives careful consideration from the PhD Admission Committee.

Policies

Program Requirements

The 72 hours of required doctoral-level credits typically consist of 48 credits of regular coursework and 24 credits of dissertation research.

Requirements

Degree Requirements

Total credits: 72

Doctoral Coursework

Code	Title	Credits
The 48 credits of regular coursework required for the degree consists of the following courses:		
CS 600	Theory of Computation (Must be completed with a B+ or better)	3
CS 700	Research Methodology in Computer Science (Must be completed with a B or better)	3
CS 701	Research Experience in Computer Science (Must be completed with a B or better)	3
CS 800	Computer Science Colloquium (Must enroll in course for two semesters)	0
Nine credits of advanced graduate courses [1]		9
30 credits of graduate level courses in the Computer Science department or a field related to the student's doctoral research area [2]		30
Total Credits		48

1. Must be selected in consultation with the student's advisor from a list maintained by the CS department. Independent study courses cannot be used towards the 9 credit hours that must be obtained in advanced graduate courses.
2. Must be selected in consultation with the student's advisor.

Note:

With careful selection of courses, students may earn an MS degree as part of their PhD studies.

Reduction of Credit

Students entering the PhD program with an approved MS degree can receive a reduction of credit for up to 30 credits. Reduction of credit requires the approval of the program director or designee and the dean or designee of the school.

Breadth Requirement

Students must demonstrate breadth of knowledge in computer science by obtaining superior grades in four graduate courses, including CS 583 Analysis of Algorithms. Collectively the four courses must span at least three of the following eight areas: Theoretical Computer Science, Systems and Networks, Security, Programming Languages, Software Engineering, Artificial Intelligence, Databases, and Visual Computing.

The grades obtained in the four selected courses must meet the following requirements:

- Students must obtain an A- or better grade in at least three of the four courses
- In the fourth course, students must obtain a grade of B or better.

A list of courses that can be used to satisfy the breadth requirement is maintained by the CS department.

A course that is used to satisfy the breadth requirement may be repeated at most once (the grade received in the last attempt is considered when evaluating the breadth requirement).

To satisfy the breadth requirement, a student can use the grades (s)he received in the past, provided that at most five years elapsed since the course was taken. The course must have been taken at GMU. Exceptions to this rule are rare and require filing a petition with supplementary documents to the Computer Science department.

An alternative way to satisfy the breadth requirement is to pass the written qualifying exams (https://cs.gmu.edu/current-students/doctoral-students/breadth-requirement/qualifying-exams/). The exams are offered once every semester (usually two weeks before the semester begins).

To qualify, each student must pass exams in **four areas**, one of which is *Foundations of Computer Science*. The other three areas are chosen from these eight areas: *computer systems, networks, compilers and languages, software construction, software testing, artificial intelligence, database systems,* and *information security*.

The four exams must be attempted in the same semester, and a failed exam may be retaken once only, in the next semester. A student who fails to pass the four exams in two consecutive semesters is deemed to have failed to satisfy the breadth requirement, and is subject to termination.

If the student takes one or more written qualifying exams, the breadth requirement can only be satisfied by passing the qualifying exams (the criterion based on course performance cannot apply).

Dissertation Research

A minimum of 24 credits of CS 998 Doctoral Dissertation Proposal and CS 999 Doctoral Dissertation must be completed, of which at least 12 must be in CS 999 Doctoral Dissertation. Only 24 credits of CS 998 Doctoral Dissertation Proposal and CS 999 Doctoral Dissertation may be applied toward the degree. Students may enroll in CS 998 Doctoral Dissertation Proposal only after passing the breadth requirement, and they may enroll in CS 999 Doctoral Dissertation only after advancing to candidacy.

Code	Title	Credits
Select 24 credits from the following:		24
CS 998	Doctoral Dissertation Proposal	
CS 999	Doctoral Dissertation (minimum 12 credits required)	

Comprehensive Exam

To demonstrate the depth of knowledge in their intended area of research, the students must pass a comprehensive exam. The comprehensive exam is administered by a committee consisting of four members: the research advisor, an additional faculty member selected by the student, and two tenured CS faculty members selected by the PhD program director. One of the members selected by the program director chairs the committee.

The comprehensive exam has both written and oral components. The student is required to initiate the comprehensive exam procedure by submitting a form to the CS department at least four months prior to the target oral exam date. For the written component of the exam, the student prepares a critical review of research literature on a topic in the intended area of research. The report should synthesize the previous research in the target area with particular emphasis on open problems. The report should be 8-10 pages long and should contain a minimum of 20 references. The written report must be received by the committee members at least one month before the oral exam date.

The oral exam includes a presentation by the student based on the written report. The duration of the oral exam is typically two hours with the presentation limited to 20 minutes. The exam is public but only the members of the committee are permitted to ask questions.

The scope of the oral exam is defined by a **reading list** that includes research articles selected by the student and advisor, as well as the textbooks and articles related to the intended **broader** research area of the student selected by the other members of the committee and the CS department. The complete reading list, as well as the members of the examination committee will be finalized and communicated to the student by the CS department at least three months before the oral exam date. The comprehensive exam reading list becomes part of the student's record.

When in both written and oral components at least three out of four committee members find the student's performance satisfactory, the student passes the comprehensive exam. Otherwise the student is allowed to re-take the exam only once (with both written and oral components) and no later than the next semester. If the written report is found unsatisfactory by two or more committee members, the oral exam is not administered in that attempt. Students who fail the comprehensive exam are subject to termination.

The student can form a dissertation committee only after successfully passing the comprehensive exam.

Milestones and Deadlines

The students are expected to make steady progress in the program by completing the required coursework and research-related milestones within the specified deadlines. Students who fail to meet the deadlines

will be dismissed from the program unless there are extenuating circumstances approved by the department.

Successful completion of CS 700 Research Methodology in Computer Science: Within the first two semesters in the program.

Successful completion of CS 701 Research Experience in Computer Science: Within the first 18 credits in the program.

Determining the research advisor: Within the first 24 credits in the program or three years, whichever comes first.

Satisfy the breadth requirement: Within the first 24 credits in the program or three years, whichever comes first.

Successful completion of both instances of CS 800 Computer Science Colloquium: Within the first 36 credits in the program or five years, whichever comes first.

Taking the comprehensive exam: Within the first 36 credits in the program (cannot be postponed beyond five years). The student must pass the exam in at most two attempts.

Advancing to candidacy and graduation: Time limits are determined by the general university rules that apply to the PhD programs.

A student who misses any time limits is subject to termination.

Annual Evaluation

All students in the program (except the students in their first year in the PhD program) are required to complete an annual progress report (http://cs.gmu.edu/resources/student-forms/). This report must be submitted **by the end of September** every year to the Administrative Coordinator of the CS PhD program.

The annual reports are reviewed by the members of the faculty to assess the student's progress in the program and feedback is provided to each student.

Dissertation Committee Selection

Each student must form a dissertation committee, comprising four or five individuals. Three members of the committee must be Graduate Faculty in the Computer Science Department. The fourth member should be a member of the George Mason University graduate faculty who is outside the department. A fifth member may be from outside the university. The chair of the dissertation committee, who must also be the dissertation director, must be a member of the Graduate Faculty in the Volgenau School. The committee must be approved by the chair of the Computer Science Department.

Dissertation Proposal

Each student must prepare a written dissertation proposal. While preparing this proposal, the student enrolls in CS 998 Doctoral Dissertation Proposal. The proposal must be made available to the committee at least two weeks in advance of the presentation. The proposal must be presented to and approved by the dissertation committee. The committee determines whether the proposal has merit and can lead to significant contributions to the area and whether the student has the knowledge and skills to complete the proposed work successfully and in a timely manner. Students may present their dissertation proposal only after passing the comprehensive exam, and the presentation may not be on the same day as the comprehensive exam. If the student fails to defend the proposal, the student may present a dissertation proposal a second time at a later date. Failure in the second attempt results in termination from the program. On completing this requirement successfully, the student is advanced to candidacy for the PhD degree.

Dissertation Preparation and Defense

While preparing the dissertation, the candidate must enroll in CS 999 Doctoral Dissertation each term. When the work is deemed complete, the dissertation is defended. The public defense is preceded by a predefense meeting in which only the candidate, the dissertation committee members, and the director of the PhD in Computer Science Program (or his or her representative) are present. If the committee approves, the candidate may then schedule the final public defense. There should be at least one month between the predefense meeting and the defense, and the defense must be announced at least two weeks in advance. The dissertation must be made available to the committee at least two weeks in advance of the defense. The entire dissertation committee must be present at the defense, unless an exception is approved by the director of the PhD in Computer Science Program in advance of the defense. The dissertation must make significant contributions to its area and be publishable in refereed journals or conferences. If the candidate defends the dissertation successfully, the dissertation committee recommends that the final form of the dissertation be completed under the supervision of the dissertation director and the graduate faculty of Mason accept the candidate for the PhD degree. If the candidate fails to defend the dissertation, the candidate may request a second defense, following the same procedures as for the initial defense. There is no time limit for this request other than general time limits for the doctoral degree and an additional predefense is not required. A candidate who fails a second attempt to defend the dissertation is terminated from the program.

Information Security and Assurance Graduate Certificate

Banner Code: VS-CERG-ISA

Academic Advising

Phone: 703-993-1530
Email: csgrad@gmu.edu
Website: cs.gmu.edu/prospective-students/ms-programs/graduate-certificates/

This graduate certificate program is intended for students interested in science and methods for ensuring secrecy, integrity, availability, and legitimate use of information systems. The certificate may be pursued concurrently with any of the graduate programs in the Volgenau School.

This graduate certificate may be pursued on a full-or part-time basis

Admissions & Policies

Admissions

Applicants must hold a baccalaureate degree from an accredited institution and have earned a GPA of 3.00 or higher in the last 60 credits.

Applicants must possess knowledge equivalent to that provided by the following courses:

Code	Title	Credits
INFS 501	Discrete and Logical Structures for Information Systems	3
SWE 510	Object-Oriented Programming in Java	3
INFS 515	Computer Organization Course and Operating Systems	3
INFS 519	Program Design and Data Structures	3

Students must also possess the equivalent knowledge of CS 555 Computer Communications and Networking and CS 571 Operating Systems, or the prerequisite courses required for the selected electives. Students not enrolled in a graduate degree program at Mason should apply for the certificate program through Graduate Admission. Students already enrolled in a Mason graduate degree program should apply to the department for admission into the certificate program. Admission into the certificate program does not guarantee acceptance into any MS program.

Policies

For policies governing all graduate certificates, see AP.6.8 Requirements for Graduate Certificates.

Requirements

Certificate Requirements

Total credits: 12

This certificate may be pursued on a full-or part-time basis.

Students must complete 12 credit hours (four courses) with an average GPA of 3.0 or higher.

Required Courses

Code	Title	Credits
ISA 562	Information Security Theory and Practice	3
ISA 656	Network Security	3
Total Credits		6

Additional Courses

Code	Title	Credits
Select two courses from the following:		6
ISA courses at the 600 and 700 level [1]		
ISA 564	Security Laboratory	
Total Credits		6

[1] Excluding ISA 697 Topics in Information Security, ISA 796 Directed Readings in Information Security, ISA 797 Advanced Topics in Information Security, and ISA 798 Research Project.

Information Security and Assurance, MS

Banner Code: VS-MS-ISA

Academic Advising

Phone: 703-993-1530
Email: csgrad@gmu.edu
Website: cs.gmu.edu/prospective-students/ms-programs/ms-in-information-security-and-assurance/

The Department of Computer Science's MS degree in Information Security and Assurance prepares graduates to fill the current and future need for information security and assurance professionals. Graduates work in a wide variety of capacities, protecting the information systems of different types of organizations and supporting the nation's information infrastructure. The Master of Science in Information Security and Assurance provides students with the general and technical knowledge and skills to understand the relationship between information security and advancing information systems technology. The program gives graduates a theoretical understanding of the science and methodologies for ensuring the secrecy and integrity of data, as well as the availability and legitimate use of data and information systems.

Students focus on the technical and management aspects of information security and examine ways to provide secure information processing systems by investigating operating systems security, distributed secure system architectures, database security, software applications security, security policies, secure e-commerce, network and distributed systems security, cryptography, and security protocols. Graduates of the program are actively recruited by federal, state, and local governments, as well as the private sector. Typical employers include Internet-based companies, software companies, banks and insurance companies, and in general any organization that depends heavily on the use of IT. All classes are scheduled in the late afternoon and early evening to accommodate employed students.

Admissions & Policies

Admissions

Eligibility and Application Requirements

Applicants must hold a four-year (120-credit minimum) baccalaureate degree from an accredited institution and have earned a GPA of 3.00 or better in the last 60 credits. Other requirements are as follows:

- Submit the appropriate application with two letters of recommendation from people directly knowledgeable of the applicant's professional and academic competence, a one-page goals statement, and a work resume.
- International students must submit their English Proficiency scores.

Policies

Foundation Requirements

To succeed in graduate courses, students entering the MS program must have coursework or equivalent knowledge in the following five foundation areas: (1) **introductory programming** in any programming language; (2) knowledge of an **object-oriented programming** language such as Java, C++, or C#; (3) **data structures** and algorithms; (4) **machine organization** such as those given in computer system architecture or assembly language courses; (5) and topics in **discrete mathematics**, including sets, propositional and predicate logic, relations, functions, trees, graphs, and inductive proofs.

The level of knowledge required in these areas is equivalent to that taught in undergraduate courses and may be demonstrated in one of several ways:

1. Applicable undergraduate coursework: Such courses must appear on transcripts from the student's undergraduate university, or another accredited university. Applicable courses from George Mason University and Northern Virginia Community College (NVCC) are given here:
   a. **Foundation:** OO programming
      - **GMU CS:** CS 211 Object-Oriented Programming
      - **GMU IT:** IT 106 Introduction to IT Problem Solving Using Computer Programming & IT 206 Object Oriented Techniques for IT Problem Solving
      - **NVCC:** CSC 201
   b. **Foundation:** Data structures
      - **GMU CS:** CS 310 Data Structures
      - **GMU IT:** IT 306 Data Structures and Algorithms in Java
      - **NVCC:** None
   c. **Foundation:** Machine organization
      - **GMU CS:** CS 367 Computer Systems and Programming or CS 465 Computer Systems Architecture
      - **GMU IT:** IT 342 Operating Systems Fundamentals
      - **NVCC:** None
   d. **Foundation:** Discrete math
      - **GMU Math:** MATH 125 Discrete Mathematics I (Mason Core)
      - **NVCC:** MATH 288

- Preparatory coursework taken at GMU: The CS department offers the following bridge foundation courses: (1-2) SWE 510 Object-Oriented Programming in Java, (3) INFS 519 Program Design and Data Structures, (4) INFS 515 Computer Organization Course and Operating Systems, and (5) INFS 501 Discrete and Logical Structures for Information Systems. These courses may be taken by students in non-degree or provisional status.
- Passing appropriate testout exams: Students can self-prepare and attempt testout exams for SWE 510 Object-Oriented Programming in Java, INFS 519 Program Design and Data Structures, INFS 515 Computer Organization Course and Operating Systems, and INFS 501 Discrete and Logical Structures for Information Systems. The exams are given before classes begin in January and August, and can only be taken once. Registration is not required; students need only be present at the date, time, and location specified and bring some form of photographic identification. Detailed information is available on the department web site. Students who fail any one of the exams must take the equivalent course before enrolling in the core curriculum courses.
- Eligible domestic students who lack one or more foundations may be admitted provisionally and required to take the appropriate preparatory course or pass the testout exam. Other students may be advised to learn the foundation material and re-apply.

Advising

The department holds orientation meetings each January and August to advise newly admitted and continuing students. Members of the faculty are present to answer questions and offer advice concerning programs of study. Detailed information is available on the department web site (https://cs.gmu.edu/).

The department also provides an advising function to students, as outlined in the student advising form available from the department. Each student is assigned a faculty advisor with whom to confer on matters related to degree requirements. A plan of study form for the MS degree should be completed and submitted by the student soon after admission to the program. This serves as a planning guide for the student.

Requirements

Degree Requirements

Total credits: 30

Completion of the degree program requires a minimum of 30 approved graduate credits (10 courses). Students must choose a concentration.

Required Core Courses

These courses provide the necessary background and fundamentals of information systems security and assurance. To continue in the program, students are required to obtain a B- or higher grade in the core courses. Students receiving lower than a B- must retake the course or face termination.

Code	Title	Credits
ISA 562	Information Security Theory and Practice	3
ISA 656	Network Security	3
One of the following:		3
INFS 612	Principles and Practices of Communication Networks	
CS 555	Computer Communications and Networking [1]	
Total Credits		9

[1] Required for students who select the Network and System Security concentration.

Concentration in Applied Cyber Security (ACBS)

Students must take any five courses from the list below. At least three of the five courses must be designated ISA or CS.

Code	Title	Credits
Select five courses from the following:		15
CS 667	Biometrics and Identity Management	
ISA 650	Security Policy	
ISA 652	Security Audit and Compliance Testing	
ISA 681	Secure Software Design and Programming	
ISA 763	Security Protocol Analysis	
ISA 785	Research in Digital Forensics	
DFOR 663	Operations of Intrusion Detection for Forensics	
DFOR 761	Malware Reverse Engineering	
DFOR 780	Advanced Topics in Digital Forensics	
ECE 646	Applied Cryptography	
ECE 746	Advanced Applied Cryptography	
Total Credits		15

Concentration in Network and System Security (NSS)

Code	Title	Credits
ISA 564	Security Laboratory	3
Select four courses from the following:		12

CS 530	Mathematical Foundations of Computer Science	
CS 531	Computer Systems and Fundamentals of Systems Programming	
CS 571	Operating Systems [1]	
CS 779	Topics in Resilient and Secure Computer Systems	
ISA 673	Operating Systems Security	
ISA 674	Intrusion Detection	
ISA 681	Secure Software Design and Programming	
ISA 763	Security Protocol Analysis	
ISA 764	Security Experimentation	
ECE 646	Applied Cryptography	
ECE 746	Advanced Applied Cryptography	
Total Credits		15

[1] Students who elect to take CS 571 Operating Systems but who have not taken CS 367 Computer Systems and Programming or its equivalent are advised to take CS 531 Computer Systems and Fundamentals of Systems Programming first.

Additional Courses

Code	Title	Credits
All students select two remaining courses from any combination of the following: [1]		6
ISA 500, 600, and 700 level courses		
CS 500, 600, and 700 level courses		
Courses from the pre-approved electives list (follows)		
ISA 799	Thesis (must take 6 credits)	
Total Credits		6

[1] Students may choose other graduate electives with the consent of their faculty advisor and the graduate coordinator.

Pre-Approved Electives by Program

- Information Systems (INFS)
- Software Engineering (SWE)
- Computer Forensics (CFRS)
- Electrical and Computer Engineering (ECE)

Information Systems (INFS)

Code	Title	Credits
INFS 623	Web Search Engines and Recommender Systems	3
INFS 740	Database Programming for the World Wide Web	3
INFS 760	Advanced Database Management	3
INFS 772	Intelligent Agents and the Semantic Web	3
INFS 774	Enterprise Architecture	3

Software Engineering (SWE)

Code	Title	Credits
SWE 619	Object-Oriented Software Specification and Construction	3
SWE 620	Software Requirements Analysis and Specification	3
SWE 621	Software Design and Architecture	3
SWE 622	Distributed Software Engineering	3
SWE 632	User Interface Design and Development	3
SWE 637	Software Testing	3
SWE 642	Software Engineering for the World Wide Web	3
SWE 645	Component-Based Software Development	3
SWE 721	Reusable Software Architectures	3

Digital Forensics (DFRS)

Code	Title	Credits
DFOR 761	Malware Reverse Engineering	3
DFOR 780	Advanced Topics in Digital Forensics	3

Electrical and Computer Engineering (ECE)

Code	Title	Credits
ECE 646	Applied Cryptography	3
ECE 746	Advanced Applied Cryptography	3

Accelerated Master's

Applied Computer Science, BS/ Information Security and Assurance, Accelerated MS

Overview

Highly-qualified students in the Applied Computer Science, BS program can complete both a BS-ACS and an Information Security and Assurance, MS in five years through the BS-MS accelerated (BAM) program.

General BAM policies are in the catalog under AP.6.7 Bachelor's/ Accelerated Master's Degrees. Policies governing all graduate degrees are in the catalog under AP.6 Graduate Policies.

Admission Requirements

Students in the Applied Computer Science, BS program are encouraged to apply to the BAM program after earning 60 undergraduate credits with an overall GPA of at least 3.30. Students must also have successfully completed CS 310 Data Structures and CS 330 Formal Methods and Models.

Accelerated Option Requirements

Students accepted to the BAM program may earn up to 12 credits of graduate coursework that count towards both the BS and MS degrees. They may begin taking graduate courses after completing 75 undergraduate credits and successfully completing CS 367 Computer Systems and Programming.

The following graduate courses can replace the corresponding undergraduate courses.

Code	Title	Credits
CS 540	Language Processors (to replace CS 440)	3
CS 550	Database Systems (to replace CS 450)	3
CS 551	Computer Graphics (to replace CS 451)	3

CS 555	Computer Communications and Networking (to replace CS 455)	3
CS 571	Operating Systems (to replace CS 471)	3
CS 580	Introduction to Artificial Intelligence (to replace CS 480)	3
CS 583	Analysis of Algorithms (to replace CS 483)	3
CS 584	Theory and Applications of Data Mining (to replace CS 484)	3
CS 587	Introduction to Cryptography (to replace CS 487)	3
SWE 619	Object-Oriented Software Specification and Construction (to replace SWE 419)	3
SWE 637	Software Testing (to replace SWE 437)	3
SWE 642	Software Engineering for the World Wide Web (to replace SWE 432)	3

Notes:

- Students may not use both the graduate course and the undergraduate alternative for their BS degree.
- Students must satisfy all recommended and required prerequisites for the graduate courses they take.
- Students also have the option to take up to 6 additional credits of graduate coursework *on reserve*, which can be used for the MS degree only.

Degree Conferral

Students must apply for degree conferral the semester before they expect to complete their BS requirements. At the beginning of their final undergraduate semester, students must submit a completed Bachelor's-Accelerated Master's Transition form to the CS department office. The master's degree will be conferred after the student completes the MS requirements.

Computer Science, BS/Information Security and Assurance, Accelerated MS

Overview

Highly-qualified students in the Computer Science, BS can complete both a BS-CS and a Information Security and Assurance, MS in five years through the BS-MS accelerated (BAM) program.

General BAM policies are in the catalog under AP.6.7 Bachelor's/Accelerated Master's Degrees. Policies governing all graduate degrees are in the catalog under AP.6 Graduate Policies.

Admission Requirements

Students in the Computer Science, BS program are encouraged to apply to the BAM program after earning 60 undergraduate credits with an overall GPA of at least 3.30. Students must have successfully completed CS 310 Data Structures and CS 330 Formal Methods and Models.

Accelerated Option Requirements

Students accepted to the BAM program may earn up to 12 credits of graduate coursework that count towards both the BS and MS degrees. They may begin taking graduate courses after completing 75 undergraduate credits and successfully completing CS 367 Computer Systems and Programming.

The following graduate courses can replace the corresponding undergraduate courses.

Code	Title	Credits
CS 540	Language Processors (to replace CS 440)	3
CS 550	Database Systems (to replace CS 450)	3
CS 551	Computer Graphics (to replace CS 451)	3
CS 555	Computer Communications and Networking (to replace CS 455)	3
CS 571	Operating Systems (to replace CS 471)	3
CS 580	Introduction to Artificial Intelligence (to replace CS 480)	3
CS 583	Analysis of Algorithms (to replace CS 483)	3
CS 584	Theory and Applications of Data Mining (to replace CS 484)	3
CS 587	Introduction to Cryptography (to replace CS 487)	3
SWE 619	Object-Oriented Software Specification and Construction (to replace SWE 419)	3
SWE 637	Software Testing (to replace SWE 437)	3
SWE 642	Software Engineering for the World Wide Web (to replace SWE 432)	3

Notes:

- Students may not use both the graduate course and the undergraduate alternative for their BS degree.
- Students must satisfy all recommended and required prerequisites for the graduate courses they take.
- Students also have the option to take up to 6 additional credits of graduate coursework *on reserve*, which can be used for the MS degree only.

Degree Conferral

Students must apply for degree conferral the semester before they expect to complete their BS requirements. At the beginning of their final undergraduate semester, students must submit a completed Bachelor's-Accelerated Master's Transition form to the CS department office. The master's degree will be conferred after the student completes the MS requirements.

Information Technology, BS/Information Security and Assurance, Accelerated MS

Overview

Highly-qualified students in the Information Technology, BS have the option of obtaining an accelerated Information Security and Assurance, MS.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies.

Admission Requirements

Students in the Information Technology, BS program may apply to this option if they have earned 60 undergraduate credits and take graduate

level courses after completion of 75 credits with an overall GPA of at least 3.30. Criteria for admission are identical to criteria for admission to the Information Security and Assurance, MS program.

Accelerated Option Requirements

Students must complete all credits that satisfy requirements for the BS and MS programs, with a minimum of 3 credits (maximum 6 credits) overlapping from the following courses:

Code	Title	Credits
ISA 562	Information Security Theory and Practice (satisfies IT 462 requirement in the BS INFT program)	3
ECE 646	Applied Cryptography (satisfies IT 466 requirement in the BS INFT program)	3

Note:

Students must complete MATH 125 Discrete Mathematics I (Mason Core) as their discrete math requirement and IT 306 Data Structures and Algorithms in Java as part of their concentration requirements in the BS program.

Degree Conferral

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and the VSE Graduate Admissions Office. At the completion of MS requirements, a master's degree is conferred.

Information Systems, MS

Banner Code: VS-MS-ISYS

Academic Advising

Phone: 703-993-1530
Email: csgrad@gmu.edu
Website: cs.gmu.edu/prospective-students/ms-programs/ms-in-information-systems/

Modern information systems manage data, information and knowledge to support enterprise functions and decision making as well as human social activity over the Internet. Increasingly, these systems are distributed, collaborative, involve big data and hosted in the cloud.

The mission of the MSIS program is to allow students of diverse baccalaureate and professional backgrounds to obtain a high-quality MS degree that:

- provides students with the theoretical knowledge and hands-on project experience needed to analyze, design, build, deploy, maintain, manage and promote effective organizational use of modern information systems;
- allows students to further specialize in related areas of big data, data and knowledge engineering, decision support systems, web-based software engineering and information security assurance; and,
- prepares students for careers in information systems in large and small organizations in both industry and government.

Career paths open to graduates include systems analyst, data administrator, database administrator, information architect, systems architect, decision analyst, data warehouse administrator, database application developer, web-based information systems designer and developer, information engineer, knowledge engineer, chief information officer, chief knowledge officer, chief privacy officer and project manager.

Admissions & Policies

Admissions

Eligibility and Application Requirements

Applicants must hold a four-year (120-credit minimum) baccalaureate degree from an accredited institution and have earned a GPA of 3.00 or better in the last 60 credits. Applicants also must submit the following:

- A one-page goals statement
- A work resume.
- International students must submit their English proficiency scores.

Policies

Foundation Requirements

To succeed in graduate courses, students entering the MS program must have coursework or equivalent knowledge in the following five foundation areas: (1) introductory programming in any programming language; (2) knowledge of an object-oriented programming language such as Java, C++, or C#; (3) data structures and algorithms; (4) machine organization such as those given in computer system architecture or assembly language courses; (5) and topics in discrete mathematics, including sets, propositional and predicate logic, relations, functions, trees, graphs, and inductive proofs.

The level of knowledge required in these areas is equivalent to that taught in undergraduate courses and may be demonstrated in one of several ways:

1. Applicable undergraduate coursework: Such courses must appear on transcripts from the student's undergraduate university, or another accredited university. Applicable courses from George Mason University and Northern Virginia Community College (NVCC) are given here:
   a. **Foundation:** OO programming
      - **GMU CS:** CS 211 Object-Oriented Programming
      - **GMU IT:** IT 106 Introduction to IT Problem Solving Using Computer Programming & IT 206 Object Oriented Techniques for IT Problem Solving
      - **NVCC:** CSC 201
   b. **Foundation:** Data structures
      - **GMU CS:** CS 310 Data Structures
      - **GMU IT:** IT 306 Data Structures and Algorithms in Java
      - **NVCC:** None
   c. **Foundation:** Machine organization
      - **GMU CS:** CS 367 Computer Systems and Programming or CS 465 Computer Systems Architecture
      - **GMU IT:** IT 342 Operating Systems Fundamentals
      - **NVCC:** None
   d. **Foundation:** Discrete math
      - **GMU Math:** MATH 125 Discrete Mathematics I (Mason Core)
      - **NVCC:** MATH 288

2. Preparatory coursework taken at GMU: The CS department offers the following bridge foundation courses: (1-2) SWE 510 Object-Oriented Programming in Java, (3) INFS 519 Program Design and Data Structures, (4) INFS 515 Computer Organization Course and Operating Systems, and (5) INFS 501 Discrete and Logical Structures for Information Systems. These courses may be taken by students in non-degree or provisional status.
3. Passing appropriate testout exams: Students can self-prepare and attempt testout exams for SWE 510 Object-Oriented Programming in Java, INFS 519 Program Design and Data Structures, INFS 515 Computer Organization Course and Operating Systems, and INFS 501 Discrete and Logical Structures for Information Systems. The exams are given before classes begin in January and August, and can only be taken once. Registration is not required; students need only be present at the date, time, and location specified and bring some form of photographic identification. Detailed information is available on the department web site. Students who fail any one of the exams must take the equivalent course before enrolling in the core curriculum courses.

Eligible domestic students who lack one or more foundation may be admitted provisionally and required to take the appropriate preparatory course or pass the testout exam. Other students may be advised to learn the foundation material and re-apply.

Advising

The department holds orientation meetings in January and August to advise newly admitted and continuing students. Members of the faculty are present to answer questions and offer advice concerning programs of study. Detailed information is available on the department web site (https://cs.gmu.edu/).

The department also provides an advising function to students, as outlined in the student advising form available from the department. Each student is assigned a faculty advisor with whom to confer on matters related to degree requirements. A plan of study form for the MS degree should be completed and submitted by the student soon after admission to the program. This plan serves as a guide for the student.

Requirements

Degree Requirements

Total credits: 30

Core Courses

To provide a common background in the fundamentals of information systems, the following core courses, which constitute the technical body of knowledge for the program, are required of all students. Students with strong academic background in mathematical foundations of computer science may have CS 530 Mathematical Foundations of Computer Science substituted for another elective course at the discretion of the program director.

Code	Title	Credits
CS 530	Mathematical Foundations of Computer Science	3
CS 550	Database Systems	3
INFS 612	Principles and Practices of Communication Networks	3
INFS 622	Information Systems Analysis and Design	3
INFS 740	Database Programming for the World Wide Web	3
Total Credits		15

Electives

Code	Title	Credits
Five courses selected from the lists which follow.		15
Total Credits		15

Electives are organized into the following emphasis areas: database management, data mining, electronic commerce, software engineering, knowledge management, and information security and assurance.

In addition to the core courses taken as part of the MS-ISYS curriculum, students may choose an emphasis within the program by taking five courses from one of the emphasis areas listed below. Students may also choose electives spanning several emphasis areas; they may also plan their electives so as to obtain certificates offered by the department. A list of approved electives is given within emphasis areas and by graduate program. A full list follows. Special topics courses may be used as electives with prior approval of the student's academic advisor and the graduate coordinator.

Students, with the consent of a faculty sponsor and faculty advisor, may also elect courses in individualized study, special topics, or a 6-credit thesis (INFS 799 Thesis), which is primarily intended for students planning to pursue a PhD in information technology with a concentration in information systems.

Database Management

Code	Title	Credits
CS 530	Mathematical Foundations of Computer Science	3
CS 787	Decision Guidance Systems	3
INFS 623	Web Search Engines and Recommender Systems	3
INFS 740	Database Programming for the World Wide Web	3
INFS 760	Advanced Database Management	3
INFS 772	Intelligent Agents and the Semantic Web	3
INFS 796	Directed Readings in Information Systems	3

Data Mining

Code	Title	Credits
CS 530	Mathematical Foundations of Computer Science	3
CS 657	Mining Massive Datasets with MapReduce	3
CS 782	Advanced Machine Learning	3
INFS 623	Web Search Engines and Recommender Systems	3
INFS 796	Directed Readings in Information Systems	3

Electronic Commerce

Code	Title	Credits
CS 530	Mathematical Foundations of Computer Science	3

INFS 640	Introduction to Electronic Commerce	3
INFS 770	Knowledge Management for E-Business	3
INFS 772	Intelligent Agents and the Semantic Web	3
INFS 774	Enterprise Architecture	3
INFS 796	Directed Readings in Information Systems	3
ISA 656	Network Security	3

Software Engineering

Code	Title	Credits
CS 530	Mathematical Foundations of Computer Science	3
SWE 619	Object-Oriented Software Specification and Construction	3
SWE 621	Software Design and Architecture	3
SWE 622	Distributed Software Engineering	3
SWE 625	Software Project Management	3
SWE 631	Software Design Patterns	3
SWE 632	User Interface Design and Development	3
SWE 637	Software Testing	3
SWE 642	Software Engineering for the World Wide Web	3
SWE 721	Reusable Software Architectures	3
SWE 795	Advanced Topics in Software Engineering	3

Knowledge Management

Code	Title	Credits
CS 530	Mathematical Foundations of Computer Science	3
CS 580	Introduction to Artificial Intelligence	3
CS 681	Instructable Cognitive Agents	3
INFS 623	Web Search Engines and Recommender Systems	3
INFS 740	Database Programming for the World Wide Web	3
INFS 770	Knowledge Management for E-Business	3
INFS 772	Intelligent Agents and the Semantic Web	3
INFS 774	Enterprise Architecture	3
INFS 796	Directed Readings in Information Systems	3

Information Security and Assurance

Code	Title	Credits
CS 530	Mathematical Foundations of Computer Science	3
CS 531	Computer Systems and Fundamentals of Systems Programming	3
ISA 562	Information Security Theory and Practice	3
ISA 652	Security Audit and Compliance Testing	3
ISA 656	Network Security	3
ISA 673	Operating Systems Security	3
ISA 674	Intrusion Detection	3
ISA 681	Secure Software Design and Programming	3
ISA 763	Security Protocol Analysis	3
ISA 764	Security Experimentation	3
ISA 785	Research in Digital Forensics	3
ISA 796	Directed Readings in Information Security	3

Certificates

Certificates may also be obtained in the following areas: Information Security and Assurance, and Software Engineering, with or without a concentration in Web-Based Software Engineering.

Approved Electives

Elective Areas by Program

- Information Systems (INFS)
- Information Security and Assurance (ISA)
- Software Engineering (SWE)
- Computer Science (CS)
- Electrical and Computer Engineering (ECE)
- Operations Research (OR)
- Psychology (PSYC)
- Statistics (STAT)
- Systems Engineering (SYST)

Information Systems (INFS)

Code	Title	Credits
INFS 623	Web Search Engines and Recommender Systems	3
INFS 640	Introduction to Electronic Commerce	3
INFS 697	Topics in Information Systems	1-6
INFS 740	Database Programming for the World Wide Web	3
INFS 760	Advanced Database Management	3
INFS 770	Knowledge Management for E-Business	3
INFS 772	Intelligent Agents and the Semantic Web	3
INFS 774	Enterprise Architecture	3
INFS 796	Directed Readings in Information Systems	3
INFS 797	Advanced Topics in Information Systems	1-6

Information Security and Assurance (ISA)

Code	Title	Credits
ISA 562	Information Security Theory and Practice	3
ISA 564	Security Laboratory	3
ISA 650	Security Policy	3
ISA 652	Security Audit and Compliance Testing	3
ISA 656	Network Security	3
ISA 673	Operating Systems Security	3
ISA 674	Intrusion Detection	3
ISA 681	Secure Software Design and Programming	3
ISA 697	Topics in Information Security	1-6
ISA 763	Security Protocol Analysis	3
ISA 764	Security Experimentation	3
ISA 785	Research in Digital Forensics	3
ISA 797	Advanced Topics in Information Security	3

Software Engineering (SWE)

Code	Title	Credits
SWE 620	Software Requirements Analysis and Specification	3
SWE 625	Software Project Management	3
SWE 626	Software Project Laboratory	3
SWE 631	Software Design Patterns	3
SWE 632	User Interface Design and Development	3
SWE 642	Software Engineering for the World Wide Web	3
SWE 645	Component-Based Software Development	3
SWE 699	Special Topics in Software Engineering	3
SWE 721	Reusable Software Architectures	3
SWE 763	Software Engineering Experimentation	3
SWE 795	Advanced Topics in Software Engineering	3
SWE 796	Directed Readings in Software Engineering	3
SWE 798	Research Project	3

Computer Science (CS)

Code	Title	Credits
CS 530	Mathematical Foundations of Computer Science	3
CS 531	Computer Systems and Fundamentals of Systems Programming	3
CS 540	Language Processors	3
CS 580	Introduction to Artificial Intelligence	3
CS 583	Analysis of Algorithms	3
CS 584	Theory and Applications of Data Mining	3
CS 635	Foundations of Parallel Computation	3
CS 640	Advanced Compilers	3
CS 650	Advanced Database Management	3
CS 657	Mining Massive Datasets with MapReduce	3
CS 662	Computer Graphics Game Technologies	3
CS 672	Computer System Performance Evaluation	3
CS 673	Multimedia Computing and Systems	3
CS 681	Instructable Cognitive Agents	3
CS 682	Computer Vision	3
CS 683	Parallel Algorithms	3
CS 684	Graph Algorithms	3
CS 685	Autonomous Robotics	3
CS 686	Image Processing and Applications	3
CS 687	Advanced Artificial Intelligence	3
CS 688	Machine Learning	3
CS 700	Research Methodology in Computer Science	3
CS 706	Concurrent Software Systems	3
CS 752	Interactive Graphics Software	3
CS 755	Advanced Computer Networks	3
CS 756	Performance Analysis of Computer Networks	3
CS 773	Real-Time Systems Design and Development	3
CS 777	Human-Computer Intelligent Interaction	3
CS 779	Topics in Resilient and Secure Computer Systems	3
CS 782	Advanced Machine Learning	3
CS 795	Advanced Topics in CS	3

Electrical and Computer Engineering (ECE)

Code	Title	Credits
ECE 511	Computer Architecture	3
ECE 521	Linear Systems and Control	3
ECE 528	Introduction to Random Processes in Electrical and Computer Engineering	3
ECE 535	Digital Signal Processing	3
ECE 545	Digital System Design with VHDL	3
ECE 584	Semiconductor Device Fundamentals	3
ECE 586	Digital Integrated Circuits	3
ECE 611	Advanced Computer Architecture	3
ECE 612	Real-Time Embedded Systems	3
ECE 620	Optimal Control Theory	3
ECE 621	Systems Identification	3
ECE 630	Statistical Communication Theory	3
ECE 633	Error Control Coding	3
ECE 635	Adaptive Signal Processing	3
ECE 642	Design and Analysis of Computer Communication Networks	3
ECE 643	Network Switching and Routing	3
ECE 645	Computer Arithmetic	3
ECE 646	Applied Cryptography	3
ECE 681	VLSI Design for ASICs	3
ECE 732	Mobile Communication Systems	3
ECE 734	Detection and Estimation Theory	3
ECE 741	Wireless Networks	3
ECE 746	Advanced Applied Cryptography	3

Operations Research (OR)

Code	Title	Credits
OR 541	Operations Research: Deterministic Models	3
OR 542	Operations Research: Stochastic Models	3
OR 635	Discrete System Simulation	3
OR 640	Global Optimization and Computational Intelligence	3
OR 641	Linear Programming	3
OR 642	Integer Programming	3
OR 643	Network Modeling	3
OR 644	Nonlinear Programming	3
OR 645	Stochastic Processes	3
OR 647	Queuing Theory	3
OR 681	Decision and Risk Analysis	3
OR 690	Optimization of Supply Chains	3

Psychology (PSYC)

Code	Title	Credits
PSYC 734	Seminar in Human Factors and Applied Cognition	3

Statistics (STAT)

Code	Title	Credits
STAT 544	Applied Probability	3
STAT 554	Applied Statistics I	3
STAT 652	Statistical Inference	3
STAT 656	Regression Analysis	3
STAT 662	Multivariate Statistical Methods	3
STAT 663	Statistical Graphics and Data Exploration I	3
STAT 674	Survey Sampling II	3

Systems Engineering (SYST)

Code	Title	Credits
SYST 520	System Engineering Design	3
SYST 530	Systems Engineering Management I	3
SYST 542	Decision Support Systems Engineering	3
SYST 560	Introduction to Air Traffic Control	3
SYST 573	Decision and Risk Analysis	3
SYST 611	System Methodology and Modeling	3
SYST 620	Discrete Event Systems	3
SYST 659	Topics in Systems Engineering	3
SYST 671	Judgment and Choice Processing and Decision Making	3
SYST 680	Principles of Command, Control, Communications, Computing, and Intelligence (C4I)	3
SYST 683	Modeling, Simulation, and Gaming	3

Accelerated Master's

Applied Computer Science, BS/ Information Systems, Accelerated MS

Overview

Highly-qualified students in the Applied Computer Science, BS program can complete both a BS-ACS and an Information Systems, MS in five years through the BS-MS accelerated (BAM) program.

General BAM policies are in the catalog under AP.6.7 Bachelor's/ Accelerated Master's Degrees. Policies governing all graduate degrees are in the catalog under AP.6 Graduate Policies.

Admission Requirements

Students in the Applied Computer Science, BS program are encouraged to apply to the BAM program after earning 60 undergraduate credits with an overall GPA of at least 3.30. Students must also have successfully completed CS 310 Data Structures and CS 330 Formal Methods and Models.

Accelerated Option Requirements

Students accepted to the BAM program may earn up to 12 credits of graduate coursework that count towards both the BS and MS degrees. They may begin taking graduate courses after completing 75 undergraduate credits and successfully completing CS 367 Computer Systems and Programming.

The following graduate courses can replace the corresponding undergraduate courses.

Code	Title	Credits
CS 540	Language Processors (to replace CS 440)	3
CS 550	Database Systems (to replace CS 450)	3
CS 551	Computer Graphics (to replace CS 451)	3
CS 555	Computer Communications and Networking (to replace CS 455)	3
CS 571	Operating Systems (to replace CS 471)	3
CS 580	Introduction to Artificial Intelligence (to replace CS 480)	3
CS 583	Analysis of Algorithms (to replace CS 483)	3
CS 584	Theory and Applications of Data Mining (to replace CS 484)	3
CS 587	Introduction to Cryptography (to replace CS 487)	3
SWE 619	Object-Oriented Software Specification and Construction (to replace SWE 419)	3
SWE 637	Software Testing (to replace SWE 437)	3
SWE 642	Software Engineering for the World Wide Web (to replace SWE 432)	3

Notes:

- Students may not use both the graduate course and the undergraduate alternative for their BS degree.
- Students must satisfy all recommended and required prerequisites for the graduate courses they take.
- Students also have the option to take up to 6 additional credits of graduate coursework *on reserve*, which can be used for the MS degree only.

Degree Conferral

Students must apply for degree conferral the semester before they expect to complete their BS requirements. At the beginning of their final undergraduate semester, students must submit a completed Bachelor's-Accelerated Master's Transition form to the CS department office. The master's degree will be conferred after the student completes the MS requirements.

Computer Science, BS/Information Systems, Accelerated MS

Overview

Highly-qualified students in the Computer Science, BS can complete both a BS-CS and an Information Systems, MS in five years through the BS-MS accelerated (BAM) program.

General BAM policies are in the catalog under AP.6.7 Bachelor's/ Accelerated Master's Degrees. Policies governing all graduate degrees are in the catalog under AP.6 Graduate Policies.

Admission Requirements

Students in the Computer Science, BS program are encouraged to apply to the BAM program after earning 60 undergraduate credits with an overall GPA of at least 3.30. Students must have successfully completed CS 310 Data Structures and CS 330 Formal Methods and Models.

Accelerated Option Requirements

Students accepted to the BAM program may earn up to 12 credits of graduate coursework that count towards both the BS and MS degrees. They may begin taking graduate courses after completing 75 undergraduate credits and successfully completing CS 367 Computer Systems and Programming.

The following graduate courses can replace the corresponding undergraduate courses.

Code	Title	Credits
CS 540	Language Processors (to replace CS 440)	3
CS 550	Database Systems (to replace CS 450)	3
CS 551	Computer Graphics (to replace CS 451)	3
CS 555	Computer Communications and Networking (to replace CS 455)	3
CS 571	Operating Systems (to replace CS 471)	3
CS 580	Introduction to Artificial Intelligence (to replace CS 480)	3
CS 583	Analysis of Algorithms (to replace CS 483)	3
CS 584	Theory and Applications of Data Mining (to replace CS 484)	3
CS 587	Introduction to Cryptography (to replace CS 487)	3
SWE 619	Object-Oriented Software Specification and Construction (to replace SWE 419)	3
SWE 637	Software Testing (to replace SWE 437)	3
SWE 642	Software Engineering for the World Wide Web (to replace SWE 432)	3

Note:

- Students may not use both the graduate course and the undergraduate alternative for their BS degree.
- Students must satisfy all recommended and required prerequisites for the graduate courses they take.
- Students also have the option to take up to 6 additional credits of graduate coursework *on reserve*, which can be used for the MS degree only.

Degree Conferral

Students must apply for degree conferral the semester before they expect to complete their BS requirements. At the beginning of their final undergraduate semester, students must submit a completed Bachelor's-Accelerated Master's Transition form to the CS department office. The master's degree will be conferred after the student completes the MS requirements.

Information Technology, BS/Information Systems, Accelerated MS

Overview

Highly-qualified students in the Information Technology, BS have the option of obtaining an accelerated Information Systems, MS.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies.

Admission Requirements

Students in the Information Technology, BS program may apply to this option if they have earned 60 undergraduate credits and take graduate level courses after completion of 75 credits with an overall GPA of at least 3.30. Criteria for admission are identical to the criteria for admission to the Information Systems, MS program.

Accelerated Option Requirements

Students must complete all credits that satisfy requirements for the BS and MS programs, with a minimum of 3 credits (maximum 6 credits) overlapping from the following courses:

Code	Title	Credits
CS 550	Database Systems (satisfies IT 414 requirement in the BS INFT program)	3
SWE 619	Object-Oriented Software Specification and Construction (satisfies as one DTP concentration course in the BS INFT program)	3

Note:

Students must complete MATH 125 Discrete Mathematics I (Mason Core) as their discrete math requirement and IT 306 Data Structures and Algorithms in Java as part of their concentration requirements in the BS program.

Degree Conferral

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and the VSE Graduate Admissions Office. At the completion of MS requirements, a master's degree is conferred.

Software Engineering Graduate Certificate

Banner Code: VS-CERG-SWE

Academic Advising

Phone: 703-993-1530
Email: csgrad@gmu.edu
Website: cs.gmu.edu/prospective-students/ms-programs/graduate-certificates/

This graduate certificate program provides knowledge, tools, and techniques to those who are working in or planning to work in software

engineering, but do not want to complete requirements for a master's degree in the field. The certificate may be pursued concurrently with any of the graduate degree programs in the Volgenau School of Engineering.

The graduate certificate may be pursued on a part-time or full-time basis.

Admissions & Policies

Admissions

General Concentration

Applicants must hold a baccalaureate degree from an accredited institution and have earned a GPA of 3.00 or higher in the last 60 credits. In addition, applicants must complete a self-assessment form, which can be obtained from the Computer Science Department (https://cs.gmu.edu/). This form provides summary information concerning background and preparation for the program.

Applicants must possess knowledge equivalent to the following undergraduate courses: structured programming in a modern programming language, data structures, discrete mathematics, and machine organization. The level of knowledge may also be achieved by taking the following foundation courses at Mason:

Code	Title	Credits
INFS 501	Discrete and Logical Structures for Information Systems	3
SWE 510	Object-Oriented Programming in Java	3
INFS 515	Computer Organization Course and Operating Systems	3
INFS 519	Program Design and Data Structures	3

In addition, it is desirable, but not necessary, for applicants to have at least one year of appropriate work experience in building or modifying software systems.

Applicants must submit a one- to two-page statement of educational and work experience in the computing field that includes a statement of career goals in software engineering. Students not enrolled in a graduate degree program at Mason should apply for the certificate program through Graduate Admissions. Students already enrolled in a Mason graduate degree program should apply to the department for admission into the certificate program. Admission into the certificate program does not guarantee acceptance into any MS program.

Web-Based Software Engineering Concentration

Applicants must hold a baccalaureate degree from an accredited institution and have earned a GPA of 3.00 or better in the last 60 credits. Applicants must complete a self-assessment form, which can be obtained from the department web site (https://cs.gmu.edu/). The form provides information concerning background and preparation for the program.

Applicants must possess knowledge equivalent to that provided by the following courses:

Code	Title	Credits
INFS 501	Discrete and Logical Structures for Information Systems	3
SWE 510	Object-Oriented Programming in Java	3
INFS 515	Computer Organization Course and Operating Systems	3
INFS 519	Program Design and Data Structures	3

Policies

Students must complete four courses with an average GPA of 3.0 or higher for a total of 12 credits of graduate study.

For policies governing all graduate certificates, see AP.6.8 Requirements for Graduate Certificates.

Requirements

Certificate Requirements

Total credits: 12

This certificate may be pursued on a full-or part-time basis.

Requirements

Students must complete all requirements within a concentration.

Concentration in General (GEN)

Code	Title	Credits
Select three courses from the following:		9
SWE 619	Object-Oriented Software Specification and Construction	
SWE 621	Software Design and Architecture	
SWE 632	User Interface Design and Development	
SWE 637	Software Testing	
Select one course from the following: [1]		3
CS 675	Distributed Systems	
CS 706	Concurrent Software Systems	
SWE 620	Software Requirements Analysis and Specification	
SWE 625	Software Project Management	
SWE 626	Software Project Laboratory	
SWE 631	Software Design Patterns	
SWE 632	User Interface Design and Development	
SWE 637	Software Testing	
SWE 645	Component-Based Software Development	
SWE 681	Secure Software Design and Programming	
SWE 699	Special Topics in Software Engineering	
SWE 721	Reusable Software Architectures	
SWE 760	Software Analysis and Design of Real-Time Systems	
SWE 763	Software Engineering Experimentation	
SWE 795	Advanced Topics in Software Engineering	
SWE 798	Research Project	
SYST 621	Systems Architecture Design	
Total Credits		12

[1] Subject to satisfying the prerequisites

Notes:
Students enrolled in the MS in Information Systems Program must substitute SWE 620 Software Requirements Analysis and Specification for INFS 622 Information Systems Analysis and Design to obtain this certificate. Credit is not given for taking both INFS 622 Information Systems Analysis and Design and SWE 620 Software Requirements Analysis and Specification; only 3 credits will be awarded.

Students enrolled in the MS in Computer Science Program may obtain a certificate in software engineering by taking any four SWE courses. If CS 706 Concurrent Software Systems is included, it is possible to complete the MS in Computer Science and the certificate in software engineering in 30 hours.

Concentration in Web-Based Software Engineering (WBSE)

Code	Title	Credits
Required Courses:		
SWE 632	User Interface Design and Development	3
SWE 642	Software Engineering for the World Wide Web	3
Select two from the following:		6
CS 550	Database Systems	
ISA 656	Network Security	
SWE 619	Object-Oriented Software Specification and Construction	
SWE 621	Software Design and Architecture	
SWE 637	Software Testing	
SWE 645	Component-Based Software Development	
SWE 681	Secure Software Design and Programming	
Total Credits		12

Software Engineering Minor

Banner Code: SWE

Academic Advising

Phone: 703-993-1530
Email: csinfo@gmu.edu
Website: cs.gmu.edu/current-students/undergraduates/software-engineering-minor/

Admissions & Policies

Admissions

Declaring a Software Engineering Minor

Students requesting a software engineering minor must have completed CS 112 Introduction to Computer Programming or CS 211 Object-Oriented Programming with a B or better.

Policies

General

Candidates for the minor in software engineering must complete 19 credits in software engineering with a minimum GPA of 2.00, 8 credits of which must be unique to the minor and not used for the major. For policies governing all minors, see AP.5.3.4 Minors.

Grades

No more than 3 credits of D grades may be used to satisfy minor requirements.

Requirements

Minor Requirements

Total credits: 19

Required Courses

Code	Title	Credits
CS 112	Introduction to Computer Programming	4
CS 211	Object-Oriented Programming	3
CS 310	Data Structures	3
Select three from the following:		9
SWE 205	Software Usability Analysis and Design	
CS 321	Software Engineering	
CS 332	Object-Oriented Software Design and Implementation	
SWE 432	Web Application Development	
SWE 437	Software Testing and Maintenance	
SWE 443	Software Architectures	
Total Credits		19

Software Engineering, MS

Banner Code: VS-MS-SWE

Academic Advising

Phone: 703-993-1530
Email: csgrad@gmu.edu
Website: cs.gmu.edu/prospective-students/ms-programs/ms-in-software-engineering/

The MS in Software Engineering (MS-SWE) prepares students to become leaders in engineering high quality, large scale, computing solutions to real life problems. Software engineering spans all aspects of developing software, including requirements analysis, design, construction, testing, usability, security, maintenance, and economics. Software engineering spans all types of software, including mobile and web applications, software services, enterprise software, and large complex systems. We revise courses regularly to keep up with changes in software engineering.

The MS-SWE program emphasizes pragmatic problem solving that addresses reliability, usability, future growth, security, cost, and efficiency. Graduates go on to technical leadership positions such as engineering lead, software architect, director of engineering, and CTO, as well as managerial and executive positions. MS-SWE students come from a diversity of undergraduate backgrounds, including computer science, engineering, mathematics, sciences, and business. The DC area has one of the largest collections of software companies in the world and the workforce is constantly growing, making our graduates in very high demand. Many MS-SWE students work full-time at companies that are

constantly hiring, making every class meeting a mini-job fair. All classes are scheduled in the late afternoon to accommodate part-time students.

Admissions & Policies

Admissions

To succeed in graduate courses, students entering the MS program must have coursework or equivalent knowledge in the following five foundation areas: (1) **introductory programming** in any programming language; (2) knowledge of an **object-oriented programming** language such as Java, C++, or C#; (3) **data structures** and algorithms; (4) **machine organization** such as those given in computer system architecture or assembly language courses; (5) and topics in **discrete mathematics**, including sets, propositional and predicate logic, relations, functions, trees, graphs, and inductive proofs.

The level of knowledge required in these areas is equivalent to that taught in undergraduate courses and may be demonstrated in one of several ways:

1. Applicable undergraduate coursework: Such courses must appear on transcripts from the student's undergraduate university, or another accredited university. Applicable courses from George Mason University and Northern Virginia Community College (NVCC) are given here:
   a. **Foundation:** OO programming
      - **GMU CS:** CS 211 Object-Oriented Programming
      - **GMU IT:** IT 106 Introduction to IT Problem Solving Using Computer Programming & IT 206 Object Oriented Techniques for IT Problem Solving
      - **NVCC:** CSC 201

   b. **Foundation:** Data structures
      - **GMU CS:** CS 310 Data Structures
      - **GMU IT:** IT 306 Data Structures and Algorithms in Java
      - **NVCC:** None

   c. **Foundation:** Machine organization
      - **GMU CS:** CS 367 Computer Systems and Programming or CS 465 Computer Systems Architecture.
      - **GMU IT:** IT 342 Operating Systems Fundamentals.
      - **NVCC:** None

   d. **Foundation:** Discrete math
      - **GMU Math:** MATH 125 Discrete Mathematics I (Mason Core)
      - **NVCC:** MATH 288
2. Preparatory coursework taken at GMU: The CS department offers the following bridge foundation courses: (1-2) SWE 510 Object-Oriented Programming in Java, (3) INFS 519 Program Design and Data Structures, (4) INFS 515 Computer Organization Course and Operating Systems, and (5) INFS 501 Discrete and Logical Structures for Information Systems. These courses may be taken by students in non-degree or provisional status.
3. Passing appropriate testout exams: Students can self-prepare and attempt testout exams for SWE 510 Object-Oriented Programming in Java, INFS 519 Program Design and Data Structures, INFS 515 Computer Organization Course and Operating Systems, and INFS 501 Discrete and Logical Structures for Information Systems. The exams are given before classes begin in January and August, and can only be taken once. Registration is not required; students need only be present at the date, time, and location specified and bring some form of photographic identification. Detailed information is available on the department web site. Students who fail any one of the exams must take the equivalent course before enrolling in the core curriculum courses.

Eligible domestic students who lack one or more foundation may be admitted provisionally and required to take the appropriate preparatory course or pass the testout exam. Other students may be advised to learn the foundation material and re-apply.

Application Requirements

In addition to general admission requirements of the university, each applicant to the MS program must hold a four-year (120-credit minimum) baccalaureate degree in an appropriate discipline from an accredited institution and have earned a GPA of 3.00 or better in the last 60 credits of undergraduate study. Other requirements are as follows:

- Provide a resume and a one- to two-page statement of educational and work experience in the computing field that includes a statement of career goals in software engineering.
- International students must submit their English Proficiency scores.

Policies

Program Requirements

In addition to the general requirements of the university, the MS in Software Engineering requires a minimum of 30 graduate credits. The coursework is divided into three categories: a breadth requirement of 12 credits of core courses, a depth requirement of 9 credits of emphasis courses, and 9 credits of elective courses.

Advising

The department holds orientation meetings each January and August to advise incoming and continuing students. Members of the faculty are present to answer questions and offer advice concerning programs of study. Detailed information is available on the department web site (https://cs.gmu.edu/).

The department also provides an advising function to students, as outlined in the student advising form available from the department. Each student is assigned a faculty advisor with whom to confer on matters related to degree requirements.

Requirements

Degree Requirements

Total credits: 30

Core Courses

Code	Title	Credits
SWE 619	Object-Oriented Software Specification and Construction	3
SWE 621	Software Design and Architecture	3
SWE 632	User Interface Design and Development	3
SWE 637	Software Testing	3
Total Credits		12

Software Engineering Related Courses

Code	Title	Credits
Students must take three courses from the following list:		9
Software Engineering		
Any SWE course at the 600-level or above.		
Computer Science		
CS 540	Language Processors	
CS 550	Database Systems [1]	
CS 555	Computer Communications and Networking	
CS 571	Operating Systems	
CS 675	Distributed Systems [2]	
Information Security and Assurance		
ISA 562	Information Security Theory and Practice	
ISA 650	Security Policy	
ISA 673	Operating Systems Security	
Information Systems		
INFS 740	Database Programming for the World Wide Web	
Operations Research		
OR 542	Operations Research: Stochastic Models	
Total Credits		9

1 Credit will not be given for both INFS 614 and CS 550.

2 Credit will not be given for both SWE 622 and CS 675.

Research Option

With the consent of a faculty sponsor and faculty advisor, students may complete a 6-credit thesis as part of the electives.

Electives

Students may select the remaining courses from the following list. Students may select courses not on this list with prior approval from the faculty advisor.

Code	Title	Credits
List of allowed electives:		9
All Software Engineering (SWE) courses at the 600-level or above.		
All Computer Science (CS) courses at the 500-level or above.		
All Information Security and Assurance (ISA) courses at the 600-level or above.		
All Information Systems (INFS) courses at the 600-level or above.		
Any of the following Electrical and Computer Engineering courses:		
ECE 542	Computer Network Architectures and Protocols	
ECE 612	Real-Time Embedded Systems	
Any of the following Operations Research courses:		
OR 531	Analytics and Decision Analysis	
OR 541	Operations Research: Deterministic Models	
OR 542	Operations Research: Stochastic Models	
Any of the following Statistics courses:		
STAT 544	Applied Probability	
STAT 554	Applied Statistics I	
Any of the following Systems Engineering courses:		
SYST 560	Introduction to Air Traffic Control	
SYST 659	Topics in Systems Engineering	
SYST 680	Principles of Command, Control, Communications, Computing, and Intelligence (C4I)	
Any of the following Psychology courses:		
PSYC 530	Cognitive Engineering: Cognitive Science Applied to Human Factors	
PSYC 734	Seminar in Human Factors and Applied Cognition	
Total Credits		9

Accelerated Master's

Applied Computer Science, BS/Software Engineering, Accelerated MS

Overview

Highly-qualified students in the Applied Computer Science, BS can complete both a BS-ACS and a Software Engineering, MS in five years through the BS-MS accelerated (BAM) program.

General BAM policies are in the catalog under AP.6.7 Bachelor's/Accelerated Master's Degrees. Policies governing all graduate degrees are in the catalog under AP.6 Graduate Policies.

Admission Requirements

Students in the Applied Computer Science, BS program are encouraged to apply to the BAM program after earning 60 undergraduate credits with an overall GPA of at least 3.30. Students must also have successfully completed CS 310 Data Structures and CS 330 Formal Methods and Models.

Accelerated Option Requirements

Students accepted to the BAM program may earn up to 12 credits of graduate coursework that count towards both the BS and MS degrees. They may begin taking graduate courses after completing 75 undergraduate credits and successfully completing CS 367 Computer Systems and Programming.

The following graduate courses can replace the corresponding undergraduate courses.

Code	Title	Credits
CS 540	Language Processors (to replace CS 440)	3
CS 550	Database Systems (to replace CS 450)	3
CS 551	Computer Graphics (to replace CS 451)	3
CS 555	Computer Communications and Networking (to replace CS 455)	3
CS 571	Operating Systems (to replace CS 471)	3
CS 580	Introduction to Artificial Intelligence (to replace CS 480)	3
CS 583	Analysis of Algorithms (to replace CS 483)	3

CS 584	Theory and Applications of Data Mining (to replace CS 484)	3
CS 587	Introduction to Cryptography (to replace CS 487)	3
SWE 619	Object-Oriented Software Specification and Construction (to replace SWE 419)	3
SWE 637	Software Testing (to replace SWE 437)	3
SWE 642	Software Engineering for the World Wide Web (to replace SWE 432)	3

Notes:

- Students may not use both the graduate course and the undergraduate alternative for their BS degree.
- Students must satisfy all recommended and required prerequisites for the graduate courses they take
- Students also have the option to take up to 6 additional credits of graduate coursework *on reserve*, which can be used for the MS degree only.

Degree Conferral

Students must apply for degree conferral the semester before they expect to complete their BS requirements. At the beginning of their final undergraduate semester, students must submit a completed Bachelor's-Accelerated Master's Transition form to the CS department office. The master's degree will be conferred after the student completes the MS requirements.

Computer Science, BS/Software Engineering, Accelerated MS

Overview

Highly-qualified students in the Computer Science, BS program can complete both a BS-CS and a Software Engineering, MS in five years through the BS-MS accelerated (BAM) program.

General BAM policies are in the catalog under AP.6.7 Bachelor's/Accelerated Master's Degrees. Policies governing all graduate degrees are in the catalog under AP.6 Graduate Policies.

Admission Requirements

Students in the Computer Science, BS program are encouraged to apply to the BAM program after earning 60 undergraduate credits with an overall GPA of at least 3.30. Students must also have successfully completed CS 310 Data Structures and CS 330 Formal Methods and Models .

Accelerated Option Requirements

Students accepted to the BAM program may earn up to 12 credits of graduate coursework that count towards both the BS and MS degrees. They may begin taking graduate courses after completing 75 undergraduate credits and successfully completing CS 367 Computer Systems and Programming.

The following graduate courses can replace the corresponding undergraduate courses.

Code	Title	Credits
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SWE 637	Software Testing (to replace SWE 437)	3
SWE 642	Software Engineering for the World Wide Web (to replace SWE 432)	3

Notes:

- Students may not use both the graduate course and the undergraduate alternative for their BS degree.
- Students must satisfy all recommended and required prerequisites for the graduate courses they take.
- Students also have the option to take up to 6 additional credits of graduate coursework *on reserve*, which can be used for the MS degree only.

Degree Conferral

Students must apply for degree conferral the semester before they expect to complete their BS requirements. At the beginning of their final undergraduate semester, students must submit a completed Bachelor's-Accelerated Master's Transition form to the CS department office. The master's degree will be conferred after the student completes the MS requirements.

Information Technology, BS/Software Engineering, Accelerated MS

Overview

Highly-qualified students in the Information Technology, BS have the option of obtaining an accelerated Software Engineering, MS.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies.

Admission Requirements

Students in the Information Technology, BS program may apply to this option if they have earned 60 undergraduate credits and take graduate level courses after completion of 75 credits with an overall GPA of at least 3.30. Criteria for admission are identical to criteria for admission to the Software Engineering, MS Program.

Accelerated Option Requirements

Students must complete all credits that satisfy requirements for the BS and MS programs, with a minimum of 3 credits (maximum 6 credits) overlapping from the following courses:

Code	Title	Credits
CS 550	Database Systems (satisfies IT 414 requirement in the BS INFT program)	3
SWE 619	Object-Oriented Software Specification and Construction (satisfies as one DTP concentration course in the BS INFT program)	3

Note:

Students must complete MATH 125 Discrete Mathematics I (Mason Core) as their discrete math requirement and IT 306 Data Structures and Algorithms in Java as part of their concentration requirements in the BS program

Degree Conferral

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and the VSE Graduate Admissions Office. At the completion of MS requirements, a master's degree is conferred.

Department of Cyber Security Engineering

Phone: 703-993-1636

Cyber Security Engineering is concerned with the development of cyber resilient systems which include the protection of the physical as well as computer and network systems. It requires a proactive approach in engineering design of physical systems with cyber security incorporated from the beginning of system development. Cyber security engineering is an important quantitative methodology to be used in all industries to include, but not limited to, transportation, energy, healthcare, infrastructure, finance, government (federal, state, and local), and defense. The Cyber Security Engineering Department is focused on academics and research for the cyber security engineering of integrated cyber-physical systems. The department prepares students with a foundation in cyber security engineering, and is most appropriate for students with a strong mathematics and science background.

Faculty

Department Faculty

Professors

Brouse, Wijesekera (Chair)

Associate Professors

Costa (Associate Chair), Gebril

Assistant Professors

Powell, Wei

Programs

- Cyber Security Engineering, BS
- Cyber Security Engineering, MS

Cyber Security Engineering, BS

Banner Code: VS-BS-CYSE

2215 Nguyen Engineering Building

Fairfax Campus

Phone: 703-993-1502
Email: pbrouse@gmu.edu

Cyber Security Engineering is concerned with the development of cyber-resilient systems which include the protection of physical as well as computer and network systems. It requires a proactive approach in engineering design of physical systems with cyber security incorporated from the beginning of system development. Cyber security engineering is an important quantitative methodology to be used in all industries including transportation, energy, healthcare, infrastructure, finance, government (federal, state, and local), and defense. The program is focused on the cyber security engineering of integrated cyber-physical systems. This degree provides a foundation in cyber security engineering and is most appropriate for students with a strong mathematics and science background.

Admissions & Policies

Policies

For policies governing all undergraduate degrees, see AP.5 Undergraduate Policies.

Advising and Plan of Study

All cyber security engineering students are assigned a faculty advisor. With the advisor's help and approval, each student is required to complete a plan of study, which constitutes a learning plan for the degree program. The plan of study must be signed by the student's advisor and the Program Chair and be updated and signed by the advisor at least once a year.

Change of Major

See Change of Major for more information.

Grade Requirements

Students in the Cyber Security Engineering, BS program must complete all mathematics, science, and VSE courses with a grade of C or better.

Termination from the Major Policy

No math, science, or Volgenau School of Engineering course that is required for the major may be attempted more than three times. Those students who do not successfully complete such a course within three attempts will be terminated from the major. Undeclared students in the Volgenau School who do not successfully complete a course required for a Volgenau School major within three attempts will also be terminated.

In addition, students in the Volgenau School with evidence of continued failure to make adequate progress toward declaring or completing a

Volgenau School major will be terminated from the school. Adequate progress is determined by the major program. For more information, see AP.5.2.4 Termination from the Major (https://catalog.gmu.edu/policies/academic/undergraduate-policies/#ap-5-2-4).

Once a student has attempted one of these courses twice unsuccessfully, the third attempt must be no later than the next semester of enrollment, excluding summers. Failure to take the course at that time will result in termination from the major. A third attempt of a Volgenau School of Engineering course requires support by the student's major department as well as permission by the department offering the course. This permission is not guaranteed. If the student is unable to take the course when required, the student may request an extension to a future semester; extensions require approval of the student's advisor, their department, and the Associate Dean for Undergraduate Programs. The deadline for extension requests is the add deadline for the semester in which the course is required.

Students who have been terminated from a Volgenau School of Engineering major may not register for a Volgenau School course without permission of the department offering the course. This applies to all undergraduate courses offered by the Volgenau School except IT 104 Introduction to Computing (Mason Core) and STAT 250 Introductory Statistics I (Mason Core).

A student may not declare any major in the Volgenau School of Engineering if the student has previously met the termination criteria for that major at any time, regardless of what the student's major was at the time the courses were taken.

Requirements

Degree Requirements

Total credits: 126

Cyber Security Engineering Core

Code	Title	Credits
Core Courses		
CYSE 101	Introduction to Cyber Security Engineering	3
CYSE 130	Introduction to Computing for Digital Systems Engineering	3
CYSE 211	Operating Systems and Lab	3
CYSE 230	Computer Networking	3
CYSE 411	Secure Software Engineering	3
CYSE 421	Industrial Control Systems Security	3
CYSE 425	Secure RF Communications	3
CYSE 430	Critical Infrastructure Protection	3
CYSE 445	System Security and Resilience	3
CYSE 450	Cyber Vulnerability Lab	1
CYSE 470	Human Factors and Cyber Security Engineering	3
CYSE 476	Cryptography Fundamentals	3
CYSE 491	Engineering Senior Seminar	2
CYSE 492	Senior Advanced Design Project I	2
CYSE 493	Senior Advanced Design Project II (Mason Core)	3
Technical Electives		
Select 9 credits from the following approved technical courses:		9
CYSE 424	Embedded and Real Time Systems	
CYSE 460	Power Systems and Smart Grid Security	
CYSE 462	Mobile Devices and Network Security	
CYSE 465	Transportation Systems Design	
CYSE 467	GPS Security	
CYSE 477	Intrusion Detection	
CYSE 478	Cyber Security Audit and Compliance	
CYSE 479	Methods of User Authentication	
CYSE 480	Reverse Software Engineering	
CYSE 499	Special Topics in Cyber Security Engineering	
Total Credits		50

Electrical and Computer Engineering

Code	Title	Credits
ECE 301	Digital Electronics	3
Total Credits		3

Systems Engineering

Code	Title	Credits
SYST 205	Systems Engineering Principles	3
Total Credits		3

Mathematics and Statistics

Code	Title	Credits
MATH 113	Analytic Geometry and Calculus I (Mason Core)	4
MATH 114	Analytic Geometry and Calculus II	4
MATH 125	Discrete Mathematics I (Mason Core)	3
MATH 203	Linear Algebra	3
MATH 213	Analytic Geometry and Calculus III	3
MATH 214	Elementary Differential Equations	3
STAT 344	Probability and Statistics for Engineers and Scientists I	3
Total Credits		23

Natural Sciences

Code	Title	Credits
PHYS 160	University Physics I (Mason Core)	3
PHYS 161	University Physics I Laboratory (Mason Core)	1
PHYS 260	University Physics II (Mason Core)	3
PHYS 261	University Physics II Laboratory (Mason Core)	1
Total Credits		8

Computing

Code	Title	Credits
CS 112	Introduction to Computer Programming	4
SYST 230	Object-oriented Modeling and Design	4

CS 222	Computer Programming for Engineers	3
Total Credits		11

Engineering

Code	Title	Credits
ENGR 107	Introduction to Engineering (Mason Core)	2
Total Credits		2

Oral Communication and Economics

Code	Title	Credits
COMM 100	Public Speaking (Mason Core)	3
or COMM 101	Fundamentals of Communication (Mason Core)	
ECON 103	Contemporary Microeconomic Principles (Mason Core)	3
Total Credits		6

Remaining Mason Core

Students must complete all Mason Core requirements not fulfilled by major requirements.

Code	Title	Credits
Written Communication		6
Literature		3
Arts		3
Western Civilization/World History		3
Global Understanding		3
Total Credits		18

Note:
All students must submit at least 24 credits of social science and humanities coursework, which is normally satisfied by the 24 credits of Mason Core social science and humanities courses listed above and with the oral communication and economics requirement.

4-Year Plan

Bachelor of Science in Cyber Security Engineering Sample Plan of Study

Detailed four year plans and degree planning checklists can be found at https://advising.gmu.edu/current-student/majors-at-mason/.

Accelerated Master's

Cyber Security Engineering, BS/Computer Engineering, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BS in Cyber Security Engineering and an MS in Computer Engineering in an accelerated time-frame after satisfactory completion of a minimum of 150 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) for policies related to this program.

This accelerated option is offered jointly by the Cyber Security Engineering Department and the Electrical and Computer Engineering Department.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/).

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits with an overall GPA of 3.0.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MS program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form: 3.0 overall GPA, successfully meeting Mason's requirements for undergraduate degree conferral (graduation), and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced standing courses: Students may take up to 6 credits of graduate-level courses that will count as advanced standing (i.e., overlap between the BS/MS program) from the list below:

Code	Title	Credits
ECE 505	Hardware Security	3
ECE 508	Internet of Things	3
ECE 511	Computer Architecture	3
ECE 512	Computer Architecture Security	3
ECE 542	Computer Network Architectures and Protocols	3

These courses may be used as technical electives in the Cyber Security Engineering, BS program.

Reserve credit courses: Additional courses (up to 6 credits) may be selected from the above list as credits to be put on reserve to be later applied to the graduate program. Students can take these courses while undergraduates but these reserve courses will only count for the graduate degree program.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7).

Cyber Security Engineering, BS/Cyber Security Engineering, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BS in Cyber Security Engineering and an MS in Cyber Security Engineering in an accelerated time-frame after satisfactory completion of a minimum of 144 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degree for policies related to this program.

This accelerated option is offered by the Department of Cyber Security Engineering.

Students in an accelerated degree program must fulfil all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits with an overall GPA of 3.0.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific prerequisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MS program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- 3.0 overall GPA,
- successfully meeting Mason's requirements for undergraduate degree conferral (graduation),
- and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing Courses

Students may take up to 12 credits of graduate-level courses that will count as advanced standing (i.e., overlap between the BS/MS program) from the list below:

Code	Title	Credits
CYSE 521	Industrial Control Systems Security	3
CYSE 570	Fundamentals of Operating Systems	3
CYSE 580	Hardware and Cyber Physical Systems	3
CYSE 587	Cyber Security Systems Engineering	3

These courses may be used as technical electives in the Cyber Security Engineering, BS program.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degree policies.

Cyber Security Engineering, BS/Digital Forensics, Accelerated MS

Overview

Highly-qualified students in the Cyber Security Engineering, BS have the option of obtaining an accelerated Digital Forensics, MS.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies.

Admission Requirements

Students in the Cyber Security Engineering, BS program may apply for this option if they have earned 90 undergraduate credits with an overall GPA of at least 3.25. Criteria for admission are identical to criteria for admission to the Digital Forensics, MS program.

Accelerated Option Requirements

Students must complete all credits that satisfy requirements for the BS and MS programs, with 6 credits overlapping.

Students register for two Digital Forensics core courses (6 credits) in place of two of the three required technical electives, as part of the undergraduate degree requirements.

Note: Students complete all Digital Forensics, MS core courses and apply the two courses from the above list toward the Digital Forensics, MS requirements.

Degree Conferral

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and the VSE Graduate Admissions Office. At the completion of MS requirements, a master's degree is conferred.

Cyber Security Engineering, BS/Operations Research, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a Cyber Security Engineering, BS and an Operations Research, MS in an accelerated time-frame after satisfactory completion of a minimum of 144 credits.

Admitted students are able to use up to 12 graduate credits in partial satisfaction of requirements for the undergraduate degree. Upon completion and conferral of the bachelor's degree and with satisfactory performance (grade of 'B' or better) in each of the graduate courses, students are given advanced standing in the master's program.

See AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate

degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/).

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Cyber Security Engineering, BS students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits with an overall GPA of at least 3.3, and completion of all MATH and PHYS requirements. Students must additionally complete MATH 203 Linear Algebra prior to applying for the graduate program.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

The criteria for admission are identical to criteria for admission to the Operations Research, MS program. Students already admitted in the BAM Pathway will be admitted to the Operations Research, MS program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- An overall GPA of at least 3.3
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing course: Students must complete all credits that satisfy requirements for both the BS and MS programs. Up to four courses (12 credits) of approved master's level courses taken as part of the undergraduate degree may be applied to the graduate degree. The courses selected for this purpose must be approved by the academic advisors of both the BS and MS programs and by the SEOR department chair. For the BS programs that allow undergraduate electives from the department of system engineering and operations research, the students may choose the graduate version of such elective courses to replace the corresponding undergraduate courses.

- Students selecting up to two courses (6 credits) of approved master's level courses may select from the combined Cyber Security Engineering course list and Systems Engineering and Operations Research course list given below.
- Students selecting up to three or four courses (9 or 12 credits) of approved master's level courses may select at most two courses from the Cyber Security Engineering course list and select the remaining courses from the Systems Engineering and Operations Research course list given below. Students are highly recommended to select courses marked as core courses because it applies to the master's degree regardless of the graduate-level concentration chosen in the Operations Research, MS. The undergraduate version of these courses, if any, may *not* be applied toward the Operations Research, MS. Credit may not be received for both the undergraduate and graduate version of these courses.
- Some of the courses in the Systems Engineering and Operations Research course list applies only to certain concentrations in the Operations Research, MS program.
- Students must pay attention to the prerequisites required for a course, and the master's degree concentration that the course may satisfy.

Select at most two from the following Cyber Security Engineering courses:

Code	Title	Credits
CYSE 570	Fundamentals of Operating Systems	
CYSE 580	Hardware and Cyber Physical Systems	

Select the remaining from the following Systems Engineering and Operations Research courses:

Code	Title	Credits
SYST 521	Network Analysis	
OR 538	Analytics for Financial Engineering and Econometrics	
OR 541	Operations Research: Deterministic Models (Core)	
OR 542	Operations Research: Stochastic Models (Core)	
OR 568	Applied Predictive Analytics (Core)	
OR 588	Financial Systems Engineering I: Introduction to Options, Futures, and Derivatives	

While still in undergraduate status, a maximum of 6 additional graduate credits may be taken as reserve graduate credit and applied to the master's program. Reserve graduate credits do not apply to the undergraduate degree.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text).

Degree Conferral

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and the VSE Graduate Admissions Office. At the completion of MS requirements, a master's degree is conferred.

Cyber Security Engineering, BS/Systems Engineering, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a Cyber Security Engineering, BS and a Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) in an accelerated time-frame after satisfactory completion of a minimum of 144 credits.

Admitted students are able to use up to 12 graduate credits in partial satisfaction of requirements for the undergraduate degree. Upon

completion and conferral of the bachelor's degree and with satisfactory performance (grade of 'B' or better) in each of the graduate courses, students are given advanced standing in the master's program.

See AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/).

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Cyber Security Engineering, BS students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits with an overall GPA of at least 3.3, and completion of all MATH and PHYS requirements.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

The criteria for admission are identical to criteria for admission to the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program. Students already admitted in the BAM Pathway will be admitted to the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- An overall GPA of at least 3.3
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing course: Students must complete all credits that satisfy requirements for both the BS and MS programs. Up to four courses (12 credits) of approved master's level courses taken as part of the undergraduate degree may be applied to the graduate degree. The courses selected for this purpose must be approved by the academic advisors of both the BS and MS programs and by the SEOR department chair. For the BS programs that allow undergraduate electives from the department of system engineering and operations research, the students may choose the graduate version of such elective courses to replace the corresponding undergraduate courses.

- Students selecting up to two courses (6 credits) of approved master's level courses may select from the combined Cyber Security Engineering course list and Systems Engineering and Operations Research course list given below.
- Students selecting up to three or four courses (9 or 12 credits) of approved master's level courses may select at most two courses from the Cyber Security Engineering course list and select the remaining courses from the Systems Engineering and Operations Research course list given below. Students are highly recommended to select courses marked as core courses because it applies to the master's degree regardless of the graduate-level concentration chosen in the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program. The undergraduate version of these courses, if any, may *not* be applied toward the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/). Credit may not be received for both the undergraduate and graduate version of these courses.
- Except for the courses marked as core, any course chosen from either course list can be used to satisfy SYST 505 Systems Engineering Principles core requirement in the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program.
- Some of the courses in the Systems Engineering and Operations Research course list applies only to certain concentrations in the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program.
- Students must pay attention to the prerequisites required for a course, and the master's degree concentration that the course may satisfy.

Select at most two from the following Cyber Security Engineering courses:

Code	Title	Credits
CYSE 570	Fundamentals of Operating Systems	
CYSE 580	Hardware and Cyber Physical Systems	

Select the remaining from the following Systems Engineering and Operations Research courses:

Code	Title	Credits
SYST 510	Systems Definition and Cost Modeling (Core)	
SYST 514	Systems Thinking	
SYST 520	System Engineering Design (Core)	
SYST 530	Systems Engineering Management I (Core)	
SYST 542	Decision Support Systems Engineering	
SYST 573	Decision and Risk Analysis	
SYST 538	Analytics for Financial Engineering and Econometrics	
SYST 560	Introduction to Air Traffic Control	
SYST 563	Evidence-Based Systems Engineering	
SYST 568	Applied Predictive Analytics	
SYST 584	Heterogeneous Data Fusion	
SYST 588	Financial Systems Engineering I: Introduction to Options, Futures, and Derivatives	

While still in undergraduate status, a maximum of 6 additional graduate credits may be taken as reserve graduate credit and applied to the

master's program. Reserve graduate credits do not apply to the undergraduate degree.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text).

Degree Conferral

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and the VSE Graduate Admissions Office. At the completion of MS requirements, a master's degree is conferred.

Cyber Security Engineering, MS

Banner Code: VS-MS-CYSE

The field of cyber security engineering is concerned with the development of cyber-resilient systems that include the protection of physical as well as computer and network systems. It requires a proactive approach in engineering the design of systems, with cybersecurity incorporated from the beginning of system development. The purpose of the MS in Cyber Security Engineering is to provide students with the currently rare combination of highly technical knowledge and skills, cyber security expertise, and a holistic systems engineering perspective. The program provides instruction on the design, planning, and management of systems and procedures for protecting critical physical and cyber infrastructure from external threats, including terrorism. The program provides students with the deep technical foundations of cyber security in the form of software, hardware, networking, and cryptography, as well as systems engineering tools and methods to design and secure complex cyber physical systems. Students learn homeland security policy, critical infrastructure policy, information security, matrix vulnerability assessment, threat assessment, physical security, personnel security, operational security, contingency planning, case analyses of specific industries and systems, redundancy planning, emergency and disaster planning, security systems, and intelligence operations. Graduates are prepared to design and implement secure complex and cyber-physical systems consisting of software, hardware, and networking components; respond to, investigate, and remediate incidents involving these systems; and develop offensive and defensive tools and techniques to attack and secure these systems.

Admissions & Policies

Admissions

The MS in Cyber Security Engineering will build on the body of knowledge acquired in undergraduate programs of study in engineering, computer science, or closely related disciplines. As such, applicants will be expected to have a bachelor's degree in engineering, computer science, or closely related disciplines and to have completed the engineering math sequence as well as courses in probability and statistics, and computer science. A minimum undergraduate GPA of 3.00 is required.

Policies

Students must complete a minimum of 30 graduate credits beyond the bachelor's degree with a GPA of 3.00 or higher, with no more than 6 credit hours of C grades. The plan of study includes a 21 credit required Core component which includes a mandatory capstone course, and 9 credits of electives.

Requirements

Degree Requirements

Total credits: 30

Code	Title	Credits
Required Coursework		
CYSE 550	Cyber Security Engineering Fundamentals	3
CYSE 570	Fundamentals of Operating Systems	3
CYSE 580	Hardware and Cyber Physical Systems	3
CYSE 610	Networks and Cyber Security	3
CYSE 587	Cyber Security Systems Engineering	3
CYSE 690	Cyber Security Engineering Capstone Project	3
or CYSE 799	Cyber Security Engineering Master Thesis	
Total Credits		18

No Concentration

Code	Title	Credits
Electives		
Select four courses from the following (three in case of MS Thesis option):		12
AIT 670	Cloud Computing Security	
BIOD 760	National Security Technology and Policy	
CYSE 521	Industrial Control Systems Security	
CYSE 650	Topics in Cyber Security Engineering	
CYSE 670	Secure Design of Connected and Automated Vehicles	
CYSE 680	Advanced Manufacturing Automation Security	
CYSE 681	Secure Energy Efficient Supply Chains	
CYSE 682	Formal Methods for Cyber Physical Systems Security	
CYSE 683	Reverse Engineering Industrial Automation	
CYSE 698	Independent Study and Research	
CYSE 750	Advanced Topics in Cyber Security Engineering	
CYSE 799	Cyber Security Engineering Master Thesis (If thesis option is chosen.)	
DFOR 761	Malware Reverse Engineering	
DFOR 767	Penetration Testing in Digital Forensics	
DFOR 775	Kernel Forensics and Analysis	
ECE 527	Learning From Data	
ECE 646	Applied Cryptography	
ECE 746	Advanced Applied Cryptography	
GBUS 540	Analysis of Financial Decisions	
INFS 622	Information Systems Analysis and Design	
ISA 673	Operating Systems Security	
ISA 681	Secure Software Design and Programming	

or SWE 681	Secure Software Design and Programming
SYST 548	Technologies and Security for Cryptocurrencies and Financial Transactions
Total Credits	12

Concentration in Secure Advanced Manufacturing and Supply Chains (SAMS)

Code	Title	Credits
Required Coursework		6
CYSE 680	Advanced Manufacturing Automation Security	
CYSE 681	Secure Energy Efficient Supply Chains	
Electives		6
CYSE 521	Industrial Control Systems Security	
CYSE 682	Formal Methods for Cyber Physical Systems Security	
CYSE 683	Reverse Engineering Industrial Automation	
CYSE 799	Cyber Security Engineering Master Thesis (If thesis option is chosen.)	
Total Credits		12

Accelerated Master's

Cyber Security Engineering, BS/Cyber Security Engineering, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BS in Cyber Security Engineering and an MS in Cyber Security Engineering in an accelerated time-frame after satisfactory completion of a minimum of 144 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degree for policies related to this program.

This accelerated option is offered by the Department of Cyber Security Engineering.

Students in an accelerated degree program must fulfil all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits with an overall GPA of 3.0.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific prerequisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MS program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- 3.0 overall GPA,
- successfully meeting Mason's requirements for undergraduate degree conferral (graduation),
- and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing Courses

Students may take up to 12 credits of graduate-level courses that will count as advanced standing (i.e., overlap between the BS/MS program) from the list below:

Code	Title	Credits
CYSE 521	Industrial Control Systems Security	3
CYSE 570	Fundamentals of Operating Systems	3
CYSE 580	Hardware and Cyber Physical Systems	3
CYSE 587	Cyber Security Systems Engineering	3

These courses may be used as technical electives in the Cyber Security Engineering, BS program.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degree policies.

Department of Electrical and Computer Engineering

Phone: 703-993-1569
Email: ece@gmu.edu
Website: ece.gmu.edu

Undergraduate Programs

The undergraduate education mission of the Department of Electrical and Computer Engineering (ECE) is to provide a quality education for electrical engineering and computer engineering students to support the needs of Virginia and the nation.

Program Educational Objectives for the BS ELEN and BS CPE

Graduates of the Electrical Engineering and the Computer Engineering programs are expected within three to five years of graduation to have:

- Established themselves as successful and productive engineering professionals or engaged in advanced study such as a graduate degree program.
- Worked effectively in team environments and individually.
- Fulfilled their responsibilities in the areas of ethics, continuing professional development, and effective communications.

Graduate Programs

Graduate programs leading to MS and PhD degrees prepare students for careers in industry, government, and academia. Graduate certificate programs provide well-defined targets for students who want to advance or update their knowledge in selected areas. The ECE department offers the PhD in Electrical and Computer Engineering and master's degrees in computer engineering, electrical engineering, telecommunications, and digital forensics, and certificates in communications, forensics, networking, and small satellite engineering.

The ECE department is committed to high standards of teaching and research excellence in communications, computer networks, bioengineering, digital systems design, microprocessor and embedded systems, distributed computing, high performance computing, signal and image processing, control systems, robotics, intelligent systems, systems integration, space-based systems, and nanoelectronics. Graduate students are offered a progressive environment with ample opportunities for the type of advanced research needed to confront the complex realities of the 21st century.

Courses in the department's graduate programs are offered during the evening or late afternoon hours to accommodate students who are employed full time. For those who enter a program on a full-time basis, some financial aid may be available in various forms, such as teaching assistantships or research assistantships.

Faculty

Department Faculty

Professors

Ephraim, Gaj, Hayes (Chair), Ioannou, Jabbari, Li, Manitius, Mark, Mulpuri, Tian

Associate Professors

Berry, Huang, Jones, Kaps, Kurtay (Associate Chair), Lorie, Nelson, Osgood, Pachowicz, Paris, Peixoto, Sasan, Soyata, Wage, Zeng

Assistant Professors

Chen, Jiang, Khasawneh, Nowzari, Parsa, Pudukotai D., Wang, Yao

Research Professors

Elder, Katona

Adjunct Professors

Abgariah, Allen, Beatty, Boci, Bollino, Cowart, Deavers, De La Barre, Diehl, Douglas, Eppley, Garfinkel, Gibson, Greenhill, Hassan, Horton, Hrnjez, Hyde, Irvine, Kaur, Khan, Khan, Larkin, Lawson, Lin, Long, Loveall, Maiden, McFadden, Neshatpour, Opacki, Robinson, Rothwell, Sabzevari, Sachdev, Schaefer, Shenkar, Sheppard, Skirlo, Steele, Shyy, Tran, Vargas, Williams, Wu, Yun

Emeritus Faculty

Allnutt, Baraniecki, Beale, Black, Ceperley, Chang, Cook, Gertler, Griffiths (Dean Emeritus), Hintz, Levis, Schaefer, Sutton, Tabak, Van Trees

Programs

- Advanced Networking Protocols for Telecommunications Graduate Certificate
- Computer Engineering, BS
- Computer Engineering, MS
- Digital Forensics, MS
- Electrical Engineering, BS
- Electrical Engineering, MS
- Electrical and Computer Engineering Minor
- Electrical and Computer Engineering, PhD
- Small Satellite Engineering Graduate Certificate
- Systems Engineering Graduate Certificate (ECE)
- Telecommunications Forensics and Security Graduate Certificate
- Telecommunications, MS

Advanced Networking Protocols for Telecommunications Graduate Certificate

Banner Code: VS-CERG-ANPT

Academic Advising

MSN 2B5
4400 University Drive
Fairfax, VA 22030

Phone: 703-993-3810
Email: tcom@gmu.edu
Website: ece.gmu.edu

The Advanced Networking Protocols for Telecommunications certificate program offers courses on Internet Routing and Network Security. This graduate certificate program is designed for those who are working in or planning to work in the telecommunication industry but do not want to complete requirements for a master's degree in the field. The certificate may be pursued on a part-time or full-time basis. The certificate may also be pursued concurrently with any of the graduate degree programs in the Volgenau School of Engineering.

Admissions & Policies

Policies

This certificate may be pursued on a full-or part-time basis.

For all policies governing Graduate Certificates, please see AP.6.8 Requirements for Graduate Certificates.

Requirements

Certificate Requirements

Total credits: 15

This certificate may be pursued on a full-or part-time basis.

Core Courses

Code	Title	Credits
TCOM 609	Interior Gateway Protocol (IGP) Routing	3
TCOM 610	Border Gateway Protocol (BGP) Routing	3
TCOM 515	Internet Protocol Routing: Lecture and Laboratory Course	3
or TCOM 535	The TCP/IP Suite of Internet Protocols	
Total Credits		9

Electives

Code	Title	Credits
Select 6 credits from the following:		6
TCOM 515	Internet Protocol Routing: Lecture and Laboratory Course [1]	
TCOM 535	The TCP/IP Suite of Internet Protocols [1]	
TCOM 611	Multi-Protocol Label Switching (MPLS)	
TCOM 631	Voice Over IP	
TCOM 662	Advanced Secure Networking	
Total Credits		6

[1] May not be taken twice for credit. If a student takes TCOM 515 and TCOM 535 in the core element, the course(s) may not be taken again in the elective element.

Computer Engineering, BS

Banner Code: VS-BS-CPE

Academic Advising

MSN 1G5
4400 University Drive
Fairfax, VA 22030

Phone: 703-993-1569
Email: ece@gmu.edu
Website: https://ece.gmu.edu/academics/undergraduate

The field of computer engineering can be described as an amalgam of hardware and software design. Computer engineers are involved in research, design, development, production, and operation of a wide variety of digital systems, from integrated circuits through microcontrollers, multi-core processors, FPGA-based accelerators, to big-data and cloud computing platforms. Reflecting the industry trend to integrate hardware and software development, the computer engineering program is built around computer-aided design tools that can simulate and assist in the design of new digital systems, such as those found in smartphones, tablets, robots, autonomous vehicles, drones, spacecraft, computer networks, smart factories, defense systems, and the internet-of-things. Advanced languages, such as VHDL and Python, and software tools, such as those used for FPGA- and ASIC-design and simulation, can be used to model hardware and software functionality from the system and architecture level down to the gate and transistor levels. Design, optimization, verification, and testing methodology involving these tools are taught in the program. Hands-on design experiences and simulation are emphasized throughout the curriculum through labs and projects integrated into various courses. The program culminates in a year-long senior design project effort which provides each student with the opportunity to apply concepts to designing, innovating and building a functional hardware system in a team environment.

The Department of Electrical and Computer Engineering is staffed by 33 full-time professors and several part-time professors.

The bachelor's program in Computer Engineering is accredited by the Engineering Accreditation Commission of ABET, http://www.abet.org.

Career Opportunities

Career opportunities exist in engineering design and development such as hardware/software co-design and integration, embedded system programming, mobile system and application development, robot and drone design, and cloud and big data computing. Other opportunities include engineering management, consultancy, technical sales, and patent law. The program provides a strong preparation for graduate study.

Specializations

The curriculum provides a strong background in the fundamentals of computer engineering. A number of technical elective specializations are offered, ranging from primarily hardware-oriented to those that are more software-oriented. These include robotics, embedded systems, computer networks, internet of things, power and energy systems and hardware and system security. The curriculum includes 9 credits of senior technical electives, which may be used for specialization in one of these technical areas.

Additional Information

The requirements for the degree may be satisfied on a full-time or part-time basis. Cooperative education provides students the opportunity to integrate paid career-related work experience with classroom learning. Academic credit towards the completion of major requirements cannot be given for co-op experience. In addition to the usual financial aid available through the Office of Student Financial Aid, computer engineering majors are encouraged to apply for scholarships provided by various professional societies and industrial organizations in their field.

Admissions & Policies

Policies

For policies governing all undergraduate degrees, see AP.5 Undergraduate Policies.

Writing-Intensive Requirement

Mason's writing-intensive requirement is satisfied by the following two courses: ECE 333 Linear Electronics I and ECE 491 Engineering Seminar in which faculty provide writing instruction and feedback on student technical writing assignments. Drafts and revisions are required.

Change of Major

See Change of Major for more information.

Double Major and Minor Programs for Computer Engineering and Electrical Engineering

Computer Engineering majors and Electrical Engineering majors can earn degrees with double majors in a number of disciplines. Computer Engineering and Computer Science may be combined. Electrical Engineering has been combined with Computer Engineering, Mechanical Engineering, Computer Science, Physics, or Math. Details are available in the department brochures or at the Volgenau School website (http://

volgenau.gmu.edu). There are several minors available for students in the ECE Department including the Mechanical Engineering minor, Bioengineering minor and others as listed in the catalog.

Grade Requirements

All computer engineering students are strongly encouraged to see their major faculty advisor each semester before course registration.

Students must complete each ECE, ENGR, BENG, CS, MATH, PHYS and STAT course presented as part of the required 126 credits for the degree with a grade of C or better.

Students must also complete any course required by the program that is a prerequisite to another course applicable to the degree with a grade of C or better.

Termination from the Major

No math, science, or Volgenau School of Engineering course that is required for the major may be attempted more than three times. Those students who do not successfully complete such a course within three attempts will be terminated from the major. Undeclared students in the Volgenau School who do not successfully complete a course required for a Volgenau School major within three attempts will also be terminated.

In addition, students in the Volgenau School with evidence of continued failure to make adequate progress toward declaring or completing a Volgenau School major will be terminated from the school. Adequate progress is determined by the major program. For more information, see AP.5.2.4 Termination from the Major (https://catalog.gmu.edu/policies/academic/undergraduate-policies/#ap-5-2-4).

Once a student has attempted one of these courses twice unsuccessfully, the third attempt must be no later than the next semester of enrollment, excluding summers. Failure to take the course at that time will result in termination from the major. A third attempt of a Volgenau School of Engineering course requires support by the student's major department as well as permission by the department offering the course. This permission is not guaranteed. If the student is unable to take the course when required, the student may request an extension to a future semester; extensions require approval of the student's advisor, their department, and the Associate Dean for Undergraduate Programs. The deadline for extension requests is the add deadline for the semester in which the course is required.

Students who have been terminated from a Volgenau School of Engineering major may not register for a Volgenau School course without permission of the department offering the course. This applies to all undergraduate courses offered by the Volgenau School except IT 104 Introduction to Computing (Mason Core) and STAT 250 Introductory Statistics I (Mason Core).

A student may not declare any major in the Volgenau School of Engineering if the student has previously met the termination criteria for that major at any time, regardless of what the student's major was at the time the courses were taken.

Requirements

Degree Requirements

Total credits: 126

Electrical and Computer Engineering

Code	Title	Credits
ECE 101	Introduction to Electrical and Computer Engineering	3
ECE 201	Introduction to Signals and Systems	3
ECE 231	Digital System Design	3
ECE 232	Digital System Design Lab	1
ECE 285	Electric Circuit Analysis I	3
ECE 286	Electric Circuit Analysis II	3
ECE 321	Continuous-Time Signals and Systems	3
ECE 333	Linear Electronics I	3
ECE 334	Linear Electronics Lab I	1
ECE 350	Embedded Systems and Hardware Interfaces	3
ECE 445	Computer Organization	3
ECE 447	Microcontrollers	4
ECE 448	FPGA Design with VHDL	4
ECE 465	Computer Networking Protocols	3
ECE 491	Engineering Seminar	1
ECE 492	Senior Advanced Design Project I (Mason Core) [1]	1
ECE 493	RS: Senior Advanced Design Project II (Mason Core)	2
Total Credits		44

[1] Students who would like to complete a more challenging senior design project have the option of enrolling in ECE 392 Engineering Design Studio to gain a semester head start in the design process.

Technical Electives

Three technical electives totaling 9 credit hours must be selected from the list below. Some graduate courses listed below and courses outside the ECE department may be taken to fulfill the technical elective requirement with the permission of the department. The decision to approve non-ECE courses as well as graduate courses as technical electives is at the discretion of the department based on a review of the course content and the student's academic record.

Code	Title	Credits
Select 9 credits from the following:		9
ECE 370	Robot Design	
ECE 410	Applications of Discrete-Time Signal Processing	
ECE 415	Power System Analysis	
ECE 416	Electric Machinery and Modern Applications	
ECE 417	Smart Grid and Cyber Security	
ECE 421	Classical Systems and Control Theory	
ECE 424	Modern Control Systems Design	
ECE 425	Secure RF Communications	
ECE 431	Digital Circuit Design	
ECE 433	Linear Electronics II	
ECE 446	Device Driver Development	
ECE 450	Mobile Robots	
ECE 460	Communication and Information Theory	

ECE 462	Data and Computer Communications
ECE 463	Digital Communications Systems
ECE 470	Introduction to Humanoid Robotics
ECE 476	Cryptography Fundamentals
ECE 499	Special Topics in Electrical and Computer Engineering
CYSE 462	Mobile Devices and Network Security
The following 500-level courses may also be taken (with prior approval of the department):	
ECE 505	Hardware Security
ECE 508	Internet of Things
ECE 510	Real-Time Concepts
ECE 511	Computer Architecture
ECE 512	Computer Architecture Security
ECE 516	Mobile Systems and Applications
ECE 521	Linear Systems and Control
ECE 527	Learning From Data
ECE 528	Introduction to Random Processes in Electrical and Computer Engineering
ECE 530	Sensor Engineering
ECE 531	Introduction to Wireless Communications and Networks
ECE 535	Digital Signal Processing
ECE 542	Computer Network Architectures and Protocols
ECE 552	Big Data Technologies
ECE 567	Optical Fiber Communications
ECE 580	Small Spacecraft Engineering
ECE 590	Selected Topics in Engineering
Total Credits	9

Computer Science

Code	Title	Credits
CS 112	Introduction to Computer Programming	4
CS 211	Object-Oriented Programming	3
CS 222	Computer Programming for Engineers	3
CS 310	Data Structures	3
CS 471	Operating Systems	3
Total Credits		16

Mathematics and Statistics

Code	Title	Credits
MATH 113	Analytic Geometry and Calculus I (Mason Core)	4
MATH 114	Analytic Geometry and Calculus II	4
MATH 125	Discrete Mathematics I (Mason Core)	3
MATH 203	Linear Algebra	3
MATH 213	Analytic Geometry and Calculus III	3
MATH 214	Elementary Differential Equations	3
STAT 346	Probability for Engineers	3
Total Credits		23

Physics

Code	Title	Credits
PHYS 160	University Physics I (Mason Core)	3
PHYS 161	University Physics I Laboratory (Mason Core)	1
PHYS 260	University Physics II (Mason Core)	3
PHYS 261	University Physics II Laboratory (Mason Core)	1
Total Credits		8

Engineering

Code	Title	Credits
ENGR 107	Introduction to Engineering (Mason Core)	2
Total Credits		2

Concentrations

Concentrations are available in the computer engineering baccalaureate program. Completion of specific courses leads to one of these designations on the student's transcript on graduation. Concentration requirements may also meet some or all of the Technical Elective requirements.

Available Concentrations:

- Computer Networks (CNWK)
- Embedded Systems (EMSY)
- Hardware and System Security (HSYS)
- Internet of Things (INOT)
- Robotics (ROB)
- Power and Energy Systems (PES)

Computer Networks (CNWK)

Code	Title	Credits
Required Course:		
ECE 465	Computer Networking Protocols	3
Select three from the following:		9
ECE 460	Communication and Information Theory	
ECE 462	Data and Computer Communications	
ECE 463	Digital Communications Systems	
ECE 476	Cryptography Fundamentals	
ECE 531	Introduction to Wireless Communications and Networks	
ECE 542	Computer Network Architectures and Protocols	
ECE 567	Optical Fiber Communications	
Total Credits		12

Embedded Systems (EMSY)

Code	Title	Credits
Required Course:		
ECE 447	Microcontrollers	4
Select three from the following:		9
ECE 421	Classical Systems and Control Theory	
ECE 446	Device Driver Development	
ECE 510	Real-Time Concepts	
ECE 516	Mobile Systems and Applications	

ECE 530	Sensor Engineering	
ECE 580	Small Spacecraft Engineering	
Total Credits		13

Hardware and System Security (HSYS)

Code	Title	Credits
Required Courses:		
ECE 465	Computer Networking Protocols	3
ECE 505	Hardware Security	3
Select two from the following:		6
ECE 425	Secure RF Communications	
ECE 462	Data and Computer Communications	
ECE 476	Cryptography Fundamentals	
ECE 512	Computer Architecture Security	
Total Credits		12

Internet of Things (INOT)

Code	Title	Credits
Required Courses:		
ECE 465	Computer Networking Protocols	3
ECE 508	Internet of Things	3
Select two from the following:		6
ECE 462	Data and Computer Communications	
ECE 476	Cryptography Fundamentals	
ECE 510	Real-Time Concepts	
ECE 512	Computer Architecture Security	
ECE 530	Sensor Engineering	
Total Credits		12

Robotics (ROB)

Code	Title	Credits
Required Courses:		
ECE 370	Robot Design	3
ECE 447	Microcontrollers	4
Select two from the following:		6
ECE 421	Classical Systems and Control Theory	
ECE 424	Modern Control Systems Design	
ECE 450	Mobile Robots	
ECE 470	Introduction to Humanoid Robotics	
ECE 510	Real-Time Concepts	
ECE 521	Linear Systems and Control	
ECE 530	Sensor Engineering	
Total Credits		13

Power and Energy Systems (PES)

Code	Title	Credits
Required Courses:		9
ECE 305	Electromagnetic Theory	3
ECE 465	Computer Networking Protocols	3
ECE 415	Power System Analysis	
or ECE 417	Smart Grid and Cyber Security	
Select one from the following:		3
ECE 415	Power System Analysis	
ECE 416	Electric Machinery and Modern Applications	
ECE 417	Smart Grid and Cyber Security	
ECE 424	Modern Control Systems Design	
ECE 425	Secure RF Communications	
ECE 462	Data and Computer Communications	
ECE 463	Digital Communications Systems	
ECE 476	Cryptography Fundamentals	
ECE 505	Hardware Security	
ECE 508	Internet of Things	
ECE 513	Applied Electromagnetic Theory	
ECE 527	Learning From Data	
ECE 531	Introduction to Wireless Communications and Networks	
Total Credits		18

English, Communication, and Economics

Code	Title	Credits
ENGH 302	Advanced Composition (Mason Core) (Natural Sciences and Technology or Multidisciplinary section)	3
COMM 100	Public Speaking (Mason Core)	3
or COMM 101	Fundamentals of Communication (Mason Core)	
ECON 103	Contemporary Microeconomic Principles (Mason Core)	3
Total Credits		9

Additional Mason Core

Students must complete all Mason Core requirements not fulfilled by major requirements. Mason Core courses should be selected from the department's list of approved courses. Honors college students meet the written and oral communication requirements through completion of the honors college curriculum. The Synthesis Mason Core requirement is satisfied by ECE 492 Senior Advanced Design Project I (Mason Core) plus ECE 493 RS: Senior Advanced Design Project II (Mason Core).

Code	Title	Credits
Written Communication [1]		3
Literature		3
Arts		3
Western Civilization/World History		3
Global Understanding		3
Total Credits		15

[1] Lower-level.

4-Year Plan

Bachelor of Science in Computer Engineering Sample Plan of Study

Detailed four year plans and degree planning checklists can be found at https://advising.gmu.edu/current-student/majors-at-mason/.

Accelerated Master's

BS (selected)/Statistical Science, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program (BAM) and obtain an undergraduate BS degree and the Statistical Science, MS in an accelerated time-frame after satisfactory completion of a minimum of 138 credits.

Admitted students are able to use up to 12 graduate credits in partial satisfaction of requirements for the undergraduate degree. Upon completion and conferral of the bachelor's degree and with satisfactory performance (grade of 'B' or better) in each of the graduate courses, students are given advanced standing in the master's program.

See AP.6.7 Bachelor's/Accelerated Master's Degrees for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements

No specific undergraduate BS degree is required. Students enrolled in any BS degree may apply to the accelerated Statistical Science, MS program **if such an accelerated** Statistical Science, MS **pathway is allowable from the student's BS program, which will be determined by the academic advisors of both the BS and MS programs.**

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits with an overall GPA of 3.0.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific prerequisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the Statistical Science, MS program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- Completion of Mason's requirements for undergraduate degree conferral (graduation) and completion of application for graduation.
- An overall GPA of 3.00.
- Completion of the following Mason courses each with a grade of C or better.

Code	Title	Credits
MATH 213	Analytic Geometry and Calculus III	3
MATH 203	Linear Algebra	3
or MATH 321	Abstract Algebra	
STAT 250	Introductory Statistics I (Mason Core)	3
or STAT 344	Probability and Statistics for Engineers and Scientists I	
STAT 346	Probability for Engineers	3
or MATH 351	Probability	
STAT 362	Introduction to Computer Statistical Packages	3

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, students complete all credits satisfying degree requirements for the BS and MS programs, with up to twelve credits overlap chosen from the following graduate courses:

Code	Title	Credits
STAT 544	Applied Probability	3
STAT 554	Applied Statistics I	3
STAT 560	Biostatistical Methods	3
STAT 574	Survey Sampling I	3
STAT 663	Statistical Graphics and Data Exploration I	3

All graduate course prerequisites must be completed prior to enrollment. Each graduate course must be completed with a grade of B or better to apply toward the MS degree.

While still in undergraduate status, a maximum of 6 additional graduate credits may be taken as reserve graduate credit and applied to the master's program. Reserve graduate credits do not apply to the undergraduate degree.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees policies.

Degree Conferral

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and Graduate Recruitment and Enrollment Services. At the completion of MS requirements, a master's degree is conferred.

Computer Engineering, BS/Computer Engineering, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BS in Computer Engineering and an MS in Computer Engineering in an accelerated time-frame after satisfactory completion of a minimum of 144 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degrees for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate

study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits with an overall GPA of 3.0.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific prerequisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MS program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form: 3.0 overall GPA, successfully meeting Mason's requirements for undergraduate degree conferral (graduation), and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced standing courses: Students may take up to 12 credits of graduate-level courses that will count as advanced standing (i.e., overlap between the BS/MS program) from the list below: Note that ECE 542 can be used to meet the ECE 465 requirement for the BS in Electrical Engineering program. An additional 9 credits of graduate-level courses from the list below may be selected to substitute in place of the 9 credits of technical electives required for the undergraduate degree:

Code	Title	Credits
ECE 505	Hardware Security	3
ECE 508	Internet of Things	3
ECE 510	Real-Time Concepts	3
ECE 511	Computer Architecture	3
ECE 512	Computer Architecture Security	3
ECE 516	Mobile Systems and Applications	3
ECE 521	Linear Systems and Control	3
ECE 527	Learning From Data	3
ECE 528	Introduction to Random Processes in Electrical and Computer Engineering	3
ECE 530	Sensor Engineering	3
ECE 531	Introduction to Wireless Communications and Networks	3
ECE 535	Digital Signal Processing	3
ECE 542	Computer Network Architectures and Protocols	3
ECE 545	Digital System Design with VHDL	3
ECE 567	Optical Fiber Communications	3
ECE 580	Small Spacecraft Engineering	3
ECE 590	Selected Topics in Engineering	3

Selected 600 level courses may be taken as well with permission of an advisor granted before registering for a given course.

Reserve credit courses: Additional courses (up to 6 credits) may be selected from the above list as credits to be put on reserve to be later applied to the graduate program. Students can take these courses while undergraduates but these reserve courses will only count for the graduate degree program.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees.

Computer Engineering, BS/Electrical Engineering, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BS in Computer Engineering and an MS in Electrical Engineering in an accelerated time-frame after satisfactory completion of a minimum of 144 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degrees for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits with an overall GPA of 3.0.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MS program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form: 3.0 overall GPA, successfully meeting Mason's requirements for undergraduate degree conferral (graduation), and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced standing courses: Students may take up to 12 credits of graduate-level courses that will count as advanced standing (i.e., overlap between the BS/MS program) from the list below. Note that ECE 542 can be used to meet the ECE 465 requirement for the BS in Electrical Engineering program. An additional 9 credits of graduate-level courses from the list below may be selected to substitute in place of the 9 credits of technical electives required for the undergraduate degree.

Code	Title	Credits
ECE 505	Hardware Security	3
ECE 508	Internet of Things	3
ECE 510	Real-Time Concepts	3
ECE 511	Computer Architecture	3
ECE 513	Applied Electromagnetic Theory	3
ECE 516	Mobile Systems and Applications	3

ECE 521	Linear Systems and Control	3
ECE 526	Neural Engineering	3
ECE 527	Learning From Data	3
ECE 528	Introduction to Random Processes in Electrical and Computer Engineering	3
ECE 530	Sensor Engineering	3
ECE 531	Introduction to Wireless Communications and Networks	3
ECE 535	Digital Signal Processing	3
ECE 542	Computer Network Architectures and Protocols	3
ECE 550	System Engineering Design	3
ECE 565	Introduction to Optical Electronics	3
ECE 567	Optical Fiber Communications	3
ECE 580	Small Spacecraft Engineering	3
ECE 584	Semiconductor Device Fundamentals	3
ECE 586	Digital Integrated Circuits	3
ECE 587	Design of Analog Integrated Circuits	3
ECE 590	Selected Topics in Engineering	3

Selected 600 level courses may be taken as well with permission of an advisor granted before registering for a given course.

Reserve credit courses: Additional courses (up to 6 credits) may be selected from the above list as credits to be put on reserve to be later applied to the graduate program. Students can take these courses while undergraduates but these reserve courses will only count for the graduate degree program.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees.

Computer Engineering, BS/Operations Research, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a Computer Engineering, BS and an Operations Research, MS in an accelerated time-frame after satisfactory completion of a minimum of 144 credits.

Admitted students are able to use up to 12 graduate credits in partial satisfaction of requirements for the undergraduate degree. Upon completion and conferral of the bachelor's degree and with satisfactory performance (grade of 'B' or better) in each of the graduate courses, students are given advanced standing in the master's program.

See AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/).

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Computer Engineering, BS students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits with an overall GPA of at least 3.3, and completion of all MATH and PHYS 160/161, and PHYS 260/261 requirements. Students must additionally complete MATH 203 Linear Algebra prior to applying for the graduate program.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

The criteria for admission are identical to criteria for admission to the Operations Research, MS program. Students already admitted in the BAM Pathway will be admitted to the Operations Research, MS program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- An overall GPA of at least 3.3
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing course: Students must complete all credits that satisfy requirements for both the BS and MS programs. Up to four courses (12 credits) of approved master's level courses taken as part of the undergraduate degree may be applied to the graduate degree. The courses selected for this purpose must be approved by the academic advisors of both the BS and MS programs and by the SEOR department chair.

- Students selecting up to two courses (6 credits) of approved master's level courses may select from the Electrical and Computer Engineering courses given below.
- Students selecting up to three or four courses (9 or 12 credits) of approved master's level courses may select at most two courses from the Electrical and Computer Engineering course list and select the remaining courses from the Systems Engineering and Operations Research course list given below. Note that ECE 542 can be used to meet the ECE 465 requirement for the Computer Engineering, BS program. Students are highly recommended to select courses marked as core courses because it applies to the master's degree regardless of the graduate-level concentration chosen in the Operations Research, MS. The undergraduate version of these courses, if any, may *not* be applied toward the Operations Research, MS. Credit may not be received for both the undergraduate and graduate version of these courses.
- Some of the courses in the Systems Engineering and Operations Research course list applies only to certain concentrations in the Operations Research, MS program.
- Students must pay attention to the prerequisites required for a course, and the master's degree concentration that the course may satisfy.

Select at most two from the following Electrical and Computer Engineering courses:

Code	Title	Credits
ECE 505	Hardware Security	
ECE 508	Internet of Things	
ECE 510	Real-Time Concepts	
ECE 511	Computer Architecture	
ECE 512	Computer Architecture Security	
ECE 516	Mobile Systems and Applications	
ECE 521	Linear Systems and Control	
ECE 527	Learning From Data	
ECE 528	Introduction to Random Processes in Electrical and Computer Engineering	
ECE 530	Sensor Engineering	
ECE 531	Introduction to Wireless Communications and Networks	
ECE 535	Digital Signal Processing	
ECE 542	Computer Network Architectures and Protocols	
ECE 545	Digital System Design with VHDL	
ECE 567	Optical Fiber Communications	
ECE 580	Small Spacecraft Engineering	
ECE 590	Selected Topics in Engineering	

Select the remaining from the following Systems Engineering and Operations Research courses:

Code	Title	Credits
SYST 521	Network Analysis	
OR 538	Analytics for Financial Engineering and Econometrics	
OR 541	Operations Research: Deterministic Models (Core)	
OR 542	Operations Research: Stochastic Models (Core)	
OR 568	Applied Predictive Analytics (Core)	
OR 588	Financial Systems Engineering I: Introduction to Options, Futures, and Derivatives	

While still in undergraduate status, a maximum of 6 additional graduate credits may be taken as reserve graduate credit and applied to the master's program. Reserve graduate credits do not apply to the undergraduate degree.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text).

Degree Conferral

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and the VSE Graduate Admissions Office. At the completion of MS requirements, a master's degree is conferred.

Computer Engineering, BS/Systems Engineering, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a Computer Engineering, BS and a Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) in an accelerated time-frame after satisfactory completion of a minimum of 144 credits.

Admitted students are able to use up to 12 graduate credits in partial satisfaction of requirements for the undergraduate degree. Upon completion and conferral of the bachelor's degree and with satisfactory performance (grade of 'B' or better) in each of the graduate courses, students are given advanced standing in the master's program.

See AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/).

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Computer Engineering, BS students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits with an overall GPA of at least 3.3, and completion of all MATH, PHYS 160/161, and PHYS 260/261 requirements.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

The criteria for admission are identical to criteria for admission to the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program. Students already admitted in the BAM Pathway will be admitted to the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- An overall GPA of at least 3.3
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing course: Students must complete all credits that satisfy requirements for both the BS and MS programs. Up to four courses (12 credits) of approved master's level courses taken as part of the undergraduate degree may be applied to the graduate degree. The courses selected for this purpose must be approved by the academic advisors of both the BS and MS programs and by the SEOR department chair.

- Students selecting up to two courses (6 credits) of approved master's level courses may select from the Electrical and Computer Engineering courses given below.
- Students selecting up to three or four courses (9 or 12 credits) of approved master's level courses may select at most two courses from the Electrical and Computer Engineering course list and select the remaining courses from the Systems Engineering and Operations Research course list given below. Note that ECE 542 can be used to meet the ECE 465 requirement for the Computer Engineering, BS program. Students are highly recommended to select courses marked as core courses because it applies to the master's degree regardless of the graduate-level concentration chosen in the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program. The undergraduate version of these courses, if any, may *not* be applied toward the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/). Credit may not be received for both the undergraduate and graduate version of these courses.
- Except for the courses marked as core, any course chosen from either course list can be used to satisfy SYST 505 Systems Engineering Principles core requirement in the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program.
- Some of the courses in the Systems Engineering and Operations Research course list applies only to certain concentrations in the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program.
- Students must pay attention to the prerequisites required for a course, and the master's degree concentration that the course may satisfy.

Select at most two from the following Electrical and Computer Engineering courses:

Code	Title	Credits
ECE 505	Hardware Security	
ECE 508	Internet of Things	
ECE 510	Real-Time Concepts	
ECE 511	Computer Architecture	
ECE 512	Computer Architecture Security	
ECE 516	Mobile Systems and Applications	
ECE 521	Linear Systems and Control	
ECE 527	Learning From Data	
ECE 528	Introduction to Random Processes in Electrical and Computer Engineering	
ECE 530	Sensor Engineering	
ECE 531	Introduction to Wireless Communications and Networks	
ECE 535	Digital Signal Processing	
ECE 542	Computer Network Architectures and Protocols	
ECE 545	Digital System Design with VHDL	
ECE 567	Optical Fiber Communications	
ECE 580	Small Spacecraft Engineering	
ECE 590	Selected Topics in Engineering	

Select the remaining from the following Systems Engineering and Operations Research courses:

Code	Title	Credits
SYST 510	Systems Definition and Cost Modeling (Core)	
SYST 520	System Engineering Design (Core)	
SYST 530	Systems Engineering Management I (Core)	
SYST 542	Decision Support Systems Engineering	
SYST 573	Decision and Risk Analysis	
SYST 538	Analytics for Financial Engineering and Econometrics	
SYST 568	Applied Predictive Analytics	
SYST 584	Heterogeneous Data Fusion	
SYST 588	Financial Systems Engineering I: Introduction to Options, Futures, and Derivatives	

While still in undergraduate status, a maximum of 6 additional graduate credits may be taken as reserve graduate credit and applied to the master's program. Reserve graduate credits do not apply to the undergraduate degree.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text).

Degree Conferral

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and the VSE Graduate Admissions Office. At the completion of MS requirements, a master's degree is conferred.

Computer Engineering, MS

Banner Code: VS-MS-CPE

Academic Advising

MSN 1G5
4400 University Drive
Fairfax, VA 22030

Phone: 703-993-1569
Email: ece@gmu.edu
Website: https://ece.gmu.edu/academics/

Computer Engineering involves knowledge of hardware and software development. The students learn how to design new generations of

computers, as well as embedded computing systems, such as those found in smartphones, cars, appliances, computer networks, smart factories, and the internet-of-things. The program covers the entire digital integrated circuit design process targeting Field Programmable Gate Arrays (FPGAs) and Application Specific Integrated Circuits (ASICs), using various optimization criteria, such as speed, cost, power, energy, reliability, and security. It also encompasses the complete software development process targeting microcontrollers, microprocessors, multi-cores, and Graphics Processing Units (GPUs). It teaches students how to efficiently partition the system into software and hardware components, and develop high-performance interfaces between these two parts. Project-oriented courses and labs expose students to modern computer-aided design tools for hardware and software design. The students master the art of writing comprehensive technical reports and giving successful oral presentations. The computer engineering program offers the following concentrations: computer architecture and embedded systems, computer networks, digital signal processing, digital system design, hardware security and cryptographic engineering, internet of things and network security, machine learning and brain-inspired computing, and space-based systems.

Admissions & Policies

Admissions

Requirements

To be considered for admission to the degree, applicants should have a baccalaureate degree in electrical engineering, computer engineering, or a closely-related discipline from an accredited program, and have earned a GPA of B or better during the last 60 credits. All students are also required to submit a resume and are encouraged to provide up to three choices for their preferred academic advisor and select their concentration at the time of application to the program.

For internationally educated applicants (as defined in the catalog section Admission of International Students (https://catalog.gmu.edu/admissions/international-students/#text), under English Proficiency Standards - Graduate Students), a satisfactory score on any of the English proficiency examinations accepted by Mason is required. Satisfactory scores are specific to Volgenau School of Engineering and are listed in the catalog section Admission of International Students (https://catalog.gmu.edu/admissions/international-students/#text), under English Proficiency Standards - Graduate Students.

All students are also required to submit resume and encouraged to provide up to three choices for their preferred academic advisor and select their concentration at the time of application to the program.

Students with BS or MS degrees in ECE-related disciplines (for example, computer science, cyber security engineering, mathematics, mechanical engineering, or physics) are encouraged to apply for admission. Domestic students may be admitted provisionally and required to satisfy provisional requirements before taking advanced coursework. Such students may also be advised to take some courses from the undergraduate electrical or computer engineering curriculum, according to their intended concentration and specific backgrounds.

Policies

Student Advising

Students can select a concentration from those available in the MS degree program at the time of application to the program or later during their studies. In the former case, students are assigned an academic advisor from the selected concentration at the time of admission. In the latter case, students can petition for a change of an academic advisor to match their concentration choice.

Plan of Study

Before completing 6 credit hours of coursework, each student must submit to the department a plan of study that has been approved by the academic advisor. This plan should be kept up to date by regular consultation with the academic advisor. A final, signed version of the plan must be turned in when the student submits a graduation application.

Requirements

Degree Requirements

Total credits: 30

Students must complete a minimum of 30 graduate credits beyond the bachelor's degree. The plan of study for the degree must fulfill the following requirements:

Core Course Requirement

Code	Title	Credits
Select 15 credits from the following:		15
ECE 505	Hardware Security	
ECE 508	Internet of Things	
ECE 511	Computer Architecture	
ECE 516	Mobile Systems and Applications	
ECE 527	Learning From Data	
ECE 528	Introduction to Random Processes in Electrical and Computer Engineering	
ECE 531	Introduction to Wireless Communications and Networks	
ECE 535	Digital Signal Processing	
ECE 542	Computer Network Architectures and Protocols	
ECE 545	Digital System Design with VHDL	
ECE 611	Advanced Computer Architecture	
ECE 646	Applied Cryptography	
ECE 799	Master's Thesis [1]	
Total Credits		15

[1] See Thesis/Scholarly Paper option.

Concentration Requirement

Accomplished by choosing one of the concentrations, and then meeting course requirements for this concentration with the grade B or better in each course. For each concentration, related ECE 590 Selected Topics in Engineering courses can be used in addition to all explicitly listed 500-level courses, and related ECE 699 Advanced Topics in Electrical and Computer Engineering courses can be used in addition to all explicitly listed 600 level or above courses, subject to approval by the student's academic advisor. With assistance from their advisors, students may petition the graduate program coordinator to approve a specialization area of their own design, not fulfilling the requirements of any concentration.

Available Concentrations

- Concentration in Computer Architecture and Embedded Systems (CAES)
- Concentration in Computer Networks (CNWK)
- Concentration in Digital Signal Processing (DISP)
- Concentration in Digital System Design (DSYD)
- Concentration in Hardware Security and Cryptographic Engineering (HSCE)
- Concentration in Internet of Things and Network Security (INNS)
- Concentration in Machine Learning and Computer Engineering (MLCE)
- Concentration in Space-Based Systems (SBSY)

Concentration in Computer Architecture and Embedded Systems (CAES)

Code	Title	Credits
Required Courses		
ECE 511	Computer Architecture	3
ECE 516	Mobile Systems and Applications	3
Total Credits		6

Code	Title	Credits
Electives		
Select at least three courses from the following, including two courses at the 600 level or above:		9
CS 571	Operating Systems	
CS 583	Analysis of Algorithms	
ECE 508	Internet of Things	
ECE 510	Real-Time Concepts	
ECE 512	Computer Architecture Security	
ECE 545	Digital System Design with VHDL	
ECE 611	Advanced Computer Architecture	
ECE 612	Real-Time Embedded Systems	
ECE 615	Software/Hardware Codesign	
ECE 616	Advanced Mobile Systems and Applications	
Total Credits		9

Concentration in Computer Networks (CNWK)

Code	Title	Credits
Required Courses		
ECE 528	Introduction to Random Processes in Electrical and Computer Engineering	3
ECE 542	Computer Network Architectures and Protocols	3
Total Credits		6

Code	Title	Credits
Electives		
Select at least three courses from the following, including two courses at the 600 level or above:		9
ECE 508	Internet of Things	
ECE 531	Introduction to Wireless Communications and Networks	
ECE 633	Error Control Coding	
ECE 642	Design and Analysis of Computer Communication Networks	
ECE 643	Network Switching and Routing	
ECE 646	Applied Cryptography	
ECE 741	Wireless Networks	
ECE 742	High-Speed Networks	
ECE 746	Advanced Applied Cryptography	
Total Credits		9

Concentration in Digital Signal Processing (DISP)

Code	Title	Credits
Required Courses		
ECE 535	Digital Signal Processing	3
ECE 545	Digital System Design with VHDL	3
Total Credits		6

Code	Title	Credits
Electives		
Select at least three courses from the following, including two courses at the 600 level or above:		9
ECE 527	Learning From Data	
ECE 528	Introduction to Random Processes in Electrical and Computer Engineering	
ECE 530	Sensor Engineering	
ECE 531	Introduction to Wireless Communications and Networks	
ECE 537	Introduction to Digital Image Processing (DIP)	
ECE 615	Software/Hardware Codesign	
ECE 631	Software-Defined Radio	
ECE 633	Error Control Coding	
ECE 635	Adaptive Signal Processing	
ECE 636	Advanced Digital Signal Processing	
ECE 645	Computer Arithmetic	
ECE 648	Digital Signal Processing Hardware Architectures	
ECE 651	Advanced Learning From Data	
Total Credits		9

Concentration in Digital System Design (DSYD)

Code	Title	Credits
Required Courses		
ECE 511	Computer Architecture	3
ECE 545	Digital System Design with VHDL	3
Total Credits		6

Code	Title	Credits
Electives		
Select at least three courses from the following, including two courses at the 600 level or above:		9
ECE 505	Hardware Security	
ECE 527	Learning From Data	
ECE 586	Digital Integrated Circuits	

ECE 615	Software/Hardware Codesign	
ECE 618	Hardware Accelerators for Machine Learning	
ECE 645	Computer Arithmetic	
ECE 648	Digital Signal Processing Hardware Architectures	
ECE 681	VLSI Design for ASICs	
ECE 682	VLSI Test Concepts	
Total Credits		9

Concentration in Hardware Security and Cryptographic Engineering (HSCE)

Code	Title	Credits
Required Courses		
ECE 505	Hardware Security	3
ECE 545	Digital System Design with VHDL	3
Total Credits		6

Code	Title	Credits
Electives		
Select at least three courses from the following, including two courses at the 600 level or above:		9
ECE 511	Computer Architecture	
ECE 512	Computer Architecture Security	
ECE 527	Learning From Data	
ECE 542	Computer Network Architectures and Protocols	
ECE 586	Digital Integrated Circuits	
ECE 615	Software/Hardware Codesign	
ECE 633	Error Control Coding	
ECE 645	Computer Arithmetic	
ECE 646	Applied Cryptography	
ECE 653	Machine Learning Security and Privacy	
ECE 681	VLSI Design for ASICs	
ECE 746	Advanced Applied Cryptography	
ECE 747	Cryptographic Engineering	
Total Credits		9

Concentration in Internet of Things & Network Security (INNS)

Code	Title	Credits
Required Courses		
ECE 508	Internet of Things	3
ECE 542	Computer Network Architectures and Protocols	3
Total Credits		6

Code	Title	Credits
Electives		
Select at least three courses from the following, including two courses at the 600 level or above:		9
ECE 510	Real-Time Concepts	
ECE 511	Computer Architecture	
ECE 512	Computer Architecture Security	
ECE 530	Sensor Engineering	
ECE 611	Advanced Computer Architecture	
ECE 612	Real-Time Embedded Systems	
ECE 633	Error Control Coding	
ECE 642	Design and Analysis of Computer Communication Networks	
ECE 646	Applied Cryptography	
ECE 653	Machine Learning Security and Privacy	
ECE 746	Advanced Applied Cryptography	
ECE 747	Cryptographic Engineering	
SWE 619	Object-Oriented Software Specification and Construction	
SWE 681	Secure Software Design and Programming	
Total Credits		9

Machine Learning and Computer Engineering (MLCE)

Code	Title	Credits
Required Courses		
ECE 527	Learning From Data	3
ECE 618	Hardware Accelerators for Machine Learning	3
Total Credits		6

Code	Title	Credits
Electives		
Select at least three courses from the following, including at least two courses at the 600 level or above:		9
CS 580	Introduction to Artificial Intelligence	
CS 584	Theory and Applications of Data Mining	
ECE 552	Big Data Technologies	3
ECE 616	Advanced Mobile Systems and Applications	
ECE 617	Distributed and Federated Learning	
ECE 651	Advanced Learning From Data	
ECE 653	Machine Learning Security and Privacy	3
ECE 681	VLSI Design for ASICs	

Concentration in Space-Based Systems (SBSY)

Code	Title	Credits
Required Courses		
ECE 511	Computer Architecture	3
ECE 580	Small Spacecraft Engineering	3
Total Credits		6

Code	Title	Credits
Electives		
Select at least three courses from the following, including two courses at the 600 level or above:		9
ECE 510	Real-Time Concepts	
ECE 528	Introduction to Random Processes in Electrical and Computer Engineering	
ECE 530	Sensor Engineering	
ECE 535	Digital Signal Processing	

ECE 545	Digital System Design with VHDL	
ECE 611	Advanced Computer Architecture	
ECE 612	Real-Time Embedded Systems	
ECE 615	Software/Hardware Codesign	
ECE 631	Software-Defined Radio	
ECE 635	Adaptive Signal Processing	
ECE 640	Small Satellite Development	
ECE 646	Applied Cryptography	
ECE 648	Digital Signal Processing Hardware Architectures	
ECE 660	Space Systems Engineering	
ECE 747	Cryptographic Engineering	
Total Credits		9

Upper-Level Course Requirement

A minimum of 9 credit hours of ECE or CS courses at the 600 level or above, other than ECE 799 (including, but not limited to, the selected concentration electives), with the grade B or better in each course. No more than 3 credit hours of either ECE 698 or ECE 798 may be used to fulfill this requirement.

ECE Course Requirement

A maximum of 6 credits of non-ECE courses may be used to fulfill degree requirements, subject to prior approval by the student's academic advisor, in the form of a plan of study signed by the advisor and submitted to the ECE Office. Additional 6 credit hours of DFOR, CS, ISA, or SWE courses may be used to fulfill degree requirements, subject to the same approval process.

Electives

Electives can be chosen from among all ECE graduate courses, as well as related graduate courses with other designations. The students are encouraged to discuss their choice of electives with their academic advisor prior to the registration.

GPA Requirements

A maximum of 6 credits of courses with grades of C or B- may be applied toward the degree. The student must present a GPA of at least 3.00 for all courses submitted for degree conferral.

Seminar Requirement

Graduate students are expected to participate actively in the exchange of knowledge and ideas in their discipline. Towards this objective, all degree candidates must attend a minimum of 6 graduate seminars approved for the degree program. Approved seminars are publicized on the departmental webpage.

To demonstrate completion of the seminar requirement, students must register for ECE 795 Engineering Seminar in their final semester. The department office will verify that the seminar requirement has been met and submit a grade of S (satisfactory) upon completion of the requirement. Students who have not met the seminar requirement in their final semester must continue to register for ECE 795 Engineering Seminar in subsequent semesters until the requirement is met.

Thesis/Scholarly Paper Option

To complete the program, students may select one of the following options:

Thesis Option

Students who select this option must complete:

Code	Title	Credits
ECE 799	Master's Thesis	6
Coursework		24
Total Credits		30

The thesis is particularly recommended for those students who wish to develop and document their research skills or contemplate subsequent enrollment in a PhD program. The thesis involves a research effort, which is conducted under the guidance of a faculty advisor. Choosing the thesis option requires approval of a full-time faculty member willing to serve as a thesis advisor. The topic and scope of the thesis must be approved by the thesis advisor. In some cases, permission may be granted to complete a portion of the work at the student's place of employment. The final written thesis and oral defense are approved by the student's advisory committee.

This committee consists of at least three full-time faculty members, including two affiliated with the MS in Computer Engineering Program, one of whom must be from the ECE Department. Thesis students may not register for ECE 798 Research Project. Students must register for at least 3 credits of ECE 799 Master's Thesis for their first thesis semester. Following their first thesis semester, they must register for at least 1 credit of ECE 799 Master's Thesis each fall and spring semester until graduation.

Scholarly Paper Option

Students who select to complete their degree program with a scholarly paper must:

Code	Title	Credits
Complete 30 credits of coursework		30
ECE 797	Scholarly Paper	0
Enroll in a 600-level or above course requiring a research project		
Write a Scholarly Paper project report and present findings as part of the course requirements		
Total Credits		30

An acceptable scholarly paper must be technically sound, adhere to accepted formatting standards for technical reports, and contain a significant literature review evidenced by a comprehensive list of cited references.

A list of courses requiring projects that can be used to satisfy the scholarly paper requirement will be published on the department website. Scholarly papers must be individual written project reports – not group projects. To qualify as a scholarly paper, an oral presentation of the project is required. A passing grade for the project, reflecting both the written report and the oral presentation, satisfies the scholarly paper requirement.

A successful scholarly paper will be recorded by awarding a satisfactory (S) grade for ECE 797 Scholarly Paper. Students are eligible to attempt the scholarly paper and register for ECE 797 Scholarly Paper after completion of 18 hours of coursework. Students choosing the scholarly paper option are not eligible for graduation until they have received a final, passing grade for ECE 797 Scholarly Paper.

Accelerated Master's

Computer Engineering, BS/Computer Engineering, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BS in Computer Engineering and an MS in Computer Engineering in an accelerated time-frame after satisfactory completion of a minimum of 144 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degrees for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits with an overall GPA of 3.0.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific prerequisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MS program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form: 3.0 overall GPA, successfully meeting Mason's requirements for undergraduate degree conferral (graduation), and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced standing courses: Students may take up to 12 credits of graduate-level courses that will count as advanced standing (i.e., overlap between the BS/MS program) from the list below: Note that ECE 542 can be used to meet the ECE 465 requirement for the BS in Electrical Engineering program. An additional 9 credits of graduate-level courses from the list below may be selected to substitute in place of the 9 credits of technical electives required for the undergraduate degree:

Code	Title	Credits
ECE 505	Hardware Security	3
ECE 508	Internet of Things	3
ECE 510	Real-Time Concepts	3
ECE 511	Computer Architecture	3
ECE 512	Computer Architecture Security	3
ECE 516	Mobile Systems and Applications	3
ECE 521	Linear Systems and Control	3
ECE 527	Learning From Data	3
ECE 528	Introduction to Random Processes in Electrical and Computer Engineering	3
ECE 530	Sensor Engineering	3
ECE 531	Introduction to Wireless Communications and Networks	3
ECE 535	Digital Signal Processing	3
ECE 542	Computer Network Architectures and Protocols	3
ECE 545	Digital System Design with VHDL	3
ECE 567	Optical Fiber Communications	3
ECE 580	Small Spacecraft Engineering	3
ECE 590	Selected Topics in Engineering	3

Selected 600 level courses may be taken as well with permission of an advisor granted before registering for a given course.

Reserve credit courses: Additional courses (up to 6 credits) may be selected from the above list as credits to be put on reserve to be later applied to the graduate program. Students can take these courses while undergraduates but these reserve courses will only count for the graduate degree program.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees.

Computer Science, BS/Computer Engineering, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BS in Computer Science and an MS in Computer Engineering in an accelerated time-frame after satisfactory completion of a minimum of 138 credits.

See
AP.6.7 Bachelor's/Accelerated Master's Degrees for policies related to this program.

This accelerated option is offered jointly by the Computer Science Department and the Electrical and Computer Engineering Department.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see
AP.6 Graduate Policies.

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits with an overall GPA of 3.0.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific prerequisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MS program, if they have met the following criteria, as verified on

the Bachelor's/Accelerated Master's Transition form: 3.0 overall GPA, successfully meeting Mason's requirements for undergraduate degree conferral (graduation), and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced standing courses: Students may take up to 12 credits of graduate-level courses that will count as advanced standing (i.e., overlap between the BS/MS program) from the list below:

Code	Title	Credits
CS 571	Operating Systems (to replace CS 471)	3
ECE 508	Internet of Things	3
ECE 511	Computer Architecture	3
ECE 512	Computer Architecture Security	3
ECE 516	Mobile Systems and Applications	3
ECE 527	Learning From Data	3
ECE 542	Computer Network Architectures and Protocols	3

Reserve credit courses: Additional courses (up to 6 credits) may be selected from the above list as credits to be put on reserve to be later applied to the graduate program. Students can take these courses while undergraduates but these reserve courses will only count for the graduate degree program.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees.

Cyber Security Engineering, BS/Computer Engineering, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BS in Cyber Security Engineering and an MS in Computer Engineering in an accelerated time-frame after satisfactory completion of a minimum of 150 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) for policies related to this program.

This accelerated option is offered jointly by the Cyber Security Engineering Department and the Electrical and Computer Engineering Department.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/).

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits with an overall GPA of 3.0.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MS program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form: 3.0 overall GPA, successfully meeting Mason's requirements for undergraduate degree conferral (graduation), and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced standing courses: Students may take up to 6 credits of graduate-level courses that will count as advanced standing (i.e., overlap between the BS/MS program) from the list below:

Code	Title	Credits
ECE 505	Hardware Security	3
ECE 508	Internet of Things	3
ECE 511	Computer Architecture	3
ECE 512	Computer Architecture Security	3
ECE 542	Computer Network Architectures and Protocols	3

These courses may be used as technical electives in the Cyber Security Engineering, BS program.

Reserve credit courses: Additional courses (up to 6 credits) may be selected from the above list as credits to be put on reserve to be later applied to the graduate program. Students can take these courses while undergraduates but these reserve courses will only count for the graduate degree program.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7).

Electrical Engineering, BS/Computer Engineering, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BS in Electrical Engineering and an MS in Computer Engineering in an accelerated time-frame after satisfactory completion of a minimum of 139 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degrees for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits with an overall GPA of 3.0.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MS program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form: 3.0 overall GPA, successfully meeting Mason's requirements for undergraduate degree conferral (graduation), and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced standing courses: Students may take up to 12 credits of graduate-level courses that will count as advanced standing (i.e., overlap between the BS/MS program) from the list below. Note that ECE 587 can be used to meet the ECE 433 requirement for the BS in Electrical Engineering program. An additional 9 credits of graduate-level courses from the list below may be selected to substitute in place of the 9 credits of technical electives required for the undergraduate degree.

Code	Title	Credits
ECE 505	Hardware Security	3
ECE 508	Internet of Things	3
ECE 510	Real-Time Concepts	3
ECE 511	Computer Architecture	3
ECE 512	Computer Architecture Security	3
ECE 516	Mobile Systems and Applications	3
ECE 521	Linear Systems and Control	3
ECE 527	Learning From Data	3
ECE 528	Introduction to Random Processes in Electrical and Computer Engineering	3
ECE 530	Sensor Engineering	3
ECE 531	Introduction to Wireless Communications and Networks	3
ECE 535	Digital Signal Processing	3
ECE 542	Computer Network Architectures and Protocols	3
ECE 545	Digital System Design with VHDL	3
ECE 567	Optical Fiber Communications	3
ECE 580	Small Spacecraft Engineering	3
ECE 590	Selected Topics in Engineering	3

Selected 600 level courses may be taken as well with permission of an advisor granted before registering for a given course.

Reserve credit courses: Additional courses (up to 6 credits) may be selected from the above list as credits to be put on reserve to be later applied to the graduate program. Students can take these courses while undergraduates but these reserve courses will only count for the graduate degree program.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees.

Digital Forensics, MS

Banner Code: VS-MS-DFOR

3100 Nguyen Engineering Building
MS 1G5

Phone: (703) 993-1569
Email: ece@gmu.edu

Digital forensics is a discipline addressing the collection, processing, and analysis of digital data for the purpose of verifying/validating the existence of an event of investigative, intelligence, cyber, or business interest. The data can be from physical media, a mobile device, real-time network traffic, the Internet of Things (IoT), unknown code, memory, the cloud, and many other sources. Digital forensics is interdisciplinary by nature and our program includes computer engineering, computer science, information technology, law, and ethics. Digital forensics is a key component in criminal, corporate, civil, cyber defense, incident response, intelligence, and counter-terrorism matters. In the last several years, with a proliferation of digital storage, transmission, and processing of sensitive information, there has been an increase in the aberrant use of digital devices. This aberrant behavior includes but is not limited to digital extortion, intrusions, economic espionage, child exploitation, cybercrime, fraud, terrorism, and identity theft. In response to this, digital forensics has become an important profession serving both public and private sectors. The MS in Digital Forensics will prepare graduates for a wide variety of careers to include law enforcement, various other branches of government, incident response, and all facets of cyber security by combining academic education with real world practical techniques and by offering advanced training in analyzing digital evidence, intrusion forensics, reverse engineering, network analysis, legal, and ethical matters.

Admissions & Policies

Admissions

Students who hold a bachelor's degree from an accredited college or university in engineering, math, science, computer science, business (with a quantitative background), economics, or other analytical disciplines, or students who have equivalent work experience indicating analytical aptitude, may apply. Depending on their background, some domestic applicants may be accepted provisionally and required to complete 3 to 12 credits of preliminary coursework before they are allowed to enroll in any of the core or specialty courses in the program. A minimum undergraduate GPA of 3.00 is required for acceptance.

Requirements

(formerly VS-MS-CFRS)

Degree Requirements

Total credits: 30

Students must complete a minimum of 30 graduate credits beyond the bachelor's degree with a GPA of 3.00 or higher, with no more than 6 credit hours of C grades. The plan of study includes a 21-credit required core component which includes a mandatory capstone course, and the choice of either a concentration or a 9-credit elective component as shown below:

Core Courses

Code	Title	Credits
DFOR 510	Digital Forensics Analysis	3
DFOR 660	Network Forensics	3
DFOR 661	Digital Media Forensics	3
DFOR 663	Operations of Intrusion Detection for Forensics	3
or DFOR 664	Incident Response Forensics	
DFOR 760	Legal and Ethical Issues in IT [1]	3
or DFOR 770	Fraud and Forensics in Accounting	
DFOR 762	Mobile Device Forensics	3
DFOR 790	Advanced Digital Forensics	3
Total Credits		21

[1] Both DFOR 760 and DFOR 770 may be taken, but only one may be used in the core component.

Concentration in Penetration Testing/Reverse Engineering (PTRE)

Focused on the practical aspects of penetration testing and reverse engineering. Students are expected to master tools, techniques, and methodologies of penetration testing and reverse engineering.

Code	Title	Credits
DFOR 761	Malware Reverse Engineering	3
DFOR 767	Penetration Testing in Digital Forensics	3
DFOR 772	Forensic Artifact Extraction	3
Total Credits		9

Electives

Code	Title	Credits
Students who do not choose the above concentration should select 9 credits from the following:		9
DFOR 590	Special Topics in Digital Forensics	
DFOR 663	Operations of Intrusion Detection for Forensics	
DFOR 664	Incident Response Forensics	
DFOR 698	Independent Reading and Research	
DFOR 710	Memory Forensics	
DFOR 720	Digital Audio Video Forensics	
DFOR 725	Linux Forensics	
DFOR 730	Forensic Deep Packet Inspection	
DFOR 737	Cloud Forensics	
DFOR 760	Legal and Ethical Issues in IT	
DFOR 761	Malware Reverse Engineering	
DFOR 762	Mobile Device Forensics	
DFOR 763	Registry Forensics - Windows	
DFOR 764	Mac Forensics	
DFOR 767	Penetration Testing in Digital Forensics	
DFOR 768	Digital Warfare	
DFOR 769	Anti-Forensics	
DFOR 770	Fraud and Forensics in Accounting	
DFOR 771	Digital Forensic Profiling	
DFOR 772	Forensic Artifact Extraction	
DFOR 773	Mobile Application Forensics and Analysis	
DFOR 775	Kernel Forensics and Analysis	
DFOR 780	Advanced Topics in Digital Forensics	
ECE 511	Computer Architecture	
ECE 611	Advanced Computer Architecture	
ECE 612	Real-Time Embedded Systems	
ECE 642	Design and Analysis of Computer Communication Networks	
ECE 646	Applied Cryptography	
ECE 746	Advanced Applied Cryptography	
ISA 650	Security Policy	
ISA 652	Security Audit and Compliance Testing	
ISA 656	Network Security	
ISA 674	Intrusion Detection	
ISA 785	Research in Digital Forensics	
TCOM 662	Advanced Secure Networking	
FRSC 510	Basic Crime Analysis	

Other courses may be appropriate as electives in the degree program, but they must be approved prior to registration.

Accelerated Master's

Applied Science, BAS Cyber Security Concentration/Digital Forensics, Accelerated MS

Overview

Highly-qualified students in the Applied Science, BAS, Cyber Security Concentration have the option of obtaining an accelerated Digital Forensics, MS.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies.

Admission Requirements

Students in the Applied Science, BAS, Cyber Security Concentration (https://catalog.gmu.edu/colleges-schools/interdisciplinary-programs-courses/applied-science-bas/#cybs) program may apply for this option if they have earned 60 undergraduate credits with an overall GPA of at least 3.25. Criteria for admission are identical to criteria for admission to the Digital Forensics, MS program.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Option Requirements

Students must complete all credits that satisfy requirements for the BAS and MS programs, with up to 12 credits overlapping from the following courses:

Code	Title	Credits
DFOR 510	Digital Forensics Analysis	3
DFOR 660	Network Forensics	3
DFOR 661	Digital Media Forensics	3
DFOR 663	Operations of Intrusion Detection for Forensics	3
DFOR 664	Incident Response Forensics	3

Degree Conferral

Students must apply the semester before they expect to complete the BAS requirements to have the BAS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and the VSE Graduate Admissions Office. At the completion of MS requirements, a master's degree is conferred.

Cyber Security Engineering, BS/Digital Forensics, Accelerated MS

Overview

Highly-qualified students in the Cyber Security Engineering, BS have the option of obtaining an accelerated Digital Forensics, MS.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies.

Admission Requirements

Students in the Cyber Security Engineering, BS program may apply for this option if they have earned 90 undergraduate credits with an overall GPA of at least 3.25. Criteria for admission are identical to criteria for admission to the Digital Forensics, MS program.

Accelerated Option Requirements

Students must complete all credits that satisfy requirements for the BS and MS programs, with 6 credits overlapping.

Students register for two Digital Forensics core courses (6 credits) in place of two of the three required technical electives, as part of the undergraduate degree requirements.

Note: Students complete all Digital Forensics, MS core courses and apply the two courses from the above list toward the Digital Forensics, MS requirements.

Degree Conferral

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and the VSE Graduate Admissions Office. At the completion of MS requirements, a master's degree is conferred.

Information Technology, BS/Digital Forensics, Accelerated MS

Overview

Highly-qualified students in the Information Technology, BS have the option of obtaining an accelerated Digital Forensics, MS.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies.

Admission Requirements

Students in the Information Technology, BS program may apply for this option if they have earned 60 undergraduate credits and take graduate level courses after completion of 75 credits with an overall GPA of at least 3.25. Criteria for admission are identical to criteria for admission to the Digital Forensics, MS program.

Accelerated Option Requirements

Students must complete all credits that satisfy requirements for the BS and MS programs, with a minimum of 3 credits (maximum 9 credits) overlapping from the following courses:

Code	Title	Credits
DFOR 510	Digital Forensics Analysis	3
DFOR 660	Network Forensics	3
DFOR 663	Operations of Intrusion Detection for Forensics	3

Degree Conferral

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and the VSE Graduate Admissions Office. At the completion of MS requirements, a master's degree is conferred.

Electrical and Computer Engineering Minor

Banner Code: ECE

Phone: 703-993-1569
Email: ece@gmu.edu
Website: ece.gmu.edu

Electrical and computer engineering has transformed every single facet of our lives. The minor in electrical and computer engineering (ECE) is a broad program designed to provide non-ECE students with the foundational knowledge to build and analyze analog and digital circuits as well as signals and systems that form the foundations of any electrical device ranging from smart phones to satellites. These foundation courses enable students to then take on higher-level coursework as part of the minor electives, providing them with a deeper understanding and hands-on opportunity to build a diverse range of hardware systems.

The ECE minor is open to any student (except those pursuing the Electrical Engineering, BS or the Computer Engineering, BS degrees) and is especially conducive to those students with a strong mathematics and

science background, such as a major in another engineering or science field as well as those pursuing a bachelor's in computer science. By combining knowledge from their major, students can use the basics and hands-on experiences gained from the ECE minor to design, engineer, build and innovate practical systems to solve real-world problems.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 18-21

Required Courses

Code	Title	Credits
ECE 101	Introduction to Electrical and Computer Engineering	3
ECE 201	Introduction to Signals and Systems	3
ECE 330	Circuit Theory	3
or ECE 285	Electric Circuit Analysis I	
ECE 301	Digital Electronics	3-4
or ECE 231 & ECE 232	Digital System Design and Digital System Design Lab	
Total Credits		12-13

Technical Electives

Code	Title	Credits
Select at least six credits from the following list:		6-8
ECE 286	Electric Circuit Analysis II	
ECE 305	Electromagnetic Theory	
ECE 321	Continuous-Time Signals and Systems	
ECE 333	Linear Electronics I	
ECE 350	Embedded Systems and Hardware Interfaces	
ECE 370	Robot Design	
ECE 410	Applications of Discrete-Time Signal Processing	
ECE 415	Power System Analysis	
ECE 416	Electric Machinery and Modern Applications	
ECE 417	Smart Grid and Cyber Security	
ECE 421	Classical Systems and Control Theory	
ECE 424	Modern Control Systems Design	
ECE 425	Secure RF Communications	
ECE 430	Principles of Semiconductor Devices	
ECE 431	Digital Circuit Design	
ECE 433	Linear Electronics II	
ECE 445	Computer Organization	
ECE 446	Device Driver Development	
ECE 447	Microcontrollers	
ECE 448	FPGA Design with VHDL	
ECE 450	Mobile Robots	
ECE 460	Communication and Information Theory	
ECE 462	Data and Computer Communications	
ECE 463	Digital Communications Systems	
ECE 465	Computer Networking Protocols	
ECE 470	Introduction to Humanoid Robotics	
ECE 476	Cryptography Fundamentals	
ECE 499	Special Topics in Electrical and Computer Engineering	
Total Credits		6-8

Electrical and Computer Engineering, PhD

Banner Code: VS-PHD-ECE

Academic Advising

MSN 1G5
4400 University Drive
Fairfax, VA 22030

Phone: 703-993-1570
Email: ecephd@gmu.edu
Website: https://ece.gmu.edu/

The PhD program in Electrical and Computer Engineering educates students to do original research on ECE topics and to become technical leaders in their fields. It has a strong and growing reputation, as graduates from the department have become professors at other universities and researchers in various industrial and government research centers. Students may choose a research emphasis in areas such as bioengineering, communications and networking, computer architecture and digital design, control and robotics, electronics, hardware security and cryptographic engineering, machine learning, mobile systems, space-based systems, and signal processing. The ECE PhD program requires coursework, a qualifying exam, a teaching assignment, a dissertation proposal and research competency exam, a research seminar, dissertation research, and a dissertation defense. Mason's general doctoral requirements apply to this program.

Admissions & Policies

Admissions

All general Mason and specific Volgenau School admission requirements apply. Applicants must submit official transcripts, a resume, a goals statement, and three letters of recommendation. Official GRE General Test results are not required for admission but should be submitted by students who consider applying for certain research fellowships. For internationally educated applicants (as defined in the catalog section Admission of International Students (https://catalog.gmu.edu/admissions/international-students/#text), under English Proficiency Standards - Graduate Students), a satisfactory score on any of the English proficiency examinations accepted by Mason is required. Satisfactory scores are specific to Volgenau School of Engineering and are listed in the catalog section Admission of International Students

(https://catalog.gmu.edu/admissions/international-students/#text), under English Proficiency Standards - Graduate Students. Application materials are reviewed by the ECE PhD admissions committee.

Policies

Reduction of Credit

Students must complete a minimum of 72 graduate credits, which may be reduced by a maximum of 30 credits from a completed master's degree. Reduction of credit requires the approval of the program director or designee and the dean or designee of the school. They determine whether the credits are eligible for reduction of credit and applicable to the degree program and the number of credits to be reduced.

Program Requirements

The 72 hours of required doctoral-level credits typically consist of 48 credits of regular coursework and 24 credits of dissertation research. More than half of the 72 credits applied to the doctoral degree must be earned at Mason. The degree plan outlined in Degree Requirements is based on a student who receives a full 30 credit reduction. Students who do not receive a full credit reduction should choose additional credits in consultation with their advisor.

Requirements

Degree Requirements

Total credits: 72

Doctoral Coursework

Courses that constitute a student's plan of study will be chosen in consultation with the student's advisor and/or dissertation committee, to include:

Code	Title	Credits
Select 18-30 credits		18-30
Total Credits		18-30

- Students are strongly encouraged to take ECE 701 Research Experience in Electrical and Computer Engineering prior to or in the same semester as the Research Qualifying Examination. In certain circumstances, this course can be skipped with the permission of the PhD advisor.
- A maximum of 21 credits of ECE 896 Directed Reading and Research. Note that ECE 698 Independent Reading and Research and ECE 798 Research Project are primarily master's level courses and cannot be counted as part of the PhD coursework. However, if these courses were taken prior to the introduction of ECE 896, the total number of credits of ECE 698, ECE 798, and ECE 896 may not exceed 21.
- A minimum of 15 credits of coursework other than ECE 701, ECE 896, ECE 998, and ECE 999.
- A maximum of 9 credits may be at the 500-level[1]

[1] For courses taken elsewhere, the equivalent levels are to be determined by the PhD advisor, subject to approval by the ECE Department chair.

Qualifying Exams

The ECE PhD Qualifying Exam tests students' knowledge of fundamental concepts and assesses their basic research skills. The exam consists of two parts: an in-class written technical qualifying exam and a research qualifying exam (RQE).

Technical Qualifying Exam

The Technical Qualifying Exam (TQE) that tests knowledge of fundamental concepts in a particular technical area. Students select one of seven areas for their TQE:

1. Computer Architecture and Digital Design
2. Control Theory
3. Electronics and Circuits
4. Hardware Security
5. Machine Learning in Computing
6. Machine Learning in Electrical Engineering
7. Signals and Systems.

The TQE is offered once a year in January before the start of the Spring semester. Students entering the program with a BS or an MS are required to take the TQE the first time it is offered after they have entered the program. A student who fails the exam will have a second and final chance to pass the exam in the following year. A student who obtains a marginal passing grade in the first attempt of the TQE will be required to take an oral exam in the same area within the subsequent four weeks. The oral exam will be administered by two ECE faculty members. A student who passes the oral exam will satisfy the TQE requirement. A student who demonstrates marginal performance in the oral exam will be required to take the written exam for the second and final time when it is offered in the following year. A student who fails the oral exam will be dismissed from the program. A student who fails the written TQE twice will be dismissed from the program.

Outstanding students may be exempt from the TQE if they obtain at least an A in two designated courses taken within the 24 months preceding the first attempt at the TQE, or within the twelve months after the student has failed the TQE in the first attempt. The designated courses are as follows:

- Area 1 - ECE 511 Computer Architecture and ECE 545 Digital System Design with VHDL
- Area 2 - ECE 521 Linear Systems and Control and ECE 528 Introduction to Random Processes in Electrical and Computer Engineering
- Area 3 - Any two of ECE 584 Semiconductor Device Fundamentals, ECE 586 Digital Integrated Circuits, ECE 587 Design of Analog Integrated Circuits, or ECE 684 MOS Device Electronics
- Area 4 - ECE 505 Hardware Security and ECE 545 Digital System Design with VHDL
- Area 5 - ECE 511 Computer Architecture and ECE 527 Learning From Data
- Area 6 - ECE 527 Learning From Data and ECE 528 Introduction to Random Processes in Electrical and Computer Engineering
- Area 7 - ECE 521 Linear Systems and Control or ECE 535 Digital Signal Processing and ECE 528 Introduction to Random Processes in Electrical and Computer Engineering.

Research Qualifying Exam

The purpose of the Research Qualifying Exam (RQE) is to assess whether students can define a research problem, critically review the literature related to the problem, apply appropriate research methods to study the problem, and interpret and communicate their results. The RQE requires students to complete a short research project and to document

their results in a written report and an oral presentation. The RQE topic is defined by a faculty advisor in consultation with the student. A committee of three faculty members (the advisor plus two additional members) evaluates the written report and the oral presentation. During the presentation the student is expected to answer questions about their project and about fundamental concepts related to the research.

Students who enter the program with an MS degree are encouraged to start working on their RQE as soon as they enter the PhD program and no later than the start of their second semester in the program regardless of their performance on the TQE. These students are required to present their paper in the RQE exam no later than the end of their second semester in the program. Students who enter the program with a BS degree are required to take the exam prior to completing 30 credits in the program regardless of their performance on the TQE.

Evaluation

The written research paper and the presentation will be evaluated using the following four criteria. Students must receive at least a "competent" raking (three on a scale of one to five) on each of the following four evaluation criteria to pass the RQE:

- Ability to articulate the research problem and its significance.
- Ability to critically review the literature.
- Understanding of research methods.
- Ability to communicate and interpret research results.

After a student has passed the TQE and has taken the RQE, the ECE PhD Committee reviews the exam results, the student's transcript, and a letter of recommendation from the student's advisor. Based on this information, the PhD Committee determines whether the student is qualified for the PhD program. A qualified student will proceed to choose a thesis advisor.

Dissertation Research

A maximum of 24 credits of ECE 998 Doctoral Dissertation Proposal and ECE 999 Doctoral Dissertation may be applied to the degree. Students who choose to take fewer than 24 credits of ECE 998 Doctoral Dissertation Proposal and ECE 999 Doctoral Dissertation may earn the remaining credits from approved coursework. Students cannot enroll in ECE 999 Doctoral Dissertation before they have advanced to candidacy. Students advanced to candidacy after the add period for a given semester must wait until the following semester to register for ECE 999 Doctoral Dissertation. Students cannot advance to candidacy and defend their dissertation during the same semester. Once enrolled in ECE 999 Doctoral Dissertation, students must maintain continuous registration in ECE 999 Doctoral Dissertation each semester until graduation, excluding summers. Students who defend in the summer must be registered for at least 1 credit of ECE 999 Doctoral Dissertation during that summer term.

Code	Title	Credits
Select 12-24 credits from the following:		12-24
ECE 998	Doctoral Dissertation Proposal (minimum 9 credits required)	
ECE 999	Doctoral Dissertation (minimum 3 credits required)	
Total Credits		12-24

Advisor, Dissertation Director, and Dissertation Committee

The process of finding a dissertation topic and dissertation director is governed by the university's policies, as described in the Requirements for Doctoral Degrees in the Academic Policies section of the catalog. Upon admission to the program, each student is assigned an ECE faculty member as an academic advisor. After the student passes the qualifying exam, the student proposes and the ECE department chair appoints a dissertation director who must be a Mason graduate faculty member with a full-time appointment. The dissertation director becomes the student's academic advisor. Normally, the dissertation director is a member of the ECE department; however, a member of another department may be appointed if warranted by the dissertation research topic. A dissertation committee should be formed within a year after the student has passed the qualifying exam. The dissertation committee consists of the dissertation director who acts as chair plus three or four additional members. All dissertation committees must include at least three members of the Mason graduate faculty, at least two of whom must be from the ECE Department. At least one member of the dissertation committee must be from outside the discipline of electrical and computer engineering. The outside member may be faculty from another Mason department or, if justified by the research topic, a qualified scientist or engineer from outside the university. All committee members must have a doctoral level degree. The dissertation committee must be approved by the ECE department chair. The dissertation director, as academic advisor, and the ECE Department chair must approve all decisions concerning a student's course requirements and dissertation.

Dissertation Proposal, Research Competency Exam, Advancement to Candidacy

The student prepares a written dissertation proposal outlining the proposed research and submits it to the dissertation committee for approval. After completing coursework requirements and preparing a proposal, the student takes a research competency exam to demonstrate their preparation for dissertation research. The exam consists of a presentation of the dissertation proposal followed by an oral exam. The exam is administered by the student's dissertation committee. The purpose of the oral exam is to verify that the student is familiar with the relevant material related to their research. The student is advanced to candidacy when he or she passes the oral exam and the dissertation committee approves the proposal.

Dissertation Research and Defense

Students conduct dissertation research under the guidance of their dissertation director, with regular consultation with other members of the dissertation committee. During this period, students must present their research results at least once in the form of a department seminar. The dissertation must represent an achievement in research, must be a significant contribution to its field, and should be deemed publishable in refereed journals or at highly selective conferences. On completion of the dissertation the student may be asked, at the discretion of the dissertation committee, to present a predefense in the presence of the committee members. The dissertation committee and the department chair approve the student's application for a public defense of the doctoral dissertation. A copy of the dissertation must be placed in the University Libraries four weeks prior to the public defense. After a successful public defense and completion of the final form of the dissertation, the dissertation committee recommends the candidate for the degree of doctor of philosophy.

Teaching Requirement

To acquire teaching experience, each PhD student is required to participate in the department's teaching activity. The requirement is typically satisfied by working as a recitation instructor for one semester,

presenting several lectures within a course, or performing other teaching work approved by the department.

Electrical Engineering, BS

Banner Code: VS-BS-ELEN

Academic Advising

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Email: ece@gmu.edu
Website: https://ece.gmu.edu/academics/undergraduate

Electrical engineering is a major field of modern technology and has transformed every facet of our lives. Electrical engineers are involved in research, development, design, production, and operation of a wide variety of devices and systems, including reliable, secure, and high-speed communication networks, autonomous vehicles, robots, multi-agent systems, nanoscale integrated circuits as well as sensors that are essential to the internet-of-things. Other technologies in electrical engineering include smartphones, tablets and other modern computing platforms, as well as wearable technology such as health-monitoring wristbands, biomedical systems such as prosthetic devices, and brain-machine interfaces. The electrical engineering program offers a broad variety of courses and prepares students for a diverse array of careers in the field. Hands-on design experiences and simulation are emphasized throughout the curriculum through labs and projects integrated into various courses. The program culminates in a year-long senior design project effort which provides each student with the opportunity to apply concepts to designing, innovating and building a functional hardware system in a team environment.

The Department of Electrical and Computer Engineering is staffed by 33 full-time professors and several part-time professors.

The bachelor's program in Electrical Engineering is accredited by the Engineering Accreditation Commission of ABET, http://www.abet.org.

Career Opportunities

Career opportunities exist in engineering research and development, system design, system integration, engineering management, engineering consultancy, technical sales, and patent law, among others. The program provides a strong preparation for graduate study.

Specializations

The curriculum provides a strong background in the fundamentals of electrical engineering and senior-level courses in the areas of electronics, networks, communications and signal processing, embedded systems, internet of things, power and energy systems, and controls and robotics. Further, the curriculum includes 9 credits of senior technical electives and 2 credits of advanced engineering labs, which may be used for further specialization in one of these areas.

Additional Information

Degree requirements may be satisfied on a full-time or part-time basis. Cooperative education provides students with the opportunity to integrate paid career-related work experience with classroom learning. Academic credit towards the completion of major requirements is not given for co-op experience. In addition to the usual financial aid available through the Office of Student Financial Aid, electrical engineering majors are encouraged to apply for scholarships provided by various professional societies and industrial organizations in their field.

Admissions & Policies

Policies

For policies governing all undergraduate degrees, see AP.5 Undergraduate Policies.

Writing-Intensive Requirement

Mason's writing-intensive requirement is satisfied by the following two courses: ECE 333 Linear Electronics I and ECE 491 Engineering Seminar in which faculty provide writing instruction and feedback on student technical writing assignments. Drafts and revisions are required.

Change of Major

See Change of Major for more information.

Double Major and Minor Programs for Electrical Engineering and Computer Engineering

Electrical Engineering majors and Computer Engineering majors can earn degrees with double majors in a number of disciplines. Computer Engineering and Computer Science may be combined. Electrical Engineering has been combined with Computer Engineering, Computer Science, Mechanical Engineering, Physics or Math. Details are available in the department brochures or at the Volgenau School web site volgenau.gmu.edu (http://volgenau.gmu.edu). There are several minors available for students in the ECE Department including the Mechanical Engineering minor, Bioengineering minor, and others as listed in the catalog.

Grade Requirements

All electrical engineering students are strongly encouraged to see their major faculty advisor before course registration each semester.

Students must complete each ECE, ENGR, BENG, CS, MATH, PHYS, and STAT course presented as part of the required 121 credits for the degree with a grade of C or better.

Students must also complete any course required by the program that is a prerequisite to another course applicable to the degree with a grade of C or better.

Termination from the Major

No math, science, or Volgenau School of Engineering course that is required for the major may be attempted more than three times. Those students who do not successfully complete such a course within three attempts will be terminated from the major. Undeclared students in the Volgenau School who do not successfully complete a course required for a Volgenau School major within three attempts will also be terminated.

In addition, students in the Volgenau School with evidence of continued failure to make adequate progress toward declaring or completing a Volgenau School major will be terminated from the school. Adequate progress is determined by the major program. For more information, see AP.5.2.4 Termination from the Major (https://catalog.gmu.edu/policies/academic/undergraduate-policies/#ap-5-2-4).

Once a student has attempted one of these courses twice unsuccessfully, the third attempt must be no later than the next semester of enrollment, excluding summers. Failure to take the course at that time will result in termination from the major. A third attempt of a Volgenau School of Engineering course requires support by the student's major department as well as permission by the department offering the course. This permission is not guaranteed. If the student is unable to take the course when required, the student may request an extension to a future semester; extensions require approval of the student's advisor, their department, and the Associate Dean for Undergraduate Programs. The deadline for extension requests is the add deadline for the semester in which the course is required.

Students who have been terminated from a Volgenau School of Engineering major may not register for a Volgenau School course without permission of the department offering the course. This applies to all undergraduate courses offered by the Volgenau School except IT 104 Introduction to Computing (Mason Core) and STAT 250 Introductory Statistics I (Mason Core).

A student may not declare any major in the Volgenau School of Engineering if the student has previously met the termination criteria for that major at any time, regardless of what the student's major was at the time the courses were taken.

Requirements

Degree Requirements

Total credits: minimum 121

Electrical and Computer Engineering

Code	Title	Credits
ECE 101	Introduction to Electrical and Computer Engineering	3
ECE 201	Introduction to Signals and Systems	3
ECE 231	Digital System Design	3
ECE 232	Digital System Design Lab	1
ECE 285	Electric Circuit Analysis I	3
ECE 286	Electric Circuit Analysis II	3
ECE 305	Electromagnetic Theory	3
ECE 321	Continuous-Time Signals and Systems	3
ECE 333	Linear Electronics I	3
ECE 334	Linear Electronics Lab I	1
ECE 350	Embedded Systems and Hardware Interfaces	3
ECE 421	Classical Systems and Control Theory	3
ECE 433	Linear Electronics II	3
ECE 445	Computer Organization	3
ECE 460	Communication and Information Theory	3
ECE 491	Engineering Seminar	1
ECE 492	Senior Advanced Design Project I (Mason Core) [1]	1
ECE 493	RS: Senior Advanced Design Project II (Mason Core)	2
Total Credits		45

[1] Students who would like to complete a more challenging senior design project have the option of enrolling in ECE 392 Engineering Design Studio to gain a semester head start in the design process.

Technical Electives

Three technical elective courses totaling 9 credit hours must be selected from the list below. ECE 447 Microcontrollers and ECE 448 FPGA Design with VHDL, which are 4-credit courses with built-in labs, can be used to fulfill one technical elective and one advanced lab requirement. The graduate courses listed below and courses outside the ECE department may be taken to fulfill the technical elective requirement with the permission of the department. The decision to approve non-ECE courses as well as graduate courses as technical electives is at the discretion of the department based on a review of the course content and the student's academic record.

Code	Title	Credits
Select 9 credit hours from the following:		9
ECE 370	Robot Design	
ECE 410	Applications of Discrete-Time Signal Processing	
ECE 415	Power System Analysis	
ECE 416	Electric Machinery and Modern Applications	
ECE 417	Smart Grid and Cyber Security	
ECE 424	Modern Control Systems Design	
ECE 425	Secure RF Communications	
ECE 430	Principles of Semiconductor Devices	
ECE 431	Digital Circuit Design	
ECE 446	Device Driver Development	
ECE 447	Microcontrollers	
ECE 448	FPGA Design with VHDL	
ECE 450	Mobile Robots	
ECE 462	Data and Computer Communications	
ECE 463	Digital Communications Systems	
ECE 465	Computer Networking Protocols	
ECE 470	Introduction to Humanoid Robotics	
ECE 476	Cryptography Fundamentals	
ECE 499	Special Topics in Electrical and Computer Engineering	
The following 500-level courses may also be taken (with prior approval of the department):		
ECE 505	Hardware Security	
ECE 508	Internet of Things	
ECE 510	Real-Time Concepts	
ECE 511	Computer Architecture	
ECE 512	Computer Architecture Security	
ECE 513	Applied Electromagnetic Theory	
ECE 516	Mobile Systems and Applications	
ECE 521	Linear Systems and Control	
ECE 526	Neural Engineering	
ECE 527	Learning From Data	
ECE 528	Introduction to Random Processes in Electrical and Computer Engineering	
ECE 530	Sensor Engineering	

ECE 531	Introduction to Wireless Communications and Networks	
ECE 535	Digital Signal Processing	
ECE 538	Medical Imaging	
ECE 542	Computer Network Architectures and Protocols	
ECE 550	System Engineering Design	
ECE 552	Big Data Technologies	
ECE 565	Introduction to Optical Electronics	
ECE 567	Optical Fiber Communications	
ECE 580	Small Spacecraft Engineering	
ECE 584	Semiconductor Device Fundamentals	
ECE 586	Digital Integrated Circuits	
ECE 587	Design of Analog Integrated Circuits	
ECE 590	Selected Topics in Engineering	
Total Credits		9

Advanced Engineering Labs

Code	Title	Credits
Select two advanced labs from the following:		2
ECE 429	Modern Control Systems Lab	
ECE 434	Linear Electronics II Laboratory	
ECE 436	Printed Circuit Board Design Lab	
ECE 447	Microcontrollers [1]	
ECE 448	FPGA Design with VHDL [1]	
ECE 461	Communication Engineering Laboratory	
ECE 467	Computer Networking Laboratory	
Total Credits		2

[1] Fulfills 3 credits of technical electives and 1 credit of advanced lab.

Computer Science

Code	Title	Credits
CS 112	Introduction to Computer Programming	4
CS 222	Computer Programming for Engineers	3
Total Credits		7

Mathematics and Statistics

Code	Title	Credits
MATH 113	Analytic Geometry and Calculus I (Mason Core)	4
MATH 114	Analytic Geometry and Calculus II	4
MATH 203	Linear Algebra	3
MATH 213	Analytic Geometry and Calculus III	3
MATH 214	Elementary Differential Equations	3
STAT 346	Probability for Engineers	3
Total Credits		20

Physics

Code	Title	Credits
PHYS 160	University Physics I (Mason Core)	3
PHYS 161	University Physics I Laboratory (Mason Core)	1
PHYS 260	University Physics II (Mason Core)	3
PHYS 261	University Physics II Laboratory (Mason Core)	1
PHYS 262	University Physics III (Mason Core)	3
PHYS 263	University Physics III Laboratory (Mason Core)	1
Total Credits		12

Engineering

Code	Title	Credits
ENGR 107	Introduction to Engineering (Mason Core)	2
Total Credits		2

English, Communication, and Economics

Code	Title	Credits
ENGH 302	Advanced Composition (Mason Core) (Natural Sciences and Technology or Multidisciplinary section)	3
COMM 100	Public Speaking (Mason Core)	3
or COMM 101	Fundamentals of Communication (Mason Core)	
ECON 103	Contemporary Microeconomic Principles (Mason Core)	3
Total Credits		9

Additional Mason Core

Students must complete all Mason Core requirements not fulfilled by major requirements. Mason Core courses should be selected from the department's list of approved courses. Honors college students meet the written and oral communication requirements through completion of the honors college curriculum. The Synthesis Mason Core requirement is satisfied by ECE 492 Senior Advanced Design Project I (Mason Core) and ECE 493 RS: Senior Advanced Design Project II (Mason Core).

Code	Title	Credits
Written Communication [1]		3
Literature		3
Arts		3
Western Civilization/World History		3
Global Understanding		3
Total Credits		15

[1] Lower-level requirement.

Concentrations

Concentrations are available in the electrical engineering baccalaureate program. Completion of specific science courses and senior-level courses leads to one of these designations on the student's transcript on graduation. Concentration requirements may also meet some or all of the Advanced Engineering Lab and Technical Elective requirements.

Available Concentrations

- Concentration in Controls and Robotics (CARB)
- Concentration in Communications and Signal Processing (CSP)
- Concentration in Electronics (ELE)
- Concentration in Embedded Systems (EMSY)
- Concentration in Internet of Things (IOT)
- Concentration in Power and Energy Systems (PES)

Concentration in Controls and Robotics (CARB)

Code	Title	Credits
Required Courses:		7
ECE 350	Embedded Systems and Hardware Interfaces	
ECE 424	Modern Control Systems Design	
ECE 429	Modern Control Systems Lab	
Select two from the following:		6-7
ECE 370	Robot Design	
ECE 447	Microcontrollers	
ECE 450	Mobile Robots	
ECE 470	Introduction to Humanoid Robotics	
ECE 521	Linear Systems and Control	
ECE 527	Learning From Data	
Total Credits		13-14

Concentration in Communications and Signal Processing (CSP)

Code	Title	Credits
Required Courses:		7
ECE 321	Continuous-Time Signals and Systems	
ECE 460	Communication and Information Theory	
ECE 461	Communication Engineering Laboratory	
or ECE 467	Computer Networking Laboratory	
Select three from the following:		9
ECE 410	Applications of Discrete-Time Signal Processing	
ECE 425	Secure RF Communications	
ECE 462	Data and Computer Communications	
ECE 463	Digital Communications Systems	
ECE 465	Computer Networking Protocols	
ECE 476	Cryptography Fundamentals	
PHYS 306	Wave Motion and Electromagnetic Radiation	
ECE 527	Learning From Data	
ECE 528	Introduction to Random Processes in Electrical and Computer Engineering	
ECE 531	Introduction to Wireless Communications and Networks	
ECE 535	Digital Signal Processing	
ECE 567	Optical Fiber Communications	
Total Credits		16

Concentration in Electronics (ELE)

Code	Title	Credits
Required Courses:		4
ECE 433	Linear Electronics II	
ECE 434	Linear Electronics II Laboratory	
Select three from the following:		9-11
ECE 415	Power System Analysis	
ECE 430	Principles of Semiconductor Devices	
ECE 431	Digital Circuit Design	
ECE 447	Microcontrollers	
ECE 448	FPGA Design with VHDL	
PHYS 306	Wave Motion and Electromagnetic Radiation	
ECE 513	Applied Electromagnetic Theory	
ECE 565	Introduction to Optical Electronics	
ECE 567	Optical Fiber Communications	
ECE 584	Semiconductor Device Fundamentals	
ECE 586	Digital Integrated Circuits	
ECE 587	Design of Analog Integrated Circuits	
Total Credits		13-15

Concentration in Embedded Systems (EMSY)

Code	Title	Credits
Required Courses:		7
ECE 350	Embedded Systems and Hardware Interfaces	
ECE 447	Microcontrollers	
Select two from the following:		6
ECE 446	Device Driver Development	
ECE 510	Real-Time Concepts	
ECE 516	Mobile Systems and Applications	
ECE 530	Sensor Engineering	
ECE 580	Small Spacecraft Engineering	
Total Credits		13

Concentration in Internet of Things (INOT)

Code	Title	Credits
Required Courses:		9
ECE 350	Embedded Systems and Hardware Interfaces	
ECE 465	Computer Networking Protocols	
ECE 508	Internet of Things	
Select one from the following:		3
ECE 462	Data and Computer Communications	
ECE 476	Cryptography Fundamentals	
ECE 510	Real-Time Concepts	
ECE 512	Computer Architecture Security	
ECE 530	Sensor Engineering	
Total Credits		12

Concentration in Power and Energy Systems (PES)

Code	Title	Credits
Required Courses:		6
ECE 305	Electromagnetic Theory	
ECE 415	Power System Analysis	
Select one from the following:		3
ECE 416	Electric Machinery and Modern Applications	
or ECE 417	Smart Grid and Cyber Security	
Select one from the following:		3
ECE 416	Electric Machinery and Modern Applications	
ECE 417	Smart Grid and Cyber Security	
ECE 424	Modern Control Systems Design	
ECE 425	Secure RF Communications	

ECE 462	Data and Computer Communications	
ECE 463	Digital Communications Systems	
ECE 465	Computer Networking Protocols	
ECE 476	Cryptography Fundamentals	
ECE 505	Hardware Security	
ECE 508	Internet of Things	
ECE 513	Applied Electromagnetic Theory	
ECE 527	Learning From Data	
ECE 531	Introduction to Wireless Communications and Networks	
Total Credits		12

4-Year Plan

Bachelors of Science in Electrical Engineering Sample Plan of Study

Detailed four year plans and degree planning checklists can be found at https://advising.gmu.edu/current-student/majors-at-mason/.

Accelerated Master's

BS (selected)/Statistical Science, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program (BAM) and obtain an undergraduate BS degree and the Statistical Science, MS in an accelerated time-frame after satisfactory completion of a minimum of 138 credits.

Admitted students are able to use up to 12 graduate credits in partial satisfaction of requirements for the undergraduate degree. Upon completion and conferral of the bachelor's degree and with satisfactory performance (grade of 'B' or better) in each of the graduate courses, students are given advanced standing in the master's program.

See AP.6.7 Bachelor's/Accelerated Master's Degrees for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements

No specific undergraduate BS degree is required. Students enrolled in any BS degree may apply to the accelerated Statistical Science, MS program **if such an accelerated** Statistical Science, MS **pathway is allowable from the student's BS program, which will be determined by the academic advisors of both the BS and MS programs.**

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits with an overall GPA of 3.0.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific prerequisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the Statistical Science, MS program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- Completion of Mason's requirements for undergraduate degree conferral (graduation) and completion of application for graduation.
- An overall GPA of 3.00.
- Completion of the following Mason courses each with a grade of C or better:

Code	Title	Credits
MATH 213	Analytic Geometry and Calculus III	3
MATH 203	Linear Algebra	3
or MATH 321	Abstract Algebra	
STAT 250	Introductory Statistics I (Mason Core)	3
or STAT 344	Probability and Statistics for Engineers and Scientists I	
STAT 346	Probability for Engineers	3
or MATH 351	Probability	
STAT 362	Introduction to Computer Statistical Packages	3

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, students complete all credits satisfying degree requirements for the BS and MS programs, with up to twelve credits overlap chosen from the following graduate courses:

Code	Title	Credits
STAT 544	Applied Probability	3
STAT 554	Applied Statistics I	3
STAT 560	Biostatistical Methods	3
STAT 574	Survey Sampling I	3
STAT 663	Statistical Graphics and Data Exploration I	3

All graduate course prerequisites must be completed prior to enrollment. Each graduate course must be completed with a grade of B or better to apply toward the MS degree.

While still in undergraduate status, a maximum of 6 additional graduate credits may be taken as reserve graduate credit and applied to the master's program. Reserve graduate credits do not apply to the undergraduate degree.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees policies.

Degree Conferral

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and Graduate

Recruitment and Enrollment Services. At the completion of MS requirements, a master's degree is conferred.

Electrical Engineering, BS/Computer Engineering, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BS in Electrical Engineering and an MS in Computer Engineering in an accelerated time-frame after satisfactory completion of a minimum of 139 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degrees for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits with an overall GPA of 3.0.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MS program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form: 3.0 overall GPA, successfully meeting Mason's requirements for undergraduate degree conferral (graduation), and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced standing courses: Students may take up to 12 credits of graduate-level courses that will count as advanced standing (i.e., overlap between the BS/MS program) from the list below. Note that ECE 587 can be used to meet the ECE 433 requirement for the BS in Electrical Engineering program. An additional 9 credits of graduate-level courses from the list below may be selected to substitute in place of the 9 credits of technical electives required for the undergraduate degree.

Code	Title	Credits
ECE 505	Hardware Security	3
ECE 508	Internet of Things	3
ECE 510	Real-Time Concepts	3
ECE 511	Computer Architecture	3
ECE 512	Computer Architecture Security	3
ECE 516	Mobile Systems and Applications	3
ECE 521	Linear Systems and Control	3
ECE 527	Learning From Data	3
ECE 528	Introduction to Random Processes in Electrical and Computer Engineering	3
ECE 530	Sensor Engineering	3
ECE 531	Introduction to Wireless Communications and Networks	3
ECE 535	Digital Signal Processing	3
ECE 542	Computer Network Architectures and Protocols	3
ECE 545	Digital System Design with VHDL	3
ECE 567	Optical Fiber Communications	3
ECE 580	Small Spacecraft Engineering	3
ECE 590	Selected Topics in Engineering	3

Selected 600 level courses may be taken as well with permission of an advisor granted before registering for a given course.

Reserve credit courses: Additional courses (up to 6 credits) may be selected from the above list as credits to be put on reserve to be later applied to the graduate program. Students can take these courses while undergraduates but these reserve courses will only count for the graduate degree program.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees.

Electrical Engineering, BS/Electrical Engineering, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BS in Electrical Engineering and an MS in Electrical Engineering in an accelerated time-frame after satisfactory completion of a minimum of 139 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degrees for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits with an overall GPA of 3.0.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific prerequisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MS program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form: 3.0 overall GPA, successfully meeting Mason's requirements for undergraduate degree conferral (graduation), and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced standing courses: Students may take up to 12 credits of graduate-level courses that will count as advanced standing (i.e., overlap between the BS/MS program) from the list below: Note that that ECE 587 can be used to meet the ECE 433 requirement for the BS in Electrical Engineering program. An additional 9 credits of graduate-level courses from the list below may be selected to substitute in place of the 9 credits of technical electives required for the undergraduate degree:

Code	Title	Credits
ECE 505	Hardware Security	3
ECE 508	Internet of Things	3
ECE 510	Real-Time Concepts	3
ECE 511	Computer Architecture	3
ECE 513	Applied Electromagnetic Theory	3
ECE 516	Mobile Systems and Applications	3
ECE 521	Linear Systems and Control	3
ECE 526	Neural Engineering	3
ECE 527	Learning From Data	3
ECE 528	Introduction to Random Processes in Electrical and Computer Engineering	3
ECE 530	Sensor Engineering	3
ECE 531	Introduction to Wireless Communications and Networks	3
ECE 535	Digital Signal Processing	3
ECE 538	Medical Imaging	3
ECE 542	Computer Network Architectures and Protocols	3
ECE 550	System Engineering Design	3
ECE 565	Introduction to Optical Electronics	3
ECE 567	Optical Fiber Communications	3
ECE 580	Small Spacecraft Engineering	3
ECE 584	Semiconductor Device Fundamentals	3
ECE 586	Digital Integrated Circuits	3
ECE 587	Design of Analog Integrated Circuits	3
ECE 590	Selected Topics in Engineering	3

Selected 600 level courses may be taken as well with permission of an advisor granted before registering for a given course.

Reserve credit courses: Additional courses (up to 6 credits) may be selected from the above list as credits to be put on reserve to be later applied to the graduate program. Students can take these courses while undergraduates but these reserve courses will only count for the graduate degree program.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees

Electrical Engineering, BS/Operations Research, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain an Electrical Engineering, BS and an Operations Research, MS in an accelerated time-frame after satisfactory completion of a minimum of 139 credits.

Admitted students are able to use up to 12 graduate credits in partial satisfaction of requirements for the undergraduate degree. Upon completion and conferral of the bachelor's degree and with satisfactory performance (grade of 'B' or better) in each of the graduate courses, students are given advanced standing in the master's program.

See AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/).

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Electrical Engineering, BS students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits with an overall GPA of at least 3.3, and completion of all MATH, PHYS 160/161, and PHYS 260/261 requirements. Students must additionally complete MATH 203 Linear Algebra prior to applying for the graduate program.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

The criteria for admission are identical to criteria for admission to the Operations Research, MS program. Students already admitted in the BAM Pathway will be admitted to the Operations Research, MS program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- An overall GPA of at least 3.3
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing course: Students must complete all credits that satisfy requirements for both the BS and MS programs. Up to four courses (12 credits) of approved master's level courses taken as part of the undergraduate degree may be applied to the graduate degree. The

courses selected for this purpose must be approved by the academic advisors of both the BS and MS programs and by the SEOR department chair.

- Students selecting up to two courses (6 credits) of approved master's level courses may select from the Electrical and Computer Engineering courses given below.
- Students selecting up to three or four courses (9 or 12 credits) of approved master's level courses may select at most two courses from the Electrical and Computer Engineering course list and select the remaining courses from the Systems Engineering and Operations Research course list given below. Note that ECE 587 can be used to meet the ECE 433 requirement for the Electrical Engineering, BS program. Students are highly recommended to select courses marked as core courses because it applies to the master's degree regardless of the graduate-level concentration chosen in the Operations Research, MS. The undergraduate version of these courses, if any, may *not* be applied toward the Operations Research, MS. Credit may not be received for both the undergraduate and graduate version of these courses.
- Some of the courses in the Systems Engineering and Operations Research course list applies only to certain concentrations in the Operations Research, MS program.
- Students must pay attention to the prerequisites required for a course, and the master's degree concentration that the course may satisfy.

Select at most two from the following Electrical and Computer Engineering courses:

Code	Title	Credits
ECE 505	Hardware Security	
ECE 508	Internet of Things	
ECE 510	Real-Time Concepts	
ECE 511	Computer Architecture	
ECE 513	Applied Electromagnetic Theory	
ECE 516	Mobile Systems and Applications	
ECE 521	Linear Systems and Control	
ECE 526	Neural Engineering	
ECE 527	Learning From Data	
ECE 528	Introduction to Random Processes in Electrical and Computer Engineering	
ECE 530	Sensor Engineering	
ECE 531	Introduction to Wireless Communications and Networks	
ECE 535	Digital Signal Processing	
ECE 538	Medical Imaging	
ECE 542	Computer Network Architectures and Protocols	
ECE 550	System Engineering Design	
ECE 565	Introduction to Optical Electronics	
ECE 567	Optical Fiber Communications	
ECE 580	Small Spacecraft Engineering	
ECE 584	Semiconductor Device Fundamentals	
ECE 586	Digital Integrated Circuits	
ECE 587	Design of Analog Integrated Circuits	
ECE 590	Selected Topics in Engineering	

Select the remaining from the following Systems Engineering and Operations Research courses:

Code	Title	Credits
SYST 521	Network Analysis	
OR 538	Analytics for Financial Engineering and Econometrics	
OR 541	Operations Research: Deterministic Models (Core)	
OR 542	Operations Research: Stochastic Models (Core)	
OR 568	Applied Predictive Analytics (Core)	
OR 588	Financial Systems Engineering I: Introduction to Options, Futures, and Derivatives	

While still in undergraduate status, a maximum of 6 additional graduate credits may be taken as reserve graduate credit and applied to the master's program. Reserve graduate credits do not apply to the undergraduate degree.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text).

Degree Conferral

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and the VSE Graduate Admissions Office. At the completion of MS requirements, a master's degree is conferred.

Electrical Engineering, BS/Systems Engineering, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain an Electrical Engineering, BS and a Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) in an accelerated time-frame after satisfactory completion of a minimum of 139 credits.

Admitted students are able to use up to 12 graduate credits in partial satisfaction of requirements for the undergraduate degree. Upon completion and conferral of the bachelor's degree and with satisfactory performance (grade of 'B' or better) in each of the graduate courses, students are given advanced standing in the master's program.

See AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/).

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Electrical Engineering, BS students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits with an overall GPA of at least 3.3, and completion of all MATH, PHYS 160/161, and PHYS 260/261 requirements.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

The criteria for admission are identical to criteria for admission to the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program. Students already admitted in the BAM Pathway will be admitted to the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- An overall GPA of at least 3.3
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing course: Students must complete all credits that satisfy requirements for both the BS and MS programs. Up to four courses (12 credits) of approved master's level courses taken as part of the undergraduate degree may be applied to the graduate degree. The courses selected for this purpose must be approved by the academic advisors of both the BS and MS programs and by the SEOR department chair.

- Students selecting up to two courses (6 credits) of approved master's level courses may select from the Electrical and Computer Engineering courses given below.
- Students selecting up to three or four courses (9 or 12 credits) of approved master's level courses may select at most two courses from the Electrical and Computer Engineering course list and select the remaining courses from the Systems Engineering and Operations Research course list given below. Note that ECE 587 can be used to meet the ECE 433 requirement for the Electrical Engineering, BS program. Students are highly recommended to select courses marked as core courses because it applies to the master's degree regardless of the graduate-level concentration chosen in the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program. The undergraduate version of these courses, if any, may *not* be applied toward the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/). Credit may not be received for both the undergraduate and graduate version of these courses.
- Except for the courses marked as core, any course chosen from either course list can be used to satisfy SYST 505 Systems Engineering Principles core requirement in the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program.
- Some of the courses in the Systems Engineering and Operations Research course list applies only to certain concentrations in the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program.
- Students must pay attention to the prerequisites required for a course, and the master's degree concentration that the course may satisfy.

Select at most two from the following Electrical and Computer Engineering courses:

Code	Title	Credits
ECE 505	Hardware Security	
ECE 508	Internet of Things	
ECE 510	Real-Time Concepts	
ECE 511	Computer Architecture	
ECE 513	Applied Electromagnetic Theory	
ECE 516	Mobile Systems and Applications	
ECE 521	Linear Systems and Control	
ECE 526	Neural Engineering	
ECE 527	Learning From Data	
ECE 528	Introduction to Random Processes in Electrical and Computer Engineering	
ECE 530	Sensor Engineering	
ECE 531	Introduction to Wireless Communications and Networks	
ECE 535	Digital Signal Processing	
ECE 538	Medical Imaging	
ECE 542	Computer Network Architectures and Protocols	
ECE 550	System Engineering Design	
ECE 565	Introduction to Optical Electronics	
ECE 567	Optical Fiber Communications	
ECE 580	Small Spacecraft Engineering	
ECE 584	Semiconductor Device Fundamentals	
ECE 586	Digital Integrated Circuits	
ECE 587	Design of Analog Integrated Circuits	
ECE 590	Selected Topics in Engineering	

Select the remaining from the following Systems Engineering and Operations Research courses:

Code	Title	Credits
SYST 510	Systems Definition and Cost Modeling (Core)	
SYST 520	System Engineering Design (Core)	
SYST 530	Systems Engineering Management I (Core)	
SYST 542	Decision Support Systems Engineering	
SYST 573	Decision and Risk Analysis	

SYST 538	Analytics for Financial Engineering and Econometrics
SYST 568	Applied Predictive Analytics
SYST 584	Heterogeneous Data Fusion
SYST 588	Financial Systems Engineering I: Introduction to Options, Futures, and Derivatives

While still in undergraduate status, a maximum of 6 additional graduate credits may be taken as reserve graduate credit and applied to the master's program. Reserve graduate credits do not apply to the undergraduate degree.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text).

Degree Conferral

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and the VSE Graduate Admissions Office. At the completion of MS requirements, a master's degree is conferred.

Electrical Engineering, BS/ Telecommunications, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BS in Electrical Engineering and an MS in Telecommunications in an accelerated time-frame after satisfactory completion of a minimum of 142 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degrees for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits with an overall GPA of 3.0.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific prerequisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MS program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form: 3.0 overall GPA, successfully meeting Mason's requirements for undergraduate degree conferral (graduation), and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced standing courses: Students may take up to 9 credits of graduate-level courses that will count as advanced standing (i.e., overlap between the BS/MS program) from the list below. At least one class (3 credits) needs to be an ECE course. These 9 credits of graduate-level courses may be selected to substitute in place of the 9 credits of technical electives required for the undergraduate degree:

Code	Title	Credits
TCOM 514	Basic Switching: Lecture and Laboratory Course	3
or TCOM 515	Internet Protocol Routing: Lecture and Laboratory Course	
TCOM 535	The TCP/IP Suite of Internet Protocols	3
ECE 542	Computer Network Architectures and Protocols	3
ECE 531	Introduction to Wireless Communications and Networks	3

Selected 600 level courses may be taken as well with permission of an advisor granted before registering for a given course.

Reserve credit courses: Additional courses (up to 6 credits) may be selected from the list below as credits to be put on reserve to be later applied to the graduate program. Students can take these courses while undergraduates but these reserve courses will only count for the graduate degree program.

Code	Title	Credits
TCOM 500	Modern Telecommunications	3
TCOM 514	Basic Switching: Lecture and Laboratory Course	3
TCOM 515	Internet Protocol Routing: Lecture and Laboratory Course	3
TCOM 535	The TCP/IP Suite of Internet Protocols	3
TCOM 552	Introduction to Mobile Communications Systems	3
TCOM 570	Network Automation	3
TCOM 590	Selected Topics in Telecommunications	1.5-3

Selected 600 level courses may be taken as well with permission of an advisor granted before registering for a given course.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees.

Electrical Engineering, MS

Banner Code: VS-MS-ELEN

Academic Advising

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Fairfax, VA 22030

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Electrical Engineering is the discipline that drives our increasingly-connected society. Electrical engineers design systems, devices, and algorithms that contribute innovative solutions across a broad spectrum of applications. The Electrical Engineering program offers the following concentrations: bioengineering, communications and networking, control and robotics, electronics, signal processing, and space-based systems. The graduates of our program develop reliable, secure, and high-speed communication networks and systems; apply modern signal processing algorithms to extract information from images, audio, video, sonar, and radio signals; apply control theory and robotics foundations to applications such as autonomous vehicles, humanoid robots, and multi-agent systems; design nanoscale devices for the highly integrated circuits that drive the Internet of Things, health-monitoring devices, smartphones, tablets, and modern-day computer systems; develop prosthetic devices, brain-machine interfaces, and systems to ameliorate neurological disorders. Students in this program will develop theoretical foundations, analytical capabilities, and practical hands-on skills in their chosen field of specialization. They will also develop the oral and written communication skills necessary to articulate their ideas and succeed as entrepreneurs, practicing engineers, or technical managers in high-tech companies.

Admissions & Policies

Admissions

Requirements

To be considered for admission to the degree, applicants should have a baccalaureate degree in electrical engineering, computer engineering, or a closely-related discipline from an accredited program, and have earned a GPA of B or better during the last 60 credits. All students are also required to submit a resume and are encouraged to provide up to three choices for their preferred academic advisor and select their concentration at the time of application to the program.

For internationally educated applicants (as defined in the catalog section Admission of International Students (https://catalog.gmu.edu/admissions/international-students/#text), under English Proficiency Standards - Graduate Students), a satisfactory score on any of the English proficiency examinations accepted by Mason is required. Satisfactory scores are specific to Volgenau School of Engineering and are listed in the catalog section Admission of International Students (https://catalog.gmu.edu/admissions/international-students/#text), under English Proficiency Standards - Graduate Students.

All students are also required to submit resume and encouraged to provide up to three choices for their preferred academic advisor and select their concentration at the time of application to the program.

Students with BS or MS degrees in ECE-related disciplines (for example, bioengineering, computer science, cyber security engineering, mathematics, mechanical engineering, or physics) are encouraged to apply for admission. Domestic students may be admitted provisionally and required to satisfy provisional requirements before taking advanced coursework. Such students may also be advised to take some courses from the undergraduate electrical engineering curriculum, according to their intended specialization and specific backgrounds.

Policies

Student Advising

Students can select a concentration from those available in the MS degree program at the time of application to the program or later during their studies. In the former case, students are assigned an academic advisor from the selected concentration at the time of the admission, in the latter case, students can petition for a change of an academic advisor to match their concentration choice.

Plan of Study

Before completing 6 credit hours of coursework, each student must submit to the department a plan of study that has been approved by the academic advisor. This plan should be kept up to date by regular consultation with the academic advisor. A final, signed version of the plan must be turned in when the student submits a graduation application.

Requirements

Degree Requirements

Total credits: 30

Students must complete a minimum of 30 graduate credits beyond the bachelor's degree. The plan of study for the degree must fulfill the following requirements:

Core Course Requirement

Code	Title	Credits
Required Courses		
Select 15 credits from the following:		15
ECE 511	Computer Architecture	
ECE 521	Linear Systems and Control	
ECE 526	Neural Engineering	
ECE 528	Introduction to Random Processes in Electrical and Computer Engineering	
ECE 535	Digital Signal Processing	
ECE 542	Computer Network Architectures and Protocols	
ECE 580	Small Spacecraft Engineering	
ECE 584	Semiconductor Device Fundamentals	
ECE 586	Digital Integrated Circuits	
ECE 587	Design of Analog Integrated Circuits	
ECE 621	Systems Identification	
ECE 630	Statistical Communication Theory	
ECE 799	Master's Thesis [1]	
Total Credits		15

[1] See Thesis/Scholarly Paper option.

Concentration Requirement

Accomplished by choosing one of the concentrations, and then meeting course requirements for this concentration with the grade B or better in each course. For each concentration, related ECE 590 Selected Topics in Engineering courses can be used in addition to all explicitly listed 500-level courses, and related ECE 699 Advanced Topics in Electrical and Computer Engineering courses in addition to all explicitly listed 600 level or above courses, subject to approval by the student's academic advisor.

With assistance from their advisors, students may petition the graduate program coordinator to approve a specialization area of their own design, not fulfilling the requirements of any concentration.

Available Concentrations

- Concentration in Bioengineering (BIOE)
- Concentration in Communications and Networking (CONE)
- Concentration in Control and Robotics (CORO)
- Concentration in Electronics (ELE)
- Concentration in Signal Processing (SIGP)
- Concentration in Space-Based Systems (SBSY)

Concentration in Bioengineering (BIOE)

Code	Title	Credits
Required Courses		
ECE 526	Neural Engineering	3
ECE 538	Medical Imaging	3
Total Credits		6

Code	Title	Credits
Electives		
Select at least three courses from the following, including two courses at the 600 level or above:		9
BENG 501	Bioengineering Research Methods	
BENG 738	Advanced Medical Image Processing	
ECE 521	Linear Systems and Control	
ECE 528	Introduction to Random Processes in Electrical and Computer Engineering	
ECE 530	Sensor Engineering	
ECE 535	Digital Signal Processing	
ECE 537	Introduction to Digital Image Processing (DIP)	
ECE 542	Computer Network Architectures and Protocols	
ECE 620	Optimal Control Theory	
ECE 621	Systems Identification	
ECE 622	Kalman Filtering with Applications	
ECE 636	Advanced Digital Signal Processing	
ECE 637	Array Processing	
ECE 734	Detection and Estimation Theory	
Total Credits		9

Concentration in Communications and Networking (CONE)

Code	Title	Credits
Required Courses		
ECE 528	Introduction to Random Processes in Electrical and Computer Engineering	3
ECE 542	Computer Network Architectures and Protocols	3
Total Credits		6

Code	Title	Credits
Electives		
Select at least three courses from the following, including two courses at the 600 level or above:		9
ECE 508	Internet of Things	
ECE 527	Learning From Data	
ECE 531	Introduction to Wireless Communications and Networks	
ECE 567	Optical Fiber Communications	
ECE 630	Statistical Communication Theory	
ECE 631	Software-Defined Radio	
ECE 633	Error Control Coding	
ECE 639	Satellite Communications	
ECE 642	Design and Analysis of Computer Communication Networks	
ECE 643	Network Switching and Routing	
ECE 646	Applied Cryptography	
ECE 651	Advanced Learning From Data	
ECE 728	Random Processes in Electrical and Computer Engineering	
ECE 731	Digital Communications	
ECE 732	Mobile Communication Systems	
ECE 734	Detection and Estimation Theory	
ECE 741	Wireless Networks	
ECE 742	High-Speed Networks	
ECE 751	Information Theory	
Total Credits		9

Concentration in Control and Robotics (CORO)

Code	Title	Credits
Required Courses		
ECE 521	Linear Systems and Control	3
ECE 528	Introduction to Random Processes in Electrical and Computer Engineering	3
Total Credits		6

Code	Title	Credits
Electives		
Select at least three courses from the following list: [1]		9
ECE 527	Learning From Data	
ECE 612	Real-Time Embedded Systems	
ECE 619	Nonlinear Systems and Control	
ECE 620	Optimal Control Theory	
ECE 621	Systems Identification	
ECE 622	Kalman Filtering with Applications	
ECE 627	Adaptive Control	
ECE 635	Adaptive Signal Processing	
ECE 651	Advanced Learning From Data	
ECE 673	Discrete Event Systems	
Total Credits		9

[1] At least two courses must be different than ECE 612, ECE 635, and ECE 673.

Concentration in Electronics (ELE)

Code	Title	Credits
Required Courses		
ECE 584	Semiconductor Device Fundamentals	3

ECE 586	Digital Integrated Circuits	3
Total Credits		6

Code	Title	Credits
Electives		
Select at least three courses from the following, including two courses at the 600 level or above:		9
ECE 513	Applied Electromagnetic Theory	
ECE 565	Introduction to Optical Electronics	
ECE 587	Design of Analog Integrated Circuits	
ECE 681	VLSI Design for ASICs	
ECE 684	MOS Device Electronics	
ECE 685	Nanoelectronics	
ECE 686	Sensor Device Technology	
ECE 687	Radio Frequency Electronics	
Total Credits		9

Concentration in Signal Processing (SIGP)

Code	Title	Credits
Required Courses		
ECE 528	Introduction to Random Processes in Electrical and Computer Engineering	3
ECE 535	Digital Signal Processing	3
Total Credits		6

Code	Title	Credits
Electives		
Select at least three courses from the following, including two courses at the 600 level or above:		9
ECE 521	Linear Systems and Control	
ECE 527	Learning From Data	
ECE 530	Sensor Engineering	
ECE 537	Introduction to Digital Image Processing (DIP)	
ECE 538	Medical Imaging	
ECE 545	Digital System Design with VHDL	
ECE 621	Systems Identification	
ECE 622	Kalman Filtering with Applications	
ECE 630	Statistical Communication Theory	
ECE 631	Software-Defined Radio	
ECE 633	Error Control Coding	
ECE 635	Adaptive Signal Processing	
ECE 636	Advanced Digital Signal Processing	
ECE 637	Array Processing	
ECE 648	Digital Signal Processing Hardware Architectures	
ECE 651	Advanced Learning From Data	
ECE 728	Random Processes in Electrical and Computer Engineering	
ECE 731	Digital Communications	
ECE 732	Mobile Communication Systems	
ECE 734	Detection and Estimation Theory	
ECE 751	Information Theory	
Total Credits		9

Concentration in Space-Based Systems (SBSY)

Code	Title	Credits
Required Courses		
ECE 511	Computer Architecture	3
ECE 580	Small Spacecraft Engineering	3
Total Credits		6

Code	Title	Credits
Electives		
Select at least three courses from the following, including two courses at the 600 level or above:		9
ECE 510	Real-Time Concepts	
ECE 513	Applied Electromagnetic Theory	
ECE 521	Linear Systems and Control	
ECE 528	Introduction to Random Processes in Electrical and Computer Engineering	
ECE 530	Sensor Engineering	
ECE 535	Digital Signal Processing	
ECE 545	Digital System Design with VHDL	
ECE 550	System Engineering Design	
ECE 612	Real-Time Embedded Systems	
ECE 615	Software/Hardware Codesign	
ECE 620	Optimal Control Theory	
ECE 622	Kalman Filtering with Applications	
ECE 627	Adaptive Control	
ECE 630	Statistical Communication Theory	
ECE 631	Software-Defined Radio	
ECE 635	Adaptive Signal Processing	
ECE 637	Array Processing	
ECE 639	Satellite Communications	
ECE 640	Small Satellite Development	
ECE 660	Space Systems Engineering	
Total Credits		9

Upper-Level Course Requirement

A minimum of 9 credit hours of ECE courses at the 600 level or above, other than ECE 698, ECE 798, and ECE 799 (including, but not limited to, the selected concentration elective), with the grade B or better in each course.

ECE Course Requirement

A maximum of 6 credits of non-ECE courses may be used to fulfill degree requirements, subject to prior approval by the student's academic advisor, in the form of a plan of study signed by the advisor and submitted to the ECE Office.

Electives

Electives can be chosen from among all ECE graduate courses, as well as related graduate courses with other designations. The students are encouraged to discuss their choice of electives with their academic advisor prior to the registration.

GPA Requirements

A maximum of 6 credits of courses with grades of C or B- may be applied toward the degree. The student must present a GPA of at least 3.00 for all courses submitted for the degree.

Seminar Requirement

Graduate students are expected to participate actively in the exchange of knowledge and ideas in their discipline. Towards this objective, all degree candidates must attend a minimum of 6 graduate seminars approved for the degree program. Approved seminars are publicized on the departmental website.

To demonstrate completion of the seminar requirement, students must register for ECE 795 Engineering Seminar in their final semester. The department office will verify that the seminar requirement has been met and submit a grade of S (satisfactory) upon completion of the requirement. Students who have not met the seminar requirement in their final semester must continue to register for ECE 795 in subsequent semesters until the requirement is met.

Thesis/Scholarly Paper Option

To complete the program, students may select one of the following options:

Thesis Option

Students who select this option must complete:

Code	Title	Credits
ECE 799	Master's Thesis	6
Coursework		24
Total Credits		30

The thesis is particularly recommended for those students who wish to develop and document their research skills or contemplate subsequent enrollment in a PhD program. The thesis involves a research effort, which is conducted under the guidance of a faculty advisor. Choosing the thesis option requires approval of a full-time faculty member willing to serve as a thesis advisor. The topic and scope of the thesis must be approved by the thesis advisor. In some cases, permission may be granted to complete a portion of the work at the student's place of employment. The final written thesis and oral defense are approved by the student's advisory committee.

This committee consists of at least three full-time faculty members, including two from the student's concentration, and one from outside the concentration. Thesis students may not register for ECE 798 Research Project. Students must register for at least 3 credits of ECE 799 Master's Thesis for their first thesis semester. Following their first thesis semester, they must register for at least 1 credit of ECE 799 Master's Thesis each fall and spring semester until graduation.

Scholarly Paper Option

Students who select to complete their degree program with a scholarly paper must:

Code	Title	Credits
Complete 30 credits of coursework		30
ECE 797	Scholarly Paper	0
Enroll in a 600-level or above course requiring a research project		
Write a Scholarly Paper project report and present findings as part of the course requirements		
Total Credits		30

An acceptable scholarly paper must be technically sound, adhere to accepted formatting standards for technical reports, and contain a significant literature review evidenced by a comprehensive list of cited references.

A list of courses requiring projects that can be used to satisfy the scholarly paper requirement will be published on the department website. Scholarly papers must be individual written project reports – not group projects. To qualify as a scholarly paper an oral presentation of the project is required. A passing grade for the project, reflecting both the written report and the oral presentation, satisfies the scholarly paper requirement.

A successful scholarly paper will be recorded by awarding a satisfactory (S) grade for ECE 797 Scholarly Paper. Students are eligible to attempt the scholarly paper and register for ECE 797 Scholarly Paper after completion of 18 hours of coursework. Students choosing the scholarly paper option are not eligible for graduation until they have received a final, passing grade for ECE 797 Scholarly Paper.

Accelerated Master's

Computer Engineering, BS/Electrical Engineering, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BS in Computer Engineering and an MS in Electrical Engineering in an accelerated time-frame after satisfactory completion of a minimum of 144 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degrees for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits with an overall GPA of 3.0.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MS program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form: 3.0 overall GPA, successfully meeting Mason's requirements for undergraduate degree conferral (graduation), and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced standing courses: Students may take up to 12 credits of graduate-level courses that will count as advanced standing (i.e., overlap between the BS/MS program) from the list below. Note that ECE 542 can be used to meet the ECE 465 requirement for the BS in Electrical Engineering program. An additional 9 credits of graduate-level courses from the list below may be selected to substitute in place of the 9 credits of technical electives required for the undergraduate degree.

Code	Title	Credits
ECE 505	Hardware Security	3
ECE 508	Internet of Things	3
ECE 510	Real-Time Concepts	3
ECE 511	Computer Architecture	3
ECE 513	Applied Electromagnetic Theory	3
ECE 516	Mobile Systems and Applications	3
ECE 521	Linear Systems and Control	3
ECE 526	Neural Engineering	3
ECE 527	Learning From Data	3
ECE 528	Introduction to Random Processes in Electrical and Computer Engineering	3
ECE 530	Sensor Engineering	3
ECE 531	Introduction to Wireless Communications and Networks	3
ECE 535	Digital Signal Processing	3
ECE 542	Computer Network Architectures and Protocols	3
ECE 550	System Engineering Design	3
ECE 565	Introduction to Optical Electronics	3
ECE 567	Optical Fiber Communications	3
ECE 580	Small Spacecraft Engineering	3
ECE 584	Semiconductor Device Fundamentals	3
ECE 586	Digital Integrated Circuits	3
ECE 587	Design of Analog Integrated Circuits	3
ECE 590	Selected Topics in Engineering	3

Selected 600 level courses may be taken as well with permission of an advisor granted before registering for a given course.

Reserve credit courses: Additional courses (up to 6 credits) may be selected from the above list as credits to be put on reserve to be later applied to the graduate program. Students can take these courses while undergraduates but these reserve courses will only count for the graduate degree program.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees.

Electrical Engineering, BS/Electrical Engineering, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BS in Electrical Engineering and an MS in Electrical Engineering in an accelerated time-frame after satisfactory completion of a minimum of 139 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degrees for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits with an overall GPA of 3.0.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific prerequisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MS program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form: 3.0 overall GPA, successfully meeting Mason's requirements for undergraduate degree conferral (graduation), and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced standing courses: Students may take up to 12 credits of graduate-level courses that will count as advanced standing (i.e., overlap between the BS/MS program) from the list below: Note that that ECE 587 can be used to meet the ECE 433 requirement for the BS in Electrical Engineering program. An additional 9 credits of graduate-level courses from the list below may be selected to substitute in place of the 9 credits of technical electives required for the undergraduate degree:

Code	Title	Credits
ECE 505	Hardware Security	3
ECE 508	Internet of Things	3
ECE 510	Real-Time Concepts	3
ECE 511	Computer Architecture	3
ECE 513	Applied Electromagnetic Theory	3
ECE 516	Mobile Systems and Applications	3
ECE 521	Linear Systems and Control	3
ECE 526	Neural Engineering	3
ECE 527	Learning From Data	3
ECE 528	Introduction to Random Processes in Electrical and Computer Engineering	3
ECE 530	Sensor Engineering	3
ECE 531	Introduction to Wireless Communications and Networks	3
ECE 535	Digital Signal Processing	3
ECE 538	Medical Imaging	3

ECE 542	Computer Network Architectures and Protocols	3
ECE 550	System Engineering Design	3
ECE 565	Introduction to Optical Electronics	3
ECE 567	Optical Fiber Communications	3
ECE 580	Small Spacecraft Engineering	3
ECE 584	Semiconductor Device Fundamentals	3
ECE 586	Digital Integrated Circuits	3
ECE 587	Design of Analog Integrated Circuits	3
ECE 590	Selected Topics in Engineering	3

Selected 600 level courses may be taken as well with permission of an advisor granted before registering for a given course.

Reserve credit courses: Additional courses (up to 6 credits) may be selected from the above list as credits to be put on reserve to be later applied to the graduate program. Students can take these courses while undergraduates but these reserve courses will only count for the graduate degree program.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees

Mechanical Engineering, BS/Electrical Engineering, Accelerated MS

Overview

The university offers highly-qualified students in the Mechanical Engineering, BS the option of obtaining an accelerated Electrical Engineering, MS.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies.

Admission Requirements

Students in the Mechanical Engineering, BS program may apply for this option if they have earned 60 undergraduate credits, with an overall GPA of at least 3.0, and passed MATH 203 Linear Algebra and STAT 346 Probability for Engineers, or their equivalents, with the grade C or better. Criteria for admission are identical to criteria for admission to the Electrical Engineering, MS program.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Option Requirements

Students must complete all credits that satisfy the requirements for the BS and MS programs, with up to 9 credits overlapping.

Students take up to 9 credits of 500-level ECE or SYST courses as part of their technical electives or substitutes for required courses in the Mechanical Engineering, BS program.

Specifically, students are encouraged to take up to three of the following courses:

Code	Title	Credits
ECE 521	Linear Systems and Control	3
ECE 526	Neural Engineering	3
ECE 527	Learning From Data	3
ECE 528	Introduction to Random Processes in Electrical and Computer Engineering	3
ECE 580	Small Spacecraft Engineering	3
SYST 521	Network Analysis	3

Degree Conferral

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and the VSE Graduate Admissions Office. At the completion of MS requirements, a master's degree is conferred.

Small Satellite Engineering Graduate Certificate

Banner Code: VS-CERG-SSEN

Phone: 703-993-1569
Email: ece@gmu.edu
Website: ece.gmu.edu

The Department of Electrical and Computer Engineering, in conjunction with the Department of Systems Engineering and Operations Research, offers the certificate in small satellite engineering. This graduate certificate provides a broad understanding of small satellite mission and operations and of technologies for spacecraft design and engineering, satellite bus, hardware and software systems, and communications. A two-semester hands-on project course is included to exercise a transition of theory into engineering practice in satellite and ground station engineering. Coursework for the graduate certificate can be used for credit toward the MS in Electrical or Computer Engineering. However, the certificate's primary purpose is to provide a well-defined body of information for students who want to advance or update their knowledge in small satellite technologies, but who do not necessarily wish to complete requirements for the MS degree. The certificate may be pursued concurrently with any of the graduate degree programs in the Volgenau School of Engineering.

Admissions & Policies

Admissions

The graduate certificate is open to all students who hold BS degrees in scientific and engineering disciplines from accredited universities and can hold graduate status (either degree or non-degree) in the Volgenau School.

Policies

The certificate is awarded on completion of four required graduate courses (12 credits) in space systems. A cumulative GPA of 3.00 is required, and at most one course with a grade of C may be applied toward the certificate.

For policies governing all graduate certificates, see AP.6.8 Requirements for Graduate Certificates.

Requirements

Certificate Requirements

Total credits: 12

This certificate may be pursued on a part-time basis only.

Code	Title	Credits
ECE 580	Small Spacecraft Engineering	3
ECE 639	Satellite Communications	3
ECE 691	CubeSat Design	1.5
ECE 692	CubeSat Engineering	1.5
SYST 682	Space Systems Engineering	3
Total Credits		12

Systems Engineering Graduate Certificate (ECE)

Banner Code: VS-CERG-SYST

Architecture-Based Systems Integration
2100 Nguyen Engineering Building
Fairfax Campus
Phone: 703-993-1670
Email: seor@gmu.edu

C4I & Cyber
2100 Nguyen Engineering Building
Fairfax Campus
Phone: 703-993-1670
Email: seor@gmu.edu

Communications and Networking
3100 Nguyen Engineering Building
Fairfax Campus
Phone: 703-993-1569
Email: ece@gmu.edu

Engineering Resilient Enterprise Systems
2100 Nguyen Engineering Building
Fairfax Campus
Phone: 703-993-1670
Email: seor@gmu.edu

Financial Systems Engineering
2100 Nguyen Engineering Building
Fairfax Campus
Phone: 703-993-1670
Email: seor@gmu.edu

Tactical Computer Operations
3100 Nguyen Engineering Building
Fairfax Campus
Phone: 703-993-1569
Email: ece@gmu.edu

Admissions & Policies

Admissions

Concentration in Architecture-Based Systems Integration (ABSI)

A bachelor's degree is required for admission to a certificate program.

Concentration in C4I & Cyber (C4IC)

The certificate with this concentration is available to students who hold bachelor's degrees in engineering and scientific disciplines or are in graduate status in such programs.

Concentration in Communications and Networking (CONE)

The certificate with this concentration in communications and networking is open to all students who hold BS degrees in scientific and engineering disciplines from accredited universities.

Concentration in Engineering Resilient Enterprise Systems (ERES)

The certificate with this concentration is available to any student who holds a bachelor's degree in an engineering or scientific discipline or has graduate status in such a program. Math requirements include MATH 113 Analytic Geometry and Calculus I (Mason Core), MATH 114 Analytic Geometry and Calculus II, or their equivalents, and a probability and statistics course.

Concentration in Financial Systems (FNSY)

The certificate with this concentration will be open to all students who hold a BS degree in scientific and engineering disciplines from an accredited university program, with a minimum GPA of 3.0. Students who are already enrolled in a master's program must submit a secondary certificate form to enroll in this certificate with concentration program; all others must apply for graduate admission to this certificate with concentration program.

Concentration in Tactical Computer Operations (TCO)

Students applying to the certificate with this concentration must hold a bachelor's degree in either computer science or computer engineering. Prospective students without these specific degrees will need to have a technical bachelor's degree and show academic competence in the areas of: C (C++, C#, Objective C), Assembler, discrete mathematics, and computer networking. An undergraduate grade point average (GPA) of 3.0 or better (4.0 scale) is required.

Policies

The Systems Engineering Graduate Certificate may be pursued on a part-time basis only.

For policies governing all graduate certificates, see AP.6.8 Requirements for Graduate Certificates.

Requirements

Certificate Requirements

Total credits: 12-15

This certificate may be pursued on a part-time basis only.

Concentration in Architecture-Based Systems Integration (ABSI)

Administered by the Department of Systems Engineering and Operations Research (https://seor.gmu.edu/)

Coursework

The following four courses must be completed with a grade of B or better:

Code	Title	Credits
SYST 520	System Engineering Design	3
SYST 618	Model-based Systems Engineering	3
SYST 620	Discrete Event Systems	3
SYST 621	Systems Architecture Design	3
Total Credits		12

Certificate coursework within the Systems Engineering MS

In addition to the ABSI concentration courses, students must take the following six courses within the Systems Engineering, MS:

Code	Title	Credits
SYST 505	Systems Engineering Principles [1]	3
SYST 510	Systems Definition and Cost Modeling	3
SYST 530	Systems Engineering Management I	3
SYST 611	System Methodology and Modeling	3
SYST 699	Masters Project	3
Select one approved elective from the ABSI concentration		3
Total Credits		18

[1] Students who have work experience in systems engineering should consult with their advisor on replacing SYST 505 with a higher-level SYST course.

Concentration in C4I & Cyber (C4IC)

Administered by the Department of Systems Engineering and Operations Research (https://seor.gmu.edu/)

The certificate with concentration requires 12 credits (4 courses). Students must complete the following with an average grade of B or better:

Coursework

Code	Title	Credits
SYST 680	Principles of Command, Control, Communications, Computing, and Intelligence (C4I)	3
or ECE 670	Principles of Command, Control, Communications, Computing, and Intelligence (C4I)	
OR 542	Operations Research: Stochastic Models	3
or ECE 528	Introduction to Random Processes in Electrical and Computer Engineering	
Select two from the following:		6
ECE 542	Computer Network Architectures and Protocols	
ECE 630	Statistical Communication Theory	
ECE 642	Design and Analysis of Computer Communication Networks	
OR 635	Discrete System Simulation	
SYST 584	Heterogeneous Data Fusion	
SYST 664	Bayesian Inference and Decision Theory	
SYST 683	Modeling, Simulation, and Gaming	
Total Credits		12

Completing the certificate with the C4I concentration within the Systems Engineering Master's Program

In addition to the four courses above, students must complete the following six courses:

Code	Title	Credits
SYST 505	Systems Engineering Principles	3
SYST 510	Systems Definition and Cost Modeling	3
SYST 520	System Engineering Design	3
SYST 530	Systems Engineering Management I	3
SYST 611	System Methodology and Modeling	3
SYST 699	Masters Project	3
Total Credits		18

Concentration in Communications and Networking (CONE)

Administered by the Department of Electrical and Computer Engineering (https://ece.gmu.edu/).

The certificate with a concentration in Communications and Networking is awarded on completion of five graduate courses (15 credits) in communications and networking. A cumulative GPA of 3.00 is required and one course with a grade of C at most may be applied toward the certificate. The certificate courses comprise two required foundation courses and three electives.

Coursework

Code	Title	Credits
Foundation Courses:		
ECE 528	Introduction to Random Processes in Electrical and Computer Engineering	3
ECE 542	Computer Network Architectures and Protocols	3
Total Credits		6

Electives

After completing the foundation courses, students choose electives by taking three courses from the following:

Code	Title	Credits
Select three courses from the following:		9
ECE 535	Digital Signal Processing	
ECE 565	Introduction to Optical Electronics	
ECE 567	Optical Fiber Communications	
ECE 630	Statistical Communication Theory	
ECE 633	Error Control Coding	
ECE 635	Adaptive Signal Processing	
ECE 642	Design and Analysis of Computer Communication Networks	
ECE 643	Network Switching and Routing	
ECE 646	Applied Cryptography	

ECE 731	Digital Communications	
ECE 732	Mobile Communication Systems	
ECE 734	Detection and Estimation Theory	
ECE 741	Wireless Networks	
ECE 742	High-Speed Networks	
OR 635	Discrete System Simulation	
OR 643	Network Modeling	
OR 647	Queuing Theory	
Total Credits		9

Concentration in Engineering Resilient Enterprise Systems (ERES)

Administered by the Department of Systems Engineering and Operations Research (https://seor.gmu.edu/).

To be eligible for a certificate with concentration in Engineering Resilient Enterprise Systems, students must complete two required courses (6 credits) plus two electives (6 credits) with an average grade of B or better.

Coursework

Code	Title	Credits
SYST 523	Engineering Resilient and Agile Enterprise Systems	3
SYST 618	Model-based Systems Engineering	3
Total Credits		6

Electives

The remaining two electives must be taken from the list below with the approval of the advisor. Courses designated as basic methods courses may also be used as an elective. Some certificate electives may require stronger math requirements.

Code	Title	Credits
Electives		**6**
Select at least one course from the following:		
SYST 514	Systems Thinking	
INFS 622	Information Systems Analysis and Design	
SWE 619	Object-Oriented Software Specification and Construction	
SYST 542	Decision Support Systems Engineering	
SYST 584	Heterogeneous Data Fusion	
SYST 630	Systems Engineering Management II	
Select the second course from the courses listed above or from the following:		
CS 555	Computer Communications and Networking	
ECE 542	Computer Network Architectures and Protocols	
INFS 612	Principles and Practices of Communication Networks	
Total Credits		6

Concentration in Financial Systems (FNSY)

Administered by the Department of Systems Engineering and Operations Research (https://seor.gmu.edu/).

To be eligible for the certificate with concentration in Financial Systems Engineering, students must complete three required courses (9 credits) plus one elective (3 credits) with an average grade of B or better.

Coursework

Code	Title	Credits
SYST/OR 538	Analytics for Financial Engineering and Econometrics	3
SYST/OR 588	Financial Systems Engineering I: Introduction to Options, Futures, and Derivatives	3
SYST/OR 688	Financial Systems Engineering II: Derivative Products and Risk Management	3
Total Credits		9

Elective

Code	Title	Credits
Select one from the following:		3
OR 645	Stochastic Processes	
OR 682	Computational Methods in Engineering and Statistics	
SYST 584	Heterogeneous Data Fusion	
SYST 671	Judgment and Choice Processing and Decision Making	
Total Credits		3

Concentration in Tactical Computer Operations (TCO)

Administered by the Department of Electrical and Computer Engineering (https://ece.gmu.edu/).

Students must meet prerequisites for courses by either taking the appropriate undergraduate courses or through instructor permission.

Coursework

Code	Title	Credits
CS 571	Operating Systems	3
ECE 511	Computer Architecture	3
DFOR 761	Malware Reverse Engineering	3
Total Credits		9

Electives

Code	Title	Credits
Select two courses from the following:		6
DFOR 767	Penetration Testing in Digital Forensics	
DFOR 769	Anti-Forensics	
DFOR 773	Mobile Application Forensics and Analysis	
DFOR 775	Kernel Forensics and Analysis	
ECE 646	Applied Cryptography	
ISA 564	Security Laboratory	
ISA 656	Network Security	
ISA 681	Secure Software Design and Programming	
ISA 763	Security Protocol Analysis	
Total Credits		6

Telecommunications Forensics and Security Graduate Certificate

Banner Code: VS-CERG-TFAS

3100 Nguyen Engineering Building
Fairfax Campus

Phone: 703-993-3810
Email: tcom@gmu.edu
Website: volgenau.gmu.edu/program/view/20548

The Telecommunications Forensics and Security certificate program offers courses on analyzing digital evidence, intrusion forensics and network analysis. This graduate certificate program is designed for those who are working in or planning to work in digital forensics and cyber analysis but do not want to complete requirements for a master's degree in the field. The certificate may be pursued on a part-time or full-time basis. The certificate may also be pursued concurrently with any of the graduate degree programs in the Volgenau School.

Admissions & Policies

Policies

For all policies governing Graduate Certificates, please see AP.6.8 Requirements for Graduate Certificates.

Requirements

Certificate Requirements

Total credits: 15

This certificate may be pursued on a full-or part-time basis.

Core Courses

Code	Title	Credits
TCOM 562	Network Security Fundamentals	3
or ISA 562	Information Security Theory and Practice	
TCOM 515	Internet Protocol Routing: Lecture and Laboratory Course	3
or TCOM 561	Security, Privacy, and Applied Cryptography for Telecommunications	
Select one from the following:		3
TCOM 660	Network Forensics [1]	
TCOM 661	Digital Media Forensics [1]	
TCOM 663	Operations of Intrusion Detection for Forensics [1]	
TCOM 664	Incident Response Forensics [1]	
Total Credits		9

[1] May not be taken twice for credit. If any of these courses is taken in the core element, it cannot be taken again in the elective element.

Electives

Code	Title	Credits
Select 6 credits from the following:		6
ISA 562	Information Security Theory and Practice	
TCOM 660	Network Forensics	
TCOM 661	Digital Media Forensics	
TCOM 662	Advanced Secure Networking	
TCOM 663	Operations of Intrusion Detection for Forensics	
TCOM 664	Incident Response Forensics	
Total Credits		6

Telecommunications, MS

Banner Code: VS-MS-TCOM

Academic Advising

MSN 2B5
4400 University Drive
Fairfax, VA 22030

Phone: 703-993-3810
Email: tcom@gmu.edu
Website: telecom.gmu.edu

The Master of Science in Telecommunications offers a blend of cutting-edge practice-oriented courses in network engineering, cloud computing, wireless communications (e. g. 5G), and cyber security. This industry-oriented program is designed for students who wish to enter the field of network engineering or are working in the field and want to advance their knowledge. The program concentrates on practical applications of network engineering, rather than on a theoretical approach, while providing a thorough education in the necessary engineering principles. Hands-on laboratory courses provide students with practical skills and knowledge needed to hit the ground running after graduation. This program also offers two certificate programs that may be incorporated into, and taken concurrently with, the MS in Telecommunications.

Admissions & Policies

Admissions

Requirements

Specific application deadlines and requirements (https://admissions.gmu.edu/grad/application-deadlines-and-requirements/?academicUnit=VS&_ga=1.107632321.273102085.1480697294) are available through the Office of Graduate Admissions.

The program is open to students who hold a BS or BA degree from an accredited college or university in engineering, math, science, computer science, business (with a quantitative background), economics, or other analytical disciplines, and students who have equivalent work experience indicating analytical aptitude. Depending on their background, some applicants may be required to complete 3 to 6 credits of preliminary coursework before they are allowed to enroll in any of the core courses or elective courses in the program. A minimum undergraduate GPA of 3.00 is usually required.

Students may be admitted to the MS program as degree seeking students, or they may be admitted for non-degree study within the program, which allows them to take individual courses. Students in the non-degree program may apply to the degree program, provided their GPA within the MS in Telecommunications Program is 3.00 or above. Up to 12 credits earned in non-degree study may be transferred into the degree program, provided each of the courses to be transferred in was passed with a grade of B or above.

Policies

GPA Requirements

A maximum of 6 credits of courses with grades of C or B- may be applied toward the degree. The student must present a GPA of at least 3.00 for all courses submitted for the degree.

Plan of Study

Before completing 9 credit hours of coursework, each student must submit to the TCOM office a plan of study that has been approved by the academic advisor. This plan should be kept up to date by regular consultation with the academic advisor. A final, signed version of the plan must be turned in when the student submits a graduation application.

Telecommunications Certificates

Two 15-credit Telecommunications certificates are offered by the department. Students may pursue these certificates as stand-alone programs through the normal admissions process or as a secondary certificate to their MS degree. Certificate courses are drawn directly from the MS in TCOM curriculum. If a student has successfully completed and conferred one of these certificates prior to acceptance to the MS, it is possible to transfer up to 12 credits (B or better) into the MS. Please note that no more than 12 credits of coursework can be brought in to the MS.

- Advanced Networking Protocols for Telecommunications Graduate Certificate
- Telecommunications Forensics and Security Graduate Certificate

Requirements

Degree Requirements

Total credits: 30

Students must complete a minimum of 30 graduate credits beyond the bachelor's degree. The plan of study includes a 21-credit required core component and a 9-credit elective component. Electives should be chosen either from the list of elective courses or from one of the two concentration options.

Core Courses

Code	Title	Credits
TCOM 500	Modern Telecommunications	3
TCOM 514	Basic Switching: Lecture and Laboratory Course	3
TCOM 515	Internet Protocol Routing: Lecture and Laboratory Course	3
TCOM 535	The TCP/IP Suite of Internet Protocols [1, 2]	3
TCOM 570	Network Automation	3
TCOM 610	Border Gateway Protocol (BGP) Routing [1]	3
TCOM 750	Coordinating Seminar	3
Total Credits		21

1 Required for the Concentration in Network Technologies

2 Required for the Concentration in Network Forensics and Security

Electives

Code	Title	Credits
Select three courses from the following:		9
TCOM 552	Introduction to Mobile Communications Systems	
TCOM 608	Optical Communications Systems	
TCOM 611	Multi-Protocol Label Switching (MPLS) [1]	
TCOM 614	Advanced Routing Lab [1]	
TCOM 616	Scalable Network Architecture [1]	
TCOM 617	Enterprise Network Architecture [1]	
TCOM 631	Voice Over IP [1]	
TCOM 652	5G Service, Technology and Network	
TCOM 660	Network Forensics [2]	
TCOM 661	Digital Media Forensics [2]	
TCOM 663	Operations of Intrusion Detection for Forensics [2]	
TCOM 664	Incident Response Forensics [2]	
TCOM 590	Selected Topics in Telecommunications	
TCOM 690	Advanced Topics in Telecommunications	
ECE 542	Computer Network Architectures and Protocols	
ECE 643	Network Switching and Routing	
ECE 646	Applied Cryptography	
Total Credits		9

1 Applicable to the Concentration in Network Technologies

2 Applicable to the Concentration in Network Forensics and Security

Concentration in Network Technologies (NTEC)

Code	Title	Credits
Required Core Courses		
TCOM 535	The TCP/IP Suite of Internet Protocols	3
TCOM 610	Border Gateway Protocol (BGP) Routing	3
Electives		
Select at least two courses from the following:		6
TCOM 611	Multi-Protocol Label Switching (MPLS)	
TCOM 614	Advanced Routing Lab	
TCOM 616	Scalable Network Architecture	
TCOM 617	Enterprise Network Architecture	
TCOM 631	Voice Over IP	
Total Credits		12

Concentration in Network Forensics and Security (NFSC)

Code	Title	Credits
Required Core Courses		
TCOM 535	The TCP/IP Suite of Internet Protocols	3
Electives		

Select at least three courses from the following:		9
TCOM 660	Network Forensics	
TCOM 661	Digital Media Forensics	
TCOM 663	Operations of Intrusion Detection for Forensics	
TCOM 664	Incident Response Forensics	
Total Credits		12

Accelerated Master's

Electrical Engineering, BS/ Telecommunications, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BS in Electrical Engineering and an MS in Telecommunications in an accelerated time-frame after satisfactory completion of a minimum of 142 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degrees for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits with an overall GPA of 3.0.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific prerequisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MS program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form: 3.0 overall GPA, successfully meeting Mason's requirements for undergraduate degree conferral (graduation), and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced standing courses: Students may take up to 9 credits of graduate-level courses that will count as advanced standing (i.e., overlap between the BS/MS program) from the list below. At least one class (3 credits) needs to be an ECE course. These 9 credits of graduate-level courses may be selected to substitute in place of the 9 credits of technical electives required for the undergraduate degree:

Code	Title	Credits
TCOM 514	Basic Switching: Lecture and Laboratory Course	3
or TCOM 515	Internet Protocol Routing: Lecture and Laboratory Course	
TCOM 535	The TCP/IP Suite of Internet Protocols	3
ECE 542	Computer Network Architectures and Protocols	3
ECE 531	Introduction to Wireless Communications and Networks	3

Selected 600 level courses may be taken as well with permission of an advisor granted before registering for a given course.

Reserve credit courses: Additional courses (up to 6 credits) may be selected from the list below as credits to be put on reserve to be later applied to the graduate program. Students can take these courses while undergraduates but these reserve courses will only count for the graduate degree program.

Code	Title	Credits
TCOM 500	Modern Telecommunications	3
TCOM 514	Basic Switching: Lecture and Laboratory Course	3
TCOM 515	Internet Protocol Routing: Lecture and Laboratory Course	3
TCOM 535	The TCP/IP Suite of Internet Protocols	3
TCOM 552	Introduction to Mobile Communications Systems	3
TCOM 570	Network Automation	3
TCOM 590	Selected Topics in Telecommunications	1.5-3

Selected 600 level courses may be taken as well with permission of an advisor granted before registering for a given course.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees.

Individualized Study, BIS/ Telecommunications, Accelerated MS

Overview

Highly-qualified students in the Individualized Study, BIS have the option of obtaining an accelerated Telecommunications, MS.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies.

Admission Requirements

Students in the Individualized Study, BIS program may apply for this option if they have earned 75 undergraduate credits (including 15 Mason resident credits) with an overall GPA of at least 3.00. Criteria for admission are identical to criteria for admission to the Telecommunications, MS program.

Accelerated Option Requirements

Students must complete all requirements for the BIS and MS programs, with 6 credits overlap.

Students select TCOM courses from the list below to meet the requirements of the accelerated program. Six credits of TCOM courses will be applied to meet the requirements of both the BIS and MS TCOM programs. An additional three credits of TCOM courses is required for the BIS Individualized Concentration (IND) with emphasis on telecommunication. Note that accelerated students can only take the courses in the list below if they passed the listed prerequisite course with a B or higher.

BIS Concentration

Total credits: 34-46

Students who are pursuing the Individualized Study, BIS, Individualized concentration (IND) with an emphasis on telecommunications must take:

Code	Title	Credits
Select an additional 500-level TCOM course(s) from the list below		3
BIS 300	Understanding Interdisciplinary Studies	3
BIS 390	The Research Process	3
BIS 490	RS: Senior Project (Mason Core)	4
ECE 301	Digital Electronics	3
IT 341	Data Communications and Network Principles	3
TCOM 500	Modern Telecommunications	3
Select additional courses related to telecommunication [1]		9-21
Total Credits		31-43

[1] Required to reach the necessary number of credits for the BIS Individualized concentration.

Telecommunications Courses

Code	Title	Credits
TCOM 500	Modern Telecommunications	3
TCOM 535	The TCP/IP Suite of Internet Protocols	3
TCOM 608	Optical Communications Systems	3
TCOM 631	Voice Over IP	3

Note:

Accelerated students who have passed IT 341 Data Communications and Network Principles with a grade of B or higher will not be required to take TCOM 535 in the Telecommunications, MS core. Other TCOM courses may be approved on a case-by-case basis.

See each course for individual prerequisite requirements.

Degree Conferral

Students must apply the semester before they expect to complete the BIS requirements to have the BIS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and the VSE Graduate Admissions Office. At the completion of MS requirements, a master's degree is conferred.

Information Technology, BS/ Telecommunications, Accelerated MS

Overview

Highly-qualified students in the Information Technology, BS have the option of obtaining an accelerated Telecommunications, MS.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies.

Admission Requirements

Students in the Information Technology, BS program may apply for this option if they have earned 60 undergraduate credits take graduate level courses after completion of 75 credits with an overall GPA of at least 3.00. Criteria for admission are identical to criteria for admission to the Telecommunications, MS program.

Accelerated Option Requirements

Students must complete all credits that satisfy requirements for the BS and MS programs, with a minimum of 3 credits (maximum 9 credits) overlapping from the following courses:

Code	Title	Credits
Select nine credits from the following:		9
TCOM 500	Modern Telecommunications (To satisfy the IT 300 BS, INFT requirement)	
TCOM 515	Internet Protocol Routing: Lecture and Laboratory Course (satisfies as one NTEL concentration course in the BS INFT program)	
TCOM 631	Voice Over IP (To satisfy the IT 484 BS, INFT requirement.)	
Total Credits		9

Degree Conferral

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and the VSE Graduate Admissions Office. At the completion of MS requirements, a master's degree is conferred.

Systems Engineering, BS/ Telecommunications, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a Systems Engineering, BS and a Telecommunications, MS in an accelerated time-frame after satisfactory completion of a minimum of 141 credits.

Admitted students are able to use up to 12 graduate credits in partial satisfaction of requirements for the undergraduate degree. Upon completion and conferral of the bachelor's degree and with satisfactory performance (grade of 'B' or better) in each of the graduate courses, students are given advanced standing in the master's program.

See AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/).

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Students in the Systems Engineering, BS program who preferably have chosen to take the systems engineering of telecommunications elective sequence will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits with an overall GPA of at least 3.0, and completed all MATH and PHYS requirements. Other students will be considered on their individual merit.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

The criteria for admission are identical to criteria for admission to the Telecommunications, MS program. Students already admitted in the BAM Pathway will be admitted to the Telecommunications, MS program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- An overall GPA of at least 3.0
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing course: Students must complete all credits that satisfy requirements for both the BS and MS programs. Up to four courses (12 credits) of approved master's level courses taken as part of the undergraduate degree may be applied to the graduate degree.

These courses may be chosen from the list of graduate courses in the following table. For Systems Engineering, BS students, these graduate courses replace the corresponding undergraduate courses listed in the BS program. The undergraduate version of these courses, if any, may *not* be applied toward the Telecommunications, MS.

Code	Title	Credits
TCOM 500	Modern Telecommunications	3
TCOM 535	The TCP/IP Suite of Internet Protocols	3
OR 541	Operations Research: Deterministic Models	3
SYST 530	Systems Engineering Management I	3
SYST 573	Decision and Risk Analysis (if taken, replaces TCOM 521 in the telecommunications core requirements)	3

Students must pay attention to the prerequisites required for a course, and the master's degree concentration that the course may satisfy.

While still in undergraduate status, a maximum of 6 additional graduate credits may be taken as reserve graduate credit and applied to the master's program. Reserve graduate credits do not apply to the undergraduate degree.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text).

Degree Conferral

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and the VSE Graduate Admissions Office. At the completion of MS requirements, a master's degree is conferred.

Department of Information Sciences and Technology

Phone: 703-993-3565
Website: ist.gmu.edu

Information Sciences and Technology offers undergraduate and graduate programs to develop expertise in applying information technology to support business applications. The programs emphasize problem-solving, communication, technical, and leadership skills.

Undergraduate

The BS in Information Technology program aims to meet the existing and emerging needs of industry by educating students in current principles and practices in the application of information technology (IT). The program focuses on equipping graduates with effective skills for interacting at the management level as well as the technical level. Graduates are hired in positions that focus on the application of IT in an increasing number of emerging sub-disciplines, including network administration and telecommunications, information security, web development and multimedia, database technology and programming, and health information technology.

Graduate

The MS in Applied Information Technology is the very best graduate education in IT for high-potential leaders, especially those working on IT solutions that affect the federal government, industry or non-profit. Its objective is to graduate individuals of competence and character who can lead multidisciplinary teams in the design, justification, development, management, and sustainment of mega-systems from data to decision in the private and federal sectors. The MS in AIT provides a high quality curricula for students seeking to pursue their careers in the leading IT areas including Cyber Security, Big Data Analytics, Knowledge Mining, Data Analytics in Social Media, and Cyber-Human Interaction.

At the doctoral level, the department offers a concentration in the Volgenau School's PhD in IT program.

Faculty

Department Faculty

Professors

Bruno, Caraballo, Gantz (Retired Emeritus), Johri, Islam (Associate Chair for Undergraduate Studies), Sanghera, Rytikova (Associate Chair for Graduate Studies), Wang

Associate Professors

Albanese, Boicu, Ceesay, Foxwell, Morikawa, Rezazad, Sun, Uzuner (Interim Chair)

Assistant Professors

Ahmadi, Hashmi, Hashemi, Hong, Lee, Marasco, Motti, Purohit, Shuman, Sultana

Instructors

Farrell, Garrison, Lewis, Lyons, McLaughlin

Adjunct Professors

Agbariah, Akhtari, Almeida, Ambre, Azamy, Bondra, Brown, Buckner, Butu, Caldwell, Camacho Gonzalez, Carneiro, Coleman, Darquea, Das, Deavers, Drake, Farhady Ghalaty, Fennell, Foster, Freas, Gebril, Girolamo, Heaton, Henderson, Hine, Hogue, Holdener, Hope, Horton, Hsu, Jalinous, Kabli, Kapfer, Karkehabadi, Katti, Kolanupaka, Kord, Kousha, Leary, Lin, Lopez, Lord, Mahmood, Mallampati, McCallam, McDonald, McKeon, Michak, Miller, Mohammad, Nelson, Nguyen, Pan, Pavlenko, Phung, Pollard, Radcliffe, Richard, Sarfaraz, Sargent, Shah, Sligh, Sniegowski, Srinivasan, Taheri, Terlecki, Tharp, Tofighi, Uyar, Varghese, Vosoughi, Zhang

Programs

- Applied Cyber Security Graduate Certificate
- Applied Information Technology, MS
- Digital Media and Web Design Minor (VSE)
- Information Sciences Graduate Certificate
- Information Technology Minor
- Information Technology Undergraduate Certificate
- Information Technology, BS

Applied Cyber Security Graduate Certificate

Banner Code: VS-CERG-ACBS

5400 Nguyen Engineering Building
Fairfax Campus

Phone: 703-993-3565
Email: msait@gmu.edu
Website: http://ist.gmu.edu/programs/graduate-programs/

This graduate certificate offers courses in four key elements of cyber security. It is designed for professionals who work for, or in support of, U.S. federal agencies and provides post-bachelor's academic preparation for students who may not wish to complete a full master's degree program as well as for master's graduates who wish to take the topic-specific courses the certificate provides.

The graduate certificate may be pursued on a full or part-time basis.

Admissions & Policies

Admissions

Applicants must hold a baccalaureate degree from an accredited institution and have earned a GPA of 3.00 or higher in the last 60 credits.

Students not enrolled in a graduate degree program at Mason should apply for the certificate program through the Office of Graduate Admission. Students already enrolled in a Mason graduate degree program should apply to the department for admission into the certificate program. Admission to the certificate program does not guarantee admission to any MS program.

Policies

For policies governing all graduate certificate programs, see AP.6 Graduate Policies.

Requirements

Certificate Requirements

Total credits: 12

This certificate may be pursued on a full-or part-time basis.

Coursework

Code	Title	Credits
Select twelve credits from any of the following:		12
AIT 660	Cyber Security Fundamentals	
AIT 670	Cloud Computing Security	
AIT 671	Information System Infrastructure Lifecycle Management	
AIT 672	Identity and Access Management	
AIT 673	Cyber Incident Handling and Response	
AIT 701	Cyber Security: Emerging Threats and Countermeasures	
Total Credits		12

Applied Information Technology, MS

Banner Code: VS-MS-AIT

Academic Advising

5400 Nguyen Engineering Building
Fairfax Campus

Phone: 703-993-3565
Email: msait@gmu.edu
Website: ist.gmu.edu/programs/graduate-programs/

The MS in Applied Information Technology (https://catalog.gmu.edu/colleges-schools/engineering/information-sciences-technology/applied-information-technology-ms/) is the very best graduate education in IT for high-potential leaders, especially those working on IT solutions that affect the federal government, industry or non-profit. Its objective is to graduate individuals of competence and character who can lead multidisciplinary teams in the design, justification, development, management, and sustainment of mega-systems from data to decision in the private and federal sectors. The MS in AIT provides a high quality curricula for students seeking to pursue their careers in the leading IT areas including Cyber Security, Big Data Analytics, Knowledge Mining, Data Analytics in Social Media, and Cyber-Human Interaction.

The MS AIT program offers the Cyber Security concentration fully online. For the online program, courses are offered in a condensed 8-week format, with students taking one course at a time. Content of courses, objectives, evaluation methods, and outcomes are identical to those for the on-campus program. Only the delivery format is different. The online program is intended to be completed in about 2.5 years. Request additional information for the online program, learn more, or apply (https://masononline.gmu.edu/programs/ms-applied-information-technology/).

At the doctoral level, the department offers a concentration in the Volgenau School's PhD in IT (https://catalog.gmu.edu/colleges-schools/engineering/information-technology-phd/) program.

Admissions & Policies

Admissions

Applicants must have completed a baccalaureate degree from one of the Mason-recognized U.S. institutional accrediting agencies and earned a GPA of 3.00 or better in their 60 highest-level credits. They must be experienced in the fundamentals of IT and quantitative methods. In addition, applicants must:

- Provide two letters of recommendation, preferably from academic references or references in industry or government who are familiar with the applicant's professional accomplishments.
- Provide a resume and detailed statement of career goals and professional aspirations.
- Have achieved a satisfactory score on the TOEFL examination for non-native English speakers.

A high-achieving Mason Engineering alum who has shown exemplary work in an undergraduate degree may consider our Fast-Track graduate admission process which requires fewer supplementary admission materials.

Requirements

Degree Requirements

Total credits: 30

Completion of the MS program requires a minimum of 30 approved graduate credits (10 courses). To provide a common background in the fundamentals of information sciences and technology, all students are required to complete four core courses. In addition to the core courses, students must choose a concentration within the program by taking six courses from one of the concentration areas listed below.

Students interested in the PhD in IT program must pursue the Cyber Security, Data Analytics and Intelligence Methods, or Cyber-Human Systems concentrations. They are required to meet with an advisor before applying to the program. In addition, students must take AIT 602 and one of the following courses: AIT 699, AIT 799, or AIT 796, while they are completing their MS AIT degree.

Students in all concentrations may take other VSE graduate-level courses not listed below as part of their MS technical electives subject to prior advisor approval.

Core Courses

Code	Title	Credits
Required Core Courses		**12**
For students in all concentrations except the IT Management concentration:		
AIT 512	Algorithms and Data Structures Essentials	
AIT 524	Database Management Systems	
AIT 542	Fundamentals of Computing Platforms	
AIT 664	Information: Representation, Processing and Visualization	
For students in the IT Management concentration:		
AIT 524	Database Management Systems	
AIT 542	Fundamentals of Computing Platforms	
AIT 580	Analytics: Big Data to Information	
AIT 664	Information: Representation, Processing and Visualization	
Total Credits		12

Concentrations

Available Concentrations

- Cyber Security (CYBR)
- Cyber-Human Systems (CBHS)
- Data Analytics and Intelligence Methods (DAIN)
- IT Management (ITMG)

Cyber Security (CYBR)

Code	Title	Credits
Foundation		
Select four courses from the following:		12
AIT 660	Cyber Security Fundamentals	
AIT 670	Cloud Computing Security	
AIT 681	Secure Software Development	
AIT 682	Network and Systems Security	
AIT 702	Incident Handling and Penetration Testing	
Electives		
Select two courses from the following:		6
AIT 590	Topics in Applied Information Technology	
AIT 602	Introduction to Research in Applied Information Technology	
AIT 636	Interpretable Machine Learning	
AIT 672	Identity and Access Management	

AIT 690	Advanced Topics in Applied Information Technology	
AIT 699	Research Project	
AIT 701	Cyber Security: Emerging Threats and Countermeasures	
AIT 712	Applied Biometric Technologies	
AIT 736	Applied Machine Learning	
AIT 746	Advanced Applied Machine Learning	
AIT 790	Advanced Special Topics in Applied Information Technology	
AIT 799	Master's Thesis	
Total Credits		18

Cyber-Human Systems (CBHS)

Code	Title	Credits
Foundation		
AIT 582	Metadata Analytics for Big Data	3
AIT 602	Introduction to Research in Applied Information Technology	3
AIT 716	Human Computer Interaction	3
AIT 724	Data Analytics in Social Media	3
Electives		
Select two courses from the following:		6
AIT 526	Introduction to Natural Language Processing	
AIT 590	Topics in Applied Information Technology	
AIT 614	Big Data Essentials	
AIT 624	Knowledge Mining from Big-Data	
AIT 636	Interpretable Machine Learning	
AIT 684	Interactive Visualization and Data Analytics	
AIT 690	Advanced Topics in Applied Information Technology	
AIT 699	Research Project	
AIT 711	Rapid Development of Scalable Applications	
AIT 722	Theories and Models in Geo-Social Data Analytics	
AIT 726	Natural Language Processing with Deep Learning	
AIT 734	Advanced Web Analytics Using Semantics	
AIT 736	Applied Machine Learning	
AIT 746	Advanced Applied Machine Learning	
AIT 790	Advanced Special Topics in Applied Information Technology	
AIT 799	Master's Thesis	
Total Credits		18

Data Analytics and Intelligence Methods (DAIN)

Code	Title	Credits
Foundation		
Select four courses from the following:		12
AIT 580	Analytics: Big Data to Information	
AIT 582	Metadata Analytics for Big Data	
AIT 614	Big Data Essentials	
AIT 677	Intelligence Analysis Methods	
AIT 724	Data Analytics in Social Media	
Electives		
Select two courses from the following:		6
AIT 526	Introduction to Natural Language Processing	
AIT 590	Topics in Applied Information Technology	
AIT 602	Introduction to Research in Applied Information Technology	
AIT 624	Knowledge Mining from Big-Data	
AIT 636	Interpretable Machine Learning	
AIT 684	Interactive Visualization and Data Analytics	
AIT 690	Advanced Topics in Applied Information Technology	
AIT 699	Research Project	
AIT 711	Rapid Development of Scalable Applications	
AIT 716	Human Computer Interaction	
AIT 722	Theories and Models in Geo-Social Data Analytics	
AIT 726	Natural Language Processing with Deep Learning	
AIT 734	Advanced Web Analytics Using Semantics	
AIT 736	Applied Machine Learning	
AIT 746	Advanced Applied Machine Learning	
AIT 790	Advanced Special Topics in Applied Information Technology	
AIT 799	Master's Thesis	
Total Credits		18

IT Management (ITMG)

Code	Title	Credits
Select six courses from the following:		18
AIT 582	Metadata Analytics for Big Data	
AIT 590	Topics in Applied Information Technology	
AIT 614	Big Data Essentials	
AIT 622	Determining Needs for Complex Big Data Systems	
AIT 655	Applied Project Management for IT Professional	
AIT 660	Cyber Security Fundamentals	
AIT 665	Managing Information Technology Programs in the Federal Sector	
AIT 670	Cloud Computing Security	
AIT 672	Identity and Access Management	
AIT 677	Intelligence Analysis Methods	
AIT 678	National Security Challenges	
AIT 679	Law and Ethics of Big Data	
AIT 685	Capstone Seminar	
AIT 690	Advanced Topics in Applied Information Technology	
AIT 697	Leading Organizations Through Change	

AIT 701	Cyber Security: Emerging Threats and Countermeasures	
Total Credits		18

Accelerated Master's

Applied Science, BAS Cyber Security Concentration/Applied Information Technology, Accelerated MS

Overview

Highly-qualified students in the Applied Science, BAS, Cyber Security Concentration (https://catalog.gmu.edu/colleges-schools/interdisciplinary-programs-courses/applied-science-bas/#cybs) have the option of obtaining an accelerated Applied Information Technology, MS (https://catalog.gmu.edu/colleges-schools/engineering/information-sciences-technology/applied-information-technology-ms/).

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7). For policies governing all graduate degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/).

Admission Requirements

Students in the Applied Science, BAS, Cyber Security Concentration (https://catalog.gmu.edu/colleges-schools/interdisciplinary-programs-courses/applied-science-bas/#cybs) program may apply to this option if they have earned 60 undergraduate credits with an overall GPA of at least 3.30. They may begin taking graduate-level courses once they have earned 75 undergraduate credits. Criteria for admission are identical to criteria for admission to the Applied Information Technology, MS program.

Accelerated Option Requirements

Students must complete all credits that satisfy requirements for the BAS and MS programs, with up to 12 credits overlapping from the following courses:

Code	Title	Credits
AIT 512	Algorithms and Data Structures Essentials	3
or AIT 580	Analytics: Big Data to Information	
AIT 524	Database Management Systems	3
AIT 542	Fundamentals of Computing Platforms	3
AIT 660	Cyber Security Fundamentals [1]	3
AIT 664	Information: Representation, Processing and Visualization	3

[1] This course is only applicable to the CYBR and ITMG concentrations in the MSAIT. Students planning to pursue CBHS or DAIN should select a different course.

Note: When selecting between AIT 512 and AIT 580, students should select the course that aligns with the MSAIT concentration they intend to pursue.

Degree Conferral

Students must apply the semester before they expect to complete the BAS requirements to have the BAS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and the VSE Graduate Admissions Office. At the completion of MS requirements, a master's degree is conferred.

Applied Science, BAS Data Analytics Concentration/Applied Information Technology, Accelerated MS

Overview

Highly-qualified students in the Applied Science, BAS, Data Analytics Concentration (https://catalog.gmu.edu/colleges-schools/interdisciplinary-programs-courses/applied-science-bas/) have the option of obtaining an accelerated Applied Information Technology, MS (https://catalog.gmu.edu/colleges-schools/engineering/information-sciences-technology/applied-information-technology-ms/).

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies.

Admission Requirements

Students in the Applied Science, BAS Data Analytics concentration may apply to this option if they have earned 60 undergraduate credits with an overall GPA of at least 3.30. Students may begin taking the master's level courses once they have earned 75 undergraduate credits.

Accelerated Option Requirements

Students must complete all credits that satisfy requirements for the BAS and MS programs. Students may select up to 12 credits to overlap from the following options. Students should consult with both the BAS and MSAIT advisors.

Code	Title	Credits
AIT 512	Algorithms and Data Structures Essentials [1]	3
or AIT 580	Analytics: Big Data to Information	
AIT 524	Database Management Systems	3
AIT 542	Fundamentals of Computing Platforms	3
AIT 664	Information: Representation, Processing and Visualization	3

[1] When selecting between AIT 512 and AIT 580, students should select the course that aligns with the MSAIT concentration they intend to pursue.

Individualized Study, BIS/Applied Information Technology, Accelerated MS

Overview

Highly-qualified students in the Individualized Study, BIS have the option of obtaining an accelerated Applied Information Technology, MS.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies.

Application Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions. Mason undergraduate students in the BIS Program can apply in the semester in which they will have completed 90 or more credits (including 15 Mason resident credits) applicable toward the BIS. Students must have an overall GPA of at least 3.30 to apply to the program.

Reserve Graduate Credit

Students may take up to 6 additional graduate credits as reserve graduate credit. These credits do not apply to the undergraduate degree. The ability to take courses for reserve graduate credit is available to all high achieving undergraduates with the permission of the department. Permission to take a graduate course for reserve graduate credit is normally granted only to Mason seniors within 15 hours of graduation.

To apply these credits to the master's degree, students must request that the credits be moved from the undergraduate degree to the graduate degree using the Bachelor's/Accelerated Master's Transition Form (http://registrar.gmu.edu/forms/).

Accelerated Option Requirements

Students in the accelerated master's option must maintain a minimum 3.30 GPA in the undergraduate segment until they have satisfied all requirements for the BIS degree. On completion and conferral of the undergraduate degree they submit the Bachelor's/Accelerated Master's Transition Form (http://registrar.gmu.edu/forms/) and are admitted to graduate status.

As graduate students, accelerated master's students have an advanced standing. Students must complete all credits that satisfy requirements of the BIS program and those of the MSAIT program, with two courses overlapping from the courses necessary to earn the BIS with a concentration IND (individualized), applied information technology emphasis as listed below.

Code	Title	Credits
AIT 524	Database Management Systems	3
AIT 542	Fundamentals of Computing Platforms	3
Total Credits		6

Information Technology, BS/Applied Information Technology, Accelerated MS

Overview

Highly-qualified students in the Information Technology, BS have the option of obtaining an accelerated Applied Information Technology, MS.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies.

Admission Requirements

Students in the Information Technology, BS program may apply to this option if they have earned 60 undergraduate credits and take graduate level courses after completion with an overall GPA of 75 credits with an overall GPA of at least 3.30. Criteria for admission are identical to criteria for admission to the Applied Information Technology, MS program.

Accelerated Option Requirements

Students must complete all credits that satisfy requirements for the BS and MS programs, with a minimum of 3 credits (maximum 12 credits) overlapping from the following courses:

Code	Title	Credits
AIT 512	Algorithms and Data Structures Essentials (satisfies the IT 306 requirement in the BS INFT program)	3
AIT 524	Database Management Systems (satisfies the IT 314 requirement in the BS INFT program)	3
AIT 542	Fundamentals of Computing Platforms (satisfies the IT 342 requirement in the BS INFT program)	3
AIT 580	Analytics: Big Data to Information (satisfies the IT 322 requirement in the BS INFT program)	3
AIT 664	Information: Representation, Processing and Visualization (satisfies the IT 415 requirement in the BS INFT program)	3
AIT 682	Network and Systems Security (satisfies the IT 366 requirement in the BS INFT program)	3

Students also have the option to take up to 6 additional credits of graduate coursework *on reserve*, which can be used for the MS degree only. See AP.1.4.4 Graduate Course Enrollment by Undergraduates.

Degree Conferral

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and the VSE Graduate Admissions Office. At the completion of MS requirements, a master's degree is conferred.

Mechanical Engineering, BS/Applied Information Technology, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a Mechanical Engineering, BS and an Applied Information Technology, MS in an accelerated time-frame after satisfactory completion of a minimum of 139 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degrees for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate

study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Mechanical Engineering, BS Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits, and additional unit-specific criteria.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

The criteria for admission are identical to criteria for admission to the Applied Information Technology, MS program.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing Courses

Students must complete all credits that satisfy requirements for both the BS and MS programs. Up to four courses (12 credits) of approved master's level courses taken as part of the undergraduate degree may be applied to the graduate degree.

Code	Title	Credits
AIT 524	Database Management Systems	3
AIT 542	Fundamentals of Computing Platforms	3
AIT 664	Information: Representation, Processing and Visualization	3
AIT 512	Algorithms and Data Structures Essentials [1]	3
AIT 580	Analytics: Big Data to Information [2]	3

1 This course should be selected for all concentrations except for the IT Management concentration

2 This course should be selected for the IT Management concentration

While still in undergraduate status, a maximum of 6 additional graduate credits may be taken as reserve graduate credit and applied to the master's program. Students are strongly encouraged to meet with a graduate advisor to select reserve graduate credits. Reserve graduate credits do not apply to the undergraduate degree.

Degree Conferral

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and the VSE Graduate Admissions Office. At the completion of MS requirements, a master's degree is conferred.

Digital Media and Web Design Minor (VSE)

Banner Code: DMWD

Email: ywangm@gmu.edu

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must earn a minimum grade of 2.00 in all courses applied to the minor. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 18

Students should be aware of the specific policies associated with this program, located on the Admissions & Policies tab.

Coursework

Code	Title	Credits
Core		
Select one course from the following:		3
AVT 217	Introduction to Web Design	
ENGH 375	Web Authoring and Design	
IT 213	Multimedia and Web Design	
Design		
Select one course from the following:		3
AVT 180	New Media in the Creative Arts	
AVT 215	Typography (Mason Core)	
AVT 311	Graphic Design Methods and Principles	
IT 415	Information Visualization	
User Experience Design or Accessibility		
Select one course from the following:		3
AVT 415	Web Design and Usability	
EDIT 426	Web Accessibility and Design	
SWE 205	Software Usability Analysis and Design	
Content Development		
Select one course from the following:		3
COMM 208	Introduction to Media Production	
COMM 435	Digital Communication	
ENGH 376	Rhetoric and New Media	
ENGH 377	Digital Creative Writing	
Elective		
Select one course not already taken as a required course above from the following:		3
AVT 180	New Media in the Creative Arts	
AVT 215	Typography (Mason Core)	
AVT 311	Graphic Design Methods and Principles	
AVT 319	Mobile App Design	
AVT 411	Motion Design	
AVT 415	Web Design and Usability	
AVT 420	Advanced Web Design	
COMM 208	Introduction to Media Production	
COMM 360	Digital Postproduction	
COMM 435	Digital Communication	

EDIT 426	Web Accessibility and Design	
ENGH 376	Rhetoric and New Media	
ENGH 377	Digital Creative Writing	
IT 315	Mobile Development	
IT 331	Web I: Web Development	
IT 332	Web Server Administration	
IT 335	Web Development using Content Management Systems	
IT 415	Information Visualization	
SWE 205	Software Usability Analysis and Design	
Capstone		
IT/AVT/COMM 479	Digital Media and Web Design Capstone	3
Total Credits		18

Information Sciences Graduate Certificate

Banner Code: VS-CERG-ISCI

5400 Nguyen Engineering Building
Fairfax Campus

Phone: 703-993-3565
Email: msait@gmu.edu
Website: ist.gmu.edu

The Information Sciences Graduate Certificate with a concentration in Intelligence Technologies offers courses in four key elements of intelligence analysis. Designed for professionals who work for, or in support of, intelligence community agencies, it provides additional academic preparation for post-bachelor's students who may not wish to complete a full master's program, as well as for master's graduates who wish to take the area-specific courses a concentration provides.

Admissions & Policies

Admissions

Applicants must hold a baccalaureate degree from an accredited institution and have earned a GPA of 3.00 or higher in the last 60 credits.

Students not enrolled in a graduate degree program at Mason should apply for the certificate program through the Office of Graduate Admission. Students already enrolled in a Mason graduate degree program should apply to the department for admission into the certificate program. Admission to the certificate program does not guarantee admission to any MS program.

Policies

For policies governing all graduate certificates, see AP.6.8 Requirements for Graduate Certificates.

Requirements

Total credits: 12

This certificate may be pursued on a full-or part-time basis.

Requirements

Concentration in Intelligence Technologies (NTLT)

Administered by the Department of Information Sciences and Technology (http://ist.gmu.edu/programs/graduate-programs/).

Requirements

Code	Title	Credits
Select twelve credits from any of the following:		12
AIT 524	Database Management Systems	
AIT 582	Metadata Analytics for Big Data	
AIT 614	Big Data Essentials	
AIT 624	Knowledge Mining from Big-Data	
AIT 677	Intelligence Analysis Methods	
AIT 678	National Security Challenges	
Total Credits		12

Information Technology Minor

Banner Code: INFT

Academic Advising

5400 Nguyen Engineering Building
Fairfax Campus

101 Bull Run Hall
Science and Technology Campus

Phone: 703-993-3565
Email: bsit@gmu.edu
Website: ist.gmu.edu/programs/undergraduate-programs/

The minor is designed primarily for students who desire to augment the knowledge gained through their major-related courses with a foundation of information technology (IT) topics and their application within organizations to achieve organizational objectives. Completing this minor provides students with the necessary skills to improve their attractiveness to employers in our technology-driven society. The minor requires a minimum of 18 credits, including 12 credits of core courses. Beyond these requirements, students must select two additional technical focus courses (6 credits) of which one course must be at the upper 300- or 400-level. Minimum 2.5 GPA is needed in completed 100- and 200-level IT core and foundation courses, and a minimum C in IT 106 or IT 109 is required in order to declare the IT minor. Minimum "C" grade in all IT courses is required to earn the IT minor. Students pursuing the IT minor should consult with an advisor to select their additional courses.

Admissions & Policies

Admissions

Declaration of Minor

In order to declare the IT Minor, students must earn a minimum 2.5 GPA in completed 100- and 200-level IT core courses required for the minor (from IT 102 or MATH 125, IT 104, IT 105, IT 106 or IT 109, and any technical focus courses being applied to the IT minor), and a minimum C in IT 106 Introduction to IT Problem Solving Using Computer

Programming or IT 109 Introduction to Computer Programming. Grades in approved course substitutions taken at Mason will be included.

Note: IT courses at the 300 and 400 level are restricted to students who have declared an Information Technology major, minor, or undergraduate certificate, and to students in the BAS or BIS program. IT 293 Applied IT: Junior Transition and IT 343 IT Project Management are restricted to students who have declared an Information Technology major. Students who have declared an Information Technology Minor will not be permitted to take IT 293 or IT 343.

Policies

Grades

Students must have a C or better in any course that satisfies a prerequisite for an IT course. To graduate with the Information Technology Minor, students must have a GPA of 2.00 or better across all courses applied to the Information Technology minor. Additionally, if a technical focus course requires a minimum B in a specified course, students will be held to meeting this prerequisite. Eight credits of coursework must be unique to the minor.

For policies governing all minors, see the Undergraduate Policies section of this catalog.

Requirements

Minor Requirements

Total credits: 18

Core Courses

Code	Title	Credits
IT 102	Discrete Structures	3
or MATH 125	Discrete Mathematics I (Mason Core)	
IT 104	Introduction to Computing	3
IT 105	IT Architecture Fundamentals	3
IT 106	Introduction to IT Problem Solving Using Computer Programming	3
or IT 109	Introduction to Computer Programming	
Total Credits		12

Technical Focus Courses

Code	Title	Credits
Select 6 credits from Technical Focus Courses (at least 3 upper division credits)		6
Total Credits		6

Students must satisfy all prerequisites and other requirements in order to take any of the courses listed below. Courses chosen for the technical focus must be chosen with a coordinator in the Information Sciences and Technology department. Not all courses are offered each semester.

Code	Title	Credits
IT 206	Object Oriented Techniques for IT Problem Solving	3
or IT 209	Introduction to Object Oriented Programming	
IT 207	Applied IT Programming	3
IT 213	Multimedia and Web Design	3
IT 214	Database Fundamentals	3
IT 223	Information Security Fundamentals	3
IT 300	Modern Telecommunications	3
IT 306	Data Structures and Algorithms in Java	3
IT 314	Database Programming	3
IT 315	Mobile Development	3
IT 322	Health Data Challenges	3
IT 324	Health Information Technology Fundamentals	3
IT 328	Health Information Emerging Technologies	3
IT 331	Web I: Web Development	3
IT 332	Web Server Administration	3
IT 335	Web Development using Content Management Systems	3
IT 341	Data Communications and Network Principles	3
IT 352	Security Administration of Linux Systems	3
IT 353	Information Defense Technologies	3
IT 357	Computer Crime, Forensics, and Auditing	3
IT 366	Network Security	3
IT 369	Data and Application Security	3
IT 390	Rapid Development of Scalable Cloud Applications	3
IT 410	Web Programming	3
IT 413	Digital Media Editing	3
IT 414	Database Administration	3
IT 415	Information Visualization	3
IT 429	Security Accreditation of Information Systems	3
IT 431	Web II: Advanced Web Development	3
IT 442	Cloud Infrastructure	3
IT 445	Advanced Networking Principles	3
IT 451	Cloud Services Management	3
IT 455	Wireless Communications and Networking	3
IT 461	Application Development in Cloud	3
IT 462	Applied Cyber Threat Analysis	3
IT 466	Foundations of Cryptography and Security	3
IT 467	Network Defense	3
IT 471	Big Data on Cloud Systems	3
IT 481	Cloud Security	3
IT 484	Voice Communications Technologies	3
IT 488	Fundamentals of Satellite Communications	3

Information Technology Undergraduate Certificate

Banner Code: VS-CERB-INFT

Academic Advising

5400 Nguyen Engineering Building

Fairfax Campus

101 Bull Run Hall
Science and Technology Campus

Phone: 703-993-3565
Email: bsit@gmu.edu
Website: ist.gmu.edu/programs/undergraduate-programs/

This certificate is designed primarily for those students who have earned a bachelor's degree or current undergraduate students who desire deeper knowledge than what can be accomplished through the IT minor. It allows students to augment the knowledge gained through their major-related courses with a foundation of information technology (IT) topics and their application within organizations to achieve organizational objectives. Completing this undergraduate certificate provides students with the necessary skills to improve their attractiveness to employers in our technology-driven society. The certificate requires a minimum of 24 credits, including 15 credits of core courses. Beyond these requirements, students must select three additional IT courses (9 credits, at least 3 upper division credits). Students pursuing the IT undergraduate certificate should consult with an advisor to select their additional courses.

Students pursuing only the undergraduate certificate in information technology will not maintain full-time status which requires a minimum of 12 credits per semester.

Requirements

Certificate Requirements

Total credits: 24-28

This certificate may be pursued on a part-time basis only.

Requirements

Students must complete all requirements for this certificate.

The Information Technology certificate is designed primarily for those students who have earned a bachelor's degree or current undergraduate students who desire deeper knowledge than what can be accomplished through the IT minor. It allows students to augment the knowledge gained through their major-related courses with a foundation of information technology (IT) topics and their application within organizations to achieve organizational objectives. Completing this undergraduate certificate provides students with the necessary skills to improve their attractiveness to employers in our technology-driven society. This certificate requires a minimum of 24 credits, including 15 credits of required courses. Beyond these requirements, students must select three additional IT courses (9 credits, at least 3 upper division credits). Students pursuing the IT undergraduate certificate should consult with an advisor to select their additional courses.

Requirements

Code	Title	Credits
IT 102	Discrete Structures	3
or MATH 125	Discrete Mathematics I (Mason Core)	
IT 104	Introduction to Computing	3
IT 105	IT Architecture Fundamentals	3
IT 106	Introduction to IT Problem Solving Using Computer Programming	3
or IT 109	Introduction to Computer Programming	
Select one from the following:		3
IT 206	Object Oriented Techniques for IT Problem Solving	
or IT 209	Introduction to Object Oriented Programming	
IT 207	Applied IT Programming	
IT 213	Multimedia and Web Design	
IT 214	Database Fundamentals	
IT 223	Information Security Fundamentals	
Total Credits		15

Technical Focus Courses

Code	Title	Credits
Select 9 credits from the approved list of technical focus courses; at least 3 of those credits must be at the upper division level.		9
Total Credits		9

Students must satisfy all prerequisites and other requirements in order to take any of the courses listed below. Courses chosen for the technical focus must be chosen with a coordinator in the Information Sciences and Technology department. Not all courses are offered each semester.

Code	Title	Credits
IT 206	Object Oriented Techniques for IT Problem Solving	3
or IT 209	Introduction to Object Oriented Programming	
IT 207	Applied IT Programming	3
IT 213	Multimedia and Web Design	3
IT 214	Database Fundamentals	3
IT 223	Information Security Fundamentals	3
IT 300	Modern Telecommunications	3
IT 304	IT in the Global Economy	3
IT 306	Data Structures and Algorithms in Java	3
or IT 309	Data Structures and Algorithms in Python	
IT 309	Data Structures and Algorithms in Python	3
or IT 306	Data Structures and Algorithms in Java	
IT 314	Database Programming	3
IT 315	Mobile Development	3
IT 322	Health Data Challenges	3
IT 324	Health Information Technology Fundamentals	3
IT 328	Health Information Emerging Technologies	3
IT 331	Web I: Web Development	3
IT 332	Web Server Administration	3
IT 335	Web Development using Content Management Systems	3
IT 341	Data Communications and Network Principles	3
IT 342	Operating Systems Fundamentals	3
IT 352	Security Administration of Linux Systems	3
IT 353	Information Defense Technologies	3

IT 357	Computer Crime, Forensics, and Auditing	3
IT 366	Network Security	3
IT 390	Rapid Development of Scalable Cloud Applications	3
IT 409	Python Web Programming	3
or IT 410	Web Programming	
IT 410	Web Programming	3
or IT 409	Python Web Programming	
IT 413	Digital Media Editing	3
IT 414	Database Administration	3
IT 415	Information Visualization	3
IT 429	Security Accreditation of Information Systems	3
IT 431	Web II: Advanced Web Development	3
IT 442	Cloud Infrastructure	3
IT 445	Advanced Networking Principles	3
IT 451	Cloud Services Management	3
IT 455	Wireless Communications and Networking	3
IT 461	Application Development in Cloud	3
IT 462	Applied Cyber Threat Analysis	3
IT 466	Foundations of Cryptography and Security	3
IT 467	Network Defense	3
IT 471	Big Data on Cloud Systems	3
IT 481	Cloud Security	3
IT 484	Voice Communications Technologies	3
IT 488	Fundamentals of Satellite Communications	3

Information Technology, BS

Banner Code: VS-BS-INFT

Academic Advising

5400 Nguyen Engineering Building
Fairfax Campus
101 Bull Run Hall
Science and Technology Campus

Phone: 703-993-3565
Email: bsit@gmu.edu
Website: http://ist.gmu.edu/programs/undergraduate-programs/

The Information Technology, BS prepares students to apply IT to support business processes. The degree produces graduates with strong problem-solving, writing, and communication skills who successfully compete for technical employment and are prepared for advanced study. The objectives of the B.S. program in Information Technology relate to the expected abilities of the graduates three to five years after graduation.

The objectives include:

1. Be employed in a position in which they have successfully used their information technology skills as evidenced by achieving improved organizational objectives
2. Progress through increasing levels of responsibility in the workplace
3. Demonstrate ethical, social and professional responsibility consistent with organizational values
4. Work effectively in teams, whether as a participant or as a leader
5. Grow through self-study, continuing education and professional development relevant to their profession

The program can be successfully completed in eight full-time semesters with an average of 15 credits each semester. It is also possible for students to complete the degree on a part-time basis. The 120-credit degree requirement consists of Mason Core requirements, IT foundation and core courses, and courses required for the chosen IT concentration. At least 30 credits toward the BS degree must be earned at Mason, and at least 45 credits must be at or above the 300 level. Upper division courses in the program are taught at the Science and Technology campus, where many Department of Information Sciences and Technology faculty offices are located.

The bachelor's program in Information Technology is accredited by the Computing Accreditation Commission of ABET, http://www.abet.org.

Admissions & Policies

Admissions

Students who meet Mason's general eligibility requirements may apply for admission to the IT major. Admission is based on the appropriateness of the student's academic objectives and the likelihood of the student benefiting from the program. Preference in admission is given to students who have four years of high school mathematics, including precalculus.

Policies

For policies governing all undergraduate degrees, see AP.5 Undergraduate Policies.

Change of Major

Mason students considering a change of major to Information Technology must have a minimum GPA of 3.00 in completed courses from the following list:IT 102 Discrete Structures or MATH 125 Discrete Mathematics I (Mason Core), IT 104 Introduction to Computing or IT 191 Review of Computing Fundamentals, IT 105 IT Architecture Fundamentals, IT 106 Introduction to IT Problem Solving Using Computer Programming or IT 196 Review of IT Problem Solving Using Computer Programming or IT 109 Introduction to Computer Programming or CS 112 Introduction to Computer Programming, IT 206 Object Oriented Techniques for IT Problem Solving or IT 209 Introduction to Object Oriented Programming or CS 211 Object-Oriented Programming, IT 216 Systems Analysis and Design, IT 207 Applied IT Programming, IT 213 Multimedia and Web Design or IT 193 Review of Multimedia and Web Design, IT 214 Database Fundamentals or IT 194 Review of Database Fundamentals, and IT 223 Information Security Fundamentals, and a grade of C or better in IT 106 Introduction to IT Problem Solving Using Computer Programming or IT 109 Introduction to Computer Programming or IT 196 Review of IT Problem Solving Using Computer Programming or both CS 112 Introduction to Computer Programming and CS 211 Object-Oriented Programming.

Note: IT courses at the 300 and 400 level are restricted to students who have declared an Information Technology major, minor, or undergraduate certificate, and to students in the BAS or BIS program. IT 293 Applied

IT: Junior Transition and IT 343 IT Project Management are restricted to students who have declared the Information Technology, BS major.

Advanced Study

Mason offers students the ability to complete both BS and MS degrees in a shorter time through an Accelerated Masters (MS) program. Choosing to pursue an accelerated MS may affect a student's choice of courses in the BS program. Students should consult with an advisor for assistance.

Grades

Students must have a C or better in any course that satisfies a prerequisite for an IT course. To graduate with the BS in Information Technology, students must have a GPA of 2.75 or better across the IT foundation, core, capstone, and concentration courses. Additionally, students must have a C or better in their foundation, core, capstone, and concentration courses. Furthermore, students must have a B or better in gateway courses for the respective concentration.

Course Repeat Policy

In addition to the University's Undergraduate Course Repeat Policy, the following courses listed have additional repeat restrictions:

- A student who has taken IT 106 twice may not take IT 109 for their third attempt, nor will they be permitted to start over with three attempts of IT 109 in lieu of taking IT 106.
- A student who has taken IT 109 twice may not take IT 106 for their third attempt, nor will they be permitted to start over with three attempts of IT 106 in lieu of taking IT 109.
- A student who has taken IT 206 twice may not take IT 209 for their third attempt, nor will they be permitted to start over with three attempts of IT 209 in lieu of taking IT 206.
- A student who has taken IT 209 twice may not take IT 206 for their third attempt, nor will they be permitted to start over with three attempts of IT 206 in lieu of taking IT 209.
- A student who has taken IT 102 Discrete Structures twice may not take MATH 125 Discrete Mathematics I (Mason Core) for their third attempt, nor will they be permitted to start over with three attempts of MATH 125 in lieu of taking IT 102.
- A student who has taken MATH 125 twice may not take IT 102 for their third attempt, nor will they be permitted to start over with three attempts of IT 102 in lieu of taking MATH 125.
- A student who has taken MATH 108 twice may not take MATH 113 for their third attempt, nor will they be permitted to start over with three attempts of MATH 113 in lieu of taking MATH 108.
- A student who has taken MATH 113 twice may not take MATH 108 for their third attempt, nor will they be permitted to start over with three attempts of MATH 108 in lieu of taking MATH 113.

Termination from the Major

No math, science, or Volgenau School of Engineering course that is required for the major may be attempted more than three times. Those students who do not successfully complete such a course within three attempts will be terminated from the major. Undeclared students in the Volgenau School who do not successfully complete a course required for a Volgenau School major within three attempts will also be terminated.

In addition, students in the Volgenau School with evidence of continued failure to make adequate progress toward declaring or completing a Volgenau School major will be terminated from the school. Adequate progress is determined by the major program. For more information, see AP.5.2.4 Termination from the Major (https://catalog.gmu.edu/policies/academic/undergraduate-policies/#ap-5-2-4).

Once a student has attempted one of these courses twice unsuccessfully, the third attempt must be no later than the next semester of enrollment, excluding summers. Failure to take the course at that time will result in termination from the major. A third attempt of a Volgenau School of Engineering course requires support by the student's major department as well as permission by the department offering the course. This permission is not guaranteed. If the student is unable to take the course when required, the student may request an extension to a future semester; extensions require approval of the student's advisor, their department, and the Associate Dean for Undergraduate Programs. The deadline for extension requests is the add deadline for the semester in which the course is required.

Students who have been terminated from a Volgenau School of Engineering major may not register for a Volgenau School course without permission of the department offering the course. This applies to all undergraduate courses offered by the Volgenau School except IT 104 Introduction to Computing (Mason Core) and STAT 250 Introductory Statistics I (Mason Core).

A student may not declare any major in the Volgenau School of Engineering if the student has previously met the termination criteria for that major at any time, regardless of what the student's major was at the time the courses were taken.

Requirements

Degree Requirements

Total credits: 120

Foundation Courses

Code	Title	Credits
IT 102	Discrete Structures	3
or MATH 125	Discrete Mathematics I (Mason Core)	
IT 104	Introduction to Computing	3
IT 105	IT Architecture Fundamentals	3
IT 106	Introduction to IT Problem Solving Using Computer Programming	3
or IT 109	Introduction to Computer Programming	
IT 206	Object Oriented Techniques for IT Problem Solving	3
or IT 209	Introduction to Object Oriented Programming	
IT 216	Systems Analysis and Design	3
STAT 250	Introductory Statistics I (Mason Core)	3
Total Credits		21

Core Courses

Code	Title	Credits
IT 207	Applied IT Programming	3
IT 213	Multimedia and Web Design	3
IT 214	Database Fundamentals	3
IT 223	Information Security Fundamentals	3
IT 300	Modern Telecommunications	3
IT 304	IT in the Global Economy	3

IT 341	Data Communications and Network Principles	3
IT 342	Operating Systems Fundamentals	3
IT 343	IT Project Management	3
MBUS 300	Accounting in a Global Economy	3
SYST 469	Human Computer Interaction	3
Total Credits		33

Two-Semester Sequence of Approved Capstone Design Courses

Code	Title	Credits
IT 492	Senior Design Project I (Mason Core)	3
IT 493	Senior Design Project II (Mason Core)	4
Total Credits		7

Information Technology Concentrations

Students choose one of six concentrations from the list below. To be eligible to choose a concentration, a student must have a B or better grade in the concentration's gateway course.

Concentration Gateway Courses

Code	Title	Credits
Database Technology and Programming (DTP)		
IT 206	Object Oriented Techniques for IT Problem Solving	3
or IT 209	Introduction to Object Oriented Programming	
IT 214	Database Fundamentals	3
or IT 194	Review of Database Fundamentals	
Health Information Technology (HIT)		
IT 214	Database Fundamentals	3
or IT 194	Review of Database Fundamentals	
Cyber Security (CYBR)		
IT 223	Information Security Fundamentals	3
Networking and Telecommunications (NTEL)		
IT 341	Data Communications and Network Principles	3
Web Application Development (WADV)		
IT 213	Multimedia and Web Design	3
or IT 193	Review of Multimedia and Web Design	
Cloud Computing (CCG)		
IT 341	Data Communications and Network Principles	3

To fulfill the requirements for a concentration, students need 15 credits made up of four courses from their chosen concentration and a fifth course chosen from any of the six concentrations. Students may choose to have two concentrations. To be eligible, the student must have a B or better in the gateway course for each concentration. If two concentrations are declared, the student must take four courses in each concentration, for a total of eight different concentration courses.

Concentrations

- Database Technology and Programming (DTP)
- Health Information Technology (HIT)
- Cyber Security (CYBR)
- Network and Telecommunications (NTEL)
- Web Application Development (WADV)
- Cloud Computing (CCG)

Database Technology and Programming (DTP)

Code	Title	Credits
Required Courses		
IT 306	Data Structures and Algorithms in Java	3
or IT 309	Data Structures and Algorithms in Python	
IT 314	Database Programming	3
Select 2 from the following courses		6
IT 315	Mobile Development	
IT 322	Health Data Challenges	
IT 369	Data and Application Security	
IT 390	Rapid Development of Scalable Cloud Applications	
IT 409	Python Web Programming	
IT 410	Web Programming	
IT 414	Database Administration	
IT 491	Introduction to Applied Natural Language Processing	
Select one additional course from any other concentration		3
Total Credits		15

Health Information Technology (HIT)

Code	Title	Credits
Select 4 courses from the following		12
HAP 360	Introduction to Health Information Systems	
IT 322	Health Data Challenges	
IT 324	Health Information Technology Fundamentals	
IT 390	Rapid Development of Scalable Cloud Applications	
STAT 362	Introduction to Computer Statistical Packages	
Select one additional course from any other concentration		3
Total Credits		15

Cyber Security (CYBR)

Code	Title	Credits
Select 4 courses from the following		12
IT 352	Security Administration of Linux Systems	
IT 353	Information Defense Technologies	
IT 357	Computer Crime, Forensics, and Auditing	
IT 366	Network Security	
IT 369	Data and Application Security	
IT 429	Security Accreditation of Information Systems	
IT 462	Applied Cyber Threat Analysis	
IT 466	Foundations of Cryptography and Security	
IT 467	Network Defense	
Select one additional course from any other concentration		3
Total Credits		15

Network and Telecommunications (NTEL)

Code	Title	Credits
Select 4 courses from the following		12
ECE 301	Digital Electronics	
IT 366	Network Security	
IT 441	Network Servers and Infrastructures	
IT 445	Advanced Networking Principles	
IT 455	Wireless Communications and Networking	
IT 484	Voice Communications Technologies	
IT 488	Fundamentals of Satellite Communications	
Select one additional course from any other concentration		3
Total Credits		15

Web Application Development (WADV)

Code	Title	Credits
Select 4 courses from the following		12
IT 315	Mobile Development	
IT 331	Web I: Web Development	
IT 332	Web Server Administration	
IT 335	Web Development using Content Management Systems	
IT 390	Rapid Development of Scalable Cloud Applications	
IT 415	Information Visualization	
IT 431	Web II: Advanced Web Development	
IT 479	Digital Media and Web Design Capstone	
Select one additional course from any other concentration		3
Total Credits		15

Cloud Computing (CCG)

Code	Title	Credits
Select 4 courses from the following		12
IT 442	Cloud Infrastructure	
IT 451	Cloud Services Management	
IT 461	Application Development in Cloud	
IT 471	Big Data on Cloud Systems	
IT 481	Cloud Security	
Select one additional course from any other concentration		3
Total Credits		15

Other Major Requirements

Code	Title	Credits
Select 7 credits of natural science, including at least one 4-credit course with lab [1]		7
COMM 100	Public Speaking (Mason Core)	3
or COMM 101	Fundamentals of Communication (Mason Core)	
IT 293	Applied IT: Junior Transition	1
MATH 108	Introductory Calculus with Business Applications (Mason Core)	3-4
or MATH 113	Analytic Geometry and Calculus I (Mason Core)	
Total Credits		14-15

[1] Students should choose these from the list of courses approved for Mason Core (these credits can also apply toward Mason Core requirements).

Additional Mason Core

Students must complete all Mason Core requirements not fulfilled by major requirements. All students must complete at least 24 credits of social science and humanities coursework, which is normally satisfied by the 24 credits of Mason Core social science and humanities courses listed here, including COMM 100 Public Speaking (Mason Core) or COMM 101 Fundamentals of Communication (Mason Core).

Code	Title	Credits
Written Communication		6
Literature		3
Arts		3
Western Civilization/World History		3
Social and Behavioral Sciences		3
Global Understanding		3
Total Credits		21

Writing-Intensive Requirement

The university writing-intensive requirement is satisfied by IT 343 IT Project Management.

Electives

Code	Title	Credits
Select additional coursework to bring the total number of credits to 120		8-9
Total Credits		8-9

4-Year Plan

Bachelors of Science in Information Technology Sample Plan of Study

Detailed four year plans and degree planning checklists can be found at https://advising.gmu.edu/current-student/majors-at-mason/.

Accelerated Master's

Information Technology, BS/Information Security and Assurance, Accelerated MS

Overview

Highly-qualified students in the Information Technology, BS have the option of obtaining an accelerated Information Security and Assurance, MS.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies.

Admission Requirements

Students in the Information Technology, BS program may apply to this option if they have earned 60 undergraduate credits and take graduate level courses after completion of 75 credits with an overall GPA of at

least 3.30. Criteria for admission are identical to criteria for admission to the Information Security and Assurance, MS program.

Accelerated Option Requirements

Students must complete all credits that satisfy requirements for the BS and MS programs, with a minimum of 3 credits (maximum 6 credits) overlapping from the following courses:

Code	Title	Credits
ISA 562	Information Security Theory and Practice (satisfies IT 462 requirement in the BS INFT program)	3
ECE 646	Applied Cryptography (satisfies IT 466 requirement in the BS INFT program)	3

Note:

Students must complete MATH 125 Discrete Mathematics I (Mason Core) as their discrete math requirement and IT 306 Data Structures and Algorithms in Java as part of their concentration requirements in the BS program.

Degree Conferral

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and the VSE Graduate Admissions Office. At the completion of MS requirements, a master's degree is conferred.

Information Technology, BS/Information Systems, Accelerated MS

Overview

Highly-qualified students in the Information Technology, BS have the option of obtaining an accelerated Information Systems, MS.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies.

Admission Requirements

Students in the Information Technology, BS program may apply to this option if they have earned 60 undergraduate credits and take graduate level courses after completion of 75 credits with an overall GPA of at least 3.30. Criteria for admission are identical to the criteria for admission to the Information Systems, MS program.

Accelerated Option Requirements

Students must complete all credits that satisfy requirements for the BS and MS programs, with a minimum of 3 credits (maximum 6 credits) overlapping from the following courses:

Code	Title	Credits
CS 550	Database Systems (satisfies IT 414 requirement in the BS INFT program)	3
SWE 619	Object-Oriented Software Specification and Construction (satisfies as one DTP concentration course in the BS INFT program)	3

Note:

Students must complete MATH 125 Discrete Mathematics I (Mason Core) as their discrete math requirement and IT 306 Data Structures and Algorithms in Java as part of their concentration requirements in the BS program.

Degree Conferral

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and the VSE Graduate Admissions Office. At the completion of MS requirements, a master's degree is conferred.

Information Technology, BS/Software Engineering, Accelerated MS

Overview

Highly-qualified students in the Information Technology, BS have the option of obtaining an accelerated Software Engineering, MS.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies.

Admission Requirements

Students in the Information Technology, BS program may apply to this option if they have earned 60 undergraduate credits and take graduate level courses after completion of 75 credits with an overall GPA of at least 3.30. Criteria for admission are identical to criteria for admission to the Software Engineering, MS Program.

Accelerated Option Requirements

Students must complete all credits that satisfy requirements for the BS and MS programs, with a minimum of 3 credits (maximum 6 credits) overlapping from the following courses:

Code	Title	Credits
CS 550	Database Systems (satisfies IT 414 requirement in the BS INFT program)	3
SWE 619	Object-Oriented Software Specification and Construction (satisfies as one DTP concentration course in the BS INFT program)	3

Note:

Students must complete MATH 125 Discrete Mathematics I (Mason Core) as their discrete math requirement and IT 306 Data Structures and Algorithms in Java as part of their concentration requirements in the BS program

Degree Conferral

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the

beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and the VSE Graduate Admissions Office. At the completion of MS requirements, a master's degree is conferred.

Information Technology, BS/Digital Forensics, Accelerated MS

Overview

Highly-qualified students in the Information Technology, BS have the option of obtaining an accelerated Digital Forensics, MS.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies.

Admission Requirements

Students in the Information Technology, BS program may apply for this option if they have earned 60 undergraduate credits and take graduate level courses after completion of 75 credits with an overall GPA of at least 3.25. Criteria for admission are identical to criteria for admission to the Digital Forensics, MS program.

Accelerated Option Requirements

Students must complete all credits that satisfy requirements for the BS and MS programs, with a minimum of 3 credits (maximum 9 credits) overlapping from the following courses:

Code	Title	Credits
DFOR 510	Digital Forensics Analysis	3
DFOR 660	Network Forensics	3
DFOR 663	Operations of Intrusion Detection for Forensics	3

Degree Conferral

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and the VSE Graduate Admissions Office. At the completion of MS requirements, a master's degree is conferred.

Information Technology, BS/ Telecommunications, Accelerated MS

Overview

Highly-qualified students in the Information Technology, BS have the option of obtaining an accelerated Telecommunications, MS.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies.

Admission Requirements

Students in the Information Technology, BS program may apply for this option if they have earned 60 undergraduate credits take graduate level courses after completion of 75 credits with an overall GPA of at least 3.00. Criteria for admission are identical to criteria for admission to the Telecommunications, MS program.

Accelerated Option Requirements

Students must complete all credits that satisfy requirements for the BS and MS programs, with a minimum of 3 credits (maximum 9 credits) overlapping from the following courses:

Code	Title	Credits
Select nine credits from the following:		9
TCOM 500	Modern Telecommunications (To satisfy the IT 300 BS, INFT requirement)	
TCOM 515	Internet Protocol Routing: Lecture and Laboratory Course (satisfies as one NTEL concentration course in the BS INFT program)	
TCOM 631	Voice Over IP (To satisfy the IT 484 BS, INFT requirement.)	
Total Credits		9

Degree Conferral

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and the VSE Graduate Admissions Office. At the completion of MS requirements, a master's degree is conferred.

Information Technology, BS/Applied Information Technology, Accelerated MS

Overview

Highly-qualified students in the Information Technology, BS have the option of obtaining an accelerated Applied Information Technology, MS.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies.

Admission Requirements

Students in the Information Technology, BS program may apply to this option if they have earned 60 undergraduate credits and take graduate level courses after completion with an overall GPA of 75 credits with an overall GPA of at least 3.30. Criteria for admission are identical to criteria for admission to the Applied Information Technology, MS program.

Accelerated Option Requirements

Students must complete all credits that satisfy requirements for the BS and MS programs, with a minimum of 3 credits (maximum 12 credits) overlapping from the following courses:

Code	Title	Credits
AIT 512	Algorithms and Data Structures Essentials (satisfies the IT 306 requirement in the BS INFT program)	3
AIT 524	Database Management Systems (satisfies the IT 314 requirement in the BS INFT program)	3

AIT 542	Fundamentals of Computing Platforms (satisfies the IT 342 requirement in the BS INFT program)	3
AIT 580	Analytics: Big Data to Information (satisfies the IT 322 requirement in the BS INFT program)	3
AIT 664	Information: Representation, Processing and Visualization (satisfies the IT 415 requirement in the BS INFT program)	3
AIT 682	Network and Systems Security (satisfies the IT 366 requirement in the BS INFT program)	3

Students also have the option to take up to 6 additional credits of graduate coursework *on reserve*, which can be used for the MS degree only. See AP.1.4.4 Graduate Course Enrollment by Undergraduates.

Degree Conferral

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and the VSE Graduate Admissions Office. At the completion of MS requirements, a master's degree is conferred.

Department of Mechanical Engineering

Phone: 703-993-5383
Email: mechengr@gmu.edu
Website: mechanical.gmu.edu/

Mechanical engineering is the broadest of the engineering disciplines, and traces its origins to antiquity. The discipline of mechanical engineering involves anything that moves or uses energy. There are two major stems in mechanical engineering: mechanical systems and thermal fluid systems. Mechanical engineers design, build, and analyze complex devices, systems, and processes that involve the conversion of energy from one form to another, the production of work, and the transport of energy and mass from one location to another.

Today, the scope of the mechanical engineering discipline is ever-expanding. Mechanical engineers work in industries that include, but are not limited to, the aerospace, bio-pharmaceutical, civil, computer and cyber, biomedical, industrial, materials and manufacturing industries. They provide innovative solutions for contemporary problems and address problems yet identified. For example, 3-D printed components are readily being used in manufactured components, as part of medical implants and devices and even in structural applications. The mechanical performance of the components will likely vary dramatically from the ideal laboratory environment in which they were produced. Mechanical engineers are needed to characterize these aggressive environments in which they may be used, design test matrices to study their performance, and determine environmentally-based mechanical properties needed for design.

The Mechanical Engineering, BS is designed to support the goal of educating leaders for the future – men and women capable of meeting the needs of society. The curriculum is designed to provide its graduates with the technical skills and competencies to analyze and design both mechanical and thermal systems, and to give them an in-depth experience in one of these two areas. With a solid foundation in these discipline-specific areas, graduates of the program will be well-prepared to enter any of the industries identified above. All students will take core courses in both content areas through their junior year. During their senior year, they will have the opportunity to focus their program of study with a design elective and three technical electives. These electives can be arranged to focus on areas such as advanced manufacturing, aerospace, bioengineering, robotics, or sustainable energy.

Faculty

Department Faculty

Professors

Cebral (joint appointment with Bioengineering), Handler

Associate Professors

Knudsen, Mccue-Weil, Reagle

Assistant Professors

Amiri, Bagheri, Beheshti, Dong, Dubey, Kang, Kathir, Lattanzi, Moran, Shishika

Research Professors

Hazelrigg

Affiliated Professors

Manzo

Adjunct Instructors

Agbanlog, Ali, Berg, Eshete, Fortner, Gallo, Nowinksi, Shahba, Siragusa, Wohnsigl

Programs

- Mechanical Engineering Minor
- Mechanical Engineering, BS
- Naval Ship Design Graduate Certificate

Mechanical Engineering Minor

Banner Code: ME

Academic Advising

3300 Nguyen Engineering Building
Fairfax Campus

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Email: mechengr@gmu.edu
Website: mechanical.gmu.edu

Mechanical Engineering is the broadest of the engineering disciplines, concerned with anything that moves or uses energy. There are two major stems in mechanical engineering: mechanical systems and thermal fluid systems. Mechanical engineers design, build, and analyze complex devices, systems and processes that involve the conversion of energy from one form to another, the production of work, and the transport of energy and mass from one location to another. This minor provides

a foundation in mechanical engineering and is most appropriate for students with a strong mathematics and science background, such as a major in another engineering or science field. The minor is administered by the Volgenau School Dean's office.

Admissions & Policies

Admissions

To be admitted to the minor, students must have completed MATH 114 Analytic Geometry and Calculus II and PHYS 160 University Physics I (Mason Core)/PHYS 161 University Physics I Laboratory (Mason Core) with a grade of C or better.

Policies

The minor in mechanical engineering consists of a minimum of 20-21 credit hours of coursework. All students must complete 14 credit hours of core courses. They must also complete two additional elective courses. All courses must be completed with a grade of C or better.

Eight credits of coursework must be unique to the minor. For policies governing all minors, see AP.5.3.4 Minors.

For policies governing all undergraduate programs, see AP.5 Undergraduate Policies.

Requirements

Minor Requirements

Total credits: 20-21

Core Courses

Code	Title	Credits
ENGR 107	Introduction to Engineering (Mason Core)	2
or ME 151	Practicum in Engineering	
ME 211	Statics	3
ME 212	Solid Mechanics	3
ME 221	Thermodynamics	3
ME 231	Dynamics	3
Total Credits		14

Elective Requirements

Code	Title	Credits
Select two additional courses from the following:		6-7
ME 313	Material Science	
ME 322	Fluid Mechanics	
ME 323	Heat Transfer	
ME 341	Design of Mechanical Elements	
ME 342	Design of Thermal Systems	
ME 352	Entrepreneurship in Engineering	
ME 414	Fatigue Analysis	
ME 415	Composite Materials	
ME 421	HVAC Design	
ME 425	Renewable Energy Engineering	
ME 431	Systems Dynamics	
ME 432	Control Engineering	
ME 445	Finite Element Analysis	
ME 446	Energetics	
ME 447	Computer-Aided Design	
ME 454	Project Mgmt for Engineers	
ME 471	Introduction to Astronautics	
ME 472	Spacecraft Subsystems	
ME 473	Spacecraft Propulsion	
ME 475	Aeronautics I	
ME 476	Aeronautics II	
ME 499	Special Topics in Mechanical Engineering (must choose at least a 3 credit section)	
Total Credits		6-7

Mechanical Engineering, BS

Banner Code: VS-BS-ME

Academic Advising

3300 Nguyen Engineering Building
Fairfax Campus

Phone: 703-993-5383
Email: mechengr@gmu.edu
Website: mechanical.gmu.edu

Today, the role of mechanical engineer is ever expanding in order to find innovative solutions for contemporary problems, and to address problems yet to be identified. To meet the growing demands of worldwide energy needs spurred by population growth and dwindling supplies of fossil fuels, for instance, mechanical engineers seek innovations in nuclear energy, bio-fuels, wind, and tidal energies to build an energy portfolio that exploits these seemingly limitless resources. From product design, which spans from biomedical devices to turbo-machinery, to manufacturing, which develops machines and systems needed to process raw materials into these products, an awareness of the benefits of advanced materials for sensing and monitoring the health of these systems and an awareness of the stealth threats to manufacturing brought on by an ever present cyber threat are in the minds of the mechanical engineers. Now more mechanical engineers oversee the operations and management of large systems along with the fiscal and human resources needed to run them.

James Michener once said, "Scientists dream about doing great things. Engineers do them." Mechanical engineers use science to advance technologies and to develop products for the benefit of society, in a discipline which dates back to the earliest of times in civilization. The major in mechanical engineering has three program education objectives, namely:

- Graduates have demonstrated success as a mechanical engineer or their chosen career field;
- Graduates have advanced their educational pursuits through graduate education, professional registration, or similar means;
- Graduates have advanced their careers by engaging in professional society participation and community service outreach.

The bachelor's program in Mechanical Engineering is accredited by the Engineering Accreditation Commission of ABET, http://www.abet.org.

Admissions & Policies

Policies

For policies governing all undergraduate degrees, see AP.5 Undergraduate Policies.

Change of Major

See Change of Major for more information.

Grade Requirements and Advising

Degree requirements include 121 credits distributed in three main areas: mechanical engineering, mathematics and basic science, and humanities and social sciences. Students must complete all math, science and Volgenau School of Engineering courses presented as part of the required 121 credits for the degree with a grade of C or better.

Students are required to see their faculty advisor at least once each year to plan their curriculum.

Termination from the Major

No math, science, or Volgenau School of Engineering course that is required for the major may be attempted more than three times. Those students who do not successfully complete such a course within three attempts will be terminated from the major. Undeclared students in the Volgenau School who do not successfully complete a course required for a Volgenau School major within three attempts will also be terminated.

In addition, students in the Volgenau School with evidence of continued failure to make adequate progress toward declaring or completing a Volgenau School major will be terminated from the school. Adequate progress is determined by the major program. For more information, see AP.5.2.4 Termination from the Major (https://catalog.gmu.edu/policies/academic/undergraduate-policies/#ap-5-2-4).

Once a student has attempted one of these courses twice unsuccessfully, the third attempt must be no later than the next semester of enrollment, excluding summers. Failure to take the course at that time will result in termination from the major. A third attempt of a Volgenau School of Engineering course requires support by the student's major department as well as permission by the department offering the course. This permission is not guaranteed. If the student is unable to take the course when required, the student may request an extension to a future semester; extensions require approval of the student's advisor, their department, and the Associate Dean for Undergraduate Programs. The deadline for extension requests is the add deadline for the semester in which the course is required.

Students who have been terminated from a Volgenau School of Engineering major may not register for a Volgenau School course without permission of the department offering the course. This applies to all undergraduate courses offered by the Volgenau School except IT 104 Introduction to Computing (Mason Core) and STAT 250 Introductory Statistics I (Mason Core).

A student may not declare any major in the Volgenau School of Engineering if the student has previously met the termination criteria for that major at any time, regardless of what the student's major was at the time the courses were taken.

Requirements

Degree Requirements

Total credits: 121

Engineering

Code	Title	Credits
Courses		
ECE 330	Circuit Theory	3
ME 151	Practicum in Engineering	2
ME 211	Statics	3
ME 212	Solid Mechanics	3
ME 221	Thermodynamics	3
ME 231	Dynamics	3
ME 311	Mechanical Experimentation I	1
ME 313	Material Science	3
ME 321	Mechanical Experimentation II	1
ME 322	Fluid Mechanics	3
ME 323	Heat Transfer	3
ME 331	Mechatronics	3
ME 341	Design of Mechanical Elements	3
or ME 342	Design of Thermal Systems	
ME 352	Entrepreneurship in Engineering	3
ME 432	Control Engineering	4
ME 443	Mechanical Design I	3
ME 444	Mechanical Design II (Mason Core) [1]	3
ME 453	Developing the Societal Engineer	2
Total Credits		49

[1] Mason's writing-intensive and synthesis requirements are satisfied by ME 444 (https://catalog.gmu.edu/search/?P=ME%20444) Mechanical Design II (Mason Core) (https://catalog.gmu.edu/mason-core/).

Electives

Code	Title	Credits
Students must select 12 upper-level (numbered 300 or above) elective credits [1]		12

[1] Students may select an optional concentration to fulfill a portion of this required elective credit.

Optional Concentration

A concentration in aerospace engineering is available in the mechanical engineering baccalaureate program. Completion of specific senior-level courses leads to this designation on the student's transcript on graduation.

Concentration in Aerospace Engineering (AENG)

Code	Title	Credits
Select four courses from the following:		
ME 471	Introduction to Astronautics	3
ME 472	Spacecraft Subsystems	3
ME 473	Spacecraft Propulsion	3
ME 475	Aeronautics I	3

ME 476	Aeronautics II	3
Total		**12**

Computer Science

Code	Title	Credits
Select one from the following:		4
CS 112	Introduction to Computer Programming	
ENGR 125T	Introduction to Engineering Methods - Transfer	
Total Credits		4

Mathematics and Science

Code	Title	Credits
Select one from the following:		4
CHEM 211 & CHEM 213	General Chemistry I (Mason Core) and General Chemistry Laboratory I (Mason Core)	
CHEM 271 & CHEM 272	General Chemistry for Engineers Lecture (Mason Core) and General Chemistry for Engineers Lab (Mason Core)	
MATH 113	Analytic Geometry and Calculus I (Mason Core)	4
MATH 114	Analytic Geometry and Calculus II	4
MATH 213	Analytic Geometry and Calculus III	3
MATH 214	Elementary Differential Equations	3
ME 351	Analytical Methods in Engineering	3
PHYS 160	University Physics I (Mason Core)	3
PHYS 161	University Physics I Laboratory (Mason Core)	1
PHYS 260	University Physics II (Mason Core)	3
PHYS 261	University Physics II Laboratory (Mason Core)	1
Select 3 credits from the list of pre-approved Mathematics and Science Electives (below)		3
Total Credits		32

Mathematics and Science Electives

Code	Title	Credits
BIOL 213	Cell Structure and Function (Mason Core)	4
BIOL 309	Oceanography	3
CHEM 212 & CHEM 214	General Chemistry II (Mason Core) and General Chemistry Laboratory II (Mason Core)	4
CLIM 411	Atmospheric Dynamics	3
CLIM 412	Physical Oceanography	3
CLIM 429	Atmospheric Thermodynamics	3
EVPP 210	Environmental Biology: Molecules and Cells	4
GEOL 412	Physical Oceanography	3
PHYS 262 & PHYS 263	University Physics III (Mason Core) and University Physics III Laboratory (Mason Core)	4
PHYS 308	Modern Physics	3
PHYS 331	Physics of Renewable Energy	3
MATH 203	Linear Algebra	3
MATH 301	Number Theory	3
MATH 125	Discrete Mathematics I (Mason Core)	3
MATH 302	Foundations of Geometry	3
MATH 312	Geometry	3
MATH 313	Introduction to Applied Analysis	3
MATH 314	Introduction to Applied Mathematics	3
MATH 351	Probability	3
MATH 411	Functions of a Complex Variable	3
STAT 344	Probability and Statistics for Engineers and Scientists I	3
STAT 346	Probability for Engineers	3

Communication and Economics

Code	Title	Credits
COMM 100	Public Speaking (Mason Core) [1]	3
or COMM 101	Fundamentals of Communication (Mason Core)	
ECON 103	Contemporary Microeconomic Principles (Mason Core)	3
Total Credits		6

[1] Or completion of the Honors College Curriculum.

Additional Mason Core

Code	Title	Credits
Arts		3
Global Understanding		3
Literature		3
Western Civilization/World History		3
Written Communication [1]		6
Total Credits		18

[1] Both lower and upper level requirement.

4-Year Plan

Bachelors of Science in Mechanical Engineering Sample Plan of Study

Detailed four year plans and degree planning checklists can be found at https://advising.gmu.edu/current-student/majors-at-mason/.

Accelerated Master's

Mechanical Engineering, BS/Applied and Engineering Physics, Accelerated MS

Overview

This program allows academically strong undergraduates with a demonstrable commitment to research to obtain the Mechanical Engineering, BS (https://catalog.gmu.edu/colleges-schools/engineering/mechanical/mechanical-engineering-bs/) and Applied and Engineering Physics, MS degrees by successfully completing 139 credits. Upon completion, students are well-prepared for entering into the professional

workforce, or a PhD program in physics or a related engineering discipline.

Admitted students take selected graduate courses during their senior year and are able to use up to 12 graduate credits in partial satisfaction of requirements for the undergraduate degree. Upon completion and conferral of the bachelor's degree and with satisfactory performance (grade of 'B' or better) in each of the graduate courses, students are given advanced standing in the master's program and complete an additional 18 credits to receive the master's degree.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies.

Application Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in the Graduate Admission Policies section of this catalog.

Successful applicants majoring in Mechanical Engineering will have completed at least 60 credits toward their undergraduate degree with an overall GPA of at least 3.00, and the following courses with a GPA of 3.00 or better:

Code	Title	Credits
CS 112	Introduction to Computer Programming	4
ME 212	Solid Mechanics	3
ME 231	Dynamics	3
ME 313	Material Science	3
ME 322	Fluid Mechanics	3
ME 323	Heat Transfer	3
ME 351	Analytical Methods in Engineering	3

One or more recommendation letters from one or more research supervisors are also required. Interested applicants majoring in Mechanical Engineering, BS (https://catalog.gmu.edu/colleges-schools/engineering/mechanical/mechanical-engineering-bs/) should submit a letter to the undergraduate Mechanical Engineering coordinator and the Physics Graduate Coordinator, respectively, requesting admission along with the aforementioned recommendation letter(s). Contact the Mechanical Engineering undergraduate and the Physics graduate coordinator for further details.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites

Accelerated Option Requirements

At the beginning of the student's final undergraduate semester, students must submit a bachelor's/accelerated master's transition form (http://registrar.gmu.edu/forms/) to the College of Science's Office of Academic and Student Affairs (https://cos.gmu.edu/about/contact-us/). Students must begin their master's program in the semester immediately following conferral of the bachelor's degree.

Students must maintain an overall GPA of 3.00 or higher in graduate coursework.

Reserve Graduate Credit

While still in undergraduate status, a maximum of 6 additional graduate credits may be taken as reserve graduate credit and applied to the master's program. Reserve graduate credits do not apply to the undergraduate degree.

Graduate Course Suggestions

The following list of suggested courses is provided for general reference. To ensure an efficient route to graduation and career-readiness, students are strongly encouraged to meet with an advisor before registering for graduate-level courses.

Code	Title	Credits
PHYS 510	Computational Physics I	3
PHYS 620	Continuum Mechanics	3
PHYS 690	Engineering Thermodynamics	3

Mechanical Engineering, BS/Applied Information Technology, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a Mechanical Engineering, BS and an Applied Information Technology, MS in an accelerated time-frame after satisfactory completion of a minimum of 139 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degrees for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Mechanical Engineering, BS Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits, and additional unit-specific criteria.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

The criteria for admission are identical to criteria for admission to the Applied Information Technology, MS program.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing Courses

Students must complete all credits that satisfy requirements for both the BS and MS programs. Up to four courses (12 credits) of approved master's level courses taken as part of the undergraduate degree may be applied to the graduate degree.

Code	Title	Credits
AIT 524	Database Management Systems	3
AIT 542	Fundamentals of Computing Platforms	3
AIT 664	Information: Representation, Processing and Visualization	3
AIT 512	Algorithms and Data Structures Essentials [1]	3
AIT 580	Analytics: Big Data to Information [2]	3

1 This course should be selected for all concentrations except for the IT Management concentration

2 This course should be selected for the IT Management concentration

While still in undergraduate status, a maximum of 6 additional graduate credits may be taken as reserve graduate credit and applied to the master's program. Students are strongly encouraged to meet with a graduate advisor to select reserve graduate credits. Reserve graduate credits do not apply to the undergraduate degree.

Degree Conferral

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and the VSE Graduate Admissions Office. At the completion of MS requirements, a master's degree is conferred.

Mechanical Engineering, BS / Bioengineering, Accelerated MS

Overview

Highly-qualified students in the Mechanical Engineering, BS have the option of obtaining an accelerated Bioengineering, MS.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies.

Admission Requirements

Mason undergraduate students majoring in Mechanical Engineering, BS may apply to this option if they have earned 60 undergraduate credits with an overall GPA of at least 3.20, completed all MATH and PHYS requirements, and passed BENG 320 Bioengineering Signals and Systems and BIOL 213 Cell Structure and Function (Mason Core) with the grade of C or better. It is also recommended that students take BENG 214 Physiology for Engineers and are proficient in MATLAB. Criteria for admission are identical to criteria for admission to the Bioengineering, MS program.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Options Requirement

Students must complete all credits that satisfy requirements for both the BS and MS programs. Students take up to 9 credits of approved MS level BENG courses as part of their undergraduate degree that will also be applied to the graduate degree. The courses selected for this purpose must be approved by the academic advisor of both the BS and MS programs and by the Bioengineering department chair.

Specifically, students are encouraged to take up to three of the following courses to apply towards both their undergraduate and graduate degree.

Code	Title	Credits
BENG 520	Biomedical Data Analytics	3
BENG 521 or BENG 541	Cell and Tissue Engineering Biomaterials	3
BENG 526	Neural Engineering	3
BENG 537 or BENG 538	Medical Image Processing Medical Imaging	3
BENG 501	Bioengineering Research Methods	3
BENG 514	Pathophysiology and the Role of New Technologies in Human Diseases	3
BENG 575	Intellectual Property, Regulatory Concepts and Product Development	3

Degree Conferral

Students are recommended to meet with their undergraduate academic advisor one year before and must apply to the program one semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and the VSE Graduate Admissions Office. At the completion of MS requirements, a MS degree is conferred.

Mechanical Engineering, BS/Civil and Infrastructure Engineering, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BS in Mechanical Engineering, BS (https://catalog.gmu.edu/colleges-schools/engineering/mechanical/mechanical-engineering-bs/) and an MS in Civil and Infrastructure Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/civil-environmental-infrastructure/civil-infrastructure-engineering-ms/). in an accelerated time-frame after satisfactory completion of a minimum of 139 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

Admission Requirements

Students in the Mechanical Engineering, BS (https://catalog.gmu.edu/colleges-schools/engineering/mechanical/mechanical-engineering-bs/) program may apply to this option if they have earned 60 undergraduate credits with an overall GPA of at least 3.30. All other criteria for admission are identical to criteria for admission into the Civil and Infrastructure Engineering, MS (https://catalog.gmu.edu/

colleges-schools/engineering/civil-environmental-infrastructure/civil-infrastructure-engineering-ms/) program.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Option Requirements

Students must complete all credits that satisfy requirements for both the BS and MS programs. Students register for up to 12 credits of overlapping graduate level courses in place of undergraduate technical elective courses.

Students are encouraged to take up to four of the following courses, based on their chosen concentration area in the master's program:

Concentration in Construction Engineering and Management (CEM)

CEIE 571 Construction Administration

CEIE 572 Building Information Modeling

CEIE 573 Legal Aspects of the Construction Process

CEIE 575 Design for Constructability

CEIE 576 Construction Cost Estimating

Concentration in Environmental and Water Resources Engineering (EWRE)

CEIE 540 Water Supply and Distribution CEIE 540 Water Supply and Distribution CEIE 540 Water Supply and Distribution

CEIE 542 Open Channel Flow CEIE 542 Open Channel Flow CEIE 542 Open Channel Flow

CEIE 550 Environmental Engineering Systems

CEIE 553 Water and Wastewater Treatment Processes

CEIE 557 Remote Monitoring Techniques for Civil Engineering Applications

Concentration in Geotechnical Engineering (GEOE)

CEIE 501 Sustainable Development

CEIE 524 Introduction to Bridge Engineering

CEIE 531 Earth Retaining Structures and Slope Stability

CEIE 532 Foundation Design

CEIE 535 Engineering Geology

Concentration in Structural Engineering (STRE)

CEIE 512 Structural Steel Design

CEIE 513 Reinforced Concrete Design

CEIE 525 Structural Evaluation and Rehabilitation

CEIE 532 Foundation Design

CEIE 575 Design for Constructability

Concentration in Transportation Engineering (TRNE)

CEIE 560 Public Transportation Systems

CEIE 561 Traffic Engineering

CEIE 562 Urban Transportation Planning

STAT 544 Applied Probability

Students also have the option of taking the following one or two additional graduate-level courses for reserve that will only count for the graduate degree program:

CEIE 601 Infrastructure Modeling

CEIE 605 Risk and Uncertainty in Civil Engineering

Degree Requirements

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and the VSE Graduate Admissions Office. At the completion of MS requirements, a master's degree is conferred.

Advising & Plan of Study

Each student is assigned a faculty advisor upon acceptance. Students must meet with their advisors during their first semester and design an approved plan of study. Students are encouraged to seek out their advisor when questions arise and when their plan of study needs to be revised.

Students must have a working background in their selected concentration area. A student lacking these foundations may be required to take one or more foundation courses.

Mechanical Engineering, BS/ Computational Science, Accelerated MS

Overview

This option enables enthusiastic, highly qualified, undergraduates to obtain the Mechanical Engineering, BS (https://catalog.gmu.edu/colleges-schools/engineering/mechanical/mechanical-engineering-bs/) and the Computational Science, MS within the accelerated time frame of five years. The program requires 139 credits total, allowing students to undertake graduate coursework during their final year in the bachelor's degree. Upon completion of this 139 credit BS/MS combined program, students are exceptionally well prepared for undertaking doctoral studies or entering the professional workforce.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies.

Application Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in the Graduate Admission Policies section of this catalog[1]. Application information for this Accelerated Master's program can be found on the Department of Computational and Data Sciences (http://cos.gmu.edu/cds/academic-programs/) website. Applicants must have an overall undergraduate GPA of at least 3.00 and have completed

at least 60 credits. Additionally, applicants will have completed the following courses with a GPA of 3.00 or better:

Code	Title	Credits
CS 112	Introduction to Computer Programming	4
ME 212	Solid Mechanics	3
ME 231	Dynamics	3
ME 313	Material Science	3
ME 322	Fluid Mechanics	3
ME 323	Heat Transfer	3
ME 351	Analytical Methods in Engineering	3
Total Credits		22

Students must maintain an overall GPA of 3.00 or higher in graduate coursework and should consult with their faculty advisor to coordinate their academic goals within the modeling and simulation or data science emphases of the Computational Science, MS.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites

[1] GRE-general scores are waived for graduates of BS degrees from any program in the College of Science or the Volgenau School of Engineering at George Mason University.

Accelerated Option Requirements

Students must complete all credits that satisfy requirements for both the BS and MS programs, with up to twelve credits overlap chosen from the following courses:

Code	Title	Credits
CSI 500	Computational Science Tools	3
CSI 501	Introduction to Scientific Programming	3
CSI 600	Quantitative Foundations for Computational Sciences	3
Select one course from the following options:		3
Any CDS, CSI, or CSS-prefixed courses numbered 500-689, or		
STAT 544	Applied Probability	
STAT 554	Applied Statistics I	
Total Credits		12

While still in undergraduate status, a maximum of 6 additional graduate credits may be taken as reserve graduate credit and applied to the master's program. Reserve graduate credits do not apply to the undergraduate degree.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees.

Mechanical Engineering, BS/Data Analytics Engineering, Accelerated MS

Overview

Highly-qualified students in the Mechanical Engineering, BS program have the option of applying to the accelerated Data Analytics Engineering, MS program.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies.

Admission Requirements

Students in the Mechanical Engineering, BS program may apply to the accelerated Data Analytics Engineering, MS program if they have earned 60 undergraduate credits with an overall GPA of at least 3.30.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Option Requirements

Students must complete all credits that satisfy requirements for the BS and MS programs, with up to twelve credits overlap chosen from the following courses:

Code	Title	Credits
AIT 580	Analytics: Big Data to Information	3
CS 504	Principles of Data Management and Mining	3
OR 531	Analytics and Decision Analysis	3
STAT 515	Applied Statistics and Visualization for Analytics	3

All graduate course prerequisites must be completed prior to enrollment. Each 500-level course must be completed with a grade of B or better to apply toward the MS program. The graduate courses selected for overlap must be approved by the academic advisors of both the BS and MS programs. The graduate courses may be counted as Electives toward the Mechanical Engineering, BS program requirements, with approval of the Mechanical Engineering Department.

Degree Conferral

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form (https://registrar.gmu.edu/forms/) that is submitted to the Office of the University Registrar and the VSE Graduate Admissions and Recruitment office. At the completion of MS requirements, a master's degree is conferred.

Mechanical Engineering, BS/Electrical Engineering, Accelerated MS

Overview

The university offers highly-qualified students in the Mechanical Engineering, BS the option of obtaining an accelerated Electrical Engineering, MS.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies.

Admission Requirements

Students in the Mechanical Engineering, BS program may apply for this option if they have earned 60 undergraduate credits, with an overall GPA of at least 3.0, and passed MATH 203 Linear Algebra and STAT 346 Probability for Engineers, or their equivalents, with the grade C or better.

Criteria for admission are identical to criteria for admission to the Electrical Engineering, MS program.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Option Requirements

Students must complete all credits that satisfy the requirements for the BS and MS programs, with up to 9 credits overlapping.

Students take up to 9 credits of 500-level ECE or SYST courses as part of their technical electives or substitutes for required courses in the Mechanical Engineering, BS program.

Specifically, students are encouraged to take up to three of the following courses:

Code	Title	Credits
ECE 521	Linear Systems and Control	3
ECE 526	Neural Engineering	3
ECE 527	Learning From Data	3
ECE 528	Introduction to Random Processes in Electrical and Computer Engineering	3
ECE 580	Small Spacecraft Engineering	3
SYST 521	Network Analysis	3

Degree Conferral

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and the VSE Graduate Admissions Office. At the completion of MS requirements, a master's degree is conferred.

Mechanical Engineering, BS/Operations Research, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a Mechanical Engineering, BS and an Operations Research, MS in an accelerated time-frame after satisfactory completion of a minimum of 139 credits.

Admitted students are able to use up to 12 graduate credits in partial satisfaction of requirements for the undergraduate degree. Upon completion and conferral of the bachelor's degree and with satisfactory performance (grade of 'B' or better) in each of the graduate courses, students are given advanced standing in the master's program.

See AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/).

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Mechanical Engineering, BS students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits with an overall GPA of at least 3.3, and completion of all MATH and PHYS requirements. Students must additionally complete MATH 203 Linear Algebra prior to applying for the graduate program.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

The criteria for admission are identical to criteria for admission to the Operations Research, MS program. Students already admitted in the BAM Pathway will be admitted to the Operations Research, MS program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- An overall GPA of at least 3.3
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing course: Students must complete all credits that satisfy requirements for both the BS and MS programs. Up to four courses (12 credits) of approved master's level courses taken as part of the undergraduate degree may be applied to the graduate degree. The courses selected for this purpose must be approved by the academic advisors of both the BS and MS programs and by the SEOR department chair. For the BS programs that allow undergraduate electives from the department of system engineering and operations research, the students may choose the graduate version of such elective courses to replace the corresponding undergraduate courses.

- Students selecting up to two courses (6 credits) of approved master's level courses may select from the combined Mechanical Engineering course list and Systems Engineering and Operations Research course list given below.
- Students selecting up to three or four courses (9 or 12 credits) of approved master's level courses may select at most two courses from the Mechanical Engineering course list and select the remaining courses from the Systems Engineering and Operations Research course list given below. Students are highly recommended to select courses marked as core courses because it applies to the master's degree regardless of the graduate-level concentration chosen in the Operations Research, MS. The undergraduate version of these courses, if any, may *not* be applied toward the Operations Research, MS. Credit may not be received for both the undergraduate and graduate version of these courses.
- Some of the courses in the Systems Engineering and Operations Research course list applies only to certain concentrations in the Operations Research, MS program.

- Students must pay attention to the prerequisites required for a course, and the master's degree concentration that the course may satisfy.

Select at most two from the following Mechanical Engineering courses:

Code	Title	Credits
ME 521	Energy Transfer	
ME 531	Energy Transmission	
ME 541	Power Generation	
ME 542	Energy Utilization	

Select the remaining from the following Systems Engineering and Operations Research courses:

Code	Title	Credits
SYST 521	Network Analysis	
OR 538	Analytics for Financial Engineering and Econometrics	
OR 541	Operations Research: Deterministic Models (Core)	
OR 542	Operations Research: Stochastic Models (Core)	
OR 568	Applied Predictive Analytics (Core)	
OR 588	Financial Systems Engineering I: Introduction to Options, Futures, and Derivatives	

While still in undergraduate status, a maximum of 6 additional graduate credits may be taken as reserve graduate credit and applied to the master's program. Reserve graduate credits do not apply to the undergraduate degree.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text).

Degree Conferral

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and the VSE Graduate Admissions Office. At the completion of MS requirements, a master's degree is conferred.

Mechanical Engineering, BS/Systems Engineering, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a Mechanical Engineering, BS and a Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) in an accelerated time-frame after satisfactory completion of a minimum of 139 credits.

Admitted students are able to use up to 12 graduate credits in partial satisfaction of requirements for the undergraduate degree. Upon completion and conferral of the bachelor's degree and with satisfactory performance (grade of 'B' or better) in each of the graduate courses, students are given advanced standing in the master's program.

See AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/).

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Mechanical Engineering, BS students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits with an overall GPA of at least 3.3, and completion of all MATH and PHYS requirements.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

The criteria for admission are identical to criteria for admission to the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program. Students already admitted in the BAM Pathway will be admitted to the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- An overall GPA of at least 3.3
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing course: Students must complete all credits that satisfy requirements for both the BS and MS programs. Up to four courses (12 credits) of approved master's level courses taken as part of the undergraduate degree may be applied to the graduate degree. The courses selected for this purpose must be approved by the academic advisors of both the BS and MS programs and by the SEOR department chair. For the BS programs that allow undergraduate electives from the department of system engineering and operations research, the students may choose the graduate version of such elective courses to replace the corresponding undergraduate courses.

- Students selecting up to two courses (6 credits) of approved master's level courses may select from the combined Mechanical Engineering course list and Systems Engineering and Operations Research course list given below.

- Students selecting up to three or four courses (9 or 12 credits) of approved master's level courses may select at most two courses from the Mechanical Engineering course list and select the remaining courses from the Systems Engineering and Operations Research course list given below. Students are highly recommended to select courses marked as core courses because it applies to the master's degree regardless of the graduate-level concentration chosen in the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program. The undergraduate version of these courses, if any, may *not* be applied toward the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/). Credit may not be received for both the undergraduate and graduate version of these courses.
- Except for the courses marked as core, any course chosen from either course list can be used to satisfy SYST 505 Systems Engineering Principles core requirement in the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program.
- Some of the courses in the Systems Engineering and Operations Research course list applies only to certain concentrations in the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program.
- Students must pay attention to the prerequisites required for a course, and the master's degree concentration that the course may satisfy.

Select at most two from the following Mechanical Engineering courses:

Code	Title	Credits
ME 521	Energy Transfer	
ME 531	Energy Transmission	
ME 541	Power Generation	
ME 542	Energy Utilization	

Select the remaining from the following Systems Engineering and Operations Research courses:

Code	Title	Credits
SYST 510	Systems Definition and Cost Modeling (Core)	
SYST 514	Systems Thinking	
SYST 520	System Engineering Design (Core)	
SYST 530	Systems Engineering Management I (Core)	
SYST 542	Decision Support Systems Engineering	
SYST 573	Decision and Risk Analysis	
SYST 538	Analytics for Financial Engineering and Econometrics	
SYST 560	Introduction to Air Traffic Control	
SYST 563	Evidence-Based Systems Engineering	
SYST 568	Applied Predictive Analytics	
SYST 584	Heterogeneous Data Fusion	
SYST 588	Financial Systems Engineering I: Introduction to Options, Futures, and Derivatives	

While still in undergraduate status, a maximum of 6 additional graduate credits may be taken as reserve graduate credit and applied to the master's program. Reserve graduate credits do not apply to the undergraduate degree.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text).

Degree Conferral

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and the VSE Graduate Admissions Office. At the completion of MS requirements, a master's degree is conferred.

Naval Ship Design Graduate Certificate

Banner Code: VS-CERG-NSDN

The graduate certificate in naval ship design provides students with the fundamentals and hands-on experience to be effective ship designers and design managers. Through coursework and experiential learning, students will develop specific knowledge in the art of naval ship design and acquire the skills to support the management of new and in-service design programs.

Upon completion of the certificate program, graduates will be able to:

- Design a vessel to execute a specified mission profile.
- Critically assess the impact of vessel design decisions on the concept of operations.
- Support programmatic needs by translating fleet requirements to design specifications while managing cost.

Admissions & Policies

Admissions

The following admission requirements apply to all graduate program applicants across the university. All applicants must:

- Submit a completed online application for graduate study.
- Submit a nonrefundable application fee.
- Submit one unofficial transcript from all institutions previously attended.
- Have earned a baccalaureate degree from a regionally accredited institution of higher education, or international equivalent.
- Have earned a minimum 3.00 GPA on a 4.00 scale in baccalaureate study.

In addition, students who have not earned a baccalaureate degree in the U.S. must submit:

- Official English translations of all diplomas, certificates, and transcripts that are not already in English. Also, documents from foreign institutions must meet the university's guidelines for international transcript submission.

- Proof of English proficiency: either TOEFL, IELTS academic exam, or Pearson Test of English meeting the minimum requirements:
  - TOEFL: 88 points total and a minimum of 20 points in each section (IBT) or 570 (PBT)
  - IELTS: 6.5 total band score
  - Pearson: 59 overall score

The Department of Mechanical Engineering will also require applicants to have earned an ABET-accredited engineering degree. Applicants seeking to enroll without an ABET-accredited engineering degree must seek approval, in writing, from the program director.

Requirements

Certificate Requirements

Total credits: 15

This certificate may be pursued on a full-or part-time basis.

Core Courses

Code	Title	Credits
ME 551	Naval Engineering	3
ME 552	Fundamentals of Naval Architecture	3
ME 553	Ship Design Process and Tools	3
ME 554	Naval Project Management	3
Total Credits		12

Elective

Code	Title	Credits
Any relevant elective course at the 5XX level or above [1]		3
Total Credits		3

[1] Elective courses may be from any academic department, but must be pre-approved, in writing, by the program director.

Department of Statistics

Phone: 703-993-3645
Email: statistics@gmu.edu
Website: statistics.gmu.edu

Statistics is the science of data. Statistical reasoning, methods, design and data analysis are crucial for all disciplines in which data are present. As collection of data grows in all sectors of employment, the Department of Statistics prepares students to meet the challenges of data science, including design of experiments, data collection, curation, analysis, and interpretation.

Department Offerings

Courses

The department offers a variety of introductory, intermediate and advanced courses, including specialized statistical methodology and applications. The focus of the department's offerings is applied, computational, and theoretical, with special emphasis on statistical, biostatistical, graphical and computational statistics, as well as federal statistics, data analytics, and statistics interfaced with modern sciences.

Undergraduate Programs

The Department of Statistics offers an undergraduate Statistics, BS (http://catalog.gmu.edu/colleges-schools/engineering/statistics/statistics-bs/) with four concentrations, as well as a Data Analysis Minor (http://catalog.gmu.edu/colleges-schools/engineering/statistics/data-analysis-minor/) and a Statistics Minor (http://catalog.gmu.edu/colleges-schools/engineering/statistics/statistics-minor/), and BS/MS accelerated options. A variety of advanced undergraduate courses are also available for inclusion in other degree programs.

Graduate Programs

The department also administers three master's degree programs: Statistical Science, MS , Biostatistics, MS (http://catalog.gmu.edu/colleges-schools/engineering/statistics/biostatistics-ms/), and Data Analytics Engineering, MS. The Data (http://catalog.gmu.edu/colleges-schools/engineering/data-analytics-engineering-ms/) Analytics Engineering, MS (http://catalog.gmu.edu/colleges-schools/engineering/data-analytics-engineering-ms/) is a multidisciplinary program with courses and concentrations offered by many participating departments in the Volgenau School of Engineering.

Two dual master's degree programs, the Mathematics and Statistical (http://catalog.gmu.edu/colleges-schools/engineering/statistics/statistical-science-ms/#dualdegreeoptionstext) Science Dual-Degree, MS (http://catalog.gmu.edu/colleges-schools/engineering/statistics/statistical-science-ms/#dualdegreeoptionstext) and the Operations Research and Statistical Science Dual-Degree, MS (http://catalog.gmu.edu/colleges-schools/engineering/statistics/statistical-science-ms/#dualdegreeoptionstext) are offered in conjunction with the Mathematical Sciences (http://catalog.gmu.edu/colleges-schools/science/mathematical-sciences/#text) and Systems Engineering and Operations Research departments, respectively.

Finally, the Statistical Science, PhD (http://catalog.gmu.edu/colleges-schools/engineering/statistics/statistical-science-phd/) represents the highest academic attainment for a statistician and, as such, requires in-depth training to gain skills and knowledge of modern statistical theory, methodology, and practice.

Faculty

Department Faculty

Professors

Davis, Rosenberger, Sun (Chair), Vidyashankar

Associate Professors

Holmes, Izmirli, Johnson, Strazzeri, Sutton

Assistant Professors

Bagchi, Bruce, Fadahunsi, Hunter, Kepplinger, Lee, Qiao, Ramezani, Slawski

Emeritus Faculty

Bolstein, Carr, Miller

Programs

- Applied Statistics Graduate Certificate
- Biostatistics, MS

- Data Analysis Minor
- Statistical Science, MS
- Statistical Science, PhD
- Statistics Minor
- Statistics, BS

Applied Statistics Graduate Certificate

Banner Code: VS-CERG-ASTA

Phone: 703-993-4835
Email: statistics@gmu.edu
Website: statistics.gmu.edu

This graduate certificate trains students in data analysis and statistical methodology. It provides a clear record of additional instruction in statistics for future graduate programs or employers.

The General Concentration is intended to complement PhD and MS programs outside the Department of Statistics. It is also intended to be responsive to the needs of those who teach or work in government/ industry and want to increase their knowledge of statistics. The certificate emphasizes the application of statistical tools, not theory. As such, there are no required prerequisite math courses, although one semester of calculus is strongly recommended.

The Federal Statistics Concentration is targeted at upgrading the skills of current practitioners. The federal statistical system is a complex data collection and analysis system that requires a wide variety of multidisciplinary skills for its maintenance. The Federal Statistics Certificate is intended to respond to the need for broad training in statistics, survey methods, and data analysis, including graphics and data visualization. The program is extremely flexible and can be tailored to the needs of students within the federal statistical sector. It is also intended to be responsive to the needs of those in state and local governments, and those in the private sector involved in the collection, interpretation, or statistical analysis of federal data.

Admissions & Policies

Admissions

General Concentration

Applicants should have an undergraduate degree from an accredited institution, with a minimum overall GPA of at least 3.00 (on a 4.00 scale). No specific undergraduate degree is required. Applicants are expected to have basic computer literacy. Successful completion of an undergraduate course in statistics is required for admission. One semester of calculus is strongly recommended.

Federal Statistics Concentration

Potential candidates must hold a bachelor's degree and have taken at least two courses in calculus and one course in calculus-based probability and statistics. These minimal course requirements are normally satisfied by students who have successfully completed courses equivalent to the following Mason courses: MATH 113 Analytic Geometry and Calculus I (Mason Core), MATH 114 Analytic Geometry and Calculus II, and STAT 344 Probability and Statistics for Engineers and Scientists I. Candidates must also be computer literate.

Policies

For policies governing all graduate certificates, see AP.6.8 Requirements for Graduate Certificates.

Requirements

Certificate Requirements

Total credits: 12

This certificate may be pursued on a part-time basis only.

Concentration in General (GEN)

Coursework

Code	Title	Credits
Select 12 credits from the following list:		12
STAT 515	Applied Statistics and Visualization for Analytics	
STAT 517	Experimental Design	
STAT 522	Applied Multivariate Statistics	
STAT 525	Nonparametric Statistics and Categorical Data Analysis	
STAT 526	Applied Regression Analysis	
STAT 532	Introduction to Statistical Software Packages	
STAT 535	Analysis of Experimental Data [1]	
STAT 539	Topics in Applied Statistics	
STAT 560	Biostatistical Methods	
STAT 574	Survey Sampling I [2]	
STAT 674	Survey Sampling II	
Total Credits		12

1. STAT 535 is the prerequisite for all other courses besides STAT 574 and STAT 674. A student with sufficient background in statistics may seek a waiver of the STAT 535 prerequisite from the appropriate course instructor.
2. Enrollment in STAT 574 requires special permission from the course instructor.

Concentration in Federal Statistics (FSS)

Some courses may have prerequisites beyond minimal admission requirements for which students must qualify or seek a waiver from the course instructor.

Coursework

Code	Title	Credits
Select 9 credits from the following list: [1]		9
STAT 544	Applied Probability	
STAT 554	Applied Statistics I	
STAT 560	Biostatistical Methods	
STAT 574	Survey Sampling I	
STAT 654	Applied Statistics II	
STAT 657	Nonparametric Statistics	

STAT 658	Time Series Analysis and Forecasting	
STAT 662	Multivariate Statistical Methods	
STAT 663	Statistical Graphics and Data Exploration I	
STAT 665	Categorical Data Analysis	
STAT 674	Survey Sampling II	
Total Credits		**9**

[1] All of these certificate courses may be used for credit toward the Statistical Science, MS.

Electives

Code	Title	Credits
Select 3 credits of electives from STAT courses numbered 500-775		3
Total Credits		3

Biostatistics, MS

Banner Code: VS-MS-BSTA

Phone: 703-993-3645
Email: statistics@gmu.edu
Website: statistics.gmu.edu

The MS in Biostatistics will allow students to specialize in the design and analysis of health-related and biological studies, while maintaining the rigor and technical training of the Statistical Science master's program.

In this degree, students will take a statistics core and a "bio" core, involving courses in public health, biology, and clinical medicine (including ethics). It also involves a research core which allows students to solve real data problems in the biological or health area and collaborate with other scientists in an interdisciplinary team. Finally, students will choose from electives in bioinformatics, global and community health, or targeted statistics courses.

This graduate degree prepares students for analyzing difficult data specific to biology and health. The program, with its research core, will also be sufficiently rigorous for students who wish to pursue a PhD in Biostatistics.

Admissions & Policies

Admissions

In addition to satisfying general admission requirements for graduate study, all applicants are expected to have basic computer literacy. They also must hold a bachelor's degree from an accredited institution in a field that includes coursework in multivariable calculus, matrix or linear algebra, statistics, and calculus-based probability. Applicants with degrees in such fields as mathematics, statistics, and some engineering programs usually meet these requirements. For applicants with degrees in other fields, these requirements are normally satisfied if students have successfully completed courses equivalent to the listed Mason courses.

Note that coursework taken to correct deficiencies in undergraduate preparation is not counted toward the degree.

Code	Title	Credits
MATH 113	Analytic Geometry and Calculus I (Mason Core)	4
MATH 114	Analytic Geometry and Calculus II	4
MATH 213	Analytic Geometry and Calculus III	3
MATH 203	Linear Algebra	3
or MATH 321	Abstract Algebra	
STAT 250	Introductory Statistics I (Mason Core)	3
or STAT 344	Probability and Statistics for Engineers and Scientists I	
STAT 346	Probability for Engineers	3
or MATH 351	Probability	

Specific application deadlines and requirements (https://admissions.gmu.edu/grad/application-deadlines-and-requirements/?academicUnit=VS&_ga=1.107632321.273102085.1480697294) are available through the Office of Graduate Admissions.

Requirements

Degree Requirements

Total credits: 30

In addition to meeting general requirements that apply to master's degrees at Mason, all students must complete the 21-credit core requirements for the degree. A grade of "B-" or better is required in all 500-level statistics core courses. Students build on these core requirements by choosing 9 credits of electives.

Core Courses

Statistics Core

The Statistics core provides the basic probability, statistical analysis techniques, and statistical modeling tools that all biostatisticians must know, and provides a basis for higher level elective coursework.

Code	Title	Credits
STAT 544	Applied Probability	3
STAT 554	Applied Statistics I	3
STAT 654	Applied Statistics II	3
Total Credits		9

Bio Core

The Bio core is designed to provide the biological background necessary for biostatisticians. These courses offer preparation in the areas of public health and epidemiology (GCH 712 Introduction to Epidemiology), bioengineering (BENG 501 Bioengineering Research Methods , BENG 538 Medical Imaging) as well as bioinformatics (BINF 630 Bioinformatics Methods). In addition, this portion of the core curriculum ensures that students are trained in the statistical techniques required for clinical medicine, and includes material on ethics in research (STAT 560 Biostatistical Methods).

Code	Title	Credits
GCH 712	Introduction to Epidemiology	3
or BENG 501	Bioengineering Research Methods	
BINF 630	Bioinformatics Methods	3
or BENG 538	Medical Imaging	

STAT 560	Biostatistical Methods	3
Total Credits		9

Research Core

The Research core has been designed to assist students in the development of the requisite skills for careers in consulting or research. These courses will allow students to consult directly with biologists and medical and public health scientists on real data problems and provide opportunities to write reports and give oral presentations.

Code	Title	Credits
STAT 634	Case Studies in Data Analysis	3
or STAT 798	Master's Research Project	
Total Credits		3

Electives

The electives labeled STAT are specifically chosen from the department's master's-level electives to include techniques that are particularly important for biostatisticians.

Code	Title	Credits
Select three electives from the following:		9
GCH 782	International Research Ethics and Methods	
GCH 806	Advanced Multivariate Statistics and Data Analysis for Health Care Research	
STAT 652	Statistical Inference	
STAT 657	Nonparametric Statistics	
STAT 662	Multivariate Statistical Methods	
STAT 663	Statistical Graphics and Data Exploration I	
STAT 665	Categorical Data Analysis	
STAT 668	Survival Analysis	
STAT 672	Statistical Learning and Data Analytics	
STAT 760	Advanced Biostatistical Methods	
STAT 773	Statistical Methods for Longitudinal Data Analysis	
BENG 525	Neural Engineering	
BENG 537	Medical Image Processing	
BENG 541	Biomaterials	
BENG 550	Advanced Biomechanics	
Total Credits		9

Accelerated Master's

Bioengineering, BS/Biostatistics, Accelerated MS

Overview:

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program (BAM) and obtain the Bioengineering, BS and the Biostatistics, MS in an accelerated time-frame after satisfactory completion of a minimum of 146 credits.

Admitted students are able to use up to 6 graduate credits in partial satisfaction of requirements for the undergraduate degree. Upon completion and conferral of the bachelor's degree and with satisfactory performance (grade of 'B' or better) in each of the graduate courses, students are given advanced standing in the master's program.

See AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/).

BAM Pathway Admission Requirements:

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits with an overall GPA of at least 3.0.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific prerequisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the Biostatistics, MS program if they meet the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- Completion of Mason's requirements for undergraduate degree conferral (graduation) and completion of application for graduation.
- An overall GPA of at least 3.0.
- Completion of the following Mason courses each with a grade of C or better.

Code	Title	Credits
MATH 213	Analytic Geometry and Calculus III	3
BENG 320	Bioengineering Signals and Systems	3

Accelerated Pathway Requirements:

To maintain the integrity and quality of both the undergraduate and graduate degree programs, students complete all credits that satisfy requirements for the BS and MS programs. Students can take up to six credits of the following approved graduate level courses listed below as part of their undergraduate degree that will also be applied to the graduate degree.

Code	Title	Credits
BENG 501	Bioengineering Research Methods	3
STAT 554	Applied Statistics I	3
STAT 560	Biostatistical Methods	3
STAT 663	Statistical Graphics and Data Exploration I	3

All graduate course prerequisites must be completed prior to enrollment. Each graduate course must be completed with a grade of B or better to apply toward the MS program. The graduate courses may be counted as Technical Electives toward Bioengineering, BS program requirements, with approval of the Bioengineering Department undergraduate coordinator.

While still in undergraduate status, a maximum of six additional graduate credits may be taken as reserve graduate credit and applied to the master's program. Reserve graduate credits do not apply to the undergraduate degree.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees policies.

Degree Conferral:

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form (https://registrar.gmu.edu/forms/) that is submitted to the Office of the University Registrar and the VSE Graduate Admissions and Recruitment. At the completion of MS requirements, a master's degree is conferred.

Statistics, BS/Biostatistics, Accelerated MS

Overview:

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program (BAM) and obtain the Statistics, BS and the Biostatistics, MS in an accelerated time-frame after satisfactory completion of a minimum of 138 credits.

Admitted students are able to use up to 12 graduate credits in partial satisfaction of requirements for the undergraduate degree. Upon completion and conferral of the bachelor's degree and with satisfactory performance (grade of 'B' or better) in each of the graduate courses, students are given advanced standing in the master's program.

See AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements:

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Students will be considered for admission into the BAM Pathway after completion of 60 credits with an overall GPA of 3.0.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific prerequisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the Biostatistics, MS program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- Completion of Mason's requirements for undergraduate degree conferral (graduation) and completion of application for graduation.
- An overall GPA of 3.00.
- Completion of the following Mason courses each with a grade of C or better.

Code	Title	Credits
MATH 114	Analytic Geometry and Calculus II	4
MATH 203	Linear Algebra	3
STAT 334	Introduction to Probability Models and Simulation	3
or STAT 346	Probability for Engineers	
STAT 354	Probability and Statistics for Engineers and Scientists II	3
or STAT 360	Introduction to Statistical Practice II	
STAT 362	Introduction to Computer Statistical Packages	3

Accelerated Pathway Requirements:

To maintain the integrity and quality of both the undergraduate and graduate degree programs, students complete all credits that satisfy requirements for the BS and MS program with up to twelve credits overlap chosen from the following graduate courses:

Code	Title	Credits
STAT 544	Applied Probability [1]	3
STAT 554	Applied Statistics I [1]	3
STAT 560	Biostatistical Methods [2]	3
STAT 663	Statistical Graphics and Data Exploration I [1]	3

1 May be counted as a Technical Elective towards the BS program requirements.

2 Replaces the corresponding undergraduate version STAT 460 as a Statistical Elective. Credit may not be received for both STAT 460 and STAT 560.

All graduate course prerequisites must be completed prior to enrollment. Each graduate course must be completed with a grade of B or better to apply toward the MS degree.

While still in undergraduate status, a maximum of 6 additional graduate credits may be taken as reserve graduate credit and applied to the master's program. Reserve graduate credits do not apply to the undergraduate degree.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies.

Degree Conferral:

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and Graduate Recruitment and Enrollment Services. At the completion of MS requirements, a master's degree is conferred.

Data Analysis Minor

Banner Code: DATA

Phone: 703-993-3645

Email: statistics@gmu.edu
Website: statistics.gmu.edu

The Data Analysis Minor provides students with a background in data analysis, statistical methodology, and data science. It is intended to complement undergraduate degree programs such as computer science, economics, environmental engineering, geography, mathematics, nursing, psychology, public administration, sociology, and systems engineering.

Admissions & Policies

Policies

For policies governing all minors, see AP.5.3.4 Minors.

Digital Technology Credential

Student can earn the Digital Technology Credential (https://volgenau.gmu.edu/academics/certificates-and-credentials/digital-technology-credential/) by enrolling in the Data Analysis Minor.

Program Requirements

The minor requires 15 credits: a core sequence of 6 credits, plus 9 credits of electives. Grades of C or better are required in all courses. At least 3 of the 9 elective credits must be in STAT or CDS courses numbered above 300. At least 8 credits must be in courses not required by the student's major.

Requirements

Minor Requirements

Total credits: 15

Core Sequence Credits

Code	Title	Credits
Select one sequence from the following: [1]		6
Sequence 1:		
STAT 250	Introductory Statistics I (Mason Core)	
STAT 350	Introductory Statistics II	
Sequence 2:		
STAT 344	Probability and Statistics for Engineers and Scientists I	
STAT 354	Probability and Statistics for Engineers and Scientists II	
Total Credits		6

[1] Mathematics majors may substitute MATH 351 and MATH 352 for the core sequence credits provided all 9 elective credits are in STAT courses.

Electives

Code	Title	Credits
Select 9 credits from the following:		9
STAT 362	Introduction to Computer Statistical Packages	
STAT 455	Experimental Design	
STAT 456	Applied Regression Analysis	
STAT 460	Introduction to Biostatistics	
STAT 462	Applied Multivariate Statistics	
STAT 463	Introduction to Exploratory Data Analysis	
STAT 465	Nonparametric Statistics and Categorical Data Analysis	
STAT 472	Introduction to Statistical Learning	
STAT 474	Introduction to Survey Sampling	
STAT 499	Special Topics in Statistics	
BENG/IT 322	Health Data Challenges	
BINF 401	Bioinformatics and Computational Biology I	
BIOL 214	Biostatistics for Biology Majors	
BIOL 312	Biostatistics for Bioinformatics	
BIOL 314	Introduction to Research Design and Analysis	
CDS 130	Computing for Scientists	
CDS 301	Scientific Information and Data Visualization	
CDS 302	Scientific Data and Databases	
CDS 303	Scientific Data Mining	
CS 445	Computational Methods for Genomics	
CS 450	Database Concepts	
CS 484	Data Mining	
CYSE 101	Introduction to Cyber Security Engineering	
CYSE 325	Discrete Events Systems Modeling	
ECON 345	Introduction to Econometrics	
ECON 445	Design and Analysis of Experiments	
GOVT 300	Research Methods and Analysis	
GGS 300	Spatial Quantitative Methods	
GGS 354	Data Analysis and Global Change Detection Techniques	
OR/SYST 335	Discrete Systems Modeling and Simulation	
OR/MATH 441	Deterministic Operations Research	
OR/MATH 442	Stochastic Operations Research	
PSYC 300	Statistics in Psychology	
SOCI 313	Statistics for the Behavioral Sciences (Mason Core)	
SOCI 405	Analysis of Social Data	
SYST 469	Human Computer Interaction	
SYST 473	Decision and Risk Analysis	
Total Credits		9

Statistical Science, MS

Banner Code: VS-MS-STAT

Phone: 703-993-3645
Email: statistics@gmu.edu
Website: statistics.gmu.edu

Statistical science is regarded as one of the oldest and most successful information technology (IT) subjects. It focuses on the conversion of raw data into information. In this graduate program, students are trained

in the theory and practice of statistical methodology, particularly as it relates to high-technology applications.

Admissions & Policies

Admissions

In addition to satisfying general admission requirements for graduate study, all applicants are expected to have basic computer literacy and some experience using statistical software (such as SAS and R). They also must hold a bachelor's degree from an accredited institution in a field that includes coursework in multivariable calculus, matrix or linear algebra, statistics, calculus-based probability, and statistical software. These requirements are normally satisfied if students have successfully completed courses equivalent to the following Mason courses:

Code	Title	Credits
MATH 113	Analytic Geometry and Calculus I (Mason Core)	4
MATH 114	Analytic Geometry and Calculus II	4
MATH 213	Analytic Geometry and Calculus III	3
MATH 203	Linear Algebra	3
or MATH 321	Abstract Algebra	
STAT 250	Introductory Statistics I (Mason Core)	3
or STAT 344	Probability and Statistics for Engineers and Scientists I	
STAT 346	Probability for Engineers	3
or MATH 351	Probability	
STAT 362	Introduction to Computer Statistical Packages	3
Coursework taken to correct deficiencies in undergraduate preparation is not counted toward the degree.		

Specific application deadlines and requirements (https://admissions.gmu.edu/grad/application-deadlines-and-requirements/?academicUnit=VS&_ga=1.107632321.273102085.1480697294) are available through the Office of Graduate Admissions.

Requirements

Degree Requirements

Total credits: 30

In addition to meeting general requirements that apply to master's degrees at Mason, all students must complete the 15-credit core requirements for the degree. Grades of B- or better are required in three of the core courses: STAT 544 Applied Probability, STAT 544 Applied Probability, and STAT 654 Applied Statistics II. Students build on these core requirements by choosing 9 credits of methodology courses and 6 credits of electives.

Students select either the professional or research option, depending on career ambitions. The professional option provides MS degree qualifications to those seeking an expanded knowledge base in modern statistical theory and practice but do not wish to pursue a research career. The research option is for students planning to continue with a PhD degree, or begin/continue careers in statistical methodology research.

Professional Option

The professional option focuses on completing coursework in modern statistical theory and practice. 30 credits are required for the degree: 15 credits of core courses (taken by all MS students), 9 credits of methodology courses, and 6 credits of electives.

Students who select the professional option may elect to complete a master's research project resulting in a technical report. This report is not an original research report but a scholarly essay on a topic of current interest in the statistical science discipline. The technical report is usually about 20 to 25 pages long and demonstrates the student's ability to read and synthesize current technical literature into a scholarly essay. The report is evaluated by the student's advisor, taking into account the comprehensiveness of the coverage of the scientific literature, the accuracy of presentation and interpretation, and the literary style. Students are notified of their evaluations, and they may be required to revise their report to further develop their skills in preparing reports on technical subjects. The report is usually written in the context of 3 credits of STAT 798 Master's Research Project, which count as elective credits. Students opting not to complete a research project must take 30 credits of coursework.

Research Option

The research option requires 30 credits, including 6 credits that must be in independent research (thesis). Research is done with approval under the guidance of a faculty member. Research may be carried out at Mason or, if appropriate, at nearby facilities. For example, students may pursue research at their place of employment on topics of interest to their employer, provided the research meets the standards of the university. The thesis is usually written in the context of 6 credits of STAT 799 Master's Thesis, which count as elective credits. The remaining 24 credits include the 15 core credits and 9 methodology credits.

In addition to satisfying general university requirements for a master's degree, candidates who select the research option must submit a thesis based on the research to the student's thesis committee, which must give preliminary approval. The composition and appointment of this committee follows graduate program policies.

Candidates also must pass a final oral exam that concentrates on, but is not limited to, the area on which the thesis is written. The exam is administered by the student's thesis committee, and all interested members of the graduate faculty are invited to attend and participate in the questioning. The thesis committee makes the final decision on whether the candidate passes or fails.

Core Courses

The core coursework covers the basic elements of statistics at the graduate level. STAT 544 Applied Probability covers the major mathematical framework for statistical theory and practice. STAT 652 Statistical Inference provides basic statistical theory. After completing this course, students have the theoretical basis from which statistical methods are derived.

STAT 554 Applied Statistics I is a survey of statistical methods that have become the backbone of statistical practice. Focus in this course is on techniques that quantify random behavior. STAT 654 Applied Statistics II, provides an overview of principles of statistical modeling.

The final core course is STAT 634 Case Studies in Data Analysis, which is a writing intensive course that serves as a capstone experience.

Students synthesize methods and ideas acquired in their coursework in a statistical consulting environment.

Code	Title	Credits
STAT 544	Applied Probability	3
STAT 554	Applied Statistics I	3
STAT 634	Case Studies in Data Analysis	3
STAT 652	Statistical Inference	3
STAT 654	Applied Statistics II	3
Total Credits		15

Methodology Courses

Code	Title	Credits
Methodology courses may be chosen from any STAT courses numbered 540-775		9
Total Credits		9

Electives

Code	Title	Credits
Select 6 credits of electives from the following:		6
STAT 500-519		
STAT 540-799		
ECE 535	Digital Signal Processing	
ECE 630	Statistical Communication Theory	
ECON 637	Econometrics I	
MATH 551	Regression and Time Series	
MATH 553	Advanced Mathematical Statistics in Actuarial Sciences	
MATH 555	Actuarial Modeling I	
MATH 556	Actuarial Modeling II	
MATH 653	Construction and Evaluation of Actuarial Models I	
MATH 654	Construction and Evaluation of Actuarial Models II	
OR 531	Analytics and Decision Analysis	
OR 541	Operations Research: Deterministic Models	
OR 542	Operations Research: Stochastic Models	
OR 645	Stochastic Processes	
OR 647	Queuing Theory	
OR 675	Reliability Analysis	
or SYST 675	Reliability Analysis	
OR 719	Graphical Models for Inference and Decision Making	
or CSI 775	Graphical Models for Inference and Decision Making	
SYST 664	Bayesian Inference and Decision Theory	
or CSI 674	Bayesian Inference and Decision Theory	
Total Credits		6

Notes:

- Credit toward the MS in Statistical Science will not be given for both STAT 515 Applied Statistics and Visualization for Analytics and STAT 663 Statistical Graphics and Data Exploration I.
- Credit toward the MS in Statistical Science will not be given for both MATH 654 Construction and Evaluation of Actuarial Models II and STAT 668 Survival Analysis.
- A student concurrently enrolled in the Actuarial Sciences Graduate Certificate and the MS in Statistical Science may count MATH 551 Regression and Time Series and MATH 553 Advanced Mathematical Statistics in Actuarial Sciences as elective courses and may count MATH 555 Actuarial Modeling I and MATH 653 Construction and Evaluation of Actuarial Models I as methodology courses. The Graduate Certificate in Actuarial Sciences must be completed prior to or concurrently with the MS in Statistical Science. Otherwise, at most two of MATH 551 Regression and Time Series, MATH 553 Advanced Mathematical Statistics in Actuarial Sciences, MATH 555 Actuarial Modeling I, and MATH 653 Construction and Evaluation of Actuarial Models I can be counted toward the MS in Statistical Science as elective courses; none can be applied as methodology courses.

Dual Degree Options

Mathematics and Statistical Science Dual-Degree MS

This program allows students to earn an MS in Mathematics and an MS in Statistical Science by completing 48 credits of coursework in both areas instead of the 60 that would be required if the degrees were sought independently.

Admission Requirements

Applicants must satisfy admission requirements for both the MS in Mathematics and the MS in Statistical Science programs. A joint faculty committee from the Department of Mathematical Sciences and the Department of Statistics make final admission decisions into the dual-degree program.

MS-MATH/STAT Dual-Degree Requirements

Total credits: 48

Code	Title	Credits
MATH 621	Algebra I	3
MATH 675	Linear Analysis	3
MATH 677	Ordinary Differential Equations	3
or MATH 678	Partial Differential Equations	
MATH 685	Numerical Analysis	3
STAT 544	Applied Probability	3
STAT 554	Applied Statistics I	3
STAT 634	Case Studies in Data Analysis	3
STAT 652	Statistical Inference	3
STAT 654	Applied Statistics II	3
Total Credits		27

Electives

Code	Title	Credits
Select 12 elective credits in MATH courses numbered 615 or higher [1]		12
Select any STAT courses numbered 540-775		9
Total Credits		21

[1] Excluding MATH 653 Construction and Evaluation of Actuarial Models I, MATH 654 Construction and Evaluation of Actuarial Models II, MATH 655 Pension Valuation, and MATH 799 MS Thesis

Notes:

- Students in either the BS/Accelerated MS in Mathematics program or the BS(selected)/Accelerated MS in Statistical Science program cannot get a reduction of 6 credits toward this dual degree. Students who want to proceed to a PhD degree will only be able to waive the number of credits specified in the associated PhD degree requirements, even though they will have 48 credits at the MS level.
- If a student decides not to complete the required 48 credits, a single MS degree will not be granted unless the student fulfills the requirements for either the MS in Mathematics or the MS in Statistical Science.
- Once a student receives one of the MS degrees from either department, the student will no longer be eligible for the reduction in credit (i.e., will need to complete 30 credits) if the student later decides to earn the other MS degree.

Operations Research and Statistical Science Dual-Degree MS

This program allows students to earn an MS in Operations Research and an MS in Statistical Science by completing 48 credits of coursework in both areas instead of the 60 that would be required if the degrees were sought independently.

Admission Requirements

Applicants must satisfy admission requirements for the MS in Operations Research Program and the MS in Statistical Science Program. A joint faculty committee from the Statistics and Systems Engineering and Operations Research Departments make final admission decisions into the dual-degree program.

MS-OPRS/STAT Dual Degree Requirements

Total credits: 48

Required Courses

Code	Title	Credits
OR 541	Operations Research: Deterministic Models	3
OR 542	Operations Research: Stochastic Models	3
OR 635	Discrete System Simulation	3
OR 699	Masters Project	3
STAT 544	Applied Probability	3
STAT 554	Applied Statistics I	3
STAT 634	Case Studies in Data Analysis	3
STAT 652	Statistical Inference	3
STAT 654	Applied Statistics II	3
Total Credits		27

Elective Credits in OR Courses

Code	Title	Credits
Select 12 elective credits in OR courses at the 600 level, including at least one deterministic methods course and at least one stochastic methods course:		12
Deterministic Methods Courses:		
OR 641	Linear Programming	
OR 642	Integer Programming	
OR 643	Network Modeling	
OR 644	Nonlinear Programming	
OR 670	Metaheuristics for Optimization	
Stochastic Methods Courses:		
OR 645	Stochastic Processes	
OR 647	Queuing Theory	
OR 674	Dynamic Programming	
OR 675	Reliability Analysis	
SYST 664	Bayesian Inference and Decision Theory	
Total Credits		12

Elective Credits in STAT Courses

Code	Title	Credits
Select 9 elective credits from any STAT courses numbered 540-775		9
Total Credits		9

Notes

- Students currently enrolled in one of the MS programs must declare pursuit of the dual MS within one year of matriculation into the first MS program.
- A maximum of 6 credits across the two disciplines may be in independent research (thesis). The requirements for independent research are the same as detailed for the associated MS program.
- Students in either the BS (selected)/Operations Research, Accelerated MS program or the BS (selected)/Statistical Science, Accelerated MS program cannot get a reduction of 6 credits toward this dual degree. Students who want to proceed to a PhD degree will only be able to waive the number of credits specified in the associated PhD degree requirements, even though they will have 48 credits at the MS level.
- If a student decides not to complete the required 48 credits, a single MS degree will not be granted unless the student fulfills the requirements for the MS in Operations Research or the MS in Statistical Science.
- Once a student receives one of the MS degrees from either department, the student will no longer be eligible for the reduction in credit (i.e., will need to complete 30 credits) if the student later decides to earn the other MS degree.

Accelerated Master's

BS (selected)/Statistical Science, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program (BAM) and obtain an undergraduate BS degree and the Statistical Science, MS in an accelerated time-frame after satisfactory completion of a minimum of 138 credits.

Admitted students are able to use up to 12 graduate credits in partial satisfaction of requirements for the undergraduate degree. Upon completion and conferral of the bachelor's degree and with satisfactory performance (grade of 'B' or better) in each of the graduate courses, students are given advanced standing in the master's program.

See AP.6.7 Bachelor's/Accelerated Master's Degrees for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements

No specific undergraduate BS degree is required. Students enrolled in any BS degree may apply to the accelerated Statistical Science, MS program **if such an accelerated** Statistical Science, MS **pathway is allowable from the student's BS program, which will be determined by the academic advisors of both the BS and MS programs.**

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits with an overall GPA of 3.0.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific prerequisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the Statistical Science, MS program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- Completion of Mason's requirements for undergraduate degree conferral (graduation) and completion of application for graduation.
- An overall GPA of 3.00.
- Completion of the following Mason courses each with a grade of C or better.

Code	Title	Credits
MATH 213	Analytic Geometry and Calculus III	3
MATH 203	Linear Algebra	3
or MATH 321	Abstract Algebra	
STAT 250	Introductory Statistics I (Mason Core)	3
or STAT 344	Probability and Statistics for Engineers and Scientists I	
STAT 346	Probability for Engineers	3
or MATH 351	Probability	
STAT 362	Introduction to Computer Statistical Packages	3

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, students complete all credits satisfying degree requirements for the BS and MS programs, with up to twelve credits overlap chosen from the following graduate courses:

Code	Title	Credits
STAT 544	Applied Probability	3
STAT 554	Applied Statistics I	3
STAT 560	Biostatistical Methods	3
STAT 574	Survey Sampling I	3
STAT 663	Statistical Graphics and Data Exploration I	3

All graduate course prerequisites must be completed prior to enrollment. Each graduate course must be completed with a grade of B or better to apply toward the MS degree.

While still in undergraduate status, a maximum of 6 additional graduate credits may be taken as reserve graduate credit and applied to the master's program. Reserve graduate credits do not apply to the undergraduate degree.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees policies.

Degree Conferral

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and Graduate Recruitment and Enrollment Services. At the completion of MS requirements, a master's degree is conferred.

Statistics, BS/Statistical Science, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program (BAM) and obtain the Statistics, BS and the Statistical Science, MS in an accelerated time-frame after satisfactory completion of a minimum of 138 credits.

Admitted students are able to use up to 12 graduate credits in partial satisfaction of requirements for the undergraduate degree. Upon completion and conferral of the bachelor's degree and with satisfactory performance (grade of 'B' or better) in each of the graduate courses, students are given advanced standing in the master's program.

See AP.6.7 Bachelor's/Accelerated Master's Degrees for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits with an overall GPA of 3.0.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific prerequisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the Statistical Science, MS program, if they have met the following

criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- Completion of Mason's requirements for undergraduate degree conferral (graduation) and completion of application for graduation.
- An overall GPA of 3.00,
- Completion of the following Mason courses each with a grade of C or better.

Code	Title	Credits
MATH 114	Analytic Geometry and Calculus II	4
MATH 203	Linear Algebra	3
STAT 334	Introduction to Probability Models and Simulation	3
or STAT 346	Probability for Engineers	
STAT 354	Probability and Statistics for Engineers and Scientists II	3
or STAT 360	Introduction to Statistical Practice II	
STAT 362	Introduction to Computer Statistical Packages	3

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, students complete all credits that satisfy requirements for the BS and MS programs, with up to twelve credits overlap chosen from the following graduate courses:

Code	Title	Credits
STAT 544	Applied Probability [1]	3
STAT 554	Applied Statistics I [1]	3
STAT 560	Biostatistical Methods [2]	3
STAT 574	Survey Sampling I [3]	3
STAT 663	Statistical Graphics and Data Exploration I [1]	3

1. May be counted as a Technical Elective towards the BS program requirements.
2. Replaces the corresponding undergraduate version STAT 460 as a Statistical Elective. Credit may not be received for both STAT 460 and STAT 560.
3. Replaces the corresponding undergraduate version STAT 474 as a Statistical Elective. Credit may not be received for both STAT 474 and STAT 574.

All graduate course prerequisites must be completed prior to enrollment. Each graduate course must be completed with a grade of B or better to apply toward the MS degree.

While still in undergraduate status, a maximum of 6 additional graduate credits may be taken as reserve graduate credit and applied to the master's program. These can be chosen from STAT 500-519 and STAT 540-799. Reserve graduate credits do not apply to the undergraduate degree.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees policies.

Degree Conferral

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and the VSE Graduate Admissions and Enrollment Services. At the completion of MS requirements, a master's degree is conferred.

Statistical Science, PhD

Banner Code: VS-PHD-STAT

Phone: 703-993-3645
Email: statistics@gmu.edu
Website: statistics.gmu.edu

The PhD in Statistical Science represents the highest academic attainment for a statistician and, as such, requires in-depth knowledge of modern statistical theory and practice. The degree program is a hybrid of theory, computation, and data analysis; and students are expected to be proficient in all three. Current research areas of key department faculty in the program include biostatistics, modern statistical methodology, big data, data analytics, statistical or machine learning, applied probability, statistical networks, statistical computing, statistical imaging, bioinformatics, financial statistics, Bayesian statistics, data confidentiality, and statistics interfaced with other disciplines.

Admissions & Policies

Admissions

Students should have a master's degree in a mathematically-intensive discipline with a minimum 3.50 GPA. Students entering with a master's degree are expected to have completed coursework equivalent to STAT 544 Applied Probability, STAT 554 Applied Statistics I, STAT 652 Statistical Inference, and STAT 654 Applied Statistics II with exceptional performance. The program also requires a course in advanced calculus, MATH 315 Advanced Calculus I or equivalent, with a B or better. In exceptional circumstances, talented students with a mathematically-intensive undergraduate degree may be admitted.

Specific application deadlines and requirements (https://www2.gmu.edu/admissions-aid/apply-now/how-apply/graduate/) are available through the Office of Graduate Admissions.

Policies

For policies governing all graduate programs, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/).

Reduction of Credit

Students must complete a minimum of 72 graduate credits, which may be reduced by a maximum of 24 credits with a master's degree in statistics, mathematics, or similar discipline, or by 30 credits with a Master's degree from the George Mason University Department of Statistics. Reduction of credit requires the approval of the Director(s) of the PhD program in Statistical Science or designee and the dean or designee of the school. They determine whether the credits are eligible for reduction of credit and applicable to the degree program and the number of credits to be reduced.

Requirements

Degree Requirements

Total credits: 72

The 72 hours of required doctoral-level credits typically consist of 48 credits of regular coursework and 24 credits of dissertation research. The following degree plan is based on a student who receives a 24 credit reduction. Students who receive more or less than a 24 credit reduction should consult with their advisor.

Doctoral Coursework

Students are required to complete a minimum of 24 credits of advanced emphasis coursework, including five core courses:

Code	Title	Credits
STAT 662	Multivariate Statistical Methods	3
or STAT 672	Statistical Learning and Data Analytics	
STAT 778	Statistical Computing	3
STAT 971	Probability Theory	3
STAT 972	Mathematical Statistics I	3
STAT 973	Mathematical Statistics II	3
The remaining three courses are selected and approved by the Dissertation Committee and the Director(s) of the PhD program in Statistical Science and should be numbered 600 or above. [1]		9
Total Credits		24

[1] STAT 652 Statistical Inference and STAT 654 Applied Statistics II do not count toward advanced emphasis coursework, if a student has received a 24 credit reduction.

Qualifying Exams

Written qualifying exams will be taken in the following areas:

- Applied Statistics
- Theoretical Statistics

The exam on Applied Statistics will cover content from STAT 778 Statistical Computing and (STAT 662 Multivariate Statistical Methods or STAT 672 Statistical Learning and Data Analytics). The exam on Theoretical Statistics will cover content from STAT 971 Probability Theory, STAT 972 Mathematical Statistics I and STAT 973 Mathematical Statistics II.

Qualifying exams are offered in August and January. Full-time students are required to take the qualifying exams in August of the year following year of admission. Part-time students are required to take the qualifying exams within the first three years of enrollment in the program. Students who do not pass both exams in two consecutive exam periods are terminated from the program.

Dissertation Research

In order to advance to candidacy, students must complete all coursework, pass the qualifying exams, and defend a dissertation proposal.

Code	Title	Credits
Select 24 credits from the following:		24
STAT 990	Dissertation Topic Presentation (required)	
STAT 998	Doctoral Dissertation Proposal	
STAT 999	Doctoral Dissertation (must complete a minimum of 12 credits)	
Total Credits		24

Dissertation Committee Selection

Following successfully passing the qualifying exams, students should identify a dissertation director who is willing to work with them and together assemble a Dissertation Committee. The chair of the Dissertation Committee must be a member of the graduate faculty with a regular appointment in the Department of Statistics, and will typically be the dissertation director. The Dissertation Committee consists of a chair, two members of the graduate faculty who hold regular appointments in the Department of Statistics, and an external member; see AP.6.10.5 Dissertation Committee. The Dissertation Committee must be approved by the Director(s) of the PhD program in Statistical Science.

Advancement to Candidacy

Admission to candidacy is acquired on completion of a dissertation proposal examination. A dissertation proposal examination consists of:

- A proposal manuscript containing a problem statement, a review of related scholarly work, preliminary results, and an outline of the work to be conducted.
- An oral proposal presentation and a subsequent examination by the Dissertation Committee on aspects within the scope of the proposal that pertain to principles and questions fundamental to the field of Statistics. The presentation and examination are attended by the Dissertation Committee and the Director(s) of the PhD program in Statistical Science.

A student who fails the dissertation proposal examination may take it a second time, within six months. If the student fails a second time, the student is terminated from the program.

Doctoral Defense

The dissertation defense serves as the student's final examination and is conducted by the Dissertation Committee. Both the pre-defense and final defense are scheduled on approval of a written request to the department chair; see AP.6.10.8 Doctoral Defense.

Statistics Minor

Banner Code: STIC

Phone: 703-993-3645
Email: statistics@gmu.edu
Website: statistics.gmu.edu

The statistics minor provides students with a background in the methodology and application of statistics. It is intended to complement undergraduate degree programs in the Volgenau School and the College of Science, especially those programs that require MATH 113 Analytic Geometry and Calculus I (Mason Core), MATH 114 Analytic Geometry and Calculus II, and STAT 344 Probability and Statistics for Engineers and Scientists I as a part of the major requirements.

Admissions & Policies

Admissions

To be admitted to the minor, students must have completed MATH 113 Analytic Geometry and Calculus I (Mason Core) and MATH 114 Analytic Geometry and Calculus II with a grade of C or better.

Policies

The minor in Statistics requires 15 credit hours of coursework. Grades of C or better are required in all courses. At least 8 credits must be in courses not required by the student's major. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 15

Core Requirements

Code	Title	Credits
STAT 344	Probability and Statistics for Engineers and Scientists I [1,2]	3
STAT 354	Probability and Statistics for Engineers and Scientists II [2]	3
STAT 362	Introduction to Computer Statistical Packages	3
STAT 456	Applied Regression Analysis	3
Total Credits		12

1. STAT 346 Probability for Engineers and a course in statistics, such as STAT 250 Introductory Statistics I (Mason Core), can be substituted for the STAT 344 Probability and Statistics for Engineers and Scientists I core requirement.
2. Students enrolled in the Mathematics, BS may substitute MATH 351 Probability and MATH 352 Statistics for STAT 344 Probability and Statistics for Engineers and Scientists I and STAT 354 Probability and Statistics for Engineers and Scientists II.

Elective Requirement

Code	Title	Credits
Select one from the following:		3
STAT 455	Experimental Design	
STAT 460	Introduction to Biostatistics	
STAT 462	Applied Multivariate Statistics	
STAT 463	Introduction to Exploratory Data Analysis	
STAT 465	Nonparametric Statistics and Categorical Data Analysis	
STAT 472	Introduction to Statistical Learning	
STAT 474	Introduction to Survey Sampling	
Total Credits		3

Statistics, BS

Banner Code: VS-BS-STIC

Phone: 703-993-3645
Email: statistics@gmu.edu
Website: statistics.gmu.edu

The Bachelor of Science in Statistics is designed to provide a framework for students to develop connections between statistical concepts and theories, their impact to data science, and their applications to statistical practice. It will prepare statisticians to use modern statistical techniques to design studies, collect data, analyze and visualize high dimensional data sets, and draw valid conclusions in an increasingly data-centric world. In this program, students will meld the time-tested concepts and theories of statistics with modern methods of analysis, in order to interpret the data that is collected in nearly every discipline and every sector of industry and government.

The BS in Statistics requires a total of 120 credit hours, including major core requirements, concentration requirements, and Mason Core requirements. The program's major core curriculum provides students with a firm foundation in statistics, mathematics, and computing. Selection of a concentration allows a student to specialize in applied, theoretical, or computational aspects of statistical practice.

Students will select one of four concentrations: Applied Statistics, Mathematical Statistics, Sports Analytics or Statistical Analytics. The Applied Statistics concentration focuses on developing proficiency in analytical methods applicable to a specific discipline of the student's choosing. This is accomplished through the requirement to complete a minor in a field that makes substantial use of data analysis. The Mathematical Statistics concentration is designed for students interested in mastering the theoretical underpinnings of statistics and probability; this concentration is recommended for students who intend to continue graduate studies in statistics or whose main focus is on research. The Sports Analytics concentration is designed to provide students with an understanding of the principles of research methodology, economics, statistics, and data analytics integral to the growing field of sports analytics. This concentration will prepare students to work with sports teams as well as companies related to the field of sports such as advertisers, sponsors, etc. where data skills are crucial for today's workforce. The Statistical Analytics concentration blends the disciplines of computer science and statistics, as two core disciplines of data science, in a modern way and is designed for students interested in applying concepts from statistics and computer science to the analysis of complex data sets.

Graduates of this program can look forward to careers in local, state, and federal government, and in the many industries that conduct scientific research, collect, and analyze data, or where data science is essential. They will enter the workforce with the ability to impact science, public policy, technology, and industry in a positive way through their expertise in data collection, analysis, synthesis, and interpretation, each with the highest ethical standards. Graduates will also be prepared to continue their studies in graduate schools.

Admissions & Policies

Policies

Advanced Placement, Credit by Exam

A score of 5 on the Advanced Placement (AP) statistics exam qualifies students for credit in STAT 260.

Change of Major

Students considering changing their major to Statistics should consult with the Volgenau School of Engineering Coordinator of Undergraduate Advising, 2500 Nguyen Engineering Building. These students must have a cumulative GPA of at least 2.75 and completed MATH 113 with a grade of C or better. See Change of Major for more information.

Grades

Students must earn a C or better in Major Core requirement courses as well as in courses required to satisfy prerequisites. Also, students must earn a C or better in at least 6 credits of the courses used to fulfill the 9 credits of Statistics Restricted Electives.

Termination from the Major

No math, science, or Volgenau School of Engineering course that is required for the major may be attempted more than three times. Those students who do not successfully complete such a course within three attempts will be terminated from the major. Undeclared students in the Volgenau School who do not successfully complete a course required for a Volgenau School major within three attempts will also be terminated.

In addition, students in the Volgenau School with evidence of continued failure to make adequate progress toward declaring or completing a Volgenau School major will be terminated from the school. Adequate progress is determined by the major program. For more information, see AP.5.2.4 Termination from the Major (https://catalog.gmu.edu/policies/academic/undergraduate-policies/#ap-5-2-4).

Once a student has attempted one of these courses twice unsuccessfully, the third attempt must be no later than the next semester of enrollment, excluding summers. Failure to take the course at that time will result in termination from the major. A third attempt of a Volgenau School of Engineering course requires support by the student's major department as well as permission by the department offering the course. This permission is not guaranteed. If the student is unable to take the course when required, the student may request an extension to a future semester; extensions require approval of the student's advisor, their department, and the Associate Dean for Undergraduate Programs. The deadline for extension requests is the add deadline for the semester in which the course is required.

Students who have been terminated from a Volgenau School of Engineering major may not register for a Volgenau School course without permission of the department offering the course. This applies to all undergraduate courses offered by the Volgenau School except IT 104 Introduction to Computing (Mason Core) and STAT 250 Introductory Statistics I (Mason Core).

A student may not declare any major in the Volgenau School of Engineering if the student has previously met the termination criteria for that major at any time, regardless of what the student's major was at the time the courses were taken.

Requirements

Degree Requirements

Total credits: 120

Major Core

Statistics Core

Code	Title	Credits
STAT 260	Introduction to Statistical Practice I	3
STAT 334	Introduction to Probability Models and Simulation [1]	3
or STAT 346	Probability for Engineers	
STAT 354	Probability and Statistics for Engineers and Scientists II	3
or STAT 360	Introduction to Statistical Practice II	
STAT 362	Introduction to Computer Statistical Packages	3
STAT 456	Applied Regression Analysis	3
STAT 463	Introduction to Exploratory Data Analysis	3
STAT 489	Pre-Capstone Professional Development	3
STAT 490	Capstone in Statistics (Mason Core)	3
Total Credits		24

1 Students in the Mathematical Statistics concentration must take STAT 346.

Mathematics Core

Code	Title	Credits
MATH 113	Analytic Geometry and Calculus I (Mason Core) [1,2]	4
MATH 114	Analytic Geometry and Calculus II [3]	4
MATH 203	Linear Algebra	3
Total Credits		11

1 Math 123-124 may be taken in place of MATH 113 if student does not have sufficiently high math placement scores to be eligible for MATH 113.

2 MATH 115 may be taken in place of MATH 113 if student qualifies.

3 MATH 116 may be taken in place of MATH 114 if student qualifies.

Computational Skills Core

Code	Title	Credits
CS 112	Introduction to Computer Programming	4
Total Credits		4

Restricted Electives

Statistics

Code	Title	Credits
Select nine credits of STAT electives [1,2]		9
STAT 356	Statistical Theory	
STAT courses numbered 440-499		
Total Credits		9

1 May not be used to fulfill other degree requirements.

2 Grades of C or better are required in at least 6 credits.

Technical

Code	Title	Credits
Select nine credits of technical electives. Specific course selections must be pre-approved by the undergraduate coordinator. Students may need to choose electives to satisfy prerequisites for some of these courses. In some cases, students will need to contact other departments for permission to enroll. [1]		9
CDS courses numbered between 100-399		
CS courses numbered above 200		
MATH 125	Discrete Mathematics I (Mason Core)	
MATH courses numbered above 200		
OR courses numbered above 300		
BENG 322	Health Data Challenges	
CYSE 101	Introduction to Cyber Security Engineering	
CYSE 325	Discrete Events Systems Modeling	
ENGH 388	Professional and Technical Writing	
IT 214	Database Fundamentals	
SOCI 391	Big Data, Technology, and Society	
SYST 438	Analytics for Financial Engineering and Econometrics	
SYST 468	Applied Predictive Analytics	
SYST 473	Decision and Risk Analysis	
SYST 488	Financial Systems Engineering	
Total Credits		9

[1] May not be used to fulfill other degree requirements.

Concentrations

Select one concentration and complete all requirements.

Concentrations

- Concentration in Applied Statistics (ASTA)
- Concentration in Mathematical Statistics (MTHS)
- Concentration is Sports Analytics (SPAL)
- Concentration in Statistical Analytics (STLA)

Concentration in Applied Statistics (ASTA)

Focuses on developing proficiency in analytical methods applicable to a specific discipline of the student's choosing. This is accomplished through the requirement to complete a minor in a field that makes substantial use of data analysis.

Code	Title	Credits
Students must complete 15 - 21 credits in a pre-approved minor, selected in consultation with the undergraduate coordinator. Courses taken to fulfill the minor requirements that are not used to fulfill Major Core or Restricted Electives requirements are considered unique to the minor. At least 15 credits of the minor coursework, technical electives, general electives, and additional Mason Core courses must be at or above the 300 level.		15-21

Concentration in Mathematical Statistics (MTHS)

Designed for students interested in mastering the theoretical underpinnings of statistics and probability; this concentration is recommended for students who intend to continue graduate studies in statistics or whose main focus is on research.

Code	Title	Credits
STAT 356	Statistical Theory	3
CDS 130	Computing for Scientists	3
MATH 125	Discrete Mathematics I (Mason Core)	3
MATH 213	Analytic Geometry and Calculus III [1]	3
MATH 300	Introduction to Advanced Mathematics	3
MATH 315	Advanced Calculus I	3
Total Credits		18

[1] MATH 215 may be taken in place of MATH 213 if student qualifies.

Code	Title	Credits
At least 9 credits of the technical electives, general electives, and additional Mason Core courses must be at or above the 300 level.		

Concentration in Sports Analytics (SPAL)

Code	Title	Credits
SPMT 201	Introduction to Sport Management	3
SPMT 425	Sport Analytics	3
SRST 450	Research Methods	3
ECON 103	Contemporary Microeconomic Principles (Mason Core)	3
ECON 104	Contemporary Macroeconomic Principles (Mason Core)	3
Select six credits of SPMT electives		6
SPMT courses numbered between 400-499		
Select three credits of a computational elective		3
CDS 130	Computing for Scientists	
SYST 468	Applied Predictive Analytics	
SYST 473	Decision and Risk Analysis	
Total Credits		24

Code	Title	Credits
At least 6 credits of the concentration computational elective, technical electives, general electives, and additional Mason Core courses must be at or above the 300 level.		

Concentration in Statistical Analytics (STLA)

Blends the disciplines of computer science and statistics in a very modern way and is designed for students interested in applying concepts from statistics and computer science to the analysis of massive data sets.

Code	Title	Credits
STAT 472	Introduction to Statistical Learning	3
CS 211	Object-Oriented Programming	3
CS 310	Data Structures	3
CS 330	Formal Methods and Models	3
CS 450	Database Concepts	3
or CDS 302	Scientific Data and Databases	
CS 484	Data Mining	3
or CDS 303	Scientific Data Mining	
MATH 125	Discrete Mathematics I (Mason Core)	3

OR 481	Numerical Methods in Engineering	3
Total Credits		24

Additional Mason Core

Code	Title	Credits
Foundation Requirements		
Written Communication		6
Oral Communication		3
Core Requirements		
Literature		3
Arts		3
Western Civilization/World History		3
Global Understanding		3
Social and Behavioral Sciences		3
Natural Science		7
Total Credits		31

General Electives

Code	Title	Credits
The number of general elective credits varies with choice of concentration		8-17
Total Credits		8-17

4-Year Plan

Bachelor of Science in Statistics Sample Plan of Study

Detailed four year plans and degree planning checklists can be found at https://advising.gmu.edu/current-student/majors-at-mason/.

Accelerated Master's

Statistics, BS/Biostatistics, Accelerated MS

Overview:

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program (BAM) and obtain the Statistics, BS and the Biostatistics, MS in an accelerated time-frame after satisfactory completion of a minimum of 138 credits.

Admitted students are able to use up to 12 graduate credits in partial satisfaction of requirements for the undergraduate degree. Upon completion and conferral of the bachelor's degree and with satisfactory performance (grade of 'B' or better) in each of the graduate courses, students are given advanced standing in the master's program.

See AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements:

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Students will be considered for admission into the BAM Pathway after completion of 60 credits with an overall GPA of 3.0.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific prerequisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the Biostatistics, MS program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- Completion of Mason's requirements for undergraduate degree conferral (graduation) and completion of application for graduation.
- An overall GPA of 3.00.
- Completion of the following Mason courses each with a grade of C or better.

Code	Title	Credits
MATH 114	Analytic Geometry and Calculus II	4
MATH 203	Linear Algebra	3
STAT 334	Introduction to Probability Models and Simulation	3
or STAT 346	Probability for Engineers	
STAT 354	Probability and Statistics for Engineers and Scientists II	3
or STAT 360	Introduction to Statistical Practice II	
STAT 362	Introduction to Computer Statistical Packages	3

Accelerated Pathway Requirements:

To maintain the integrity and quality of both the undergraduate and graduate degree programs, students complete all credits that satisfy requirements for the BS and MS program with up to twelve credits overlap chosen from the following graduate courses:

Code	Title	Credits
STAT 544	Applied Probability [1]	3
STAT 554	Applied Statistics I [1]	3
STAT 560	Biostatistical Methods [2]	3
STAT 663	Statistical Graphics and Data Exploration I [1]	3

1 May be counted as a Technical Elective towards the BS program requirements.

2 Replaces the corresponding undergraduate version STAT 460 as a Statistical Elective. Credit may not be received for both STAT 460 and STAT 560.

All graduate course prerequisites must be completed prior to enrollment. Each graduate course must be completed with a grade of B or better to apply toward the MS degree.

While still in undergraduate status, a maximum of 6 additional graduate credits may be taken as reserve graduate credit and applied to the master's program. Reserve graduate credits do not apply to the undergraduate degree.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies.

Degree Conferral:

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and Graduate Recruitment and Enrollment Services. At the completion of MS requirements, a master's degree is conferred.

Statistics, BS/Data Analytics Engineering, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program (BAM) and obtain the Statistics, BS and the Data Analytics Engineering, MS in an accelerated time-frame after satisfactory completion of a minimum of 138 credits.

Admitted students are able to use up to 12 graduate credits in partial satisfaction of requirements for the undergraduate degree. Upon completion and conferral of the bachelor's degree and with satisfactory performance (grade of 'B' or better) in each of the graduate courses, students are given advanced standing in the master's program.

See AP.6.7 Bachelor's/Accelerated Master's Degrees for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits with an overall GPA of at least 3.0.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific prerequisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the Data Analytics Engineering, MS program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- Completion of Mason's requirements for undergraduate degree conferral (graduation) and completion of application for graduation.
- An overall GPA of at least 3.0.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, students complete all credits that satisfy requirements for the BS and MS programs, with up to twelve credits overlap chosen from the following graduate courses:

Code	Title	Credits
CS 504	Principles of Data Management and Mining	3
or CS 584	Theory and Applications of Data Mining	
OR 541	Operations Research: Deterministic Models (Credit may not be received for both OR 441 and OR 541.)	3
or OR 531	Analytics and Decision Analysis	
STAT 515	Applied Statistics and Visualization for Analytics	3
or STAT 554	Applied Statistics I	
STAT 663	Statistical Graphics and Data Exploration I	3

All graduate course prerequisites must be completed prior to enrollment. Each graduate course must be completed with a grade of B or better to apply toward the MS program.

The graduate courses may be counted as Technical Electives toward the Statistics, BS program requirements, with approval of the Statistics Department undergraduate coordinator.

While still in undergraduate status, a maximum of six additional graduate credits may be taken as reserve graduate credit and applied to the master's program. Reserve graduate credits do not apply to the undergraduate degree.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees policies.

Degree Conferral

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form (https://registrar.gmu.edu/forms/) that is submitted to the Office of the University Registrar and the VSE Graduate Admissions and Recruitment office. At the completion of MS requirements, a master's degree is conferred.

Statistics, BS/Operations Research, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a Statistics, BS and an Operations Research, MS in an accelerated time-frame after satisfactory completion of a minimum of 138 credits.

Admitted students are able to use up to 12 graduate credits in partial satisfaction of requirements for the undergraduate degree. Upon completion and conferral of the bachelor's degree and with satisfactory performance (grade of 'B' or better) in each of the graduate courses, students are given advanced standing in the master's program.

See AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/).

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Statistics, BS students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits with an overall GPA of at least 3.3, and completion of all MATH requirements. Students must additionally complete MATH 203 Linear Algebra prior to applying for the graduate program.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

The criteria for admission are identical to criteria for admission to the Operations Research, MS program. Students already admitted in the BAM Pathway will be admitted to the Operations Research, MS program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- An overall GPA of at least 3.3
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing course: Students must complete all credits that satisfy requirements for both the BS and MS programs. Up to four courses (12 credits) of approved master's level courses taken as part of the undergraduate degree may be applied to the graduate degree. The courses selected for this purpose must be approved by the academic advisors of both the BS and MS programs and by the SEOR department chair. For the BS programs that allow undergraduate electives from the department of system engineering and operations research, the students may choose the graduate version of such elective courses to replace the corresponding undergraduate courses.

- Students selecting up to two courses (6 credits) of approved master's level courses may select from the combined Statistics course list and Systems Engineering and Operations Research course list given below.
- Students selecting up to three or four courses (9 or 12 credits) of approved master's level courses may select at most two courses from the Statistics course list and select the remaining courses from the Systems Engineering and Operations Research course list given below. Students are highly recommended to select courses marked as core courses because it applies to the master's degree regardless of the graduate-level concentration chosen in the Operations Research, MS. The undergraduate version of these courses, if any, may *not* be applied toward the Operations Research, MS. Credit may not be received for both the undergraduate and graduate version of these courses.
- Some of the courses in the Systems Engineering and Operations Research course list applies only to certain concentrations in the Operations Research, MS program.
- Students must pay attention to the prerequisites required for a course, and the master's degree concentration that the course may satisfy.

Select from the following Statistics courses:

Code	Title	Credits
STAT 544	Applied Probability	
STAT 554	Applied Statistics I	

Select the remaining from the following Systems Engineering and Operations Research courses:

Code	Title	Credits
SYST 573	Decision and Risk Analysis	
SYST 538	Analytics for Financial Engineering and Econometrics	
SYST/OR 568	Applied Predictive Analytics (Core)	
SYST 588	Financial Systems Engineering I: Introduction to Options, Futures, and Derivatives	
OR 541	Operations Research: Deterministic Models (Core)	
OR 542	Operations Research: Stochastic Models (Core)	

While still in undergraduate status, a maximum of 6 additional graduate credits may be taken as reserve graduate credit and applied to the master's program. Reserve graduate credits do not apply to the undergraduate degree.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text).

Degree Conferral

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and the VSE Graduate Admissions Office. At the completion of MS requirements, a master's degree is conferred.

Statistics, BS/Systems Engineering, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a Statistics, BS and a Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) in an

accelerated time-frame after satisfactory completion of a minimum of 138 credits.

Admitted students are able to use up to 12 graduate credits in partial satisfaction of requirements for the undergraduate degree. Upon completion and conferral of the bachelor's degree and with satisfactory performance (grade of 'B' or better) in each of the graduate courses, students are given advanced standing in the master's program.

See AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/).

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Statistics, BS students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits with an overall GPA of at least 3.3, and completion of all MATH requirements.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

The criteria for admission are identical to criteria for admission to the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program. Students already admitted in the BAM Pathway will be admitted to the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- An overall GPA of at least 3.3
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing course: Students must complete all credits that satisfy requirements for both the BS and MS programs. Up to four courses (12 credits) of approved master's level courses taken as part of the undergraduate degree may be applied to the graduate degree. The courses selected for this purpose must be approved by the academic advisors of both the BS and MS programs and by the SEOR department chair. For the BS programs that allow undergraduate electives from the department of system engineering and operations research, the students may choose the graduate version of such elective courses to replace the corresponding undergraduate courses.

- Students selecting up to two courses (6 credits) of approved master's level courses may select from the combined Statistics course list and Systems Engineering and Operations Research course list given below.
- Students selecting up to three or four courses (9 or 12 credits) of approved master's level courses may select at most two courses from the Statistics course list and select the remaining courses from the Systems Engineering and Operations Research course list given below. The undergraduate version of these courses, if any, may *not* be applied toward the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/). Credit may not be received for both the undergraduate and graduate version of these courses.
- Except for the courses marked as core, any course chosen from either course list can be used to satisfy SYST 505 Systems Engineering Principles core requirement in the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program.
- Some of the courses in the Systems Engineering and Operations Research course list applies only to certain concentrations in the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program.
- Students must pay attention to the prerequisites required for a course, and the master's degree concentration that the course may satisfy.

Select from the following Statistics courses:

Code	Title	Credits
STAT 544	Applied Probability	
STAT 554	Applied Statistics I	

Select the remaining from the following Systems Engineering and Operations Research courses:

Code	Title	Credits
SYST 573	Decision and Risk Analysis	
SYST 538	Analytics for Financial Engineering and Econometrics	
SYST/OR 568	Applied Predictive Analytics	
SYST 588	Financial Systems Engineering I: Introduction to Options, Futures, and Derivatives	
OR 541	Operations Research: Deterministic Models	
OR 542	Operations Research: Stochastic Models	

While still in undergraduate status, a maximum of 6 additional graduate credits may be taken as reserve graduate credit and applied to the master's program. Reserve graduate credits do not apply to the undergraduate degree.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text).

Degree Conferral

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must

complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and the VSE Graduate Admissions Office. At the completion of MS requirements, a master's degree is conferred.

Statistics, BS/Statistical Science, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program (BAM) and obtain the Statistics, BS and the Statistical Science, MS in an accelerated time-frame after satisfactory completion of a minimum of 138 credits.

Admitted students are able to use up to 12 graduate credits in partial satisfaction of requirements for the undergraduate degree. Upon completion and conferral of the bachelor's degree and with satisfactory performance (grade of 'B' or better) in each of the graduate courses, students are given advanced standing in the master's program.

See AP.6.7 Bachelor's/Accelerated Master's Degrees for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits with an overall GPA of 3.0.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific prerequisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the Statistical Science, MS program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- Completion of Mason's requirements for undergraduate degree conferral (graduation) and completion of application for graduation.
- An overall GPA of 3.00,
- Completion of the following Mason courses each with a grade of C or better.

Code	Title	Credits
MATH 114	Analytic Geometry and Calculus II	4
MATH 203	Linear Algebra	3
STAT 334	Introduction to Probability Models and Simulation	3
or STAT 346	Probability for Engineers	
STAT 354	Probability and Statistics for Engineers and Scientists II	3
or STAT 360	Introduction to Statistical Practice II	
STAT 362	Introduction to Computer Statistical Packages	3

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, students complete all credits that satisfy requirements for the BS and MS programs, with up to twelve credits overlap chosen from the following graduate courses:

Code	Title	Credits
STAT 544	Applied Probability [1]	3
STAT 554	Applied Statistics I [1]	3
STAT 560	Biostatistical Methods [2]	3
STAT 574	Survey Sampling I [3]	3
STAT 663	Statistical Graphics and Data Exploration I [1]	3

1. May be counted as a Technical Elective towards the BS program requirements.
2. Replaces the corresponding undergraduate version STAT 460 as a Statistical Elective. Credit may not be received for both STAT 460 and STAT 560.
3. Replaces the corresponding undergraduate version STAT 474 as a Statistical Elective. Credit may not be received for both STAT 474 and STAT 574.

All graduate course prerequisites must be completed prior to enrollment. Each graduate course must be completed with a grade of B or better to apply toward the MS degree.

While still in undergraduate status, a maximum of 6 additional graduate credits may be taken as reserve graduate credit and applied to the master's program. These can be chosen from STAT 500-519 and STAT 540-799. Reserve graduate credits do not apply to the undergraduate degree.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees policies.

Degree Conferral

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and the VSE Graduate Admissions and Enrollment Services. At the completion of MS requirements, a master's degree is conferred.

Department of Systems Engineering and Operations Research

John Shortle, Chair

2100 Nguyen Engineering Building

Fairfax Campus

Phone: 703-993-5689
Email: seor@gmu.edu
Website: https://seor.gmu.edu/

The Systems Engineering and Operations Research (SEOR) Department offers a bachelor's degree in systems engineering, a minor in systems engineering, a minor in aviation flight training and management, a master's degree in systems engineering, a master's degree in operations research, and a doctoral degree in systems engineering and operations research. The department also offers a concentration in predictive analytics and a concentration in financial engineering within the school-wide master's degree in data analytics engineering. In addition, the department offers six systems engineering certificates at the master's level: architecture-based systems integration, C4I and cyber (command, control, communications, computing, intelligence, and cyber), engineering resilient enterprise systems, communication and networking, tactical computer operations, and financial systems; the department offers three operations research certificates: computational modeling, military operations research, and predictive data analytics. The department also offers a dual master's degree in operations research and master's degree in statistical science jointly with the Statistics Department.

There is much overlap between systems engineering and operations research. The department encourages students of either discipline to elect courses in the other. For more information, go to the department's website (http://seor.gmu.edu/).

Systems Engineering

Systems engineers determine the most effective ways to use all of a system's components: people, machines, materials, information, and energy. The engineers plan, design, implement, and manage integrated systems, working to ensure performance, safety, reliability, and maintainability. They also work to ensure that systems are delivered on time at a reasonable cost. Examples of systems include the national air transportation system, computer networks, autonomous vehicles, intelligent robots, the electric power grid, healthcare systems, and financial trading systems. Whereas other engineering disciplines concentrate on individual aspects of a system, such as electronics, ergonomics, or software, systems engineers focus on the system as a whole and the interaction of the underlying parts. Systems engineering, perhaps more than any other engineering discipline, is involved with the human and organizational aspects of developing the desired system. Systems engineering is the people-oriented engineering profession.

Operations Research

Operations research is the professional field that uses analytical and data-based methods in engineering to support management decision making, often focusing on how best to allocate limited resources. Operations researchers do for organizations what physicists do for the physical world: they try to find order in apparent chaos by identifying the structure in complex situations and understanding how the components of organizations interact. The goal is to explain and predict the effects of actions taken on these systems and to use the information to make informed management decisions. Much of this work is developing and manipulating mathematical and computer models of organizational systems, frequently making use of big data to build and run the models.

Faculty

Department Faculty

Professors

Adelman, Brouse, Chang, Chen, Hoffman, Laskey, Pyster, Shortle (chair), Sofer, Zaidi

Associate Professors

Baldo, Costa, Ganesan, Huang, Jones, Loerch, Luo, Sherry, Xu

Assistant Professors

El-Amine, Ji, Mohebbi, Raz, Sokolov

Research and Affiliate Professors

Miller-Hooks, Wagner, Wolman

Adjunct Professors

Ahmed, Bailey, Barry, Burke, Charbonneau, Comer, Dam, Edson, Ferreiro, Guharay, Hashim, Icore, Keltz, Killam, Laveson, Locher, Maxwell, Mulhearn, Nicholas, Ray, Rothwell, Stimpson, Warren, Wieland, Woodaman, Xie

Emeritus Faculty

Donohue, Nash, Palmer

Programs

- Aviation Flight Training and Management Minor
- Operations Research and Engineering Graduate Certificate
- Operations Research, MS
- Systems Engineering Graduate Certificate (SEOR)
- Systems Engineering Minor
- Systems Engineering and Operations Research, PhD
- Systems Engineering, BS
- Systems Engineering, MS

Aviation Flight Training and Management Minor

Banner Code: AVIM

Academic Advising

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Students completing the minor will take classes for Pilot Ground School and Flight Training leading up to a solo flight. In addition, students will study aspects of aviation from systems engineering of air traffic control, design of airports, human factors and psychology, and financial planning and management. Students will be trained for required government licensing exams such as the Federal Aviation Administration (FAA) Knowledge Test and FAA Flight tests. Special fees to cover flight training costs will apply. Students are responsible for meeting all eligibility requirements.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 15

Required SEOR Courses

Code	Title	Credits
SYST 460	Introduction to Air Traffic Control	3
SYST 462	Flight Training Lab I (Lab fees to cover flight training costs apply)	3
SYST 463	Flight Training Lab II (Lab fees to cover flight training costs apply)	3
Total Credits		9

Two Additional Courses

Code	Title	Credits
Select one from the following:		3
SYST 370	Systems Project Management [1]	
or SYST 371	Systems Engineering Management	
SYST 461	Air Transportation System Engineering	
MIS 303	Introduction to Business Information Systems	
MBUS 301	Managing People and Organizations in a Global Economy	
MBUS 305	Introduction to International Business (Mason Core)	
ECON 471	Airline Economics	
Total Credits		3

[1] Credit cannot be received for both SYST 370 and SYST 371.

Code	Title	Credits
Select one from the following:		3
SYST 469	Human Computer Interaction [2]	
or SYST 470	Human Factors Engineering	
PSYC 317	Cognitive Psychology	
PSYC 333	Industrial and Organizational Psychology	
HIST 378	History of Aviation	
Total Credits		3

[2] Credit cannot be received for both SYST 469 and SYST 470.

Prerequisites

Some of the courses listed above have additional prerequisites. Students should pay careful attention to prerequisites when selecting courses.

Operations Research, MS

Banner Code: VS-MS-OPRS

Academic Advising

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Website: https://seor.gmu.edu/

The Master of Science in Operations Research prepares students for research and professional practice associated with the formulation, analysis, and computer implementation of mathematical models for decision making. Major components include optimization, stochastic modeling, computer simulation, predictive data analytics, and application of these components to realistic and relevant operational analysis problems. Students focus their studies in a concentration area such as data analytics, decision analysis, financial engineering, military operations research, optimization, or stochastic modeling; students can also choose a self-defined concentration with approval of a faculty advisor.

To obtain the MS degree, students complete an approved plan of study that contains a minimum of 30 graduate credits. Appropriate courses may be transferred, with advisor approval, into this degree program. Students may also take courses through the Commonwealth Graduate Engineering Program. The program also prepares students for pursuing advanced graduate study leading to the PhD degree in Systems Engineering and Operations Research (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-operations-research-phd/).

Admissions & Policies

Admissions

To be admitted to the program, students must hold a baccalaureate degree from an accredited institution in engineering, mathematics, computer science, physical sciences, economics, or a related field. They also must have completed courses in:

Code	Title	Credits
Calculus		
MATH 113	Analytic Geometry and Calculus I (Mason Core)	4
MATH 114	Analytic Geometry and Calculus II	4
MATH 213	Analytic Geometry and Calculus III	3
Matrix Algebra		
MATH 203	Linear Algebra	3
Differential Equations		
MATH 214	Elementary Differential Equations	3
Applied Probability and Statistics		
STAT 346	Probability for Engineers	3
Scientific Programming Language		
CS 112	Introduction to Computer Programming	4

Specific application deadlines and requirements (https://www2.gmu.edu/admissions-aid/apply-now/how-apply/graduate/) are available through the Office of Graduate Admissions.

Requirements

Degree Requirements

Total credits: 30

Students must complete four core courses and the project (15 credits). The remaining 15 credits are electives subject to the requirements below, and can be taken in one of five concentration areas or in an individual plan approved by the student's advisor.

Required Core Courses

Code	Title	Credits
OR 541	Operations Research: Deterministic Models	3
OR 542	Operations Research: Stochastic Models	3
OR 568	Applied Predictive Analytics	3
OR 635	Discrete System Simulation	3
Total Credits		12

Project or Thesis (Optional)

Students must complete three credit hours of OR 699 Masters Project. Students in this course work in teams on approved applied project. A project report is submitted at the end of the semester, and a final project presentation is made to the entire faculty of the SEOR Department.

Students with the consent of a faculty adviser and departmental approval, may be approved to complete a thesis.

Code	Title	Credits
OR 699	Masters Project	3
Total Credits		3

Methods Courses

Code	Title	Credits
Select at least one deterministic methods and one stochastic methods course:		6
Deterministic Methods Courses:		
OR 641	Linear Programming	
OR 642	Integer Programming	
OR 643	Network Modeling	
OR 644	Nonlinear Programming	
OR 670	Metaheuristics for Optimization	
Stochastic Methods Courses:		
OR 645	Stochastic Processes	
OR 647	Queuing Theory	
OR 674	Dynamic Programming	
OR 675	Reliability Analysis	
SYST 664	Bayesian Inference and Decision Theory	
Total Credits		6

Additional Electives

Code	Title	Credits
Select up to three additional electives from the list of allowable electives with written concurrence of the advisor [1]		9
Total Credits		9

[1] At least two of these electives must be taken from SEOR course offerings, and one of these must be OR 600-level or higher. The remaining course should be taken in an area appropriate to the student's interests, such as operations research, systems engineering, computer science, information systems, statistics, data analytics, electrical and computer engineering, economics, mathematics or supply chain management.
The allowable elective for MS students includes:
A. Within VSE:
- o Any OR course ≥600
- o Any SYST course > 500
- o Any STAT course ≥ 554
- o Any CS course ≥ 500
- o Any ECE course≥ 500 but not 528
- o Any CEIE course > 500 but not 601

B. External to VSE (subject to approval by the Department Chair):
- o Any MATH course > 601 and permitted for Math majors;
- o Any CSI course > 610
- o Any ECON course ≥ 611

Concentrations

Students may construct concentration areas by choosing electives from among special groupings. The six concentrations available are data analytics, decision analysis, financial engineering, military operations research, optimization, and stochastic modeling. In addition to the required core courses (12 credits) and project course (3 credits), the remaining 15 credit hours consist of methods and elective courses associated with the concentration areas as outlined below. Students can also devise their own grouping of electives subject to prior approval of their advisor.

Available Concentrations

- Concentration in Data Analytics (DNIC)
- Concentration in Decision Analysis (DA)
- Concentration in Financial Engineering (FNNE)
- Concentration in Military Operations Research (MOR)
- Concentration in Optimization (OPT)
- Concentration in Stochastic Models (STM)

Concentration in Data Analytics (DNIC)

Code	Title	Credits
Students concentrating in data analytics must complete the following:		
CS 504	Principles of Data Management and Mining	3
One deterministic methods course		3
One stochastics methods course		3
and two courses from the following list:		6
OR 604	Practical Optimization	
OR 670	Metaheuristics for Optimization	
STAT 663	Statistical Graphics and Data Exploration I	

SYST 664	Bayesian Inference and Decision Theory	
Total Credits		15

Concentration in Decision Analysis (DA)

Code	Title	Credits
OR 671	Judgment and Choice Processing and Decision Making	3
OR 681	Decision and Risk Analysis	3
SYST 664	Bayesian Inference and Decision Theory	3
Select one deterministic methods course		3
Select one stochastic methods course		3
Total Credits		15

Concentration in Financial Engineering (FNNE)

Code	Title	Credits
OR 588	Financial Systems Engineering I: Introduction to Options, Futures, and Derivatives	3
OR 688	Financial Systems Engineering II: Derivative Products and Risk Management	3
Select one from the following:		3
OR 538	Analytics for Financial Engineering and Econometrics	
SYST 548	Technologies and Security for Cryptocurrencies and Financial Transactions	
OR 645	Stochastic Processes	
OR 671	Judgment and Choice Processing and Decision Making	
OR 681	Decision and Risk Analysis	
OR 682	Computational Methods in Engineering and Statistics	
Students must also complete:		6
One deterministic methods course		
One stochastics methods course [1]		
Total Credits		15

[1] If the student has already taken OR 645 Stochastic Processes this can be substituted for an elective course with written concurrence of the student's advisor

Concentration in Military Operations Research (MOR)

Code	Title	Credits
OR 651	Military Operations Research I: Cost Analysis	3
OR 652	Military Operations Research Modeling II: Effectiveness Analysis	3
SYST 683	Modeling, Simulation, and Gaming	3
One deterministic methods course		3
One stochastics methods course		3
Total Credits		15

Concentration in Optimization (OPT)

Code	Title	Credits
Select three courses from the following:		9
OR 604	Practical Optimization	
OR 641	Linear Programming	
OR 642	Integer Programming	
OR 643	Network Modeling	
OR 644	Nonlinear Programming	
OR 646	Stochastic Optimization	
OR 670	Metaheuristics for Optimization	
OR 682	Computational Methods in Engineering and Statistics	
Students must also complete:		6
One stochastic methods course		
One elective course with written concurrence of the student's advisor		
Total Credits		15

Concentration in Stochastic Models (STM)

Code	Title	Credits
Select three courses from the following:		9
OR 645	Stochastic Processes	
OR 647	Queuing Theory	
OR 674	Dynamic Programming	
OR 719	Graphical Models for Inference and Decision Making	
SYST 664	Bayesian Inference and Decision Theory	
STAT 554	Applied Statistics I	
or STAT 663	Statistical Graphics and Data Exploration I	
Select must also complete:		6
One deterministic methods course		
One elective course with written concurrence of the student's advisor		
Total Credits		15

Dual Degree Options

Operations Research and Statistical Science Dual-Degree MS

This program allows students to earn an MS in Operations Research and an MS in Statistical Science by completing 48 credits of coursework in both areas instead of the 60 that would be required if the degrees were sought independently.

Admission Requirements

Applicants must satisfy admission requirements for the MS in Operations Research Program and the MS in Statistical Science Program. A joint faculty committee from the Statistics and Systems Engineering and Operations Research Departments make final admission decisions into the dual-degree program.

MS-OPRS/STAT Dual Degree Requirements

Total credits: 48

Required Courses

Code	Title	Credits
OR 541	Operations Research: Deterministic Models	3
OR 542	Operations Research: Stochastic Models	3
OR 635	Discrete System Simulation	3
OR 699	Masters Project	3
STAT 544	Applied Probability	3
STAT 554	Applied Statistics I	3
STAT 634	Case Studies in Data Analysis	3
STAT 652	Statistical Inference	3
STAT 654	Applied Statistics II	3
Total Credits		27

Elective Credits in OR Courses

Code	Title	Credits
Select 12 elective credits in OR courses at the 600 level, including at least one deterministic methods course and at least one stochastic methods course:		12
Deterministic Methods Courses:		
OR 641	Linear Programming	
OR 642	Integer Programming	
OR 643	Network Modeling	
OR 644	Nonlinear Programming	
OR 670	Metaheuristics for Optimization	
Stochastic Methods Courses:		
OR 645	Stochastic Processes	
OR 647	Queuing Theory	
OR 674	Dynamic Programming	
OR 675	Reliability Analysis	
SYST 664	Bayesian Inference and Decision Theory	
Total Credits		12

Elective Credits in STAT Courses

Code	Title	Credits
Select 9 elective credits from any STAT courses numbered 540-775		9
Total Credits		9

Notes

- Students currently enrolled in one of the MS programs must declare pursuit of the dual MS within one year of matriculation into the first MS program.
- A maximum of 6 credits across the two disciplines may be in independent research (thesis). The requirements for independent research are the same as detailed for the associated MS program.
- Students in either the BS (selected)/Operations Research, Accelerated MS program or the BS (selected)/Statistical Science, Accelerated MS program cannot get a reduction of 6 credits toward this dual degree. Students who want to proceed to a PhD degree will only be able to waive the number of credits specified in the associated PhD degree requirements, even though they will have 48 credits at the MS level.
- If a student decides not to complete the required 48 credits, a single MS degree will not be granted unless the student fulfills the requirements for the MS in Operations Research or the MS in Statistical Science.
- Once a student receives one of the MS degrees from either department, the student will no longer be eligible for the reduction in credit (i.e., will need to complete 30 credits) if the student later decides to earn the other MS degree.

Accelerated Master's

Bioengineering, BS/Operations Research, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a Bioengineering, BS and an Operations Research, MS in an accelerated time-frame after satisfactory completion of a minimum of 140 credits.

Admitted students are able to use up to 12 graduate credits in partial satisfaction of requirements for the undergraduate degree. Upon completion and conferral of the bachelor's degree and with satisfactory performance (grade of 'B' or better) in each of the graduate courses, students are given advanced standing in the master's program.

See AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/).

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Bioengineering, BS students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits with an overall GPA of at least 3.3, and completion of all MATH and PHYS requirements. Students must additionally complete MATH 203 Linear Algebra prior to applying for the graduate program.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

The criteria for admission are identical to criteria for admission to the Operations Research, MS program. Students already admitted in the BAM Pathway will be admitted to the Operations Research, MS program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- An overall GPA of at least 3.3
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing course: Students must complete all credits that satisfy requirements for both the BS and MS programs. Up to four courses (12 credits) of approved master's level courses taken as part of the undergraduate degree may be applied to the graduate degree. The courses selected for this purpose must be approved by the academic advisors of both the BS and MS programs and by the SEOR department chair. For the BS programs that allow undergraduate electives from the department of system engineering and operations research, the students may choose the graduate version of such elective courses to replace the corresponding undergraduate courses.

- Students selecting up to two courses (6 credits) of approved master's level courses may select from the Bioengineering courses given below.
- Students selecting up to three or four courses (9 or 12 credits) of approved master's level courses may select at most two courses from the Bioengineering course list and select the remaining courses from the Systems Engineering and Operations Research course list given below. Students are highly recommended to select courses marked as core courses because it applies to the master's degree regardless of the graduate-level concentration chosen in the Operations Research, MS. The undergraduate version of these courses, if any, may *not* be applied toward the Operations Research, MS. Credit may not be received for both the undergraduate and graduate version of these courses.
- Some of the courses in the Systems Engineering and Operations Research course list applies only to certain concentrations in the Operations Research, MS program.
- Students must pay attention to the prerequisites required for a course, and the master's degree concentration that the course may satisfy.

Select from the following Bioengineering courses:

Code	Title	Credits
Required course:		
BENG 575	Intellectual Property, Regulatory Concepts and Product Development	
Select at most one from the following Bioengineering courses:		
BENG 501	Bioengineering Research Methods	
BENG 514	Pathophysiology and the Role of New Technologies in Human Diseases	
BENG 520	Biomedical Data Analytics	
BENG 521	Cell and Tissue Engineering	
or BENG 541	Biomaterials	
BENG 526	Neural Engineering	
BENG 537	Medical Image Processing	
or BENG 538	Medical Imaging	

Select the remaining from the following Systems Engineering and Operations Research courses:

Code	Title	Credits
SYST 521	Network Analysis	
OR 538	Analytics for Financial Engineering and Econometrics	
OR 541	Operations Research: Deterministic Models (Core)	
OR 542	Operations Research: Stochastic Models (Core)	
OR 568	Applied Predictive Analytics (Core)	
OR 588	Financial Systems Engineering I: Introduction to Options, Futures, and Derivatives	

While still in undergraduate status, a maximum of 6 additional graduate credits may be taken as reserve graduate credit and applied to the master's program. Reserve graduate credits do not apply to the undergraduate degree.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text).

Degree Conferral

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and the VSE Graduate Admissions Office. At the completion of MS requirements, a master's degree is conferred.

Civil and Infrastructure Engineering, BS/ Operations Research, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a Civil and Infrastructure Engineering, BS (https://catalog.gmu.edu/colleges-schools/engineering/civil-environmental-infrastructure/civil-infrastructure-engineering-bs/) and an Operations Research, MS in an accelerated time-frame after satisfactory completion of a minimum of 139 credits.

Admitted students are able to use up to 12 graduate credits in partial satisfaction of requirements for the undergraduate degree. Upon completion and conferral of the bachelor's degree and with satisfactory performance (grade of 'B' or better) in each of the graduate courses, students are given advanced standing in the master's program.

See AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/).

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate

study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Civil and Infrastructure Engineering, BS (https://catalog.gmu.edu/colleges-schools/engineering/civil-environmental-infrastructure/civil-infrastructure-engineering-bs/) students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits with an overall GPA of at least 3.3, and completion of all MATH and PHYS requirements. Students must additionally complete MATH 203 Linear Algebra prior to applying for the graduate program.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

The criteria for admission are identical to criteria for admission to the Operations Research, MS program. Students already admitted in the BAM Pathway will be admitted to the Operations Research, MS program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- An overall GPA of at least 3.3
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing course: Students must complete all credits that satisfy requirements for both the BS and MS programs. Up to four courses (12 credits) of approved master's level courses taken as part of the undergraduate degree may be applied to the graduate degree. The courses selected for this purpose must be approved by the academic advisors of both the BS and MS programs and by the SEOR department chair. For the BS programs that allow undergraduate electives from the department of system engineering and operations research, the students may choose the graduate version of such elective courses to replace the corresponding undergraduate courses.

- Students selecting up to two courses (6 credits) of approved master's level courses may select from the Civil and Infrastructure Engineering courses given below.
- Students selecting up to three or four courses (9 or 12 credits) of approved master's level courses may select at most two courses from the Civil and Infrastructure Engineering course list and select the remaining courses from the Systems Engineering and Operations Research course list given below. Students are highly recommended to select courses marked as core courses because it applies to the master's degree regardless of the graduate-level concentration chosen in the Operations Research, MS. The undergraduate version of these courses, if any, may *not* be applied toward the Operations Research, MS. Credit may not be received for both the undergraduate and graduate version of these courses.
- Some of the courses in the Systems Engineering and Operations Research course list applies only to certain concentrations in the Operations Research, MS program.
- Students must pay attention to the prerequisites required for a course, and the master's degree concentration that the course may satisfy.

Select at most two from the following Civil and Infrastructure Engineering courses:

Code	Title	Credits
CEIE 501	Sustainable Development	
CEIE 512	Structural Steel Design	
CEIE 532	Foundation Design	
CEIE 535	Engineering Geology	
CEIE 540	Water Supply and Distribution	
CEIE 542	Open Channel Flow	
CEIE 550	Environmental Engineering Systems	
CEIE 553	Water and Wastewater Treatment Processes	
CEIE 557	Remote Monitoring Techniques for Civil Engineering Applications	
CEIE 561	Traffic Engineering	
CEIE 562	Urban Transportation Planning	
CEIE 571	Construction Administration	
CEIE 572	Building Information Modeling	
CEIE 573	Legal Aspects of the Construction Process	
CEIE 574	Construction Computer Application and Informatics	
CEIE 576	Construction Cost Estimating	

Select the remaining from the following Systems Engineering and Operations Research courses:

Code	Title	Credits
SYST 521	Network Analysis	
OR 538	Analytics for Financial Engineering and Econometrics	
OR 541	Operations Research: Deterministic Models (Core)	
OR 542	Operations Research: Stochastic Models (Core)	
OR 568	Applied Predictive Analytics (Core)	
OR 588	Financial Systems Engineering I: Introduction to Options, Futures, and Derivatives	

While still in undergraduate status, a maximum of 6 additional graduate credits may be taken as reserve graduate credit and applied to the master's program. Reserve graduate credits do not apply to the undergraduate degree.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text).

Degree Conferral

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is

submitted to the Office of the University Registrar and the VSE Graduate Admissions Office. At the completion of MS requirements, a master's degree is conferred.

Computer Engineering, BS/Operations Research, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a Computer Engineering, BS and an Operations Research, MS in an accelerated time-frame after satisfactory completion of a minimum of 144 credits.

Admitted students are able to use up to 12 graduate credits in partial satisfaction of requirements for the undergraduate degree. Upon completion and conferral of the bachelor's degree and with satisfactory performance (grade of 'B' or better) in each of the graduate courses, students are given advanced standing in the master's program.

See AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/).

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Computer Engineering, BS students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits with an overall GPA of at least 3.3, and completion of all MATH and PHYS 160/161, and PHYS 260/261 requirements. Students must additionally complete MATH 203 Linear Algebra prior to applying for the graduate program.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

The criteria for admission are identical to criteria for admission to the Operations Research, MS program. Students already admitted in the BAM Pathway will be admitted to the Operations Research, MS program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- An overall GPA of at least 3.3
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing course: Students must complete all credits that satisfy requirements for both the BS and MS programs. Up to four courses (12 credits) of approved master's level courses taken as part of the undergraduate degree may be applied to the graduate degree. The courses selected for this purpose must be approved by the academic advisors of both the BS and MS programs and by the SEOR department chair.

- Students selecting up to two courses (6 credits) of approved master's level courses may select from the Electrical and Computer Engineering courses given below.
- Students selecting up to three or four courses (9 or 12 credits) of approved master's level courses may select at most two courses from the Electrical and Computer Engineering course list and select the remaining courses from the Systems Engineering and Operations Research course list given below. Note that ECE 542 can be used to meet the ECE 465 requirement for the Computer Engineering, BS program. Students are highly recommended to select courses marked as core courses because it applies to the master's degree regardless of the graduate-level concentration chosen in the Operations Research, MS. The undergraduate version of these courses, if any, may *not* be applied toward the Operations Research, MS. Credit may not be received for both the undergraduate and graduate version of these courses.
- Some of the courses in the Systems Engineering and Operations Research course list applies only to certain concentrations in the Operations Research, MS program.
- Students must pay attention to the prerequisites required for a course, and the master's degree concentration that the course may satisfy.

Select at most two from the following Electrical and Computer Engineering courses:

Code	Title	Credits
ECE 505	Hardware Security	
ECE 508	Internet of Things	
ECE 510	Real-Time Concepts	
ECE 511	Computer Architecture	
ECE 512	Computer Architecture Security	
ECE 516	Mobile Systems and Applications	
ECE 521	Linear Systems and Control	
ECE 527	Learning From Data	
ECE 528	Introduction to Random Processes in Electrical and Computer Engineering	
ECE 530	Sensor Engineering	
ECE 531	Introduction to Wireless Communications and Networks	
ECE 535	Digital Signal Processing	
ECE 542	Computer Network Architectures and Protocols	
ECE 545	Digital System Design with VHDL	
ECE 567	Optical Fiber Communications	
ECE 580	Small Spacecraft Engineering	
ECE 590	Selected Topics in Engineering	

Select the remaining from the following Systems Engineering and Operations Research courses:

Code	Title	Credits
SYST 521	Network Analysis	
OR 538	Analytics for Financial Engineering and Econometrics	
OR 541	Operations Research: Deterministic Models (Core)	
OR 542	Operations Research: Stochastic Models (Core)	
OR 568	Applied Predictive Analytics (Core)	
OR 588	Financial Systems Engineering I: Introduction to Options, Futures, and Derivatives	

While still in undergraduate status, a maximum of 6 additional graduate credits may be taken as reserve graduate credit and applied to the master's program. Reserve graduate credits do not apply to the undergraduate degree.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text).

Degree Conferral

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and the VSE Graduate Admissions Office. At the completion of MS requirements, a master's degree is conferred.

Computer Science, BS/Operations Research, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a Computer Science, BS and an Operations Research, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) in an accelerated time-frame after satisfactory completion of a minimum of 138 credits.

Admitted students are able to use up to 12 graduate credits in partial satisfaction of requirements for the undergraduate degree. Upon completion and conferral of the bachelor's degree and with satisfactory performance (grade of 'B' or better) in each of the graduate courses, students are given advanced standing in the master's program.

See AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/).

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Computer Science, BS students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits with an overall GPA of at least 3.3, and completion of all MATH and Science requirements. Students must additionally complete MATH 203 Linear Algebra prior to applying for the graduate program.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

The criteria for admission are identical to criteria for admission to the Operations Research, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program. Students already admitted in the BAM Pathway will be admitted to the Operations Research, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- An overall GPA of at least 3.3
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing course: Students must complete all credits that satisfy requirements for both the BS and MS programs. Up to four courses (12 credits) of approved master's level courses taken as part of the undergraduate degree may be applied to the graduate degree. The courses selected for this purpose must be approved by the academic advisors of both the BS and MS programs and by the SEOR department chair. For the BS programs that allow undergraduate electives from the department of system engineering and operations research, the students may choose the graduate version of such elective courses to replace the corresponding undergraduate courses.

- Students selecting up to two courses (6 credits) of approved master's level courses may select from the combined Computer Science course list and Systems Engineering and Operations Research course list given below.
- Students selecting up to three or four courses (9 or 12 credits) of approved master's level courses may select at most two courses from the Computer Science course list and select the remaining courses from the Systems Engineering and Operations Research course list given below. Students are highly recommended to select courses marked as core courses because it applies to the master's degree regardless of the graduate-level concentration chosen in the Operations Research, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/). The undergraduate version of these courses, if any, may *not* be applied toward the Operations Research, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/). Credit may not be received for both the undergraduate and graduate version of these courses.

- Students must pay attention to the prerequisites required for a course, and the master's degree concentration that the course may satisfy.

Select at most two from the following Computer Science courses:

Code	Title	Credits
CS 540	Language Processors	
CS 550	Database Systems	
CS 551	Computer Graphics	
CS 555	Computer Communications and Networking	
CS 571	Operating Systems	
CS 580	Introduction to Artificial Intelligence	
CS 583	Analysis of Algorithms	
CS 584	Theory and Applications of Data Mining	

Select the remaining from the following Systems Engineering and Operations Research courses:

Code	Title	Credits
OR 541	Operations Research: Deterministic Models (Core)	
OR 542	Operations Research: Stochastic Models (Core)	

While still in undergraduate status, a maximum of 6 additional graduate credits may be taken as reserve graduate credit and applied to the master's program. Reserve graduate credits do not apply to the undergraduate degree.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text).

Degree Conferral

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and the VSE Graduate Admissions Office. At the completion of MS requirements, a master's degree is conferred.

Cyber Security Engineering, BS/ Operations Research, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a Cyber Security Engineering, BS and an Operations Research, MS in an accelerated time-frame after satisfactory completion of a minimum of 144 credits.

Admitted students are able to use up to 12 graduate credits in partial satisfaction of requirements for the undergraduate degree. Upon completion and conferral of the bachelor's degree and with satisfactory performance (grade of 'B' or better) in each of the graduate courses, students are given advanced standing in the master's program.

See AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/).

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Cyber Security Engineering, BS students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits with an overall GPA of at least 3.3, and completion of all MATH and PHYS requirements. Students must additionally complete MATH 203 Linear Algebra prior to applying for the graduate program.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

The criteria for admission are identical to criteria for admission to the Operations Research, MS program. Students already admitted in the BAM Pathway will be admitted to the Operations Research, MS program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- An overall GPA of at least 3.3
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing course: Students must complete all credits that satisfy requirements for both the BS and MS programs. Up to four courses (12 credits) of approved master's level courses taken as part of the undergraduate degree may be applied to the graduate degree. The courses selected for this purpose must be approved by the academic advisors of both the BS and MS programs and by the SEOR department chair. For the BS programs that allow undergraduate electives from the department of system engineering and operations research, the students may choose the graduate version of such elective courses to replace the corresponding undergraduate courses.

- Students selecting up to two courses (6 credits) of approved master's level courses may select from the combined Cyber Security Engineering course list and Systems Engineering and Operations Research course list given below.
- Students selecting up to three or four courses (9 or 12 credits) of approved master's level courses may select at most two courses from the Cyber Security Engineering course list and select the remaining courses from the Systems Engineering and Operations Research course list given below. Students are highly recommended to select courses marked as core courses because it applies to the master's

degree regardless of the graduate-level concentration chosen in the Operations Research, MS. The undergraduate version of these courses, if any, may *not* be applied toward the Operations Research, MS. Credit may not be received for both the undergraduate and graduate version of these courses.

- Some of the courses in the Systems Engineering and Operations Research course list applies only to certain concentrations in the Operations Research, MS program.
- Students must pay attention to the prerequisites required for a course, and the master's degree concentration that the course may satisfy.

Select at most two from the following Cyber Security Engineering courses:

Code	Title	Credits
CYSE 570	Fundamentals of Operating Systems	
CYSE 580	Hardware and Cyber Physical Systems	

Select the remaining from the following Systems Engineering and Operations Research courses:

Code	Title	Credits
SYST 521	Network Analysis	
OR 538	Analytics for Financial Engineering and Econometrics	
OR 541	Operations Research: Deterministic Models (Core)	
OR 542	Operations Research: Stochastic Models (Core)	
OR 568	Applied Predictive Analytics (Core)	
OR 588	Financial Systems Engineering I: Introduction to Options, Futures, and Derivatives	

While still in undergraduate status, a maximum of 6 additional graduate credits may be taken as reserve graduate credit and applied to the master's program. Reserve graduate credits do not apply to the undergraduate degree.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text).

Degree Conferral

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and the VSE Graduate Admissions Office. At the completion of MS requirements, a master's degree is conferred.

Electrical Engineering, BS/Operations Research, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain an Electrical Engineering, BS and an Operations Research, MS in an accelerated time-frame after satisfactory completion of a minimum of 139 credits.

Admitted students are able to use up to 12 graduate credits in partial satisfaction of requirements for the undergraduate degree. Upon completion and conferral of the bachelor's degree and with satisfactory performance (grade of 'B' or better) in each of the graduate courses, students are given advanced standing in the master's program.

See AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/).

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Electrical Engineering, BS students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits with an overall GPA of at least 3.3, and completion of all MATH, PHYS 160/161, and PHYS 260/261 requirements. Students must additionally complete MATH 203 Linear Algebra prior to applying for the graduate program.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

The criteria for admission are identical to criteria for admission to the Operations Research, MS program. Students already admitted in the BAM Pathway will be admitted to the Operations Research, MS program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- An overall GPA of at least 3.3
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing course: Students must complete all credits that satisfy requirements for both the BS and MS programs. Up to four courses (12 credits) of approved master's level courses taken as part of the undergraduate degree may be applied to the graduate degree. The courses selected for this purpose must be approved by the academic advisors of both the BS and MS programs and by the SEOR department chair.

- Students selecting up to two courses (6 credits) of approved master's level courses may select from the Electrical and Computer Engineering courses given below.

- Students selecting up to three or four courses (9 or 12 credits) of approved master's level courses may select at most two courses from the Electrical and Computer Engineering course list and select the remaining courses from the Systems Engineering and Operations Research course list given below. Note that ECE 587 can be used to meet the ECE 433 requirement for the Electrical Engineering, BS program. Students are highly recommended to select courses marked as core courses because it applies to the master's degree regardless of the graduate-level concentration chosen in the Operations Research, MS. The undergraduate version of these courses, if any, may *not* be applied toward the Operations Research, MS. Credit may not be received for both the undergraduate and graduate version of these courses.
- Some of the courses in the Systems Engineering and Operations Research course list applies only to certain concentrations in the Operations Research, MS program.
- Students must pay attention to the prerequisites required for a course, and the master's degree concentration that the course may satisfy.

Select at most two from the following Electrical and Computer Engineering courses:

Code	Title	Credits
ECE 505	Hardware Security	
ECE 508	Internet of Things	
ECE 510	Real-Time Concepts	
ECE 511	Computer Architecture	
ECE 513	Applied Electromagnetic Theory	
ECE 516	Mobile Systems and Applications	
ECE 521	Linear Systems and Control	
ECE 526	Neural Engineering	
ECE 527	Learning From Data	
ECE 528	Introduction to Random Processes in Electrical and Computer Engineering	
ECE 530	Sensor Engineering	
ECE 531	Introduction to Wireless Communications and Networks	
ECE 535	Digital Signal Processing	
ECE 538	Medical Imaging	
ECE 542	Computer Network Architectures and Protocols	
ECE 550	System Engineering Design	
ECE 565	Introduction to Optical Electronics	
ECE 567	Optical Fiber Communications	
ECE 580	Small Spacecraft Engineering	
ECE 584	Semiconductor Device Fundamentals	
ECE 586	Digital Integrated Circuits	
ECE 587	Design of Analog Integrated Circuits	
ECE 590	Selected Topics in Engineering	

Select the remaining from the following Systems Engineering and Operations Research courses:

Code	Title	Credits
SYST 521	Network Analysis	
OR 538	Analytics for Financial Engineering and Econometrics	
OR 541	Operations Research: Deterministic Models (Core)	
OR 542	Operations Research: Stochastic Models (Core)	
OR 568	Applied Predictive Analytics (Core)	
OR 588	Financial Systems Engineering I: Introduction to Options, Futures, and Derivatives	

While still in undergraduate status, a maximum of 6 additional graduate credits may be taken as reserve graduate credit and applied to the master's program. Reserve graduate credits do not apply to the undergraduate degree.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text).

Degree Conferral

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and the VSE Graduate Admissions Office. At the completion of MS requirements, a master's degree is conferred.

Mechanical Engineering, BS/Operations Research, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a Mechanical Engineering, BS and an Operations Research, MS in an accelerated time-frame after satisfactory completion of a minimum of 139 credits.

Admitted students are able to use up to 12 graduate credits in partial satisfaction of requirements for the undergraduate degree. Upon completion and conferral of the bachelor's degree and with satisfactory performance (grade of 'B' or better) in each of the graduate courses, students are given advanced standing in the master's program.

See AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/).

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Mechanical Engineering, BS students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits with an overall GPA of at least 3.3, and completion of all MATH and PHYS

requirements. Students must additionally complete MATH 203 Linear Algebra prior to applying for the graduate program.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

The criteria for admission are identical to criteria for admission to the Operations Research, MS program. Students already admitted in the BAM Pathway will be admitted to the Operations Research, MS program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- An overall GPA of at least 3.3
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing course: Students must complete all credits that satisfy requirements for both the BS and MS programs. Up to four courses (12 credits) of approved master's level courses taken as part of the undergraduate degree may be applied to the graduate degree. The courses selected for this purpose must be approved by the academic advisors of both the BS and MS programs and by the SEOR department chair. For the BS programs that allow undergraduate electives from the department of system engineering and operations research, the students may choose the graduate version of such elective courses to replace the corresponding undergraduate courses.

- Students selecting up to two courses (6 credits) of approved master's level courses may select from the combined Mechanical Engineering course list and Systems Engineering and Operations Research course list given below.
- Students selecting up to three or four courses (9 or 12 credits) of approved master's level courses may select at most two courses from the Mechanical Engineering course list and select the remaining courses from the Systems Engineering and Operations Research course list given below. Students are highly recommended to select courses marked as core courses because it applies to the master's degree regardless of the graduate-level concentration chosen in the Operations Research, MS. The undergraduate version of these courses, if any, may *not* be applied toward the Operations Research, MS. Credit may not be received for both the undergraduate and graduate version of these courses.
- Some of the courses in the Systems Engineering and Operations Research course list applies only to certain concentrations in the Operations Research, MS program.
- Students must pay attention to the prerequisites required for a course, and the master's degree concentration that the course may satisfy.

Select at most two from the following Mechanical Engineering courses:

Code	Title	Credits
ME 521	Energy Transfer	
ME 531	Energy Transmission	
ME 541	Power Generation	
ME 542	Energy Utilization	

Select the remaining from the following Systems Engineering and Operations Research courses:

Code	Title	Credits
SYST 521	Network Analysis	
OR 538	Analytics for Financial Engineering and Econometrics	
OR 541	Operations Research: Deterministic Models (Core)	
OR 542	Operations Research: Stochastic Models (Core)	
OR 568	Applied Predictive Analytics (Core)	
OR 588	Financial Systems Engineering I: Introduction to Options, Futures, and Derivatives	

While still in undergraduate status, a maximum of 6 additional graduate credits may be taken as reserve graduate credit and applied to the master's program. Reserve graduate credits do not apply to the undergraduate degree.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text).

Degree Conferral

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and the VSE Graduate Admissions Office. At the completion of MS requirements, a master's degree is conferred.

Statistics, BS/Operations Research, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a Statistics, BS and an Operations Research, MS in an accelerated time-frame after satisfactory completion of a minimum of 138 credits.

Admitted students are able to use up to 12 graduate credits in partial satisfaction of requirements for the undergraduate degree. Upon completion and conferral of the bachelor's degree and with satisfactory performance (grade of 'B' or better) in each of the graduate courses, students are given advanced standing in the master's program.

See AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/).

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Statistics, BS students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits with an overall GPA of at least 3.3, and completion of all MATH requirements. Students must additionally complete MATH 203 Linear Algebra prior to applying for the graduate program.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

The criteria for admission are identical to criteria for admission to the Operations Research, MS program. Students already admitted in the BAM Pathway will be admitted to the Operations Research, MS program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- An overall GPA of at least 3.3
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing course: Students must complete all credits that satisfy requirements for both the BS and MS programs. Up to four courses (12 credits) of approved master's level courses taken as part of the undergraduate degree may be applied to the graduate degree. The courses selected for this purpose must be approved by the academic advisors of both the BS and MS programs and by the SEOR department chair. For the BS programs that allow undergraduate electives from the department of system engineering and operations research, the students may choose the graduate version of such elective courses to replace the corresponding undergraduate courses.

- Students selecting up to two courses (6 credits) of approved master's level courses may select from the combined Statistics course list and Systems Engineering and Operations Research course list given below.
- Students selecting up to three or four courses (9 or 12 credits) of approved master's level courses may select at most two courses from the Statistics course list and select the remaining courses from the Systems Engineering and Operations Research course list given below. Students are highly recommended to select courses marked as core courses because it applies to the master's degree regardless of the graduate-level concentration chosen in the Operations Research, MS. The undergraduate version of these courses, if any, may *not* be applied toward the Operations Research, MS. Credit may not be received for both the undergraduate and graduate version of these courses.
- Some of the courses in the Systems Engineering and Operations Research course list applies only to certain concentrations in the Operations Research, MS program.
- Students must pay attention to the prerequisites required for a course, and the master's degree concentration that the course may satisfy.

Select from the following Statistics courses:

Code	Title	Credits
STAT 544	Applied Probability	
STAT 554	Applied Statistics I	

Select the remaining from the following Systems Engineering and Operations Research courses:

Code	Title	Credits
SYST 573	Decision and Risk Analysis	
SYST 538	Analytics for Financial Engineering and Econometrics	
SYST/OR 568	Applied Predictive Analytics (Core)	
SYST 588	Financial Systems Engineering I: Introduction to Options, Futures, and Derivatives	
OR 541	Operations Research: Deterministic Models (Core)	
OR 542	Operations Research: Stochastic Models (Core)	

While still in undergraduate status, a maximum of 6 additional graduate credits may be taken as reserve graduate credit and applied to the master's program. Reserve graduate credits do not apply to the undergraduate degree.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text).

Degree Conferral

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and the VSE Graduate Admissions Office. At the completion of MS requirements, a master's degree is conferred.

Systems Engineering BS/Operations Research, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a Systems Engineering, BS and an Operations Research, MS in an accelerated time-frame after satisfactory completion of a minimum of 141 credits.

Admitted students are able to use up to 12 graduate credits in partial satisfaction of requirements for the undergraduate degree. Upon completion and conferral of the bachelor's degree and with satisfactory performance (grade of 'B' or better) in each of the graduate courses, students are given advanced standing in the master's program.

See AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/).

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Systems Engineering, BS students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits with an overall GPA of at least 3.3, and completion of all MATH and PHYS requirements. Students must additionally complete MATH 203 Linear Algebra prior to applying for the graduate program.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

The criteria for admission are identical to criteria for admission to the Operations Research, MS program. Students already admitted in the BAM Pathway will be admitted to the Operations Research, MS program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- An overall GPA of at least 3.3
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing course: Students must complete all credits that satisfy requirements for both the BS and MS programs. Up to four courses (12 credits) of approved master's level courses taken as part of the undergraduate degree may be applied to the graduate degree.

These courses may be chosen from the list of graduate courses in the following table. For Systems Engineering, BS students, these graduate courses replace the corresponding undergraduate courses listed in the table. The undergraduate version of these courses may *not* be applied toward the Operations Research, MS.

Undergraduate	Graduate	
SYST 420	SYST 521/OR 643	Credit may not be received for both courses.
SYST 473	SYST 573	Credit may not be received for both courses.
OR 441	OR 541	Core course in the graduate program. Credit may not be received for both courses.
OR 442	OR 542	Core course in the graduate program. Credit may not be received for both courses.
SYST 438	SYST 538	The course applies only to certain concentrations in the graduate program; credit may not be received for both courses.
SYST 468	OR/SYST 568	Core course in the graduate program. Credit may not be received for both courses.
SYST 488	SYST 588	The course applies only to certain concentrations in the graduate program; credit may not be received for both courses.

Any other 500-level course may be applied to both the undergraduate and graduate degrees with approval of the advisor and SEOR department chair. Students must pay attention to the prerequisites required for a course, and the master's degree concentration that the course may satisfy.

While still in undergraduate status, a maximum of 6 additional graduate credits may be taken as reserve graduate credit and applied to the master's program. Reserve graduate credits do not apply to the undergraduate degree.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text).

Degree Conferral

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and Graduate Recruitment and Enrollment Services. At the completion of MS requirements, a master's degree is conferred.

BS (selected)/Operations Research, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BS in their major and an Operations Research, MS in an accelerated time-frame after satisfactory completion of a minimum of 138 credits.

Admitted students are able to use up to 12 graduate credits in partial satisfaction of requirements for the undergraduate degree. Upon completion and conferral of the bachelor's degree and with satisfactory performance (grade of 'B' or better) in each of the graduate courses, students are given advanced standing in the master's program.

See AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/).

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Mason undergraduate students majoring in both engineering and non-engineering disciplines will be considered for admission into the BAM Pathway if 1) such an accelerated Operations Research, MS pathway is allowable from the student's BS program, which will be determined by the academic advisors of both the BS and MS programs and by the SEOR department chair, 2) they have completed of a minimum of 60 credits with an overall GPA of at least 3.3, and 3) they have completed all MATH and PHYS requirements. Students must additionally complete MATH 203 Linear Algebra prior to applying for the graduate program.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

The criteria for admission are identical to criteria for admission to the Operations Research, MS program. Students already admitted in the BAM Pathway will be admitted to the Operations Research, MS program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- An overall GPA of at least 3.3
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing course: Students must complete all credits that satisfy requirements for both the BS and MS programs. Up to four courses (12 credits) of approved master's level courses taken as part of the undergraduate degree may be applied to the graduate degree. The courses selected for this purpose must be approved by the academic advisors of both the BS and MS programs and by the SEOR department chair. For the BS programs that allow undergraduate electives from the department of system engineering and operations research, the students may choose the graduate version of such elective courses to replace the corresponding undergraduate courses.

- Students are highly recommended to select courses marked as core courses because it applies to the master's degree regardless of the graduate-level concentration chosen in the Operations Research, MS program. The undergraduate version of these courses, if any, may *not* be applied toward the Operations Research, MS. Credit may not be received for both the undergraduate and graduate version of these courses.
- Some of the courses in the Systems Engineering and Operations Research course list applies only to certain concentrations in the Operations Research, MS program.
- Students must pay attention to the prerequisites required for a course, and the master's degree concentration that the course may satisfy.

The courses may be chosen from the list of Systems Engineering and Operations Research graduate courses in the following table.

Code	Title	Credits
SYST 521	Network Analysis	
OR 538	Analytics for Financial Engineering and Econometrics	
OR 541	Operations Research: Deterministic Models (Core)	
OR 542	Operations Research: Stochastic Models (Core)	
OR 568	Applied Predictive Analytics (Core)	
OR 588	Financial Systems Engineering I: Introduction to Options, Futures, and Derivatives	

Any other 500-level course may be applied to both the undergraduate and graduate degrees with approval of the advisor and SEOR department chair.

While still in undergraduate status, a maximum of 6 additional graduate credits may be taken as reserve graduate credit and applied to the master's program. Reserve graduate credits do not apply to the undergraduate degree.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text).

Degree Conferral

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and the VSE Graduate Admissions Office. At the completion of MS requirements, a master's degree is conferred.

Operations Research and Engineering Graduate Certificate

Banner Code: VS-CERG-OR

Systems Engineering and Operations Research

2100 Nguyen Engineering Building

Fairfax Campus

Phone: 703-993-5689
Email: seor@gmu.edu
Website: seor.gmu.edu/

Admissions & Policies

Admissions

Computational Modeling Concentration

For admission to the certificate with a Computational Modeling concentration, applicants must meet minimum entrance requirements for the MS in operations research, the MS in statistical science, or the PhD in computational sciences and informatics.

Military Operations Research Concentration

Admissions requirements for the certificate with a Military Operations Research concentration are identical to those for the Operations Research, MS.

Predictive Data Analytics Concentration

The certificate with Predictive Analytics concentration will be open to all students who hold a BS degree in scientific and engineering disciplines from an accredited university program, with a minimum GPA of 3.0. Students who are already enrolled in a master's program must submit a secondary certificate form to enroll in this certificate with concentration program; all others must apply for graduate admission to this certificate with concentration program.

Policies

For policies governing all graduate certificates, see AP.6.8 Requirements for Graduate Certificates.

Courses taken for the Computational Modeling certificate can count toward a master's degree in operations research or statistics or a PhD in computational sciences and informatics. One must be concurrently enrolled in the program for courses to count toward the certificate and the other degree.

Requirements

Total credits: 12-15

This certificate may be pursued on a part-time basis only.

Certificate Requirements

Students must complete all requirements within a concentration.

Concentration in Computational Modeling (CCM)

Code	Title	Credits
OR 541	Operations Research: Deterministic Models	3
OR 635	Discrete System Simulation	3
OR 682	Computational Methods in Engineering and Statistics	3
or MATH 685	Numerical Analysis	
Select one from the following Electives:		3
CSI 744	Linear and Nonlinear Modeling in the Natural Sciences	
OR 542	Operations Research: Stochastic Models	
SYST 611	System Methodology and Modeling	
SYST 683	Modeling, Simulation, and Gaming	
ECE 521	Linear Systems and Control	
MATH 673	Dynamical Systems	
Total Credits		12

Concentration in Military Operations Research (MOR)

Certificate candidates must complete five courses, with an average grade of B or better, for a total of 15 graduate credits.

Code	Title	Credits
OR 541	Operations Research: Deterministic Models	3
OR 635	Discrete System Simulation	3
OR 651	Military Operations Research I: Cost Analysis	3
OR 652	Military Operations Research Modeling II: Effectiveness Analysis	3
SYST 683	Modeling, Simulation, and Gaming	3
Total Credits		15

Concentration in Predictive Data Analytics (PDA)

Code	Title	Credits
OR 541	Operations Research: Deterministic Models	3
OR 568	Applied Predictive Analytics	3
One from the following:		3
OR 542	Operations Research: Stochastic Models	
OR 604	Practical Optimization	
OR 635	Discrete System Simulation	
One from the following:		3
CS 504	Principles of Data Management and Mining	
CS 584	Theory and Applications of Data Mining	
Total Credits		12

Systems Engineering Graduate Certificate (SEOR)

Banner Code: VS-CERG-SYST

Architecture-Based Systems Integration
2100 Nguyen Engineering Building
Fairfax Campus
Phone: 703-993-5689
Email: seor@gmu.edu

C4I & Cyber
2100 Nguyen Engineering Building
Fairfax Campus
Phone: 703-993-5689
Email: seor@gmu.edu

Communications and Networking

3100 Nguyen Engineering Building
Fairfax Campus
Phone: 703-993-5689
Email: ece@gmu.edu

Engineering Resilient Enterprise Systems
2100 Nguyen Engineering Building
Fairfax Campus
Phone: 703-993-5689
Email: seor@gmu.edu

Financial Systems Engineering
2100 Nguyen Engineering Building
Fairfax Campus
Phone: 703-993-5689
Email: seor@gmu.edu

Tactical Computer Operations
3100 Nguyen Engineering Building
Fairfax Campus
Phone: 703-993-5689
Email: ece@gmu.edu

Admissions & Policies

Admissions

Concentration in Architecture-Based Systems Integration (ABSI)

A bachelor's degree is required for admission to a certificate program.

Concentration in C4I & Cyber (C4IC)

The certificate with this concentration is available to students who hold bachelor's degrees in engineering and scientific disciplines or are in graduate status in such programs.

Concentration in Communications and Networking (CONE)

The certificate with this concentration in communications and networking is open to all students who hold BS degrees in scientific and engineering disciplines from accredited universities.

Concentration in Engineering Resilient Enterprise Systems (ERES)

The certificate with this concentration is available to any student who holds a bachelor's degree in an engineering or scientific discipline or has graduate status in such a program. Math requirements include MATH 113 Analytic Geometry and Calculus I (Mason Core), MATH 114 Analytic Geometry and Calculus II, or their equivalents, and a probability and statistics course.

Concentration in Financial Systems (FNSY)

The certificate with this concentration will be open to all students who hold a BS degree in scientific and engineering disciplines from an accredited university program, with a minimum GPA of 3.0. Students who are already enrolled in a master's program must submit a secondary certificate form to enroll in this certificate with concentration program; all others must apply for graduate admission to this certificate with concentration program.

Concentration in Tactical Computer Operations (TCO)

Students applying to the certificate with this concentration must hold a bachelor's degree in either computer science or computer engineering. Prospective students without these specific degrees will need to have a technical bachelor's degree and show academic competence in the areas of: C (C++, C#, Objective C), Assembler, discrete mathematics, and computer networking. An undergraduate grade point average (GPA) of 3.0 or better (4.0 scale) is required.

Policies

The Systems Engineering Graduate Certificate may be pursued on a part-time basis only.

For policies governing all graduate certificates, see AP.6.8 Requirements for Graduate Certificates.

Requirements

Certificate Requirements

Total credits: 12-15

This certificate may be pursued on a part-time basis only.

Concentration in Architecture-Based Systems Integration (ABSI)

Administered by the Department of Systems Engineering and Operations Research (https://seor.gmu.edu/)

Coursework

The following four courses must be completed with a grade of B or better:

Code	Title	Credits
SYST 520	System Engineering Design	3
SYST 618	Model-based Systems Engineering	3
SYST 620	Discrete Event Systems	3
SYST 621	Systems Architecture Design	3
Total Credits		12

Certificate coursework within the Systems Engineering MS

In addition to the ABSI concentration courses, students must take the following six courses within the Systems Engineering, MS:

Code	Title	Credits
SYST 505	Systems Engineering Principles [1]	3
SYST 510	Systems Definition and Cost Modeling	3
SYST 530	Systems Engineering Management I	3
SYST 611	System Methodology and Modeling	3
SYST 699	Masters Project	3
Select one approved elective from the ABSI concentration		3
Total Credits		18

[1] Students who have work experience in systems engineering should consult with their advisor on replacing SYST 505 with a higher-level SYST course.

Concentration in C4I & Cyber (C4IC)

Administered by the Department of Systems Engineering and Operations Research (https://seor.gmu.edu/)

The certificate with concentration requires 12 credits (4 courses). Students must complete the following with an average grade of B or better.

Coursework

Code	Title	Credits
SYST 680	Principles of Command, Control, Communications, Computing, and Intelligence (C4I)	3
or ECE 670	Principles of Command, Control, Communications, Computing, and Intelligence (C4I)	
OR 542	Operations Research: Stochastic Models	3
or ECE 528	Introduction to Random Processes in Electrical and Computer Engineering	
Select two from the following:		6
ECE 542	Computer Network Architectures and Protocols	
ECE 630	Statistical Communication Theory	
ECE 642	Design and Analysis of Computer Communication Networks	
OR 635	Discrete System Simulation	
SYST 584	Heterogeneous Data Fusion	
SYST 664	Bayesian Inference and Decision Theory	
SYST 683	Modeling, Simulation, and Gaming	
Total Credits		12

Completing the certificate with the C4I concentration within the Systems Engineering Master's Program

In addition to the four courses above, students must complete the following six courses:

Code	Title	Credits
SYST 505	Systems Engineering Principles	3
SYST 510	Systems Definition and Cost Modeling	3
SYST 520	System Engineering Design	3
SYST 530	Systems Engineering Management I	3
SYST 611	System Methodology and Modeling	3
SYST 699	Masters Project	3
Total Credits		18

Concentration in Communications and Networking (CONE)

Administered by the Department of Electrical and Computer Engineering (https://ece.gmu.edu/).

The certificate with a concentration in Communications and Networking is awarded on completion of five graduate courses (15 credits) in communications and networking. A cumulative GPA of 3.00 is required and one course with a grade of C at most may be applied toward the certificate. The certificate courses comprise two required foundation courses and three electives.

Coursework

Code	Title	Credits
Foundation Courses:		
ECE 528	Introduction to Random Processes in Electrical and Computer Engineering	3
ECE 542	Computer Network Architectures and Protocols	3
Total Credits		6

Electives

After completing the foundation courses, students choose electives by taking three courses from the following:

Code	Title	Credits
Select three courses from the following:		9
ECE 535	Digital Signal Processing	
ECE 565	Introduction to Optical Electronics	
ECE 567	Optical Fiber Communications	
ECE 630	Statistical Communication Theory	
ECE 633	Error Control Coding	
ECE 635	Adaptive Signal Processing	
ECE 642	Design and Analysis of Computer Communication Networks	
ECE 643	Network Switching and Routing	
ECE 646	Applied Cryptography	
ECE 731	Digital Communications	
ECE 732	Mobile Communication Systems	
ECE 734	Detection and Estimation Theory	
ECE 741	Wireless Networks	
ECE 742	High-Speed Networks	
OR 635	Discrete System Simulation	
OR 643	Network Modeling	
OR 647	Queuing Theory	
Total Credits		9

Concentration in Engineering Resilient Enterprise Systems (ERES)

Administered by the Department of Systems Engineering and Operations Research (https://seor.gmu.edu/).

To be eligible for a certificate with concentration in Engineering Resilient Enterprise Systems, students must complete two required courses (6 credits) plus two electives (6 credits) with an average grade of B or better.

Coursework

Code	Title	Credits
SYST 523	Engineering Resilient and Agile Enterprise Systems	3
SYST 618	Model-based Systems Engineering	3
Total Credits		6

Electives

The remaining two electives must be taken from the list below with the approval of the advisor. Courses designated as basic methods courses may also be used as an elective. Some certificate electives may require stronger math requirements.

Code	Title	Credits
Electives		**6**
Select at least one course from the following:		
SYST 514	Systems Thinking	
INFS 622	Information Systems Analysis and Design	
SWE 619	Object-Oriented Software Specification and Construction	
SYST 542	Decision Support Systems Engineering	
SYST 584	Heterogeneous Data Fusion	
SYST 630	Systems Engineering Management II	
Select the second course from the courses listed above or from the following:		
CS 555	Computer Communications and Networking	
ECE 542	Computer Network Architectures and Protocols	
INFS 612	Principles and Practices of Communication Networks	
Total Credits		6

Concentration in Financial Systems (FNSY)

Administered by the Department of Systems Engineering and Operations Research (https://seor.gmu.edu/).

To be eligible for the certificate with concentration in Financial Systems Engineering, students must complete three required courses (9 credits) plus one elective (3 credits) with an average grade of B or better.

Coursework

Code	Title	Credits
SYST/OR 538	Analytics for Financial Engineering and Econometrics	3
SYST/OR 588	Financial Systems Engineering I: Introduction to Options, Futures, and Derivatives	3
SYST/OR 688	Financial Systems Engineering II: Derivative Products and Risk Management	3
Total Credits		9

Elective

Code	Title	Credits
Select one from the following:		3
OR 645	Stochastic Processes	
OR 682	Computational Methods in Engineering and Statistics	
SYST 584	Heterogeneous Data Fusion	
SYST 671	Judgment and Choice Processing and Decision Making	
Total Credits		3

Concentration in Tactical Computer Operations (TCO)

Administered by the Department of Electrical and Computer Engineering (https://ece.gmu.edu/).

Students must meet prerequisites for courses by either taking the appropriate undergraduate courses or through instructor permission.

Coursework

Code	Title	Credits
CS 571	Operating Systems	3
ECE 511	Computer Architecture	3
DFOR 761	Malware Reverse Engineering	3
Total Credits		9

Electives

Code	Title	Credits
Select two courses from the following:		6
DFOR 767	Penetration Testing in Digital Forensics	
DFOR 769	Anti-Forensics	
DFOR 773	Mobile Application Forensics and Analysis	
DFOR 775	Kernel Forensics and Analysis	
ECE 646	Applied Cryptography	
ISA 564	Security Laboratory	
ISA 656	Network Security	
ISA 681	Secure Software Design and Programming	
ISA 763	Security Protocol Analysis	
Total Credits		6

Systems Engineering Minor

Banner Code: SYST

Academic Advising

2100 Nguyen Engineering Building
Fairfax Campus

Phone: 703-993-5689
Email: seor@gmu.edu
Website: https://seor.gmu.edu/

The minor in systems engineering offers an attractive complement to many undergraduate majors. Systems engineers define, design, develop, integrate, and test systems. Whereas other engineering disciplines concentrate on individual aspects of a system (electronics, ergonomics, software, etc.), systems engineers focus on the system as a whole. This minor provides students with the fundamentals of systems engineering and operations research. In these courses, students learn how to deal with the system life cycle and to use scientific methods for analyzing operations of a system or organization. The structured set of courses helps students across the technical fields prepare for the information technology work now common in public and private industry. This minor is open to all majors, and especially appropriate for students in the natural sciences, computational sciences, information technology, finance, economics, mathematics, engineering, or computer science programs.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 15

Required Courses

Code	Title	Credits
SYST 473	Decision and Risk Analysis	3
Select one from the following:		3
SYST 210	Systems Design [1]	
SYST 101	Understanding Systems Engineering [2]	
or SYST 205	Systems Engineering Principles	
Total Credits		6

1 SYST 210 cannot be counted as both a required and additional course.

2 Credit cannot be received for both SYST 101 and SYST 205.

Three Additional Courses

Code	Title	Credits
Select any three additional courses from the following. Students are encouraged to take SYST 460 and SYST 461 for technical emphasis in Aviation Systems, SYST 438 and SYST 468 for technical emphasis in Data Analytics, SYST 438 and SYST 488 for technical emphasis in Financial Engineering, and OR 441/MATH 441, OR 442/MATH 442, and OR 481/MATH 446 for technical emphasis in Operations Research.		9
SYST 130	Introduction to Computing for Digital Systems Engineering	
SYST 210	Systems Design	
SYST 220 & SYST 221	Dynamical Systems I and Systems Modeling Laboratory	
SYST 230	Object-oriented Modeling and Design	
SYST 320	Dynamical Systems II	
SYST 330	Systems Methods	
SYST 370	Systems Project Management [1]	
or SYST 371	Systems Engineering Management	
SYST 438	Analytics for Financial Engineering and Econometrics	
SYST 460	Introduction to Air Traffic Control	
SYST 461	Air Transportation System Engineering	
SYST 468	Applied Predictive Analytics	
SYST 469	Human Computer Interaction [2]	
or SYST 470	Human Factors Engineering	
SYST 488	Financial Systems Engineering	
OR 335	Discrete Systems Modeling and Simulation	
OR/MATH 441	Deterministic Operations Research	
OR/MATH 442	Stochastic Operations Research	
OR 481	Numerical Methods in Engineering	
or MATH 446	Numerical Analysis I	
Total Credits		9

1 Credit cannot be received for both SYST 370 and SYST 371.

2 Credit cannot be received for both SYST 469 and SYST 470.

Prerequisites

Some of the courses listed above have additional prerequisites. Students should pay careful attention to prerequisites when selecting courses.

Systems Engineering, BS

Banner Code: VS-BS-SYST

Academic Advising

2100 Nguyen Engineering Building
Fairfax Campus

Phone: 703-993-5689
Email: seor@gmu.edu
Website: https://seor.gmu.edu/

The program leading to the BS in Systems Engineering prepares students for a professional career in systems engineering. The program reflects the systems engineer's unique perspective, which considers all aspects of a system throughout its lifetime. Mason's systems engineering program is interdisciplinary, drawing from engineering, computer science, operations research, psychology, and economics. The core systems engineering courses tie these diverse threads to provide a global understanding of how individual engineering disciplines fit into the development of complex, large-scale systems. Students gain depth in a technical area by selecting a sequence of technical electives that constitute an emphasis. Students choose their own emphasis with the help of their advisor. A year-long senior design project provides hands-on experience in applying various systems engineering methods and tools. In the first two years, students obtain a basic foundation in mathematics, natural sciences, computing, writing, humanities, arts, and social sciences. The systems engineering program builds on this foundation, teaching theoretical knowledge, practical skills, and the ability to apply systems thinking to problems. Teamwork, collaborative learning, analytical skills, practical problem solving, and oral and written communication are strongly stressed.

Mission

The mission of the undergraduate program is to equip students with the ability to participate productively in the many professional activities associated with engineering a trustworthy system that satisfies client needs. The term "system" is interpreted broadly to include information, telecommunication, defense, health delivery, transportation, energy or manufacturing systems, as well as corporate processes.

Objectives

The program educational objectives of the Systems Engineering program are what we expect our students to attain within three to five years

of graduation. Graduates earning the Bachelor of Science degree in Systems Engineering at George Mason University will:

- Use critical thinking, quantitative methods, and systems thinking to contribute to solutions for global societal challenges.
- Apply systems engineering methods, processes, models and tools to the engineering of complex systems.
- Advance the objectives of their organizations, profession, and society in a rapidly changing world.

Accreditation

The bachelor's program in Systems Engineering is accredited by the Engineering Accreditation Commission of ABET, http://www.abet.org. The requirements for the degree may be satisfied through part-time enrollment.

Admissions & Policies

Policies

Change of Major

See Change of Major for more information.

Grade Requirements

Students in the Systems Engineering, BS program must complete all mathematics, science, and VSE courses with a grade of C or better. However, students may apply for a one-time grade waiver for no more than one mathematics, science, or VSE course with grade of C- or D.

Students must also complete any course required by the program that is a prerequisite to another course applicable to the degree with a grade of C or better.

Termination from the Major

No math, science, or Volgenau School of Engineering course that is required for the major may be attempted more than three times. Those students who do not successfully complete such a course within three attempts will be terminated from the major. Undeclared students in the Volgenau School who do not successfully complete a course required for a Volgenau School major within three attempts will also be terminated.

In addition, students in the Volgenau School with evidence of continued failure to make adequate progress toward declaring or completing a Volgenau School major will be terminated from the school. Adequate progress is determined by the major program. For more information, see AP.5.2.4 Termination from the Major (https://catalog.gmu.edu/policies/academic/undergraduate-policies/#ap-5-2-4).

Once a student has attempted one of these courses twice unsuccessfully, the third attempt must be no later than the next semester of enrollment, excluding summers. Failure to take the course at that time will result in termination from the major. A third attempt of a Volgenau School of Engineering course requires support by the student's major department as well as permission by the department offering the course. This permission is not guaranteed. If the student is unable to take the course when required, the student may request an extension to a future semester; extensions require approval of the student's advisor, their department, and the Associate Dean for Undergraduate Programs. The deadline for extension requests is the add deadline for the semester in which the course is required.

Students who have been terminated from a Volgenau School of Engineering major may not register for a Volgenau School course without permission of the department offering the course. This applies to all undergraduate courses offered by the Volgenau School except IT 104 Introduction to Computing (Mason Core) and STAT 250 Introductory Statistics I (Mason Core).

A student may not declare any major in the Volgenau School of Engineering if the student has previously met the termination criteria for that major at any time, regardless of what the student's major was at the time the courses were taken.

Requirements

Degree Requirements

Total credits: 123

Mathematics and Statistics

Code	Title	Credits
MATH 113	Analytic Geometry and Calculus I (Mason Core)	4
MATH 114	Analytic Geometry and Calculus II	4
MATH 203	Linear Algebra	3
MATH 213	Analytic Geometry and Calculus III	3
MATH 214	Elementary Differential Equations	3
STAT 344	Probability and Statistics for Engineers and Scientists I	3
STAT 354	Probability and Statistics for Engineers and Scientists II	3
Total Credits		23

Natural Science

Code	Title	Credits
PHYS 160 & PHYS 161	University Physics I (Mason Core) and University Physics I Laboratory (Mason Core)	4
PHYS 260 & PHYS 261	University Physics II (Mason Core) and University Physics II Laboratory (Mason Core)	4
Select 4 credits from the following: [1]		4
PHYS 262 & PHYS 263	University Physics III (Mason Core) and University Physics III Laboratory (Mason Core)	
BIOL 213	Cell Structure and Function (Mason Core)	
CHEM 211 & CHEM 213	General Chemistry I (Mason Core) and General Chemistry Laboratory I (Mason Core)	
CHEM 271 & CHEM 272	General Chemistry for Engineers Lecture (Mason Core) and General Chemistry for Engineers Lab (Mason Core)	
Total Credits		12

[1] Students who select the Bioengineering technical emphasis area are strongly encouraged to take BIOL 213 Cell Structure and Function (Mason Core). Students who select the Environmental Engineering technical emphasis area are strongly encouraged to take Chemistry. Both lecture and laboratory must belong to the same natural science subject. Students are not permitted to take PHYS 262 University Physics III (Mason Core) and CHEM 213 General Chemistry Laboratory I (Mason Core) or CHEM 211 General Chemistry I (Mason Core) and PHYS 263 University Physics III Laboratory (Mason Core). Both lecture and laboratory must belong to the same natural science subject.

Computing

Code	Title	Credits
Select from options below:		7
SYST 130	Introduction to Computing for Digital Systems Engineering	
or CDS 130	Computing for Scientists	
or CS 112	Introduction to Computer Programming	
or ENGR 125T	Introduction to Engineering Methods - Transfer	
and		
SYST 230	Object-oriented Modeling and Design	
or CS 211	Object-Oriented Programming	
Total Credits		7

Communication and Economics

Code	Title	Credits
COMM 100	Public Speaking (Mason Core)	3
or COMM 101	Fundamentals of Communication (Mason Core)	
ECON 103	Contemporary Microeconomic Principles (Mason Core)	3
Total Credits		6

Engineering

Code	Title	Credits
ENGR 107	Introduction to Engineering (Mason Core)	2
Total Credits		2

Systems Engineering

Students must complete each of these courses with a grade of C or better.

Code	Title	Credits
SYST 101	Understanding Systems Engineering	3
SYST 210	Systems Design	3
SYST 220	Dynamical Systems I	3
SYST 221	Systems Modeling Laboratory	1
SYST 320	Dynamical Systems II	3
SYST 330	Systems Methods	3
SYST 335	Discrete Systems Modeling and Simulation	3
SYST 371	Systems Engineering Management	3
SYST 395	Applied Systems Engineering	3
SYST 470	Human Factors Engineering	3
SYST 473	Decision and Risk Analysis	3
SYST 489	Senior Seminar	3
SYST 490	Senior Design Project I	3
SYST 495	Senior Design Project II (Mason Core)	3
OR 441	Deterministic Operations Research	3
OR 442	Stochastic Operations Research	3
Select 3 approved technical electives selected from one of the Technical Emphasis Areas below		9
Total Credits		55

Additional Mason Core

Students must complete all Mason Core requirements not fulfilled by major requirements.

Code	Title	Credits
English (6 credits)		6
ENGH 100	Composition for Multilingual Writers (Mason Core)	
or ENGH 101	Composition (Mason Core)	
ENGH 302	Advanced Composition (Mason Core) [1]	
Literature		3
Arts		3
Western Civilization/World History		3
Global Understanding		3
Total Credits		18

[1] Must complete either natural science and technology or multidisciplinary section.

Technical Emphasis Areas

The systems engineering program requires 9 credits of technical electives. Students must select one of the following technical emphases, each containing three courses. Students must complete each of these courses with a grade of C or better.

Aviation Systems

Code	Title	Credits
SYST 420	Network Analysis	3
SYST 460	Introduction to Air Traffic Control	3
SYST 461	Air Transportation System Engineering	3
Total Credits		9

Bioengineering

Code	Title	Credits
BENG 230	Continuum Biomechanics and Transport I	3
BENG 320	Bioengineering Signals and Systems	3
BENG 330	Computational Methods in Bioengineering	3
Some of the courses listed above have additional prerequisites. Students should pay careful attention to prerequisites when selecting courses.		
Total Credits		9

Control Systems

Code	Title	Credits
ECE 201	Introduction to Signals and Systems	3
ECE 321	Continuous-Time Signals and Systems	3

SYST 421	Classical Systems and Control Theory	3
Total Credits		9

Computer Network Systems

Code	Title	Credits
SYST 420	Network Analysis	3
ECE 465	Computer Networking Protocols	3
TCOM 500	Modern Telecommunications	3
Total Credits		9

Cyber Security Engineering

Code	Title	Credits
CYSE 211	Operating Systems and Lab	3
CYSE 430	Critical Infrastructure Protection	3
And choose one of the following:		3
CYSE 460	Power Systems and Smart Grid Security	
CYSE 465	Transportation Systems Design	
CYSE 470	Human Factors and Cyber Security Engineering	
CYSE 477	Intrusion Detection	
Total Credits		9

Data Analytics

Code	Title	Credits
SYST 468	Applied Predictive Analytics	3
IT 214	Database Fundamentals	3
STAT 463	Introduction to Exploratory Data Analysis	3
or SYST 438	Analytics for Financial Engineering and Econometrics	
Total Credits		9

Environmental Engineering

Code	Title	Credits
CEIE 240	Hydraulics	3
CEIE 355	Environmental Engineering and Science	3
CEIE 450	Environmental Engineering Systems	3
or CEIE 453	Water and Wastewater Treatment Processes	
Total Credits		9

Financial Engineering

Code	Title	Credits
SYST 438	Analytics for Financial Engineering and Econometrics	3
SYST 488	Financial Systems Engineering	3
And choose one of the following:		3
STAT 463	Introduction to Exploratory Data Analysis	
STAT 455	Experimental Design	
SYST 468	Applied Predictive Analytics	
MBUS 304	Entrepreneurship: Starting and Managing a New Enterprise	
Total Credits		9

Mechanical Engineering

Code	Title	Credits
Select one of the following options:		9
Option 1: Mechanical Design		
ME 211	Statics	
or CEIE 210	Statics	
ME 212	Solid Mechanics	
or CEIE 310	Mechanics of Materials	
ME 341	Design of Mechanical Elements	
or ME 231	Dynamics	
Option 2: Thermal Fluids		
ME 221	Thermodynamics	
ME 322	Fluid Mechanics	
ME 323	Heat Transfer	
or ME 342	Design of Thermal Systems	
Some of the courses listed above have additional prerequisites. Students should pay careful attention to prerequisites when selecting courses.		
Total Credits		9

Operations Research

Code	Title	Credits
OR 481	Numerical Methods in Engineering	3
SYST 420	Network Analysis	3
SYST 468	Applied Predictive Analytics	3
Total Credits		9

Software-Intensive Systems

Code	Title	Credits
CS 310	Data Structures	3
CS 321	Software Engineering	3
CS 332	Object-Oriented Software Design and Implementation	3
CS 310 listed above requires CS 112 and CS 211 computing sequence. Students should pay careful attention to prerequisites when selecting courses.		
Total Credits		9

Synthesis Requirement

Mason's synthesis requirement for systems engineering majors is satisfied by successful completion of SYST 495 Senior Design Project II (Mason Core). Students who do not pass SYST 495 Senior Design Project II (Mason Core) with a C or better must retake both SYST 490 Senior Design Project I and SYST 495 Senior Design Project II (Mason Core).

Writing-Intensive Requirement

Mason's writing-intensive requirement for systems engineering majors is satisfied by successful completion of SYST 489 Senior Seminar.

Advising and Plan of Study

All systems engineering students are assigned a faculty advisor. With the advisor's help and approval, each student is required to complete a plan of study. This plan of study, which is available from the SEOR office, constitutes a learning plan for the degree program and must be signed by the student's advisor and the Department Chair. The plan of study must be updated and signed by the advisor at least once per year.

4-Year Plan

Bachelor of Science in Systems Engineering Sample Plan of Study

Detailed four year plans and degree planning checklists can be found at https://advising.gmu.edu/current-student/majors-at-mason/.

Accelerated Master's

BS (selected)/Statistical Science, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program (BAM) and obtain an undergraduate BS degree and the Statistical Science, MS in an accelerated time-frame after satisfactory completion of a minimum of 138 credits.

Admitted students are able to use up to 12 graduate credits in partial satisfaction of requirements for the undergraduate degree. Upon completion and conferral of the bachelor's degree and with satisfactory performance (grade of 'B' or better) in each of the graduate courses, students are given advanced standing in the master's program.

See AP.6.7 Bachelor's/Accelerated Master's Degrees for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

BAM Pathway Admission Requirements

No specific undergraduate BS degree is required. Students enrolled in any BS degree may apply to the accelerated Statistical Science, MS program **if such an accelerated** Statistical Science, MS **pathway is allowable from the student's BS program, which will be determined by the academic advisors of both the BS and MS programs.**

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits with an overall GPA of 3.0.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific prerequisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the Statistical Science, MS program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- Completion of Mason's requirements for undergraduate degree conferral (graduation) and completion of application for graduation.
- An overall GPA of 3.00.
- Completion of the following Mason courses each with a grade of C or better.

Code	Title	Credits
MATH 213	Analytic Geometry and Calculus III	3
MATH 203	Linear Algebra	3
or MATH 321	Abstract Algebra	
STAT 250	Introductory Statistics I (Mason Core)	3
or STAT 344	Probability and Statistics for Engineers and Scientists I	
STAT 346	Probability for Engineers	3
or MATH 351	Probability	
STAT 362	Introduction to Computer Statistical Packages	3

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, students complete all credits satisfying degree requirements for the BS and MS programs, with up to twelve credits overlap chosen from the following graduate courses:

Code	Title	Credits
STAT 544	Applied Probability	3
STAT 554	Applied Statistics I	3
STAT 560	Biostatistical Methods	3
STAT 574	Survey Sampling I	3
STAT 663	Statistical Graphics and Data Exploration I	3

All graduate course prerequisites must be completed prior to enrollment. Each graduate course must be completed with a grade of B or better to apply toward the MS degree.

While still in undergraduate status, a maximum of 6 additional graduate credits may be taken as reserve graduate credit and applied to the master's program. Reserve graduate credits do not apply to the undergraduate degree.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees policies.

Degree Conferral

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and Graduate Recruitment and Enrollment Services. At the completion of MS requirements, a master's degree is conferred.

Systems Engineering, BS/Data Analytics Engineering, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a Systems Engineering, BS and a Data Analytics Engineering, MS in an accelerated time-frame after satisfactory completion of a minimum of 141 credits.

Admitted students are able to use up to 12 graduate credits in partial satisfaction of requirements for the undergraduate degree. Upon completion and conferral of the bachelor's degree and with satisfactory performance (grade of 'B' or better) in each of the graduate courses, students are given advanced standing in the master's program.

See AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/).

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Systems Engineering, BS students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits with an overall GPA of at least 3.0.

For the predictive analytics and financial engineering concentrations, students must submit evidence of:

- Satisfactory completion of courses in calculus, applied probability and statistics, and a scientific programming language.
- Familiarity with analytical modeling software, such as spreadsheets or math packages.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the Data Analytics Engineering, MS program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- An overall GPA of at least 3.0
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing course: Students must complete all credits that satisfy requirements for both the BS and MS programs. Up to four courses (12 credits) of approved master's level courses taken as part of the undergraduate degree may be applied to the graduate degree.

These courses may be chosen from the list of graduate courses in the following table. For Systems Engineering, BS students, these graduate courses replace the corresponding undergraduate courses listed in the table. The undergraduate version of these courses may *not* be applied toward the Systems Engineering, MS.

Undergraduate	Graduate	
SYST 473	SYST 573	This course applies to only certain concentrations; Credit may not be received for both courses.
OR 441	OR 541	Satisfies OR 531 core requirement in the graduate program. Credit may not be received for both courses.
SYST 438	SYST 538	This course applies to only certain concentrations; Credit may not be received for both courses
SYST 468	SYST 568	This course applies to only certain concentrations; Credit may not be received for both courses
SYST 488	SYST 588	This course applies to only certain concentrations; Credit may not be received for both courses

For the predictive analytics and financial engineering concentration, any other 500-level course may be applied to both the undergraduate and graduate degrees with approval of the advisor and SEOR department chair.

OR 541 Operations Research: Deterministic Models will substitute for the OR 531 Analytics and Decision Analysis core requirement in the MS DAE program. Students Bachelor of Science in Systems Engineering program are not permitted to take OR 531 Analytics and Decision Analysis.

Students must pay attention to the prerequisites required for a course, and the master's degree concentration that the course may satisfy.

While still in undergraduate status, a maximum of 6 additional graduate credits may be taken as reserve graduate credit and applied to the master's program. Reserve graduate credits do not apply to the undergraduate degree.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text).

Degree Conferral

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and the VSE Graduate Admissions Office. At the completion of MS requirements, a master's degree is conferred.

Systems Engineering BS/Operations Research, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a Systems Engineering, BS and an Operations Research, MS in an accelerated time-frame after satisfactory completion of a minimum of 141 credits.

Admitted students are able to use up to 12 graduate credits in partial satisfaction of requirements for the undergraduate degree. Upon completion and conferral of the bachelor's degree and with satisfactory performance (grade of 'B' or better) in each of the graduate courses, students are given advanced standing in the master's program.

See AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/).

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Systems Engineering, BS students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits with an overall GPA of at least 3.3, and completion of all MATH and PHYS requirements. Students must additionally complete MATH 203 Linear Algebra prior to applying for the graduate program.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

The criteria for admission are identical to criteria for admission to the Operations Research, MS program. Students already admitted in the BAM Pathway will be admitted to the Operations Research, MS program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- An overall GPA of at least 3.3
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing course: Students must complete all credits that satisfy requirements for both the BS and MS programs. Up to four courses (12 credits) of approved master's level courses taken as part of the undergraduate degree may be applied to the graduate degree.

These courses may be chosen from the list of graduate courses in the following table. For Systems Engineering, BS students, these graduate courses replace the corresponding undergraduate courses listed in the table. The undergraduate version of these courses may *not* be applied toward the Operations Research, MS.

Undergraduate	Graduate	
SYST 420	SYST 521/OR 643	Credit may not be received for both courses.
SYST 473	SYST 573	Credit may not be received for both courses.
OR 441	OR 541	Core course in the graduate program. Credit may not be received for both courses.
OR 442	OR 542	Core course in the graduate program. Credit may not be received for both courses.
SYST 438	SYST 538	The course applies only to certain concentrations in the graduate program; credit may not be received for both courses.
SYST 468	OR/SYST 568	Core course in the graduate program. Credit may not be received for both courses.
SYST 488	SYST 588	The course applies only to certain concentrations in the graduate program; credit may not be received for both courses.

Any other 500-level course may be applied to both the undergraduate and graduate degrees with approval of the advisor and SEOR department chair. Students must pay attention to the prerequisites required for a course, and the master's degree concentration that the course may satisfy.

While still in undergraduate status, a maximum of 6 additional graduate credits may be taken as reserve graduate credit and applied to the master's program. Reserve graduate credits do not apply to the undergraduate degree.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text).

Degree Conferral

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at

the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and Graduate Recruitment and Enrollment Services. At the completion of MS requirements, a master's degree is conferred.

Systems Engineering BS/Systems Engineering, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a Systems Engineering, BS and a Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) in an accelerated time-frame after satisfactory completion of a minimum of 141 credits.

Admitted students are able to use up to 12 graduate credits in partial satisfaction of requirements for the undergraduate degree. Upon completion and conferral of the bachelor's degree and with satisfactory performance (grade of 'B' or better) in each of the graduate courses, students are given advanced standing in the master's program.

See AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/).

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Systems Engineering, BS students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits with an overall GPA of at least 3.3, and completion of all MATH and PHYS requirements.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

The criteria for admission are identical to criteria for admission to the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program. Students already admitted in the BAM Pathway will be admitted to the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- An overall GPA of at least 3.3
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing course: Students must complete all credits that satisfy requirements for both the BS and MS programs. Up to four courses (12 credits) of approved master's level courses taken as part of the undergraduate degree may be applied to the graduate degree.

These courses may be chosen from the list of graduate courses in the following table. For Systems Engineering, BS students, these graduate courses replace the corresponding undergraduate courses listed in the table. The undergraduate version of these courses may *not* be applied toward the Systems Engineering, MS.

Undergraduate	Graduate	
SYST 420	SYST 521/OR 643	Credit may not be received for both courses.
SYST 473	SYST 573	Credit may not be received for both courses.
OR 441	OR 541	Credit may not be received for both courses.
OR 442	OR 542	Credit may not be received for both courses.
SYST 438	SYST 538	The course applies only to certain concentrations in the graduate program; credit may not be received for both courses.
SYST 468	SYST/OR 568	The course applies only to certain concentrations in the graduate program; credit may not be received for both courses.
SYST 488	SYST 588	The course applies only to certain concentrations in the graduate program; credit may not be received for both courses.

Any course chosen from the above course list may be used to satisfy SYST 505 Systems Engineering Principles core requirement in the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program. Any other 500-level course may be applied to both the undergraduate and graduate degrees with approval of the advisor and SEOR department chair. Students must pay attention to the prerequisites required for a course, and the master's degree concentration that the course may satisfy.

While still in undergraduate status, a maximum of 6 additional graduate credits may be taken as reserve graduate credit and applied to the master's program. Reserve graduate credits do not apply to the undergraduate degree.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text).

Degree Conferral

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and Graduate Recruitment and Enrollment Services. At the completion of MS requirements, a master's degree is conferred.

Systems Engineering, BS/ Telecommunications, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a Systems Engineering, BS and a Telecommunications, MS in an accelerated time-frame after satisfactory completion of a minimum of 141 credits.

Admitted students are able to use up to 12 graduate credits in partial satisfaction of requirements for the undergraduate degree. Upon completion and conferral of the bachelor's degree and with satisfactory performance (grade of 'B' or better) in each of the graduate courses, students are given advanced standing in the master's program.

See AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/).

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Students in the Systems Engineering, BS program who preferably have chosen to take the systems engineering of telecommunications elective sequence will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits with an overall GPA of at least 3.0, and completed all MATH and PHYS requirements. Other students will be considered on their individual merit.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

The criteria for admission are identical to criteria for admission to the Telecommunications, MS program. Students already admitted in the BAM Pathway will be admitted to the Telecommunications, MS program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- An overall GPA of at least 3.0
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing course: Students must complete all credits that satisfy requirements for both the BS and MS programs. Up to four courses (12 credits) of approved master's level courses taken as part of the undergraduate degree may be applied to the graduate degree.

These courses may be chosen from the list of graduate courses in the following table. For Systems Engineering, BS students, these graduate courses replace the corresponding undergraduate courses listed in the BS program. The undergraduate version of these courses, if any, may *not* be applied toward the Telecommunications, MS.

Code	Title	Credits
TCOM 500	Modern Telecommunications	3
TCOM 535	The TCP/IP Suite of Internet Protocols	3
OR 541	Operations Research: Deterministic Models	3
SYST 530	Systems Engineering Management I	3
SYST 573	Decision and Risk Analysis (if taken, replaces TCOM 521 in the telecommunications core requirements)	3

Students must pay attention to the prerequisites required for a course, and the master's degree concentration that the course may satisfy.

While still in undergraduate status, a maximum of 6 additional graduate credits may be taken as reserve graduate credit and applied to the master's program. Reserve graduate credits do not apply to the undergraduate degree.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text).

Degree Conferral

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and the VSE Graduate Admissions Office. At the completion of MS requirements, a master's degree is conferred.

Systems Engineering, MS

Banner Code: VS-MS-SYST

Academic Advising

2100 Nguyen Engineering Building

Fairfax Campus

Phone: 703-993-5689
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Systems engineers are the visionaries who take a global perspective of the system. Whereas discipline-specific engineers deal with system components, the systems engineer is concerned with the integration of these components and the overall success of the system throughout its life cycle. Systems engineers focus on needs and requirements, design, production, deployment, operation, maintenance, refinement, and retirement of systems, considering multiple objectives and constraints from different stakeholder groups. Systems engineering comprises product, process, and resource management and focuses on architecture, human factors, decision support, performance and evaluation, and management. Our educational and research program reflects the systems engineer's unique perspective on the system life cycle.

Mason's graduate program in Systems Engineering recognizes the importance of balancing an education in quantitative models and engineering tools with a proper understanding of the systems perspective. Concentration areas include Advanced Transportation Systems (ATS), Architecture-Based Systems Integration (ABSI), Command, Control, Communications, Computing, and Intelligence (C4I), Energy Systems (NRGS), Financial Systems Engineering (FNSE), Systems Engineering and Data Analytics (SEDA), Systems Engineering of Software-Intensive Systems (SESI) and Systems Management (SMG).

The graduate program leading to the Master of Science in Systems Engineering emphasizes both analytical and practical aspects of engineering complex systems. Students are expected to demonstrate proficiency in using qualitative and quantitative tools relevant to systems engineering practice. The program also prepares students for careers in research and development and for pursuing advanced graduate study leading to the PhD degree in Systems Engineering and Operations Research (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-operations-research-phd/).

Admissions & Policies

Admissions

Foundation and Admission Requirements

Each applicant for the MS program should meet the following entrance requirements:

1. Have a baccalaureate degree from an accredited institution in engineering, mathematics, computer science, physical sciences, economics, or a related field.
2. Have completed courses in multivariate calculus, matrix algebra, differential equations, applied probability and statistics, and a computer language.
3. Provide evidence of satisfactory educational achievement in at least one of the following forms: a GPA of at least 3.00 as an undergraduate or an acceptable GPA in graduate courses. International students must also achieve satisfactory scores on the Graduate Record Examination (GRE).
4. Have achieved a satisfactory score on the TOEFL examination for non-native English speakers.
5. Have two letters of recommendation submitted by former professors or supervisors.

Policies

Advising & Plan of Study

All entering systems engineering students should attend an orientation meeting. Each student is assigned a faculty advisor upon acceptance. Students must meet with their advisors during their first semester and design an approved plan of study. Students are encouraged to seek out their advisor when questions arise and when their plan of study needs to be revised. Any changes to the plan of study must be approved by the faculty advisor and remain on file with the department. Selection of a concentration (if any) within the program must be submitted to the Registrar, with departmental approval, via formal paperwork. It is the student's responsibility to ensure that their intended concentration is reflected on their transcript prior to graduation.

Requirements

Degree Requirements

Total credits: 30-33

To obtain the Master of Science degree, students must complete a minimum of 30 semester hours of graduate level courses that consists of five core courses, three concentration courses, an elective, and a systems engineering project.

Students must have a working background in engineering mathematics and computer systems. A student lacking these foundations may be required to take one or more foundation courses. The department offers SYST 500 Quantitative Foundations for Systems Engineering as an intensive review of undergraduate engineering mathematics, including matrix algebra, calculus, differential equations, probability and statistics. Students who have not completed a two-semester calculus sequence and matrix algebra will be required to complete these courses prior to taking SYST 500.

Approved basic methods and concentration courses for the eight concentration areas are listed below. Students are expected to select a set of concentration courses that constitute a clearly defined focus. These courses must be approved by the student's advisor. Each student is required to have a current plan of study on file with the Systems Engineering and Operations Research Department.

Candidates for the MS must have a minimum GPA of 3.00 in coursework applied to the degree, which may include no more than 6 credits of C. The GPA calculation excludes all transfer courses and Mason nondegree studies credits not formally approved for the degree.

Core Courses

Code	Title	Credits
Students must complete the following five courses:		15
SYST 505	Systems Engineering Principles [1]	
SYST 510	Systems Definition and Cost Modeling	
SYST 520	System Engineering Design	
SYST 530	Systems Engineering Management I	
SYST 611	System Methodology and Modeling	
Total Credits		15

[1] SYST 505 may be replaced by an approved elective for students who have work experience in systems engineering or who have been enrolled in the undergraduate BSSE program at Mason. SYST 505, if taken, must be taken in the first semester of enrollment in the MSSE program.

Project or Thesis (Optional)

Students must complete three credit hours of SYST 699 Masters Project. Students in this course work in teams on an approved applied project. A project report is submitted at the end of the semester, and a final project presentation is made to the entire faculty of the SEOR Department.

Students with the consent of a faculty advisor and departmental approval, may be approved to complete a thesis.

Code	Title	Credits
SYST 699	Masters Project	3
Total Credits		3

Basic Methods Course

Code	Title	Credits
Select one course from the following: [1]		3
OR 531	Analytics and Decision Analysis	
OR 541	Operations Research: Deterministic Models	
OR 542	Operations Research: Stochastic Models	
ECE 528	Introduction to Random Processes in Electrical and Computer Engineering	
SYST 538	Analytics for Financial Engineering and Econometrics	
SYST 563	Evidence-Based Systems Engineering	
SYST 568	Applied Predictive Analytics	
or OR 568	Applied Predictive Analytics	
SYST 573	Decision and Risk Analysis	
SYST 620	Discrete Event Systems	
SYST 664	Bayesian Inference and Decision Theory	
Total Credits		3

[1] Students must complete one basic methods course. The choice of basic methods course may depend on the student's concentration and must be selected from the list above.

Concentrations

Students must complete 3 courses (9 credits) from their area of emphasis. Students may select one of the following eight areas of concentration, or may create their own emphasis area with the approval of their advisor and the Department Chair

- Advanced Transportation Systems (ATS)
- Architecture-Based Systems Integration (ABSI)
- Command, Control, Communications, Computing, and Intelligence (C4I)
- Energy Systems (NRGS)
- Financial Systems Engineering (FNSE)
- Systems Engineering and Data Analytics (SEDA)
- Systems Engineering of Software-Intensive Systems (SESI)
- Systems Management (SMG)

Concentration in Advanced Transportation Systems (ATS)

The air transportation system is among the most complex networked systems. This concentration is designed to provide students with the skills to address the next generation of challenges of the air transportation system. Topics addressed include congestion and safety of the national air space, economic and human factors, impact of technology innovation, and public policy. The program emphasizes design, modeling, and analysis to support decision making for government and the aviation industry.

Code	Title	Credits
Required Coursework		
SYST 560	Introduction to Air Traffic Control	3
SYST 660	Air Transportation Systems Modeling	3
Select one from the following:		3
ECE 528	Introduction to Random Processes in Electrical and Computer Engineering	
OR 531	Analytics and Decision Analysis	
OR 541	Operations Research: Deterministic Models	
OR 542	Operations Research: Stochastic Models	
OR 568	Applied Predictive Analytics	
or SYST 568	Applied Predictive Analytics	
SYST 563	Evidence-Based Systems Engineering	
SYST 573	Decision and Risk Analysis	
SYST 620	Discrete Event Systems	
SYST 664	Bayesian Inference and Decision Theory	
One free elective, chosen under advisement:		3
Total Credits		12

Concentration in Architecture-Based Systems Integration (ABSI)

There is much interest today in the engineering of systems that comprise other component systems, where each of the component systems serves organizational and human purposes. These systems families are often categorized as systems of systems, federations of systems, or coalitions of systems. The design of architectures is a major ingredient in the design of systems families. Furthermore, it provides the conceptual basis for achieving system integration. This concentration covers the formulation of the system integration problem, definition of architecture frameworks, use of structured analysis and object-oriented methodologies for the design of architectures, modeling and simulation for the evaluation of architectures, and approaches to integration. Both defense and industrial applications are considered.

Code	Title	Credits
Required Coursework		
SYST 618	Model-based Systems Engineering	3
SYST 621	Systems Architecture Design	3
Select one of the following basic methods course:		3
ECE 528	Introduction to Random Processes in Electrical and Computer Engineering	
OR 531	Analytics and Decision Analysis	
OR 541	Operations Research: Deterministic Models	

OR 542	Operations Research: Stochastic Models	
OR 568	Applied Predictive Analytics	
or SYST 568	Applied Predictive Analytics	
SYST 563	Evidence-Based Systems Engineering	
SYST 573	Decision and Risk Analysis	
SYST 620	Discrete Event Systems	
SYST 664	Bayesian Inference and Decision Theory	
One free elective, chosen under advisement		3
Total Credits		12

Concentration in Command, Control, Communications, Computing, and Intelligence (C4I)

C4I systems are concerned with gathering, retrieving, analyzing, and disseminating time-sensitive information to achieve mission-critical objectives. These systems support military operations across the spectrum of conflict, intelligence operations, transportation monitoring, emergency response, drug interdiction, and law enforcement, among others. C4I systems include the equipment, people, and procedures necessary to accomplish the mission. The equipment may include a variety of sensors, communications systems, and information processing and decision-support systems.

The program focuses on the analysis, design, development, and management of C4I systems. Topics addressed include C4I architectures and software, communications, decision support, modeling and simulation, and sensor data fusion.

Code	Title	Credits
Required Coursework		
SYST 680	Principles of Command, Control, Communications, Computing, and Intelligence (C4I)	3
or ECE 670	Principles of Command, Control, Communications, Computing, and Intelligence (C4I)	
Basic Methods Course:		
OR 542	Operations Research: Stochastic Models	3
or ECE 528	Introduction to Random Processes in Electrical and Computer Engineering	
SYST 584	Heterogeneous Data Fusion	3
One free elective, chosen under advisement:		3
Total Credits		12

Concentration in Energy Systems (NRGS)

With the rising economic and environmental costs to power homes, businesses and the transportation systems that move people and goods from place to place, innovative solutions are required to meet the world's expanding energy needs. Students completing the energy systems concentration will build upon a foundation in systems engineering design by incorporating physical principles of thermal fluid energy transfer into system models. Students will develop the tools to model and analyze generation, transmission, and utilization systems in steady and dynamic operation. Students will optimize these systems by considering physical principles, economics, local policy and security concerns. Graduates will be able to apply their expertise to work with: traditional power generation facilities; renewable energy integration; national, local, and smart grids; mechanical and electrical energy storage systems; utilization of energy in building and transportation systems.

Code	Title	Credits
Required Coursework		
ME 521	Energy Transfer	3
ME 531	Energy Transmission	3
ME 541	Power Generation	3
One free elective, chosen under advisement:		3
Total Credits		12

Concentration in Financial Systems Engineering (FNSE)

Financial engineering is a cross-disciplinary field which relies on mathematical finance, numerical methods, and computer simulations to make trading, hedging, and investment decisions, as well as facilitating the risk management of those decisions. While mathematics is indispensable in financial engineering, the concentration will try best to focus on the concepts and ideas of finance, while limiting the math within a scope acceptable to most students in engineering.

Code	Title	Credits
Required Coursework		
SYST 588	Financial Systems Engineering I: Introduction to Options, Futures, and Derivatives	3
Basic methods course:		
SYST 538	Analytics for Financial Engineering and Econometrics	3
One technical elective, chosen from below		3
SYST 548	Technologies and Security for Cryptocurrencies and Financial Transactions	3
SYST 688	Financial Systems Engineering II: Derivative Products and Risk Management	3
Total Credits		15

Concentration in Systems Engineering and Data Analytics (SEDA)

Systems engineers must address a broad range of issues relevant to the design, implementation, analysis, and management of systems. This concentration provides methodological tools that can be applied to the systems engineering process. Areas of focus include decision support systems, distributed intelligent systems, knowledge-based planning systems, network systems, probabilistic reasoning systems, sensor fusion systems, and optimization methods.

Code	Title	Credits
Required Coursework		
OR 531	Analytics and Decision Analysis	3
SYST 568	Applied Predictive Analytics	3
SYST 573	Decision and Risk Analysis	3
One free elective, chosen under advisement:		3
Total Credits		12

Concentration in Systems Engineering of Software-Intensive Systems (SESI)

This concentration addresses the software component of the systems engineering life cycle. It specifically covers the allocation of system requirements to software. Practitioners are concerned with the theoretical and practical aspects of technology, cost, and the social effect of computer systems that are reliable, maintainable, secure, efficient,

and cost effective. The program emphasizes the integration of hardware, software, and firmware, and the management of these complex computer systems over their life cycle through systems engineering methods, tools, and processes.

Code	Title	Credits
Required Coursework		
SYST 542	Decision Support Systems Engineering	3
SYST 618	Model-based Systems Engineering	3
One from the following:		3
ECE 528	Introduction to Random Processes in Electrical and Computer Engineering	
OR 531	Analytics and Decision Analysis	
OR 541	Operations Research: Deterministic Models	
OR 542	Operations Research: Stochastic Models	
OR 568	Applied Predictive Analytics	
or SYST 568	Applied Predictive Analytics	
SYST 563	Evidence-Based Systems Engineering	
SYST 573	Decision and Risk Analysis	
SYST 620	Discrete Event Systems	
SYST 664	Bayesian Inference and Decision Theory	
One free elective, chosen under advisement:		3
Total Credits		12

Concentration in Systems Management (SMG)

The management aspect of systems engineering involves tracking and control of system development through the major phases of the system lifecycle, identifying and resolving problems to minimize their effect on cost, schedule, or performance, and iteratively improving product and process. This concentration emphasizes the theory and practice of systems management and prepares students for careers in management.

Code	Title	Credits
Required Coursework		
SYST 514	Systems Thinking	3
SYST 618	Model-based Systems Engineering	3
SYST 630	Systems Engineering Management II	3
One free elective, chosen under advisement:		3
Total Credits		12

Online MS in Systems Engineering

The graduate program leading to the Master of Science in Systems Engineering can be completed entirely online. The delivery mode for the online program is asynchronous, but many courses are also offered in synchronous mode. Students may also plan a program with some courses taken online and some in the classroom. The following courses are offered online at least once a year: SYST 500 Quantitative Foundations for Systems Engineering, SYST 505 Systems Engineering Principles, SYST 510 Systems Definition and Cost Modeling, SYST 520 System Engineering Design, SYST 530 Systems Engineering Management I, SYST 542 Decision Support Systems Engineering, SYST 573 Decision and Risk Analysis, SYST 611 System Methodology and Modeling, SYST 618 Model-based Systems Engineering, SYST 620 Discrete Event Systems, SYST 621 Systems Architecture Design, SYST 630 Systems Engineering Management II, SYST 699 Masters Project, OR 531 Analytics and Decision Analysis, OR 541 Operations Research: Deterministic Models and OR 542 Operations Research: Stochastic Models.

Accelerated Master's

Bioengineering, BS/Systems Engineering, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a Bioengineering, BS and a Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) in an accelerated time-frame after satisfactory completion of a minimum of 140 credits.

Admitted students are able to use up to 12 graduate credits in partial satisfaction of requirements for the undergraduate degree. Upon completion and conferral of the bachelor's degree and with satisfactory performance (grade of 'B' or better) in each of the graduate courses, students are given advanced standing in the master's program.

See AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/).

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Bioengineering, BS students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits with an overall GPA of at least 3.3, and completion of all MATH and PHYS requirements.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

The criteria for admission are identical to criteria for admission to the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program. Students already admitted in the BAM Pathway will be admitted to the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- An overall GPA of at least 3.3
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing course: Students must complete all credits that satisfy requirements for both the BS and MS programs. Up to four courses (12 credits) of approved master's level courses taken as part of the undergraduate degree may be applied to the graduate degree. The courses selected for this purpose must be approved by the academic advisors of both the BS and MS programs and by the SEOR department chair. For the BS programs that allow undergraduate electives from the department of system engineering and operations research, the students may choose the graduate version of such elective courses to replace the corresponding undergraduate courses.

- Students selecting up to two courses (6 credits) of approved master's level courses may select from the Bioengineering courses given below.
- Students selecting up to three or four courses (9 or 12 credits) of approved master's level courses may select at most two courses from the Bioengineering course list and select the remaining courses from the Systems Engineering and Operations Research course list given below. Students are highly recommended to select courses marked as core courses because it applies to the master's degree regardless of the graduate-level concentration chosen in the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program. The undergraduate version of these courses, if any, may *not* be applied toward the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/). Credit may not be received for both the undergraduate and graduate version of these courses.
- Except for the courses marked as core, any course chosen from either course list can be used to satisfy SYST 505 Systems Engineering Principles core requirement in the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program.
- Some of the courses in the Systems Engineering and Operations Research course list applies only to certain concentrations in the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program.
- Students must pay attention to the prerequisites required for a course, and the master's degree concentration that the course may satisfy.

Select from the following Bioengineering courses:

Code	Title	Credits
Required course:		
BENG 575	Intellectual Property, Regulatory Concepts and Product Development	
Select at most one from the following Bioengineering courses:		
BENG 501	Bioengineering Research Methods	
BENG 514	Pathophysiology and the Role of New Technologies in Human Diseases	
BENG 520	Biomedical Data Analytics	
BENG 521	Cell and Tissue Engineering	
or BENG 541	Biomaterials	
BENG 526	Neural Engineering	
BENG 537	Medical Image Processing	
or BENG 538	Medical Imaging	

Select the remaining from the following Systems Engineering and Operations Research courses:

Code	Title	Credits
SYST 510	Systems Definition and Cost Modeling (Core)	
SYST 514	Systems Thinking	
SYST 520	System Engineering Design (Core)	
SYST 530	Systems Engineering Management I (Core)	
SYST 542	Decision Support Systems Engineering	
SYST 573	Decision and Risk Analysis	
SYST 538	Analytics for Financial Engineering and Econometrics	
SYST 560	Introduction to Air Traffic Control	
SYST 563	Evidence-Based Systems Engineering	
SYST 568	Applied Predictive Analytics	
SYST 584	Heterogeneous Data Fusion	
SYST 588	Financial Systems Engineering I: Introduction to Options, Futures, and Derivatives	

While still in undergraduate status, a maximum of 6 additional graduate credits may be taken as reserve graduate credit and applied to the master's program. Reserve graduate credits do not apply to the undergraduate degree.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text).

Degree Conferral

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and the VSE Graduate Admissions Office. At the completion of MS requirements, a master's degree is conferred.

Civil and Infrastructure Engineering, BS/ Systems Engineering, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a Civil and Infrastructure Engineering, BS (https://catalog.gmu.edu/colleges-schools/engineering/civil-environmental-infrastructure/civil-infrastructure-engineering-bs/) and a Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) in an accelerated time-frame after satisfactory completion of a minimum of 139 credits.

Admitted students are able to use up to 12 graduate credits in partial satisfaction of requirements for the undergraduate degree. Upon completion and conferral of the bachelor's degree and with satisfactory performance (grade of 'B' or better) in each of the graduate courses, students are given advanced standing in the master's program.

See AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/).

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Civil and Infrastructure Engineering, BS (https://catalog.gmu.edu/colleges-schools/engineering/civil-environmental-infrastructure/civil-infrastructure-engineering-bs/) students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits with an overall GPA of at least 3.3, and completion of all MATH and PHYS requirements.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

The criteria for admission are identical to criteria for admission to the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program. Students already admitted in the BAM Pathway will be admitted to the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- An overall GPA of at least 3.3
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing course: Students must complete all credits that satisfy requirements for both the BS and MS programs. Up to four courses (12 credits) of approved master's level courses taken as part of the undergraduate degree may be applied to the graduate degree. The courses selected for this purpose must be approved by the academic advisors of both the BS and MS programs and by the SEOR department chair. For the BS programs that allow undergraduate electives from the department of system engineering and operations research, the students may choose the graduate version of such elective courses to replace the corresponding undergraduate courses.

- Students selecting up to two courses (6 credits) of approved master's level courses may select from the Civil and Infrastructure Engineering courses given below.
- Students selecting up to three or four courses (9 or 12 credits) of approved master's level courses may select at most two courses from the Civil and Infrastructure Engineering course list and select the remaining courses from the Systems Engineering and Operations Research course list given below. Students are highly recommended to select courses marked as core courses because it applies to the master's degree regardless of the graduate-level concentration chosen in the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program. The undergraduate version of these courses, if any, may *not* be applied toward the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/). Credit may not be received for both the undergraduate and graduate version of these courses.
- Except for the courses marked as core, any course chosen from either course list can be used to satisfy SYST 505 Systems Engineering Principles core requirement in the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program.
- Some of the courses in the Systems Engineering and Operations Research course list applies only to certain concentrations in the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program.
- Students must pay attention to the prerequisites required for a course, and the master's degree concentration that the course may satisfy.

Select at most two from the following Civil and Infrastructure Engineering courses:

Code	Title	Credits
CEIE 501	Sustainable Development	
CEIE 512	Structural Steel Design	
CEIE 532	Foundation Design	
CEIE 535	Engineering Geology	
CEIE 540	Water Supply and Distribution	
CEIE 542	Open Channel Flow	
CEIE 550	Environmental Engineering Systems	
CEIE 553	Water and Wastewater Treatment Processes	
CEIE 557	Remote Monitoring Techniques for Civil Engineering Applications	
CEIE 561	Traffic Engineering	
CEIE 562	Urban Transportation Planning	
CEIE 571	Construction Administration	
CEIE 572	Building Information Modeling	
CEIE 573	Legal Aspects of the Construction Process	
CEIE 574	Construction Computer Application and Informatics	
CEIE 576	Construction Cost Estimating	

Select the remaining from the following Systems Engineering and Operations Research courses:

Code	Title	Credits
SYST 510	Systems Definition and Cost Modeling (Core)	
SYST 514	Systems Thinking	
SYST 520	System Engineering Design (Core)	
SYST 530	Systems Engineering Management I (Core)	
SYST 542	Decision Support Systems Engineering	
SYST 573	Decision and Risk Analysis	
SYST 538	Analytics for Financial Engineering and Econometrics	
SYST 560	Introduction to Air Traffic Control	
SYST 563	Evidence-Based Systems Engineering	
SYST 568	Applied Predictive Analytics	
SYST 584	Heterogeneous Data Fusion	
SYST 588	Financial Systems Engineering I: Introduction to Options, Futures, and Derivatives	

While still in undergraduate status, a maximum of 6 additional graduate credits may be taken as reserve graduate credit and applied to the master's program. Reserve graduate credits do not apply to the undergraduate degree.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text).

Degree Conferral

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and the VSE Graduate Admissions Office. At the completion of MS requirements, a master's degree is conferred.

Computer Engineering, BS/Systems Engineering, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a Computer Engineering, BS and a Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) in an accelerated time-frame after satisfactory completion of a minimum of 144 credits.

Admitted students are able to use up to 12 graduate credits in partial satisfaction of requirements for the undergraduate degree. Upon completion and conferral of the bachelor's degree and with satisfactory performance (grade of 'B' or better) in each of the graduate courses, students are given advanced standing in the master's program.

See AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/).

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Computer Engineering, BS students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits with an overall GPA of at least 3.3, and completion of all MATH, PHYS 160/161, and PHYS 260/261 requirements.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

The criteria for admission are identical to criteria for admission to the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program. Students already admitted in the BAM Pathway will be admitted to the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- An overall GPA of at least 3.3
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing course: Students must complete all credits that satisfy requirements for both the BS and MS programs. Up to four courses (12 credits) of approved master's level courses taken as part of the undergraduate degree may be applied to the graduate degree. The courses selected for this purpose must be approved by the academic advisors of both the BS and MS programs and by the SEOR department chair.

- Students selecting up to two courses (6 credits) of approved master's level courses may select from the Electrical and Computer Engineering courses given below.
- Students selecting up to three or four courses (9 or 12 credits) of approved master's level courses may select at most two courses from the Electrical and Computer Engineering course list and select the remaining courses from the Systems Engineering and Operations Research course list given below. Note that ECE 542 can be used to meet the ECE 465 requirement for the Computer Engineering, BS program. Students are highly recommended to select courses marked as core courses because it applies to the master's degree

regardless of the graduate-level concentration chosen in the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program. The undergraduate version of these courses, if any, may *not* be applied toward the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/). Credit may not be received for both the undergraduate and graduate version of these courses.

- Except for the courses marked as core, any course chosen from either course list can be used to satisfy SYST 505 Systems Engineering Principles core requirement in the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program.
- Some of the courses in the Systems Engineering and Operations Research course list applies only to certain concentrations in the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program.
- Students must pay attention to the prerequisites required for a course, and the master's degree concentration that the course may satisfy.

Select at most two from the following Electrical and Computer Engineering courses:

Code	Title	Credits
ECE 505	Hardware Security	
ECE 508	Internet of Things	
ECE 510	Real-Time Concepts	
ECE 511	Computer Architecture	
ECE 512	Computer Architecture Security	
ECE 516	Mobile Systems and Applications	
ECE 521	Linear Systems and Control	
ECE 527	Learning From Data	
ECE 528	Introduction to Random Processes in Electrical and Computer Engineering	
ECE 530	Sensor Engineering	
ECE 531	Introduction to Wireless Communications and Networks	
ECE 535	Digital Signal Processing	
ECE 542	Computer Network Architectures and Protocols	
ECE 545	Digital System Design with VHDL	
ECE 567	Optical Fiber Communications	
ECE 580	Small Spacecraft Engineering	
ECE 590	Selected Topics in Engineering	

Select the remaining from the following Systems Engineering and Operations Research courses:

Code	Title	Credits
SYST 510	Systems Definition and Cost Modeling (Core)	
SYST 520	System Engineering Design (Core)	
SYST 530	Systems Engineering Management I (Core)	
SYST 542	Decision Support Systems Engineering	
SYST 573	Decision and Risk Analysis	
SYST 538	Analytics for Financial Engineering and Econometrics	
SYST 568	Applied Predictive Analytics	
SYST 584	Heterogeneous Data Fusion	
SYST 588	Financial Systems Engineering I: Introduction to Options, Futures, and Derivatives	

While still in undergraduate status, a maximum of 6 additional graduate credits may be taken as reserve graduate credit and applied to the master's program. Reserve graduate credits do not apply to the undergraduate degree.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text).

Degree Conferral

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and the VSE Graduate Admissions Office. At the completion of MS requirements, a master's degree is conferred.

Computer Science, BS/Systems Engineering, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a Computer Science, BS and a Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) in an accelerated time-frame after satisfactory completion of a minimum of 138 credits.

Admitted students are able to use up to 12 graduate credits in partial satisfaction of requirements for the undergraduate degree. Upon completion and conferral of the bachelor's degree and with satisfactory performance (grade of 'B' or better) in each of the graduate courses, students are given advanced standing in the master's program.

See AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/).

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Computer Science, BS students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits with an

overall GPA of at least 3.3, and completion of all MATH and Science requirements.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

The criteria for admission are identical to criteria for admission to the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program. Students already admitted in the BAM Pathway will be admitted to the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- An overall GPA of at least 3.3
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing course: Students must complete all credits that satisfy requirements for both the BS and MS programs. Up to four courses (12 credits) of approved master's level courses taken as part of the undergraduate degree may be applied to the graduate degree. The courses selected for this purpose must be approved by the academic advisors of both the BS and MS programs and by the SEOR department chair. For the BS programs that allow undergraduate electives from the department of system engineering and operations research, the students may choose the graduate version of such elective courses to replace the corresponding undergraduate courses.

- Students selecting up to two courses (6 credits) of approved master's level courses may select from the combined Computer Science course list and Systems Engineering and Operations Research course list given below.
- Students selecting up to three or four courses (9 or 12 credits) of approved master's level courses may select at most two courses from the Computer Science course list and select the remaining courses from the Systems Engineering and Operations Research course list given below. The undergraduate version of these courses, if any, may *not* be applied toward the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/). Credit may not be received for both the undergraduate and graduate version of these courses.
- Any course chosen from either course list can be used to satisfy SYST 505 Systems Engineering Principles core requirement in the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program.
- Some of the courses in the Systems Engineering and Operations Research course list applies only to certain concentrations in the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program.
- Students must pay attention to the prerequisites required for a course, and the master's degree concentration that the course may satisfy.

Select at most two from the following Computer Science courses:

Code	Title	Credits
CS 540	Language Processors	
CS 550	Database Systems	
CS 551	Computer Graphics	
CS 555	Computer Communications and Networking	
CS 571	Operating Systems	
CS 580	Introduction to Artificial Intelligence	
CS 583	Analysis of Algorithms	
CS 584	Theory and Applications of Data Mining	

Select the remaining from the following Systems Engineering and Operations Research courses:

Code	Title	Credits
OR 541	Operations Research: Deterministic Models	
OR 542	Operations Research: Stochastic Models	

While still in undergraduate status, a maximum of 6 additional graduate credits may be taken as reserve graduate credit and applied to the master's program. Reserve graduate credits do not apply to the undergraduate degree.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text).

Degree Conferral

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and the VSE Graduate Admissions Office. At the completion of MS requirements, a master's degree is conferred.

Cyber Security Engineering, BS/Systems Engineering, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a Cyber Security Engineering, BS and a Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) in an accelerated time-frame after satisfactory completion of a minimum of 144 credits.

Admitted students are able to use up to 12 graduate credits in partial satisfaction of requirements for the undergraduate degree. Upon completion and conferral of the bachelor's degree and with satisfactory performance (grade of 'B' or better) in each of the graduate courses, students are given advanced standing in the master's program.

See AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/).

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Cyber Security Engineering, BS students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits with an overall GPA of at least 3.3, and completion of all MATH and PHYS requirements.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

The criteria for admission are identical to criteria for admission to the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program. Students already admitted in the BAM Pathway will be admitted to the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- An overall GPA of at least 3.3
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing course: Students must complete all credits that satisfy requirements for both the BS and MS programs. Up to four courses (12 credits) of approved master's level courses taken as part of the undergraduate degree may be applied to the graduate degree. The courses selected for this purpose must be approved by the academic advisors of both the BS and MS programs and by the SEOR department chair. For the BS programs that allow undergraduate electives from the department of system engineering and operations research, the students may choose the graduate version of such elective courses to replace the corresponding undergraduate courses.

- Students selecting up to two courses (6 credits) of approved master's level courses may select from the combined Cyber Security Engineering course list and Systems Engineering and Operations Research course list given below.
- Students selecting up to three or four courses (9 or 12 credits) of approved master's level courses may select at most two courses from the Cyber Security Engineering course list and select the remaining courses from the Systems Engineering and Operations Research course list given below. Students are highly recommended to select courses marked as core courses because it applies to the master's degree regardless of the graduate-level concentration chosen in the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program. The undergraduate version of these courses, if any, may *not* be applied toward the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/). Credit may not be received for both the undergraduate and graduate version of these courses.
- Except for the courses marked as core, any course chosen from either course list can be used to satisfy SYST 505 Systems Engineering Principles core requirement in the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program.
- Some of the courses in the Systems Engineering and Operations Research course list applies only to certain concentrations in the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program.
- Students must pay attention to the prerequisites required for a course, and the master's degree concentration that the course may satisfy.

Select at most two from the following Cyber Security Engineering courses:

Code	Title	Credits
CYSE 570	Fundamentals of Operating Systems	
CYSE 580	Hardware and Cyber Physical Systems	

Select the remaining from the following Systems Engineering and Operations Research courses:

Code	Title	Credits
SYST 510	Systems Definition and Cost Modeling (Core)	
SYST 514	Systems Thinking	
SYST 520	System Engineering Design (Core)	
SYST 530	Systems Engineering Management I (Core)	
SYST 542	Decision Support Systems Engineering	
SYST 573	Decision and Risk Analysis	
SYST 538	Analytics for Financial Engineering and Econometrics	
SYST 560	Introduction to Air Traffic Control	
SYST 563	Evidence-Based Systems Engineering	
SYST 568	Applied Predictive Analytics	
SYST 584	Heterogeneous Data Fusion	
SYST 588	Financial Systems Engineering I: Introduction to Options, Futures, and Derivatives	

While still in undergraduate status, a maximum of 6 additional graduate credits may be taken as reserve graduate credit and applied to the master's program. Reserve graduate credits do not apply to the undergraduate degree.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text).

Degree Conferral

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and the VSE Graduate Admissions Office. At the completion of MS requirements, a master's degree is conferred.

Electrical Engineering, BS/Systems Engineering, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain an Electrical Engineering, BS and a Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) in an accelerated time-frame after satisfactory completion of a minimum of 139 credits.

Admitted students are able to use up to 12 graduate credits in partial satisfaction of requirements for the undergraduate degree. Upon completion and conferral of the bachelor's degree and with satisfactory performance (grade of 'B' or better) in each of the graduate courses, students are given advanced standing in the master's program.

See AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/).

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Electrical Engineering, BS students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits with an overall GPA of at least 3.3, and completion of all MATH, PHYS 160/161, and PHYS 260/261 requirements.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

The criteria for admission are identical to criteria for admission to the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program. Students already admitted in the BAM Pathway will be admitted to the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- An overall GPA of at least 3.3
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing course: Students must complete all credits that satisfy requirements for both the BS and MS programs. Up to four courses (12 credits) of approved master's level courses taken as part of the undergraduate degree may be applied to the graduate degree. The courses selected for this purpose must be approved by the academic advisors of both the BS and MS programs and by the SEOR department chair.

- Students selecting up to two courses (6 credits) of approved master's level courses may select from the Electrical and Computer Engineering courses given below.
- Students selecting up to three or four courses (9 or 12 credits) of approved master's level courses may select at most two courses from the Electrical and Computer Engineering course list and select the remaining courses from the Systems Engineering and Operations Research course list given below. Note that ECE 587 can be used to meet the ECE 433 requirement for the Electrical Engineering, BS program. Students are highly recommended to select courses marked as core courses because it applies to the master's degree regardless of the graduate-level concentration chosen in the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program. The undergraduate version of these courses, if any, may *not* be applied toward the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/). Credit may not be received for both the undergraduate and graduate version of these courses.
- Except for the courses marked as core, any course chosen from either course list can be used to satisfy SYST 505 Systems Engineering Principles core requirement in the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program.
- Some of the courses in the Systems Engineering and Operations Research course list applies only to certain concentrations in the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program.
- Students must pay attention to the prerequisites required for a course, and the master's degree concentration that the course may satisfy.

Select at most two from the following Electrical and Computer Engineering courses:

Code	Title	Credits
ECE 505	Hardware Security	
ECE 508	Internet of Things	
ECE 510	Real-Time Concepts	

ECE 511	Computer Architecture
ECE 513	Applied Electromagnetic Theory
ECE 516	Mobile Systems and Applications
ECE 521	Linear Systems and Control
ECE 526	Neural Engineering
ECE 527	Learning From Data
ECE 528	Introduction to Random Processes in Electrical and Computer Engineering
ECE 530	Sensor Engineering
ECE 531	Introduction to Wireless Communications and Networks
ECE 535	Digital Signal Processing
ECE 538	Medical Imaging
ECE 542	Computer Network Architectures and Protocols
ECE 550	System Engineering Design
ECE 565	Introduction to Optical Electronics
ECE 567	Optical Fiber Communications
ECE 580	Small Spacecraft Engineering
ECE 584	Semiconductor Device Fundamentals
ECE 586	Digital Integrated Circuits
ECE 587	Design of Analog Integrated Circuits
ECE 590	Selected Topics in Engineering

Select the remaining from the following Systems Engineering and Operations Research courses:

Code	Title	Credits
SYST 510	Systems Definition and Cost Modeling (Core)	
SYST 520	System Engineering Design (Core)	
SYST 530	Systems Engineering Management I (Core)	
SYST 542	Decision Support Systems Engineering	
SYST 573	Decision and Risk Analysis	
SYST 538	Analytics for Financial Engineering and Econometrics	
SYST 568	Applied Predictive Analytics	
SYST 584	Heterogeneous Data Fusion	
SYST 588	Financial Systems Engineering I: Introduction to Options, Futures, and Derivatives	

While still in undergraduate status, a maximum of 6 additional graduate credits may be taken as reserve graduate credit and applied to the master's program. Reserve graduate credits do not apply to the undergraduate degree.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text).

Degree Conferral

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and the VSE Graduate Admissions Office. At the completion of MS requirements, a master's degree is conferred.

Mechanical Engineering, BS/Systems Engineering, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a Mechanical Engineering, BS and a Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) in an accelerated time-frame after satisfactory completion of a minimum of 139 credits.

Admitted students are able to use up to 12 graduate credits in partial satisfaction of requirements for the undergraduate degree. Upon completion and conferral of the bachelor's degree and with satisfactory performance (grade of 'B' or better) in each of the graduate courses, students are given advanced standing in the master's program.

See AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/).

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Mechanical Engineering, BS students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits with an overall GPA of at least 3.3, and completion of all MATH and PHYS requirements.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

The criteria for admission are identical to criteria for admission to the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program. Students already admitted in the BAM Pathway will be admitted to the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- An overall GPA of at least 3.3
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing course: Students must complete all credits that satisfy requirements for both the BS and MS programs. Up to four courses (12 credits) of approved master's level courses taken as part of the undergraduate degree may be applied to the graduate degree. The courses selected for this purpose must be approved by the academic advisors of both the BS and MS programs and by the SEOR department chair. For the BS programs that allow undergraduate electives from the department of system engineering and operations research, the students may choose the graduate version of such elective courses to replace the corresponding undergraduate courses.

- Students selecting up to two courses (6 credits) of approved master's level courses may select from the combined Mechanical Engineering course list and Systems Engineering and Operations Research course list given below.
- Students selecting up to three or four courses (9 or 12 credits) of approved master's level courses may select at most two courses from the Mechanical Engineering course list and select the remaining courses from the Systems Engineering and Operations Research course list given below. Students are highly recommended to select courses marked as core courses because it applies to the master's degree regardless of the graduate-level concentration chosen in the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program. The undergraduate version of these courses, if any, may *not* be applied toward the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/). Credit may not be received for both the undergraduate and graduate version of these courses.
- Except for the courses marked as core, any course chosen from either course list can be used to satisfy SYST 505 Systems Engineering Principles core requirement in the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program.
- Some of the courses in the Systems Engineering and Operations Research course list applies only to certain concentrations in the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program.
- Students must pay attention to the prerequisites required for a course, and the master's degree concentration that the course may satisfy.

Select at most two from the following Mechanical Engineering courses:

Code	Title	Credits
ME 521	Energy Transfer	
ME 531	Energy Transmission	
ME 541	Power Generation	
ME 542	Energy Utilization	

Select the remaining from the following Systems Engineering and Operations Research courses:

Code	Title	Credits
SYST 510	Systems Definition and Cost Modeling (Core)	
SYST 514	Systems Thinking	
SYST 520	System Engineering Design (Core)	
SYST 530	Systems Engineering Management I (Core)	
SYST 542	Decision Support Systems Engineering	
SYST 573	Decision and Risk Analysis	
SYST 538	Analytics for Financial Engineering and Econometrics	
SYST 560	Introduction to Air Traffic Control	
SYST 563	Evidence-Based Systems Engineering	
SYST 568	Applied Predictive Analytics	
SYST 584	Heterogeneous Data Fusion	
SYST 588	Financial Systems Engineering I: Introduction to Options, Futures, and Derivatives	

While still in undergraduate status, a maximum of 6 additional graduate credits may be taken as reserve graduate credit and applied to the master's program. Reserve graduate credits do not apply to the undergraduate degree.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text).

Degree Conferral

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and the VSE Graduate Admissions Office. At the completion of MS requirements, a master's degree is conferred.

Statistics, BS/Systems Engineering, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a Statistics, BS and a Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) in an accelerated time-frame after satisfactory completion of a minimum of 138 credits.

Admitted students are able to use up to 12 graduate credits in partial satisfaction of requirements for the undergraduate degree. Upon completion and conferral of the bachelor's degree and with satisfactory performance (grade of 'B' or better) in each of the graduate courses, students are given advanced standing in the master's program.

See AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate

degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/).

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Statistics, BS students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits with an overall GPA of at least 3.3, and completion of all MATH requirements.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

The criteria for admission are identical to criteria for admission to the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program. Students already admitted in the BAM Pathway will be admitted to the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- An overall GPA of at least 3.3
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing course: Students must complete all credits that satisfy requirements for both the BS and MS programs. Up to four courses (12 credits) of approved master's level courses taken as part of the undergraduate degree may be applied to the graduate degree. The courses selected for this purpose must be approved by the academic advisors of both the BS and MS programs and by the SEOR department chair. For the BS programs that allow undergraduate electives from the department of system engineering and operations research, the students may choose the graduate version of such elective courses to replace the corresponding undergraduate courses.

- Students selecting up to two courses (6 credits) of approved master's level courses may select from the combined Statistics course list and Systems Engineering and Operations Research course list given below.
- Students selecting up to three or four courses (9 or 12 credits) of approved master's level courses may select at most two courses from the Statistics course list and select the remaining courses from the Systems Engineering and Operations Research course list given below. The undergraduate version of these courses, if any, may *not* be applied toward the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/). Credit may not be received for both the undergraduate and graduate version of these courses.
- Except for the courses marked as core, any course chosen from either course list can be used to satisfy SYST 505 Systems Engineering Principles core requirement in the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program.
- Some of the courses in the Systems Engineering and Operations Research course list applies only to certain concentrations in the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program.
- Students must pay attention to the prerequisites required for a course, and the master's degree concentration that the course may satisfy.

Select from the following Statistics courses:

Code	Title	Credits
STAT 544	Applied Probability	
STAT 554	Applied Statistics I	

Select the remaining from the following Systems Engineering and Operations Research courses:

Code	Title	Credits
SYST 573	Decision and Risk Analysis	
SYST 538	Analytics for Financial Engineering and Econometrics	
SYST/OR 568	Applied Predictive Analytics	
SYST 588	Financial Systems Engineering I: Introduction to Options, Futures, and Derivatives	
OR 541	Operations Research: Deterministic Models	
OR 542	Operations Research: Stochastic Models	

While still in undergraduate status, a maximum of 6 additional graduate credits may be taken as reserve graduate credit and applied to the master's program. Reserve graduate credits do not apply to the undergraduate degree.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text).

Degree Conferral

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and the VSE Graduate Admissions Office. At the completion of MS requirements, a master's degree is conferred.

Systems Engineering BS/Systems Engineering, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a Systems Engineering, BS and a Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) in

an accelerated time-frame after satisfactory completion of a minimum of 141 credits.

Admitted students are able to use up to 12 graduate credits in partial satisfaction of requirements for the undergraduate degree. Upon completion and conferral of the bachelor's degree and with satisfactory performance (grade of 'B' or better) in each of the graduate courses, students are given advanced standing in the master's program.

See AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/).

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Systems Engineering, BS students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits with an overall GPA of at least 3.3, and completion of all MATH and PHYS requirements.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

The criteria for admission are identical to criteria for admission to the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program. Students already admitted in the BAM Pathway will be admitted to the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- An overall GPA of at least 3.3
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing course: Students must complete all credits that satisfy requirements for both the BS and MS programs. Up to four courses (12 credits) of approved master's level courses taken as part of the undergraduate degree may be applied to the graduate degree.

These courses may be chosen from the list of graduate courses in the following table. For Systems Engineering, BS students, these graduate courses replace the corresponding undergraduate courses listed in the table. The undergraduate version of these courses may *not* be applied toward the Systems Engineering, MS.

Undergraduate	Graduate	
SYST 420	SYST 521/OR 643	Credit may not be received for both courses.
SYST 473	SYST 573	Credit may not be received for both courses.
OR 441	OR 541	Credit may not be received for both courses.
OR 442	OR 542	Credit may not be received for both courses.
SYST 438	SYST 538	The course applies only to certain concentrations in the graduate program; credit may not be received for both courses.
SYST 468	SYST/OR 568	The course applies only to certain concentrations in the graduate program; credit may not be received for both courses.
SYST 488	SYST 588	The course applies only to certain concentrations in the graduate program; credit may not be received for both courses.

Any course chosen from the above course list may be used to satisfy SYST 505 Systems Engineering Principles core requirement in the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program. Any other 500-level course may be applied to both the undergraduate and graduate degrees with approval of the advisor and SEOR department chair. Students must pay attention to the prerequisites required for a course, and the master's degree concentration that the course may satisfy.

While still in undergraduate status, a maximum of 6 additional graduate credits may be taken as reserve graduate credit and applied to the master's program. Reserve graduate credits do not apply to the undergraduate degree.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text).

Degree Conferral

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and Graduate

Recruitment and Enrollment Services. At the completion of MS requirements, a master's degree is conferred.

BS (selected)/Systems Engineering, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BS in their major and a Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) in an accelerated time-frame after satisfactory completion of a minimum of 138 credits.

Admitted students are able to use up to 12 graduate credits in partial satisfaction of requirements for the undergraduate degree. Upon completion and conferral of the bachelor's degree and with satisfactory performance (grade of 'B' or better) in each of the graduate courses, students are given advanced standing in the master's program.

See AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/).

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Mason undergraduate students majoring in both engineering and non-engineering disciplines will be considered for admission into the BAM Pathway if 1) such an accelerated Systems Engineering, MS pathway is allowable from the student's BS program, which will be determined by the academic advisors of both the BS and MS programs and by the SEOR department chair, 2) they have completed of a minimum of 60 credits with an overall GPA of at least 3.3, and 3) they have completed all MATH and PHYS requirements.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

The criteria for admission are identical to criteria for admission to the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program. Students already admitted in the BAM Pathway will be admitted to the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- An overall GPA of at least 3.3
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing course: Students must complete all credits that satisfy requirements for both the BS and MS programs. Up to four courses (12 credits) of approved master's level courses taken as part of the undergraduate degree may be applied to the graduate degree. The courses selected for this purpose must be approved by the academic advisors of both the BS and MS programs and by the SEOR department chair. For the BS programs that allow undergraduate electives from the department of system engineering and operations research, the students may choose the graduate version of such elective courses to replace the corresponding undergraduate courses.

- Students are highly recommended to select courses marked as core courses because it applies to the master's degree regardless of the graduate-level concentration chosen in the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program. The undergraduate version of these courses, if any, may *not* be applied toward the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/). Credit may not be received for both the undergraduate and graduate version of these courses.
- Except for the courses marked as core, any course chosen from the course list can be used to satisfy SYST 505 Systems Engineering Principles core requirement in the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program.
- Some of the courses in the Systems Engineering and Operations Research course list applies only to certain concentrations in the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program.
- Students must pay attention to the prerequisites required for a course, and the master's degree concentration that the course may satisfy.

The courses may be chosen from the list of Systems Engineering and Operations Research graduate courses in the following table.

Code	Title	Credits
SYST 510	Systems Definition and Cost Modeling (Core)	
SYST 514	Systems Thinking	
SYST 520	System Engineering Design (Core)	
SYST 530	Systems Engineering Management I (Core)	
SYST 542	Decision Support Systems Engineering	
SYST 573	Decision and Risk Analysis	
SYST 538	Analytics for Financial Engineering and Econometrics	
SYST 560	Introduction to Air Traffic Control	
SYST 563	Evidence-Based Systems Engineering	
SYST 568	Applied Predictive Analytics	
SYST 584	Heterogeneous Data Fusion	

SYST 588	Financial Systems Engineering I: Introduction to Options, Futures, and Derivatives

Any other 500-level course may be applied to both the undergraduate and graduate degrees with approval of the advisor and SEOR department chair.

While still in undergraduate status, a maximum of 6 additional graduate credits may be taken as reserve graduate credit and applied to the master's program. Reserve graduate credits do not apply to the undergraduate degree.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text).

Degree Conferral

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and the VSE Graduate Admissions Office. At the completion of MS requirements, a master's degree is conferred.

Systems Engineering and Operations Research, PhD

Banner Code: VS-PHD-SEOR

Academic Advising

2100 Nguyen Engineering Building
Fairfax Campus

Phone: 703-993-5689
Email: seor@gmu.edu
Website: https://seor.gmu.edu/

This doctoral program offers a unique integration of systems engineering and operations research. This integration gives students a strong analytical and computational capability combined with an overarching systems perspective that is well-grounded in application. No other department in the nation offers a PhD degree program that covers systems engineering and operations research in this integrated manner. The program prepares students for leadership positions in research and development in government, industry, and academia.

Admissions & Policies

Admissions

All general Mason and specific Volgenau School admissions requirements apply. Candidates for the PhD program typically must hold an MS degree from an accredited institution of higher education in systems engineering, operations research or related areas in engineering, mathematics, and computer science with a minimum graduate GPA of 3.50 and a minimum undergraduate GPA of 3.00. In addition, well-qualified candidates holding a BS degree in these areas may apply directly to the PhD program.

All applicants should have a strong background in engineering mathematics, which includes three semesters of calculus, differential equations, linear algebra, and probability. In addition, students entering the doctoral program must have a sound working knowledge in computing.

The admission process involves submitting the application for admission, undergraduate and graduate transcripts from previous colleges and universities attended, GRE test results, three letters of reference, a résumé and a statement of career goals and aspirations, and a self-assessment of past background. Translations of international credentials must be provided if they are not in English; in some cases, applicants will be required to have documents evaluated by an external agency. A satisfactory score on the TOEFL examination is required for non-native English speakers. All of an applicant's background is examined before an admission decision is made.

Policies

For policies governing all graduate programs, see AP.6 Graduate Policies.

Program Requirements

The program includes: course requirements; a qualifying exam that tests fundamental concepts in systems engineering and operations research; a comprehensive exam that tests the research competency of the student; dissertation proposal defense; dissertation research; and dissertation pre-defense and defense. All general Mason and specific Volgenau School requirements apply to this program.

PhD dissertations are extremely time intensive, and successful completion requires full time focus. It is expected that students who have reached candidacy (that is, successfully presented their dissertation proposal) will spend full time on their research for at least one academic year and will attend the majority of the SEOR departmental seminars throughout that period.

Reduction of Credit

The doctoral program is a 72 credit hour program; however, students entering with a master's degree in a related discipline may be given a reduction of credit up to 24 hours. Reduction of credit requires the approval of the program director or designee and the dean or designee of the school. They determine whether the credits are eligible for reduction of credit and applicable to the degree program and the number of credits to be reduced.

The 72 hours of required doctoral-level credits typically consist of 48 credits of coursework and 24 credits of dissertation research. Students who receive a reduction of credit will complete a minimum of 48 credits as outlined in Degree Requirements.

All decisions concerning the student's course requirements and plan of study must be approved by the dissertation committee chair, as well as by the department's doctoral coordinator.

Requirements

Degree Requirements

Total credits: 72

Doctoral Coursework

A GPA of 3.50 is required, and no grade of C is allowed in doctoral coursework. Students lacking prerequisites for their courses or lacking

the coursework to complete the qualifying exams or their dissertation may need to take additional courses.

Code	Title	Credits
OR 568	Applied Predictive Analytics	3
or SYST 568	Applied Predictive Analytics	
SYST 763	Research Methods in Systems Engineering and Information Technology	3
Select 12 credits of 700-level SEOR approved courses [1,2]		12
Select 6 credits in SYST or OR courses numbered 600 or higher [2,3]		6
SYST Courses		
OR Courses		
SEOR 800	Systems Engineering and Operations Research Colloquium I [4]	0
Total Credits		24

1. A list of approved courses is available from the department
2. No more than 3 credits are allowed for a directed reading course. All courses and course substitutions must be approved by the student's dissertation committee chair and the SEOR doctoral coordinator.
3. Excluding SYST 699 Masters Project and OR 699 Masters Project
4. Students must register the 0-credit SEOR 800 Systems Engineering and Operations Research Colloquium I 3 times before being able to take SEOR 997 Systems Engineering and Operations Research Colloquium II .

Additional Coursework Requirements

Students entering without a master's degree are required to complete an additional 24 credits of Master's level courses, including the following:

Code	Title	Credits
SYST 505	Systems Engineering Principles	3
SYST 520	System Engineering Design	3
OR 541	Operations Research: Deterministic Models	3
OR 542	Operations Research: Stochastic Models	3
Select 12 additional credits from one of two alternatives (systems engineering or operations research) [1]		12
Total Credits		24

1. Consult the SEOR Department for the list of allowable courses.

Note

With appropriate selection of courses, students may obtain the MS degree in systems engineering or operations research by completing 6 additional credits, including 3 approved credits from the advanced emphasis courses (which may also apply towards the PhD degree advanced emphasis requirements) and 3 credits of either SYST 699 Masters Project or OR 699 Masters Project. Consult the SEOR Department for further detail. Credits taken in the courses SYST 699 or OR 699 may not be applied towards the PhD degree program requirements.

Qualifying Exams

The exams are primarily for testing the students' familiarity with fundamental concepts. Each student must take the following four exams within two years of enrolling in the program:

- Systems Engineering Principles
- Systems Engineering Design
- Deterministic Models
- Stochastic Models

A student who passes three of the four exams in the first attempt must retake and pass the failed exam within one year. A student who passes fewer than three exams in the first attempt must retake and pass an entire set of four exams within one year. After two unsuccessful attempts, a student is dismissed from the PhD program.

Systems Engineering and Operations Research Colloquium II

Code	Title	Credits
SEOR 997	Systems Engineering and Operations Research Colloquium II [1]	3

1. SEOR 997 Systems Engineering and Operations Research Colloquium II must be taken after coursework is completed, after three semesters of SEOR 800 Systems Engineering and Operations Research Colloquium I are completed, and along with SEOR 998 Doctoral Dissertation Proposal. Students should also have a dissertation advisor and a dissertation topic prior to registering. The colloquium presentation in SEOR 997 must be given at least one month prior to the proposal defense.

Dissertation Research

Code	Title	Credits
Select 21 credits from the following:		21
SEOR 998	Doctoral Dissertation Proposal	
SEOR 999	Doctoral Dissertation (must complete a minimum of 12 credits)	
Total Credits		21

Doctoral Supervisory Committee

Students should identify a potential dissertation director and approach them to see if they are willing to work together, and identify a doctoral supervisory committee as soon as possible. It is recommended that the committee be formed by the end of the second or third semester of study. The dissertation director must be a member of the SEOR graduate faculty or a member of the Mason graduate faculty with approval from the SEOR department chair. The doctoral supervisory committee must include at least three members from the SEOR department-approved graduate faculty, and at least one non-SEOR member from the Mason graduate faculty. The composition of the doctoral supervisory committee is to be approved by the doctoral coordinator. At least four members of the committee must be members of the Mason graduate faculty.

Comprehensive Exam

The comprehensive exam is taken after the student has satisfactorily completed all the advanced emphasis coursework requirements in the approved plan of study filed by the student. The examiners will include the supervisory committee plus any outside examiners considered appropriate. However, the supervisory committee determines whether the student passes or not. The comprehensive exam consists of a written examination of 8 hours in length and an oral examination. The committee will determine if the student has a mastery of the advanced emphasis coursework. If a student fails the comprehensive exam, the student may request a re-examination within 60 days of receiving notice of the exam result. The request should be made in writing to the doctoral

coordinator. If the student fails the re-examination or does not request a re-examination within 60 days, the student may be terminated from the PhD program. In such a case, with recommendation of the supervisory committee and approval of the SEOR Chair, the student may apply his/her coursework towards a master's degree.

Dissertation Proposal

After passing the comprehensive exam, each doctoral student prepares a written dissertation proposal, which is presented to the doctoral supervisory committee. After successfully completing SEOR 997 Systems Engineering and Operations Research Colloquium II , this requirement, and with the dissertation supervisory committee's recommendation, the student is formally admitted as a candidate for the PhD degree.

Dissertation Defense

When the central portions of the research have been completed to the point where the student is able to describe the original contributions of the dissertation effort, a candidate submits the written dissertation to the supervisory committee and schedules an oral predefense with the committee. The predefense is attended by the supervisory committee. The supervisory committee must approve the work or the student must schedule a second predefense.

Once the committee believes the student is ready, a final public oral defense may be scheduled no sooner than one month after the conclusion of the predefense, with an announcement posted for at least two weeks. The defense must be attended by the supervisory committee and the department's doctoral coordinator, unless an exception has been approved in advance by the doctoral coordinator. Following a satisfactory evaluation of the oral defense of the dissertation by the supervisory committee, the student must prepare, with supervision from the dissertation director, a final publishable dissertation that represents a definitive contribution to knowledge in systems engineering and operations research. This document must meet format guidelines specified by the Guide for Preparing Graduate Theses, Dissertations, and Projects. If the student fails to successfully defend the dissertation, the student may request a second defense, following the same procedures as for the initial defense. There is no time limit for this request, other than the general time limits for the doctoral degree. An additional predefense is not required, but the student is strongly advised to consult with the committee before scheduling a second defense. If the student fails on the second attempt to defend the dissertation, the student will be terminated from the PhD program.

Sid and Reva Dewberry Department of Civil, Environmental, and Infrastructure Engineering

Sam Salem, Chair

Phone: 703-993-1675
Website: civil.gmu.edu

The Sid and Reva Dewberry Department of Civil, Environmental, and Infrastructure Engineering (CEIE) offers BS, MS, MEng, and PhD degrees. These degree programs focus on the physical and organizational infrastructure essential to the functioning of society.

Civil and infrastructure engineering is the study of land, transportation, water resources, environment, structures, geotechnology, and construction from a civil engineering perspective and within a complex technological, social, political, economic, and environmental context. The focus is on how these systems are successfully conceived, developed, designed, built, operated, maintained, and renewed in the built environment. This applies to major metropolitan areas in developed countries, such as Washington, D.C. and its integrated suburbs, and extends to infrastructure issues in developing nations which often involve very different issues.

An urban society thrives and prospers when adequate, appropriate, reliable, robust, secure, and cost-effective infrastructure systems are provided. The investment in existing infrastructure and other urban systems in the United States and abroad is enormous. The investment required to maintain, operate, renew, and manage the evolution of these infrastructure systems in the future is even greater. The need for highly educated and creative professionals to confront and solve these continuing vital problems is pressing. Examples of infrastructure systems include water supply and distribution; streets, roads, and highways; wastewater management; transit; storm water management; public utilities; energy supply and distribution; telecommunications; buildings, facilities and structures; and solid waste management.

Faculty

Department Faculty

Professors

Goodings, Miller-Hooks, Salem (Chair)

Associate Professors

Ferreira, Kosoglu, Lattanzi, Tanyu, Urgessa, Venigalla, Zhu

Assistant Professors

Bonkok, Esmaeili, Furst, Henneman, Ji, Maggioni, Tian

Instructors

Binning

Adjunct Faculty

Ali, Benton, Cesme, Cristei, Doyle, ElSayed, Evans, Faghri, Fakhri-Yazdi, Farahmandfar, Fry, Garrahan, Gabriel, Guler, Haber, Haight, Hedges, Kelly, Kennedy, Kewaisy, Laib, Loulakis, Manous, McDonald, Minaie, Pathak, Pennetti, Reseigh, Rodriguez, Sangameswaran, Schroedel, Shatnawi, Teitelman, Thoesen, Warren, Woods, Yang, Younis, Yuan

Emeritus Faculty

Arciszewski, Bronzini, Houck

Programs

- Civil and Infrastructure Engineering, BS
- Civil and Infrastructure Engineering, MS
- Civil and Infrastructure Engineering, PhD
- Environmental Engineering Minor

Civil and Infrastructure Engineering, BS

Banner Code: VS-BS-CEIE

Lisa Nolder, Associate Director for Undergraduate Programs

Phone: 703-993-1675
Email: snolder@gmu.edu
Website: http://civil.gmu.edu/

The bachelor's degree program provides essential underpinnings in the theory and design methods of civil and infrastructure engineering for engineering practice. Students benefit from exposure to practical civil, environmental, and infrastructure engineering problems and their solutions in the classroom, lab, and field. The educational objectives of the Civil and Infrastructure Engineering program describe expectations for graduates approximately three to five years after obtaining their degree. Graduates of the program will be professionals who:

- Engage in the engineering practice of planning, designing, constructing, operating and maintaining sustainable infrastructure;
- Participate in public discussions concerning infrastructure in the urban, suburban, and exurban setting by providing professional guidance;
- Stay current through continuing education opportunities, professional conferences, graduate school, and other self-learning experiences; have the ability to obtain and maintain professional licensing.

Civil engineering students can look forward to a career in local, state, and federal government organizations, and in architectural and engineering firms that specialize in land development, transportation, water resources, environment, structures, geotechnical, construction, and other related fields. The program also prepares students for continuing graduate studies for sophisticated practice, research, and teaching.

The bachelor's program in civil and infrastructure engineering is accredited by the Engineering Accreditation Commission of ABET, http://www.abet.org.

This is a Green Leaf program.

Admissions & Policies

Policies

For policies governing all undergraduate degrees, see AP.5 Undergraduate Policies.

Change of Major

See Change of Major for more information.

Program Requirements

Degree requirements include 121 credits distributed in three main areas: mathematics and basic science, humanities and social sciences, and civil engineering analysis and design. Students must complete all math, science and Volgenau School of Engineering courses presented as part of the required 121 credits for the degree with a grade of C or better.

The prerequisite structure for these courses is extensive. Sample schedules, available from the department, provide a comprehensive listing of major and Mason Core requirements and serve as a guide to the progression of the courses to satisfy all prerequisites.

Students are required to see their academic advisor at least once each year to plan their curriculum, and to develop an approved plan of study, which constitutes a learning plan for the degree program.

Termination from the Major

No math, science, or Volgenau School of Engineering course that is required for the major may be attempted more than three times. Those students who do not successfully complete such a course within three attempts will be terminated from the major. Undeclared students in the Volgenau School who do not successfully complete a course required for a Volgenau School major within three attempts will also be terminated.

In addition, students in the Volgenau School with evidence of continued failure to make adequate progress toward declaring or completing a Volgenau School major will be terminated from the school. Adequate progress is determined by the major program. For more information, see AP.5.2.4 Termination from the Major (https://catalog.gmu.edu/policies/academic/undergraduate-policies/#ap-5-2-4).

Once a student has attempted one of these courses twice unsuccessfully, the third attempt must be no later than the next semester of enrollment, excluding summers. Failure to take the course at that time will result in termination from the major. A third attempt of a Volgenau School of Engineering course requires support by the student's major department as well as permission by the department offering the course. This permission is not guaranteed. If the student is unable to take the course when required, the student may request an extension to a future semester; extensions require approval of the student's advisor, their department, and the Associate Dean for Undergraduate Programs. The deadline for extension requests is the add deadline for the semester in which the course is required.

Students who have been terminated from a Volgenau School of Engineering major may not register for a Volgenau School course without permission of the department offering the course. This applies to all undergraduate courses offered by the Volgenau School except IT 104 Introduction to Computing (Mason Core) and STAT 250 Introductory Statistics I (Mason Core).

A student may not declare any major in the Volgenau School of Engineering if the student has previously met the termination criteria for that major at any time, regardless of what the student's major was at the time the courses were taken.

Requirements

Degree Requirements

Total credits: 121

This is a Green Leaf program.

Code	Title	Credits
CEIE 101	Introduction to Civil Engineering	2
or ENGR 107	Introduction to Engineering (Mason Core)	

Civil Engineering

Code	Title	Credits
CEIE 203	Geomatics and Engineering Graphics	3
CEIE 210	Statics	3
CEIE 240	Hydraulics	3
CEIE 301	Engineering and Economic Models in Civil Engineering	3
CEIE 310	Mechanics of Materials	3
CEIE 311	Structural Analysis	3
CEIE 331	Soil Mechanics	3
CEIE 340	Water Resource Engineering	3
CEIE 355	Environmental Engineering and Science	3
CEIE 360	Introduction to Transportation Engineering	3
CEIE 370	Construction Systems	3
CEIE 409	Professional Practice and Management in Engineering (Mason Core)	1
CEIE 490	Civil Engineering Senior Design Project I (Mason Core)	1
CEIE 491	Civil Engineering Senior Design Project II	3
Total Credits		38

Computing

Code	Title	Credits
CDS 130	Computing for Scientists	3
Total Credits		3

Technical Electives

Code	Title	Credits
Select 12 credits of CEIE Technical Electives from four different specialty areas from among the following six Civil Engineering specialty areas:		12
Construction Engineering:		
CEIE 471/571	Construction Administration [1]	
CEIE 476/576	Construction Cost Estimating [1]	
CEIE 478/578	Construction Planning and Scheduling [1]	
Environmental Engineering:		
CEIE 450/550	Environmental Engineering Systems [1]	
CEIE 453/553	Water and Wastewater Treatment Processes [1]	
Geotechnical Engineering:		
CEIE 432/532	Foundation Design [1]	
CEIE 435/535	Engineering Geology [1]	
Structural Engineering:		
CEIE 412/512	Structural Steel Design [1]	
CEIE 413/513	Reinforced Concrete Design [1]	
CEIE 414	Structural Modeling for Engineers	
Transportation Engineering:		
CEIE 461/561	Traffic Engineering [1]	
CEIE 462/562	Urban Transportation Planning [1]	
Water Resources Engineering:		
CEIE 440/540	Water Supply and Distribution [1]	
CEIE 442/542	Open Channel Flow [1]	
Select 12 credits of CEIE Technical Elective courses from any CEIE 4XX course [2]		12
Total Credits		24

1. Taking a 500-level course requires prior approval by the department's undergraduate program director.
2. One 3 credit course of those remaining credits may be from related advanced science or engineering course offerings. Approval from the student's academic advisor is required before a non-CEIE course is taken to meet senior technical elective requirements for the degree.

Mathematics

Code	Title	Credits
MATH 113	Analytic Geometry and Calculus I (Mason Core)	4
MATH 114	Analytic Geometry and Calculus II	4
MATH 213	Analytic Geometry and Calculus III	3
MATH 214	Elementary Differential Equations	3
Total Credits		14

Physics

Code	Title	Credits
PHYS 160	University Physics I (Mason Core)	3
PHYS 161	University Physics I Laboratory (Mason Core)	1
PHYS 260	University Physics II (Mason Core)	3
PHYS 261	University Physics II Laboratory (Mason Core)	1
PHYS 266	Introduction to Thermodynamics	1
Total Credits		9

Chemistry

Code	Title	Credits
CHEM 271 & CHEM 272	General Chemistry for Engineers Lecture (Mason Core) and General Chemistry for Engineers Lab (Mason Core)	4
or CHEM 211 & CHEM 213	General Chemistry I (Mason Core) and General Chemistry Laboratory I (Mason Core)	
Total Credits		4

Biology

Code	Title	Credits
BIOL 177	Ecological Applications	3
Total Credits		3

Statistics

Code	Title	Credits
STAT 344	Probability and Statistics for Engineers and Scientists I	3
Total Credits		3

Communication and Economics

Code	Title	Credits
COMM 100	Public Speaking (Mason Core)	3
or COMM 101	Fundamentals of Communication (Mason Core)	
ECON 103	Contemporary Microeconomic Principles (Mason Core)	3
Total Credits		6

Writing-Intensive Requirement

The university's writing-intensive requirement for civil and infrastructure engineering majors is satisfied by the successful completion of CEIE 301 Engineering and Economic Models in Civil Engineering.

Additional Mason Core

Students must complete all Mason Core requirements not fulfilled by major requirements with one modification. CEIE students are required to take 6 credits of written communication, 3 credits of literature, and courses in two of the following three areas: arts, global understanding, and western civilization/world history. This exemption means that CEIE students meet the Volgenau School of Engineering's requirement for humanities and social science courses by taking 21 credits rather than 24. The two additional Mason Core areas to be satisfied must be approved by the CEIE faculty advisor with the goal of best meeting the Mason Core needs of the student. All other Mason Core requirements must be met.

Code	Title	Credits
Written Communication		6
Literature		3
Select courses from two of the following areas:		6
Arts		
Western Civilization/World History		
Global Understanding		
Total Credits		15

4-Year Plan

Bachelor of Science in Civil & Infrastructure Engineering Sample Study Plan

Detailed four year plans and degree planning checklists can be found at https://advising.gmu.edu/current-student/majors-at-mason/.

Honors

Honors in the Major

The Sid and Reva Dewberry Department of Civil, Environmental and Infrastructure Engineering offers an Honors Program in Civil and Infrastructure Engineering that creates a community of outstanding scholars in civil engineering who share a commitment to learning, service, and leadership. The Program is crafted around the civil and infrastructure curriculum, and is distinct from the University Honors Curriculum. Entry to the Honors Program is by invitation, extended to students with a minimum high school GPA of 3.80.

Requirements

The Honors Program is challenging, designed for the highly motivated student, and consists of 120 credits. Honors students must satisfy requirements in addition to those of the normal BS CEIE degree, including:

- An advanced communication course, COMM 320 Business and Professional Communication or COMM 637 Risk Communication, which may serve as a substitute for one CEIE (4xx) level senior technical elective.
- A minimum of 6 credits of CEIE graduate (5xx/6xx) level courses (these courses may substitute for CEIE (4xx) level senior technical electives by approval of the Department Chair). Students must submit a Graduate Course for Undergraduate Credit Form for approval to the course instructor and Department Chair.

Once admitted to the Honors Program, students must remain in good standing and maintain a minimum cumulative GPA of 3.50 and a minimum GPA of 3.20 in each semester for all courses counting toward the BS CEIE degree, maintain continuous enrollment working toward the BS CEIE degree, and abide by the Mason Honor Code.

Accelerated Master's

Civil and Infrastructure Engineering, BS/ Civil and Infrastructure Engineering, Accelerated MS

Overview

Highly-qualified students in the Civil and Infrastructure Engineering, BS have the option of obtaining an accelerated Civil and Infrastructure Engineering, MS.

See AP.6.7 Bachelor's/Accelerated Master's Degrees for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

Admission Requirements

Students in the Civil and Infrastructure Engineering, BS program may apply to this option if they have earned 60 undergraduate credits with an overall GPA of at least 3.30. All other criteria for admission are identical to criteria for admission into the Civil and Infrastructure Engineering, MS program.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Option Requirements

Students register for up to 12 credits of overlapping graduate level courses in place of undergraduate technical elective courses.

Students are encouraged to take up to four of the following courses, based on their chosen concentration area in the master's program:

Concentration in Construction Engineering and Management (CEM)

CEIE 571 Construction Administration

CEIE 572 Building Information Modeling

CEIE 573 Legal Aspects of the Construction Process

CEIE 575 Design for Constructability

CEIE 576 Construction Cost Estimating

Concentration in Environmental and Water Resources Engineering (EWRE)

CEIE 540 Water Supply and Distribution

CEIE 542 Open Channel Flow

CEIE 550 Environmental Engineering Systems

CEIE 553 Water and Wastewater Treatment Processes

CEIE 557 Remote Monitoring Techniques for Civil Engineering Applications

Concentration in Geotechnical Engineering (GEOE)

CEIE 501 Sustainable Development

CEIE 524 Introduction to Bridge Engineering

CEIE 531 Earth Retaining Structures and Slope Stability

CEIE 532 Foundation Design

CEIE 535 Engineering Geology

Concentration in Structural Engineering (STRE)

CEIE 512 Structural Steel Design

CEIE 513 Reinforced Concrete Design

CEIE 524 Introduction to Bridge Engineering

CEIE 525 Structural Evaluation and Rehabilitation

CEIE 532 Foundation Design

CEIE 575 Design for Constructability

Concentration in Transportation Engineering (TRNE)

CEIE 560 Public Transportation Systems

CEIE 561 Traffic Engineering

CEIE 562 Urban Transportation Planning

STAT 554 Applied Statistics I

While still in undergraduate status, a maximum of 6 additional graduate credits may be taken as reserve graduate credit and applied to the master's program from the list below. Reserve graduate credits do not apply to the undergraduate degree.

CEIE 601 Infrastructure Modeling

CEIE 605 Risk and Uncertainty in Civil Engineering

Degree Requirements

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. Students must complete all credits that satisfy requirements for both the BS and MS programs. Up to four courses (12 credits) of approved master's level courses taken as part of the undergraduate degree may be applied to the graduate degree. The courses selected for this purpose must be approved by the academic advisors of both the BS and MS programs, and students must have satisfactory performance (grade of 'B' or better) in each of the graduate courses intended to be applied towards the MS degree. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and the VSE Graduate Admissions Office for approval. At the completion of MS requirements, a master's degree is conferred.

Bachelor's Degree (selected)/ Environmental Science and Policy, Accelerated MS

Overview

This bachelor's/accelerated master's degree program allows academically strong undergraduates with a commitment to advance their education to obtain a Green Leaf-designated bachelor's degree and the Environmental Science and Policy, MS (https://catalog.gmu.edu/colleges-schools/science/environmental-policy/environmental-science-policy-ms/) degrees within an accelerated timeframe. Upon completion of this 141 credit accelerated program, students will be exceptionally well prepared for entry into their careers or into a doctoral program in the field or in a related discipline.

Students are eligible to apply for this accelerated program once they have earned at least 60 undergraduate credits and can enroll in up to 18 credits of graduate coursework after successfully completing 75 undergraduate credits. This flexibility makes it possible for students to complete a bachelor's and a master's in five years.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies. For more information on undergraduates enrolling in graduate courses, see AP.1.4.4 Graduate Course Enrollment by Undergraduates (https://catalog.gmu.edu/policies/academic/registration-attendance/#text).

Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in the Graduate Admission Policies section of this catalog.

Important application information and processes for this accelerated master's program can be found here (https://www2.gmu.edu/admissions-aid/how-apply/accelerated-masters/).

The GRE exam is not required for this accelerated master's program.

Students should submit three letters of recommendation (at least one from a former professor or someone with a PhD), a recent resume, a statement of interest/research goals and interests (including information on the candidate's proposed MS research), and a letter from their advisor (see Graduate Advisor section below) stating that the advisor agrees to

take on the candidate as an MS student, how the candidate would be a good fit for them and why candidate's research topic would be suitable.

Students with an overall GPA of at least 3.20 who are pursuing any Green Leaf-designated major or minor may apply to this accelerated master's program after completing two semesters of chemistry (including CHEM 211 General Chemistry I (Mason Core) and CHEM 212 General Chemistry II (Mason Core) and three semesters of biology, including a course in ecology, or the equivalent, for example:

Code	Title	Credits
Select one of the following options:		13
Option 1:		
BIOL 213	Cell Structure and Function (Mason Core)	
BIOL 214	Biostatistics for Biology Majors	
BIOL 308	Foundations of Ecology and Evolution	
Option 2:		
EVPP 210	Environmental Biology: Molecules and Cells	
EVPP 301	Environmental Science: Biological Diversity and Ecosystems	
EVPP 302	Environmental Science: Biomes and Human Dimensions	
EVPP 305	Environmental Microbiology Essentials	
EVPP 306	Environmental Microbiology Essentials Laboratory	
Option 3:		
CONS 401	Conservation Theory	
CONS 402	Applied Conservation	
6 credits of BIOL or CONS electives		

Graduate Advisor

By at least the beginning of their senior year, students should seek out a faculty member in the Department of Environmental Science and Policy who is willing to serve as their advisor. This advisor will aid the student in choosing the appropriate graduate courses to take and help to prepare the student for graduate studies. Admission into a research-oriented master's concentration is dependent upon securing the agreement of a faculty advisor. Faculty from a variety of departments and colleges at George Mason University (called "program faculty") can serve as master's advisors. Potential students are encouraged to speak with the graduate program coordinator in the department to obtain guidance on this issue.

Accelerated Option Requirements

After the completion of 75 undergraduate credits, students may complete 3 to 12 credits of graduate coursework that can apply to both the undergraduate and graduate degrees.

In addition to applying to graduate from the undergraduate program, students in the accelerated program must submit a bachelor's/accelerated master's transition form (available from the Office of the University Registrar (https://registrar.gmu.edu/forms/)) to the College of Science's Office of Academic and Student Affairs (https://cos.gmu.edu/about/contact-us/) by the last day to add classes of their final undergraduate semester. Students should enroll for courses in the master's program in the fall or spring semester immediately following conferral of the bachelor's degree, but should contact an advisor if they would like to defer up to one semester.

Students must maintain an overall GPA of 3.00 or higher in all graduate coursework and should consult with their faculty advisor to coordinate their academic goals.

Reserve Graduate Credits

Accelerated master's students may also take up to 6 graduate credits as reserve graduate credits. These credits do not apply to the undergraduate degree, but will reduce the master's degree by up to 6 credits. With 12 graduate credits counted toward the undergraduate degree plus the maximum 6 reserve graduate credits, the credits necessary for the graduate degree can be reduced by up to 18.

Graduate Course Suggestions

The following list of suggested courses is provided for general reference. To ensure an efficient route to graduation and post-graduation readiness, students are strongly encouraged to meet with an advisor before registering for graduate-level courses.

Code	Title	Credits
EVPP 518	Conservation Biology	3
EVPP 529	Environmental Science Communication	3
EVPP 621	Overview of Biodiversity Conservation	3
EVPP 635	Environment and Society	3

Civil and Infrastructure Engineering, BS/Operations Research, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a Civil and Infrastructure Engineering, BS (https://catalog.gmu.edu/colleges-schools/engineering/civil-environmental-infrastructure/civil-infrastructure-engineering-bs/) and an Operations Research, MS in an accelerated time-frame after satisfactory completion of a minimum of 139 credits.

Admitted students are able to use up to 12 graduate credits in partial satisfaction of requirements for the undergraduate degree. Upon completion and conferral of the bachelor's degree and with satisfactory performance (grade of 'B' or better) in each of the graduate courses, students are given advanced standing in the master's program.

See AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/).

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Civil and Infrastructure Engineering, BS (https://catalog.gmu.edu/colleges-schools/engineering/civil-environmental-infrastructure/civil-infrastructure-engineering-bs/) students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits with an overall GPA of at least 3.3, and completion of all MATH and PHYS

requirements. Students must additionally complete MATH 203 Linear Algebra prior to applying for the graduate program.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

The criteria for admission are identical to criteria for admission to the Operations Research, MS program. Students already admitted in the BAM Pathway will be admitted to the Operations Research, MS program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- An overall GPA of at least 3.3
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing course: Students must complete all credits that satisfy requirements for both the BS and MS programs. Up to four courses (12 credits) of approved master's level courses taken as part of the undergraduate degree may be applied to the graduate degree. The courses selected for this purpose must be approved by the academic advisors of both the BS and MS programs and by the SEOR department chair. For the BS programs that allow undergraduate electives from the department of system engineering and operations research, the students may choose the graduate version of such elective courses to replace the corresponding undergraduate courses.

- Students selecting up to two courses (6 credits) of approved master's level courses may select from the Civil and Infrastructure Engineering courses given below.
- Students selecting up to three or four courses (9 or 12 credits) of approved master's level courses may select at most two courses from the Civil and Infrastructure Engineering course list and select the remaining courses from the Systems Engineering and Operations Research course list given below. Students are highly recommended to select courses marked as core courses because it applies to the master's degree regardless of the graduate-level concentration chosen in the Operations Research, MS. The undergraduate version of these courses, if any, may *not* be applied toward the Operations Research, MS. Credit may not be received for both the undergraduate and graduate version of these courses.
- Some of the courses in the Systems Engineering and Operations Research course list applies only to certain concentrations in the Operations Research, MS program.
- Students must pay attention to the prerequisites required for a course, and the master's degree concentration that the course may satisfy.

Select at most two from the following Civil and Infrastructure Engineering courses:

Code	Title	Credits
CEIE 501	Sustainable Development	
CEIE 512	Structural Steel Design	
CEIE 532	Foundation Design	
CEIE 535	Engineering Geology	
CEIE 540	Water Supply and Distribution	
CEIE 542	Open Channel Flow	
CEIE 550	Environmental Engineering Systems	
CEIE 553	Water and Wastewater Treatment Processes	
CEIE 557	Remote Monitoring Techniques for Civil Engineering Applications	
CEIE 561	Traffic Engineering	
CEIE 562	Urban Transportation Planning	
CEIE 571	Construction Administration	
CEIE 572	Building Information Modeling	
CEIE 573	Legal Aspects of the Construction Process	
CEIE 574	Construction Computer Application and Informatics	
CEIE 576	Construction Cost Estimating	

Select the remaining from the following Systems Engineering and Operations Research courses:

Code	Title	Credits
SYST 521	Network Analysis	
OR 538	Analytics for Financial Engineering and Econometrics	
OR 541	Operations Research: Deterministic Models (Core)	
OR 542	Operations Research: Stochastic Models (Core)	
OR 568	Applied Predictive Analytics (Core)	
OR 588	Financial Systems Engineering I: Introduction to Options, Futures, and Derivatives	

While still in undergraduate status, a maximum of 6 additional graduate credits may be taken as reserve graduate credit and applied to the master's program. Reserve graduate credits do not apply to the undergraduate degree.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text).

Degree Conferral

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and the VSE Graduate Admissions Office. At the completion of MS requirements, a master's degree is conferred.

Civil and Infrastructure Engineering, BS/ Systems Engineering, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a Civil and Infrastructure Engineering, BS (https://catalog.gmu.edu/colleges-schools/engineering/civil-environmental-infrastructure/civil-infrastructure-engineering-bs/) and a Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) in an accelerated time-frame after satisfactory completion of a minimum of 139 credits.

Admitted students are able to use up to 12 graduate credits in partial satisfaction of requirements for the undergraduate degree. Upon completion and conferral of the bachelor's degree and with satisfactory performance (grade of 'B' or better) in each of the graduate courses, students are given advanced standing in the master's program.

See AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text) for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/).

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Civil and Infrastructure Engineering, BS (https://catalog.gmu.edu/colleges-schools/engineering/civil-environmental-infrastructure/civil-infrastructure-engineering-bs/) students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits with an overall GPA of at least 3.3, and completion of all MATH and PHYS requirements.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

The criteria for admission are identical to criteria for admission to the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program. Students already admitted in the BAM Pathway will be admitted to the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- An overall GPA of at least 3.3
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing course: Students must complete all credits that satisfy requirements for both the BS and MS programs. Up to four courses (12 credits) of approved master's level courses taken as part of the undergraduate degree may be applied to the graduate degree. The courses selected for this purpose must be approved by the academic advisors of both the BS and MS programs and by the SEOR department chair. For the BS programs that allow undergraduate electives from the department of system engineering and operations research, the students may choose the graduate version of such elective courses to replace the corresponding undergraduate courses.

- Students selecting up to two courses (6 credits) of approved master's level courses may select from the Civil and Infrastructure Engineering courses given below.
- Students selecting up to three or four courses (9 or 12 credits) of approved master's level courses may select at most two courses from the Civil and Infrastructure Engineering course list and select the remaining courses from the Systems Engineering and Operations Research course list given below. Students are highly recommended to select courses marked as core courses because it applies to the master's degree regardless of the graduate-level concentration chosen in the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program. The undergraduate version of these courses, if any, may *not* be applied toward the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/). Credit may not be received for both the undergraduate and graduate version of these courses.
- Except for the courses marked as core, any course chosen from either course list can be used to satisfy SYST 505 Systems Engineering Principles core requirement in the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program.
- Some of the courses in the Systems Engineering and Operations Research course list applies only to certain concentrations in the Systems Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/systems-operations-research/systems-engineering-ms/) program.
- Students must pay attention to the prerequisites required for a course, and the master's degree concentration that the course may satisfy.

Select at most two from the following Civil and Infrastructure Engineering courses:

Code	Title	Credits
CEIE 501	Sustainable Development	
CEIE 512	Structural Steel Design	
CEIE 532	Foundation Design	
CEIE 535	Engineering Geology	
CEIE 540	Water Supply and Distribution	
CEIE 542	Open Channel Flow	
CEIE 550	Environmental Engineering Systems	

CEIE 553	Water and Wastewater Treatment Processes
CEIE 557	Remote Monitoring Techniques for Civil Engineering Applications
CEIE 561	Traffic Engineering
CEIE 562	Urban Transportation Planning
CEIE 571	Construction Administration
CEIE 572	Building Information Modeling
CEIE 573	Legal Aspects of the Construction Process
CEIE 574	Construction Computer Application and Informatics
CEIE 576	Construction Cost Estimating

Select the remaining from the following Systems Engineering and Operations Research courses:

Code	Title	Credits
SYST 510	Systems Definition and Cost Modeling (Core)	
SYST 514	Systems Thinking	
SYST 520	System Engineering Design (Core)	
SYST 530	Systems Engineering Management I (Core)	
SYST 542	Decision Support Systems Engineering	
SYST 573	Decision and Risk Analysis	
SYST 538	Analytics for Financial Engineering and Econometrics	
SYST 560	Introduction to Air Traffic Control	
SYST 563	Evidence-Based Systems Engineering	
SYST 568	Applied Predictive Analytics	
SYST 584	Heterogeneous Data Fusion	
SYST 588	Financial Systems Engineering I: Introduction to Options, Futures, and Derivatives	

While still in undergraduate status, a maximum of 6 additional graduate credits may be taken as reserve graduate credit and applied to the master's program. Reserve graduate credits do not apply to the undergraduate degree.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#text).

Degree Conferral

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and the VSE Graduate Admissions Office. At the completion of MS requirements, a master's degree is conferred.

Civil and Infrastructure Engineering, MS

Banner Code: VS-MS-CEIE

Laura Kosoglu, PhD, Associate Department Chair; Director, CEIE Graduate Program; Associate Professor

Phone: 703-993-5319
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This MS is designed for students who have completed a bachelor's degree in civil engineering, although domestic students with related undergraduate degrees may be considered for provisional admission. The MS educates students in the theory and practice of civil engineering science and design, with a technical concentration. The master's degree is increasingly expected for high level practice in civil engineering, and prepares graduates to practice in civil engineering for: federal, state, or local government; engineering design firms; construction firms; public utilities; non-governmental organizations; and local and regional planning firms, among others. The MS degree serves as a foundation for subsequent study in a doctoral program in civil engineering, as well as for graduate studies in architecture, law, business, economics, finance, and public policy and administration.

Both part-time and full-time study is available. Full-time students typically complete the degree in one and a half, to two years.

Admissions & Policies

Admissions

To be considered for admission to the program, a candidate must:

- Satisfy general University and Volgenau School requirements for admission to a graduate program,
- Have earned a baccalaureate degree in engineering or a related science,
- Provide two letters of reference, submitted by former professors or supervisors,
- Provide a goals statement and professional résumé.

Acceptance to the degree program is based on an assessment of the applicant's capacity to pursue graduate studies successfully. Consideration is given to the undergraduate record, any previous graduate work, professional work experience, and reference letters.

Requirements

Degree Requirements

Total credits: 30

All MS students must develop a faculty-approved plan of study with a minimum of 30 graduate credits. These credits include two core courses (CEIE 601 Infrastructure Modeling and CEIE 605 Risk and Uncertainty in Civil Engineering), specific requirements of a concentration declared by the student, and seminar requirement (CEIE 795 Civil and Infrastructure Engineering Seminar).

Plan of Study

Students are responsible for developing and receiving advisor approval on a plan of study no later than the end of their second semester of study. Courses taken without prior approval by the faculty advisor may not be accepted for credit toward the degree. No more than three courses used for credit toward the MS may be cross-listed as undergraduate courses. None may repeat material completed as part of the student's previous studies. Most MS courses are offered on a two-semester or three-semester rotation.

Core Courses

All MS students must complete the following two core courses, preferably within the first 12 credit hours of their MS studies. These courses provide a common background for understanding the breadth and complexity of civil and infrastructure engineering and for analyzing and solving engineering problems.

Code	Title	Credits
CEIE 601	Infrastructure Modeling	3
CEIE 605	Risk and Uncertainty in Civil Engineering	3
Total Credits		6

Concentration in Construction Engineering and Management (CEM)

Code	Title	Credits
Select at least three from the following five construction engineering and management core courses:		9
CEIE 571	Construction Administration [1]	
CEIE 572	Building Information Modeling [1]	
CEIE 573	Legal Aspects of the Construction Process	
CEIE 575	Design for Constructability	
CEIE 576	Construction Cost Estimating [1]	
Total Credits		9

[1] Cross-lists with an undergraduate course

Electives

A list of approved electives for the construction engineering and management concentration is provided below. Note that the remaining construction engineering and management core courses can also be selected as electives.

Code	Title	Credits
CEIE 501	Sustainable Development [1]	3
CEIE 524	Introduction to Bridge Engineering	3
CEIE 525	Structural Evaluation and Rehabilitation	3
CEIE 531	Earth Retaining Structures and Slope Stability	3
CEIE 532	Foundation Design [1]	3
CEIE 574	Construction Computer Application and Informatics [1]	3
CEIE 578	Construction Planning and Scheduling [1]	3
CEIE 607	Public Infrastructure Management and Finance	3
CEIE 636	Sources of Geotechnical Data	3
CEIE 677	Construction Simulation	3
CEIE 678	Infrastructure Asset Management	3
CEIE 679	Special Topics in Construction Management	3
GGS 553	Geographic Information Systems	3

[1] Cross-lists with an undergraduate course

Concentration in Environmental and Water Resources Engineering (EWRE)

Code	Title	Credits
Select at least three from the following five environmental and water resources engineering core courses:		9
CEIE 557	Remote Monitoring Techniques for Civil Engineering Applications [1]	
CEIE 641	Water Resources Engineering I: Principles and Practice	
CEIE 642	Flood Hazards Engineering	
CEIE 658	Water Quality	
CEIE 742	Water Resources Engineering II: Water Resource Systems	
Total Credits		9

Electives

A list of approved electives for the environmental and water resources engineering concentration is provided below. Note that the remaining environmental and water resources engineering core courses can also be selected as electives.

Code	Title	Credits
CEIE 540	Water Supply and Distribution [1]	3
CEIE 542	Open Channel Flow [1]	3
CEIE 550	Environmental Engineering Systems [1]	3
CEIE 553	Water and Wastewater Treatment Processes [1]	3
CEIE 607	Public Infrastructure Management and Finance	3
CEIE 634	Geoenvironmental Design	3
CEIE 643	Coastal Flood Hazards	3
CEIE 649	Special Topics in Water Resources Engineering	3
CEIE 657	Environmental Engineering Microbiology	3
CEIE 659	Hazardous Waste	3
CEIE 664	Transportation Engineering and the Environment	3
CEIE 683	Water and Wastewater Systems Security	3
COMM 637	Risk Communication	3
CHEM 627	Aquatic Environmental Chemistry	3
CHEM 651	Environmental Chemistry of Organic Substances	3
CSI 501	Introduction to Scientific Programming	3
CSI 690	Numerical Methods	3
CSI 720	Fluid Mechanics	3
CSI 721	Computational Fluid Dynamics I	3
EVPP 524	Introduction to Environmental and Resource Economics	3
EVPP 670	Environmental Law	3

GGS 553	Geographic Information Systems	3
GGS 656	The Hydrosphere	3
GGS 671	Algorithms and Modeling in GIS	3
GGS 787	Scientific Data Mining for Geoinformatics	3
STAT 554	Applied Statistics I	3

[1] Cross-lists with an undergraduate course

Concentration in Geotechnical Engineering (GEOE)

Code	Title	Credits
Select at least three from the following five geotechnical engineering core courses:		9
CEIE 531	Earth Retaining Structures and Slope Stability	
CEIE 634	Geoenvironmental Design	
CEIE 635	Advanced Soil Mechanics	
CEIE 636	Sources of Geotechnical Data	
CEIE 638	Advanced Foundation Design	
Total Credits		9

Electives

A list of approved electives for the geotechnical engineering concentration is provided below. Note that the remaining geotechnical engineering core courses can also be selected as electives.

Code	Title	Credits
CEIE 524	Introduction to Bridge Engineering	3
CEIE 532	Foundation Design [1]	3
CEIE 535	Engineering Geology [1]	3
CEIE 573	Legal Aspects of the Construction Process	3
CEIE 575	Design for Constructability	3
CEIE 607	Public Infrastructure Management and Finance	3
CEIE 637	Tunneling and Ground Improvement	3
CEIE 639	Special Topics in Geotechnical Engineering	1-3
CEIE 659	Hazardous Waste	3
GGS 553	Geographic Information Systems	3

[1] Cross-lists with an undergraduate course

Concentration in Structural Engineering (STRE)

Code	Title	Credits
Select at least three of the following five structural engineering core courses:		9
CEIE 526	Structural Steel Design II	
CEIE 527	Pre-stressed Concrete	
CEIE 611	Structural Analysis II	
CEIE 612	Mechanics of Materials II	
CEIE 613	Structural Dynamics	
Total Credits		9

Electives

A list of approved electives for the structural engineering concentration is provided below. Note that the remaining structural engineering core courses can also be selected as electives.

Code	Title	Credits
CEIE 512	Structural Steel Design [1]	3
CEIE 513	Reinforced Concrete Design [1]	3
CEIE 524	Introduction to Bridge Engineering	3
CEIE 525	Structural Evaluation and Rehabilitation	3
CEIE 532	Foundation Design [1]	3
CEIE 575	Design for Constructability	3
CEIE 607	Public Infrastructure Management and Finance	3
CEIE 619	Special Topics in Structural Engineering	3
CEIE 620	Intelligent Systems in Civil Engineering	3
CEIE 623	Reinforced Concrete Design II	3
CSI 690	Numerical Methods	3
CSI 742	The Mathematics of the Finite Element Method	3

[1] Cross-lists with an undergraduate course

Concentration in Transportation Engineering (TRNE)

Code	Title	Credits
Select at least three of the following five transportation engineering core courses:		9
CEIE 662	Travel Demand Modeling	
CEIE 663	Intelligent Transportation Systems	
CEIE 664	Transportation Engineering and the Environment	
CEIE 767	Traffic Engineering Modeling and Analysis	
STAT 554	Applied Statistics I	
Total Credits		9

Electives

A list of approved electives for the transportation engineering concentration is provided below. Note that the remaining transportation engineering core courses can also be selected as electives.

Code	Title	Credits
CEIE 560	Public Transportation Systems	3
CEIE 561	Traffic Engineering [1]	3
CEIE 562	Urban Transportation Planning [1]	3
CEIE 607	Public Infrastructure Management and Finance	3
CEIE 665	Travel Survey Methods and Data Analysis	3
CEIE 667	Multi-modal Transportation Systems	3
CEIE 668	Transportation Economics	3
CEIE 669	Special Topics in Transportation Engineering	3
CEIE 762	Network Models for Transportation Planning	3
CEIE 763	Discrete Choice Analysis in Transportation	3

CS 504	Principles of Data Management and Mining	3
GGS 553	Geographic Information Systems	3

[1] Cross-lists with an undergraduate course

Note:

For all concentrations, electives outside of the chosen concentration can only be taken or substituted with the approval of the faculty advisor or the department.

Project or Thesis Option

Students, with the consent of a faculty advisor and departmental approval, may be approved to complete a project or thesis.

Research Project

Students complete CEIE 798 Research Project in Civil Engineering, during which they prepare and present a scholarly paper. The scholarly paper is a technical report on an independent study, laboratory or computer experimentation, or literature search on a current civil and infrastructure engineering topic selected with approval of a faculty advisor. CEIE 798 Research Project in Civil Engineering credits count toward elective credit hours required for the MS degree.

Code	Title	Credits
CEIE 798	Research Project in Civil Engineering	3
Total Credits		3

Master's Thesis

Students complete CEIE 799 Master's Thesis which counts toward the 30 credit hours required for the MS degree. The MS thesis should reflect a significant, independent research effort that advances engineering science, and is worthy of publication. The work is conducted with the approval of a faculty thesis advisor, and the final written thesis and oral defense are defended before a three-member faculty committee. The thesis is recommended for those students who wish to develop and document their research skills, or contemplate subsequent enrollment in a PhD program. Students are advised of the university's continuous registration requirement for thesis and dissertation research credits. Upon first enrolling in CEIE 799 Master's Thesis, the student must continue registration for each fall and spring semester until the thesis is successfully completed. CEIE 799 Master's Thesis credits count toward elective credit hours required for the MS degree.

Code	Title	Credits
CEIE 799	Master's Thesis (must complete 6 credits)	1-6
Total Credits		1-6

Seminar Requirement

All degree candidates must attend a minimum of five graduate seminars approved by the CEIE Department for the degree program. Students must enroll in CEIE 795 Civil and Infrastructure Engineering Seminar and receive a satisfactory (S) grade by their final semester. This course is used to verify the seminar attendance requirement and is repeatable. Continuous enrollment every semester is encouraged for attendance tracking and for dissemination of seminar information but is not required.

Code	Title	Credits
CEIE 795	Civil and Infrastructure Engineering Seminar	0
Total Credits		0

Accelerated Master's

Civil and Infrastructure Engineering, BS/ Civil and Infrastructure Engineering, Accelerated MS

Overview

Highly-qualified students in the Civil and Infrastructure Engineering, BS have the option of obtaining an accelerated Civil and Infrastructure Engineering, MS.

See AP.6.7 Bachelor's/Accelerated Master's Degrees for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

Admission Requirements

Students in the Civil and Infrastructure Engineering, BS program may apply to this option if they have earned 60 undergraduate credits with an overall GPA of at least 3.30. All other criteria for admission are identical to criteria for admission into the Civil and Infrastructure Engineering, MS program.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Option Requirements

Students register for up to 12 credits of overlapping graduate level courses in place of undergraduate technical elective courses.

Students are encouraged to take up to four of the following courses, based on their chosen concentration area in the master's program:

Concentration in Construction Engineering and Management (CEM)

CEIE 571 Construction Administration

CEIE 572 Building Information Modeling

CEIE 573 Legal Aspects of the Construction Process

CEIE 575 Design for Constructability

CEIE 576 Construction Cost Estimating

Concentration in Environmental and Water Resources Engineering (EWRE)

CEIE 540 Water Supply and Distribution

CEIE 542 Open Channel Flow

CEIE 550 Environmental Engineering Systems

CEIE 553 Water and Wastewater Treatment Processes

CEIE 557 Remote Monitoring Techniques for Civil Engineering Applications

Concentration in Geotechnical Engineering (GEOE)

CEIE 501 Sustainable Development

CEIE 524 Introduction to Bridge Engineering

CEIE 531 Earth Retaining Structures and Slope Stability

CEIE 532 Foundation Design

CEIE 535 Engineering Geology

Concentration in Structural Engineering (STRE)

CEIE 512 Structural Steel Design

CEIE 513 Reinforced Concrete Design

CEIE 524 Introduction to Bridge Engineering

CEIE 525 Structural Evaluation and Rehabilitation

CEIE 532 Foundation Design

CEIE 575 Design for Constructability

Concentration in Transportation Engineering (TRNE)

CEIE 560 Public Transportation Systems

CEIE 561 Traffic Engineering

CEIE 562 Urban Transportation Planning

STAT 554 Applied Statistics I

While still in undergraduate status, a maximum of 6 additional graduate credits may be taken as reserve graduate credit and applied to the master's program from the list below. Reserve graduate credits do not apply to the undergraduate degree.

CEIE 601 Infrastructure Modeling

CEIE 605 Risk and Uncertainty in Civil Engineering

Degree Requirements

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. Students must complete all credits that satisfy requirements for both the BS and MS programs. Up to four courses (12 credits) of approved master's level courses taken as part of the undergraduate degree may be applied to the graduate degree. The courses selected for this purpose must be approved by the academic advisors of both the BS and MS programs, and students must have satisfactory performance (grade of 'B' or better) in each of the graduate courses intended to be applied towards the MS degree. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and the VSE Graduate Admissions Office for approval. At the completion of MS requirements, a master's degree is conferred.

Mechanical Engineering, BS/Civil and Infrastructure Engineering, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a BS in Mechanical Engineering, BS (https://catalog.gmu.edu/colleges-schools/engineering/mechanical/mechanical-engineering-bs/) and an MS in Civil and Infrastructure Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/civil-environmental-infrastructure/civil-infrastructure-engineering-ms/). in an accelerated time-frame after satisfactory completion of a minimum of 139 credits.

See AP.6.7 Bachelor's/Accelerated Master's Degrees (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies.

Admission Requirements

Students in the Mechanical Engineering, BS (https://catalog.gmu.edu/colleges-schools/engineering/mechanical/mechanical-engineering-bs/) program may apply to this option if they have earned 60 undergraduate credits with an overall GPA of at least 3.30. All other criteria for admission are identical to criteria for admission into the Civil and Infrastructure Engineering, MS (https://catalog.gmu.edu/colleges-schools/engineering/civil-environmental-infrastructure/civil-infrastructure-engineering-ms/) program.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Option Requirements

Students must complete all credits that satisfy requirements for both the BS and MS programs. Students register for up to 12 credits of overlapping graduate level courses in place of undergraduate technical elective courses.

Students are encouraged to take up to four of the following courses, based on their chosen concentration area in the master's program:

Concentration in Construction Engineering and Management (CEM)

CEIE 571 Construction Administration

CEIE 572 Building Information Modeling

CEIE 573 Legal Aspects of the Construction Process

CEIE 575 Design for Constructability

CEIE 576 Construction Cost Estimating

Concentration in Environmental and Water Resources Engineering (EWRE)

CEIE 540 Water Supply and Distribution CEIE 540 Water Supply and Distribution CEIE 540 Water Supply and Distribution

CEIE 542 Open Channel Flow CEIE 542 Open Channel Flow CEIE 542 Open Channel Flow

CEIE 550 Environmental Engineering Systems

CEIE 553 Water and Wastewater Treatment Processes

CEIE 557 Remote Monitoring Techniques for Civil Engineering Applications

Concentration in Geotechnical Engineering (GEOE)

CEIE 501 Sustainable Development

CEIE 524 Introduction to Bridge Engineering

CEIE 531 Earth Retaining Structures and Slope Stability

CEIE 532 Foundation Design

CEIE 535 Engineering Geology

Concentration in Structural Engineering (STRE)

CEIE 512 Structural Steel Design

CEIE 513 Reinforced Concrete Design

CEIE 525 Structural Evaluation and Rehabilitation

CEIE 532 Foundation Design

CEIE 575 Design for Constructability

Concentration in Transportation Engineering (TRNE)

CEIE 560 Public Transportation Systems

CEIE 561 Traffic Engineering

CEIE 562 Urban Transportation Planning

STAT 544 Applied Probability

Students also have the option of taking the following one or two additional graduate-level courses for reserve that will only count for the graduate degree program:

CEIE 601 Infrastructure Modeling

CEIE 605 Risk and Uncertainty in Civil Engineering

Degree Requirements

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and the VSE Graduate Admissions Office. At the completion of MS requirements, a master's degree is conferred.

Advising & Plan of Study

Each student is assigned a faculty advisor upon acceptance. Students must meet with their advisors during their first semester and design an approved plan of study. Students are encouraged to seek out their advisor when questions arise and when their plan of study needs to be revised.

Students must have a working background in their selected concentration area. A student lacking these foundations may be required to take one or more foundation courses.

Civil and Infrastructure Engineering, PhD

Banner Code: VS-PHD-CEIE

Laura Kosoglu, PhD, Associate Department Chair; Director, CEIE Graduate Program; Associate Professor

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The Doctor of Philosophy in Civil and Infrastructure Engineering was created to prepare students for advanced leadership positions in research and development in the public or private sector, academics, or government. Students may elect to study in the areas of: construction engineering and management, environmental and water resources engineering, geotechnical engineering, structural engineering, or transportation engineering. Admitted students will complete both required and applicable coursework in their technical interest area based on a plan of study prepared with a doctoral advisor. They will take qualifying exams that assess student's breadth of knowledge at the graduate level and competency to conduct research. They will form a doctoral committee and prepare and defend a dissertation proposal leading to PhD candidacy. Finally, they will conduct original scholarly research and prepare, then defend a doctoral dissertation. Both part-time and full-time study is available.

Admissions & Policies

Admissions

Requirements

All general George Mason University and specific Volgenau School admission requirements (including deadlines) apply. In addition, all applicants, including Mason undergraduates, must submit the following:

- Official transcript of undergraduate and graduate course work,
- For applicants whose official language is not English, official TOEFL scores which meet the minimum requirements set by the Volgenau School,
- Three letters of recommendation from individuals knowledgeable about the applicant's professional or academic work (at least two of the letters should be from individuals with doctorates),
- Recent professional résumé,
- Substantial statement of interest that includes a description of the specific area of proposed dissertation research, contacts the student has made with potential faculty advisors, and an explanation of career and research goals

Admission decisions will be based on the student's qualifications, the availability of a faculty advisor, and the faculty advisor's approval in their proposed area of research. The application materials will be reviewed by the department doctoral committee and decisions made with input from appropriate faculty members.

Financial support for outstanding applicants is available in the form of fellowships as well as research and teaching assistantships. For best consideration, applicants are encouraged to apply early and to contact potential faculty advisors to express interest in support.

Policies

Reduction of Credit

Students must complete a minimum of 72 graduate credits, which may be reduced by a maximum of 30 credits from a completed master's degree in civil engineering or other related fields. Reduction of credit requires the approval of the program director or designee and the dean or designee of the school. They determine whether the credits are eligible for reduction of credit and applicable to the degree program and the number of credits to be reduced.

Program Requirements

The PhD in Civil and Infrastructure Engineering requires 72 graduate credits. Admitted students are expected to hold at a minimum a Bachelor of Science in Civil Engineering or a degree in a closely-related engineering or science field.

The degree plan outlined in Degree Requirements is based on a student who receives a full 30 credit reduction. Students who do not receive a full credit reduction must choose additional credits in consultation with their advisor.

Requirements

Degree Requirements

Total credits: 72

Doctoral Coursework

A minimum GPA of 3.50 is required and no C grades are allowed for the coursework earned beyond the MS. A detailed plan of study will be prepared for each student upon acceptance into the program and in consultation with the faculty advisor, which outlines all course requirements to include:

Required Courses

The following must be completed while in residence in the program.

Code	Title	Credits
The following must be completed while in residence in the program.		3
CEIE 800	Civil, Environmental, and Infrastructure Engineering Colloquium (must be taken at least twice)	
CEIE 990	Civil and Infrastructure Dissertation Topic Presentation	
Select one from the following:		3
CEIE 603	Research Methods in Civil Engineering	
CEIE 796	Directed Reading	
Total Credits		6

Courses Chosen with Advisor

Code	Title	Credits
Courses, especially in the student's technical interest area, chosen in consultation with his or her advisor (minimum) [1]		12
Total Credits		12

[1] No more than three courses used for credit toward the PhD may be cross-listed as undergraduate courses. None may repeat material completed as part of the student's previous studies.

Qualifying Exam

The PhD qualifying exam is offered twice a year prior to the start of the fall and spring semesters. The qualifying exam is intended to test students' breadth of knowledge at the MS level in their research area and to evaluate readiness for research. Students entering with a MS degree are required to attempt the qualifying exam within 18 months of admission to the program. Students entering without a MS degree must attempt the qualifying exam within two years of admission to the program.

The qualifying exam consists of one written exam and one oral exam in the student's primary research area. The available examination areas include:

- Area A: Construction Engineering and Management
- Area B: Environmental Engineering
- Area C: Geotechnical Engineering
- Area D: Structural Engineering
- Area E: Transportation Engineering
- Area F: Water Resources Engineering

The requirements of the written exam (deadlines for exam request, list of topics, allowed aid sheets, calculator policy etc.) are posted on the department's website. The oral exam is conducted by an examining committee of three CEIE graduate faculty, of whom two must be in the student's research area. Students give a five minute research presentation, and answer questions from the examination committee about the written exam, the research presentation and other related topics.

Students who receive an overall passing grade form a dissertation committee and register for CEIE 998 Doctoral Dissertation Proposal. Students who receive an overall failing grade may petition to repeat the exam. If granted, the second attempt, which includes both the written and the oral exam, must be completed within one calendar year. The petition to repeat the exam must be received within one month of the first exam attempt. No more than two exam attempts are permitted. Students who do not receive an overall passing grade are terminated from the program.

Dissertation Research

Students become eligible for CEIE 998 Doctoral Dissertation Proposal upon passing the qualifying exam (preceding section). Upon admission to candidacy, which requires satisfactory preparation and defense of a dissertation proposal, students may register for CEIE 999 Doctoral Dissertation.

Code	Title	Credits
Select 12- 24 credits from the following: [1]		12-24
CEIE 998	Doctoral Dissertation Proposal	

CEIE 999	Doctoral Dissertation (minimum 3 credits required)	
Total Credits		12-24

[1] Note: 60 total credits of coursework is required if only completing 12 credits of research.

Dissertation Committee

A dissertation committee (separate from the examination committee) is formed upon successful completion of the qualifying exams. The dissertation committee is composed of at least four members, including the student's advisor. The student, in consultation with their advisor, shall select at least one other full-time CEIE Department faculty member to serve on the committee, and at least one committee member from outside of the CEIE department. At least three members of the committee are to be members of the Mason graduate faculty. All committee members must hold earned doctorates and possess applicable knowledge and experience in the student's chosen topic. The CEIE Department Chair must approve the composition of the dissertation committee. Additional committee members from outside Mason (e.g., from industry, other institutions, etc.,) may be appointed if approved by the majority of the CEIE faculty. The committee must be formed and approved before admission to candidacy (described in the next section) and before registering for CEIE 999 Doctoral Dissertation. Substitutions to the dissertation committee are allowed with the approval of the CEIE Department Chair.

Dissertation Proposal Preparation and Advancement to Candidacy

After successfully passing the qualifying exams and forming of a dissertation committee, the student may register for CEIE 998 Doctoral Dissertation Proposal research credits and begin preparation of the dissertation research proposal. The student will consult with his or her advisor on the selection of an original scholarly topic and preparation of a formal research proposal. Students are also encouraged to register for the required CEIE 990 Civil and Infrastructure Dissertation Topic Presentation course during this time. Students must schedule a formal proposal defense (also known as the research competency exam) with all members of their chosen committee present. This cannot be done before successful completion of the qualifying exams. Committee members should receive printed copies for the final proposal not less than two weeks prior to the scheduled defense date.

The research competency exam (proposal defense) includes the written proposal and a presentation of the planned dissertation research. The dissertation proposal defense shall not include already completed research. The dissertation proposal defense is the main opportunity for the committee to provide input and for the dissertation committee members to examine the student's knowledge in higher-level coursework and familiarity with existing and emerging research related to the student's research area. After the student's presentation, and after private deliberation, the committee makes a pass/fail determination that is given to the student by his or her advisor.

Students who pass the research competency exam are admitted to candidacy and become PhD Candidates. Students who do not pass the exam may, in consultation with their advisor, schedule a second exam within 120 days of receiving notice of the first exam result. Students who do not successfully pass the research competency within this period are terminated from the program.

Dissertation Research and Defense

On successful completion of the dissertation proposal, students are to conduct original research under the guidance of their dissertation director and dissertation committee members. Students are not to schedule their dissertation defense sooner than two semesters after advancement to candidacy. The dissertation must represent achievement in research, must be a significant contribution to the field of civil engineering, and should be deemed publishable in refereed journals. When the majority of the research has been completed, the candidate is to submit a written draft of the dissertation to the doctoral dissertation committee and schedule an oral defense to be attended by the doctoral dissertation committee. The CEIE department and the CEIE Graduate Coordinator must be notified of the defense at least two weeks prior to the defense to allow time to advertise it broadly.

On successful completion of the oral defense, students must submit a final dissertation that meets the guidelines specified by the Guide for Preparing Graduate Theses, Dissertations, and Projects. If the student fails to defend the dissertation successfully, the student may request a second defense following the same procedures as the initial defense. This request has no time limit, other than the general time limits for the doctoral degree as per Mason policy. The student is strongly advised to consult with the committee before scheduling the second defense. If the student fails on the second attempt to successfully defend the dissertation, the student will be terminated from the PhD program. Following a successful public defense and completion of the final form of the dissertation, the dissertation committee recommends the candidate for the degree of Doctor of Philosophy.

Teaching Opportunities

All PhD students are encouraged to participate in teaching activities in consultation with their major advisors. Teaching opportunities include presenting lectures, conducting recitation sessions, serving as a teaching assistant, working as a laboratory assistant, participating in teaching workshops, preparing course materials, and other related activities approved by the student's advisor.

Environmental Engineering Minor

Banner Code: EENG

Lisa Nolder, Associate Director for Undergraduate Programs

Phone: 703-993-1675
Email: snolder@gmu.edu
Website: https://volgenau.gmu.edu/program/environmental-engineering-minor

Students with engineering majors in CEIE, BIOE, SEOR, and non-engineering majors in Biology, Chemistry, Environmental Science and Policy, Geography and Geoinformation Science, and Geology are especially encouraged to consider this offering. The minor prepares students through additional coursework for subsequent graduate studies in water and environmental engineering at Mason or elsewhere, and for employment in environmental engineering, although the minor by itself does not constitute an engineering qualification.

Admissions & Policies

Policies

Eight credits of coursework must be unique to the minor and students must complete all coursework with a minimum GPA of 2.00. For policies governing all minors, see AP.5.3.4 Minors.

Requirements

Minor Requirements

Total credits: 19

Coursework

Code	Title	Credits
CEIE 240	Hydraulics	3
CEIE 355	Environmental Engineering and Science	3
CEIE 450	Environmental Engineering Systems	3
or CEIE 453	Water and Wastewater Treatment Processes	
or CHEM 427	Aquatic Environmental Chemistry	
or CHEM 438	Atmospheric Chemistry	
EVPP 355	Ecological Engineering and Ecosystem Restoration	4
or EVPP 378	RS: Ecological Sustainability (Mason Core)	
or EVPP 442	Urban Ecosystems and Processes	
GGS 302	Global Environmental Hazards	3
or GGS 319	Air Pollution	
PHYS 331	Physics of Renewable Energy	3
or ME 425	Renewable Energy Engineering	
Total Credits		19

A-Z COURSES

For more detailed information on courses, see please go to AP.2 Course Information.

See Courses at Mason (http://catalog.gmu.edu/course-search/) for additional schedule details.

Course information accurate at time of publication in April 2021. For the most updated version, view course details on Patriot Web prior to registering.

Academic English (AE)

000 Level Courses

AE 000: *AE Pre-Registration.* 0 credits.
Offered by INTO Mason. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to English Language level students.

Schedule Type: Lecture

Grading:
This course is graded on the Not Gradeable (NG) scale.

AE 002: *Core Foundations.* 10 credits.
Focuses on reading and writing in daily life. Develops basic writing (forming accurate simple sentences) and basic reading (identifying main ideas and explicit details in very short functional texts) on familiar, personally relevant topics. Introduces vocabulary and grammar at the CEFR A1+ level. Designed for non-native English speakers at a mid-beginning level in written skills. Offered by INTO Mason. May be repeated within the degree for a maximum 20 credits.

Registration Restrictions:
Enrollment is limited to English Language level students.

Schedule Type: Lecture

Grading:
This course is graded on the English Language scale.

AE 003: *Oral Communication Skills Foundations.* 6-8 credits.
Focuses on listening and speaking skills in everyday settings. Develops functions, vocabulary, grammar, and pronunciation at the CEFR A1+ level. Designed for non-native English speakers at a mid-beginning level in listening and speaking. Offered by INTO Mason. May be repeated within the degree for a maximum 12 credits.

Registration Restrictions:
Enrollment is limited to English Language level students.

Schedule Type: Lecture

Grading:
This course is graded on the English Language scale.

AE 010: *Level 1 Core.* 10 credits.
Focuses on reading and writing in daily life. Develops basic writing (transitioning from sentence-level to paragraph-level) and basic reading (identifying main ideas and explicit details in short expository and functional texts) on familiar, personally relevant topics. Introduces vocabulary and grammar at the CEFR A2 level. Designed for non-native English speakers at a high-beginning level in written skills. Offered by INTO Mason. May be repeated within the degree for a maximum 20 credits.

Registration Restrictions:
Enrollment is limited to English Language level students.

Schedule Type: Lecture

Grading:
This course is graded on the English Language scale.

AE 011: *Level 1 Oral Comm Skills.* 6-8 credits.
Focuses on listening and speaking skills in everyday settings. Develops functions, vocabulary, grammar, and pronunciation at the CEFR A2 level. Designed for non-native English speakers at a high-beginning level in listening and speaking. Offered by INTO Mason. May be repeated within the degree for a maximum 16 credits.

Registration Restrictions:
Enrollment is limited to English Language level students.

Schedule Type: Lecture

Grading:
This course is graded on the English Language scale.

AE 012: *Level 1-2 Special Topics.* 2 credits.
Offered by INTO Mason. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to English Language level students.

Schedule Type: Lecture

Grading:
This course is graded on the English Language scale.

AE 013: *Vocabulary in Daily Life.* 2 credits.
Offered by INTO Mason. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to English Language level students.

Schedule Type: Lecture

Grading:
This course is graded on the English Language scale.

AE 014: *Listening in Daily Life.* 2 credits.
Offered by INTO Mason. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to English Language level students.

Schedule Type: Lecture

Grading:
This course is graded on the English Language scale.

AE 015: *Writing Daily Life.* 2 credits.
Offered by INTO Mason. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to English Language level students.

Schedule Type: Lecture

Grading:
This course is graded on the English Language scale.

AE 017: *Listening and Speaking.* 6 credits.
Offered by INTO Mason. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to English Language level students.

Schedule Type: Lecture

Grading:
This course is graded on the English Language scale.

AE 020: *Level 2 Core.* 10 credits.
Focuses on reading and writing in general and academic settings. Further develops paragraph writing and identifying main ideas and explicit details in readings on familiar topics. Introduces vocabulary and grammar at the CEFR B1 level. Designed for non-native English speakers at a low-intermediate level in written skills. Offered by INTO Mason. May be repeated within the degree for a maximum 20 credits.

Registration Restrictions:
Enrollment is limited to English Language level students.

Schedule Type: Lecture

Grading:
This course is graded on the English Language scale.

AE 021: *Level 2 Oral Comm Skills.* 6-8 credits.
Focuses on listening and speaking skills in social and academic settings. Introduces short presentations and develops functions, vocabulary, grammar, and pronunciation at the CEFR A2+ level. Designed for non-native English speakers at a low-intermediate level in listening and speaking. Offered by INTO Mason. May be repeated within the degree for a maximum 18 credits.

Registration Restrictions:
Enrollment is limited to English Language level students.

Schedule Type: Lecture

Grading:
This course is graded on the English Language scale.

AE 022: *Level 2-3 Special Topics.* 2-4 credits.
Offered by INTO Mason. May be repeated within the term for a maximum 12 credits.

Registration Restrictions:
Enrollment is limited to English Language level students.

Schedule Type: Lecture

Grading:
This course is graded on the English Language scale.

AE 023: *Basic Spelling Skills.* 2 credits.
Offered by INTO Mason. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to English Language level students.

Schedule Type: Lecture

Grading:
This course is graded on the English Language scale.

AE 024: *Basic Pronunciation Skills.* 2 credits.
Offered by INTO Mason. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to English Language level students.

Schedule Type: Lecture

Grading:
This course is graded on the English Language scale.

AE 030: *Level 3 Core.* 10 credits.
Focuses on reading and writing in academic and general settings. Transitions from paragraphs to short essay writing and introduces inferencing and identifying text connections. Develops vocabulary and grammar at the CEFR B1 level. Designed for non-native English speakers at a mid-intermediate level in written skills. Offered by INTO Mason. May be repeated within the degree for a maximum 20 credits.

Registration Restrictions:
Enrollment is limited to English Language level students.

Schedule Type: Lecture

Grading:
This course is graded on the English Language scale.

AE 031: *Level 3 Oral Comm Skills.* 6-8 credits.
Focuses on listening and speaking skills in academic and social settings. Introduces note-taking and develops short presentations, functions, vocabulary, grammar, and pronunciation at the CEFR B1 level. Designed for non-native English speakers at a mid-intermediate level in oral skills. Offered by INTO Mason. May be repeated within the degree for a maximum 16 credits.

Registration Restrictions:
Enrollment is limited to English Language level students.

Schedule Type: Lecture

Grading:
This course is graded on the English Language scale.

AE 032: *Level 3-4 Special Topics.* 2-4 credits.
Offered by INTO Mason. May be repeated within the term for a maximum 12 credits.

Registration Restrictions:
Enrollment is limited to English Language level students.

Schedule Type: Lecture

Grading:
This course is graded on the English Language scale.

AE 033: *Reading Plus.* 2 credits.
Offered by INTO Mason. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to English Language level students.

Schedule Type: Lecture

Grading:
This course is graded on the English Language scale.

AE 034: *Dictionary Skills.* 2 credits.
Offered by INTO Mason. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to English Language level students.

Schedule Type: Lecture

Grading:
This course is graded on the English Language scale.

AE 035: *Developing Vocabulary.* 2 credits.
Offered by INTO Mason. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to English Language level students.

Schedule Type: Lecture

Grading:
This course is graded on the English Language scale.

AE 036: *American Culture.* 2 credits.
Offered by INTO Mason. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to English Language level students.

Schedule Type: Lecture

Grading:
This course is graded on the English Language scale.

AE 040: *Level 4 Core.* 10 credits.
Focuses on reading and writing in academic settings. Develops comprehension and retention of modified academic and informational texts and writing a variety of academic essays on concrete and abstract topics. Covers vocabulary and grammar at the CEFR B1+ level. Designed for non-native English speakers at a high-intermediate level in written skills. Offered by INTO Mason. May be repeated within the degree for a maximum 20 credits.

Registration Restrictions:
Enrollment is limited to English Language level students.

Schedule Type: Lecture

Grading:
This course is graded on the English Language scale.

AE 041: *Level 4 Oral Comm Skills.* 6-8 credits.
Focuses on listening and speaking skills in academic and social settings. Introduces note-taking and develops short formal presentations, conversation management, functions, vocabulary, grammar, and pronunciation at the CEFR B1+ level. Designed for non-native English speakers at a high-intermediate level in oral skills. Offered by INTO Mason. May be repeated within the degree for a maximum 16 credits.

Registration Restrictions:
Enrollment is limited to English Language level students.

Schedule Type: Lecture

Grading:
This course is graded on the English Language scale.

AE 042: *Level 4-5 Special Topics.* 2-4 credits.
Offered by INTO Mason. May be repeated within the term for a maximum 12 credits.

Registration Restrictions:
Enrollment is limited to English Language level students.

Schedule Type: Lecture

Grading:
This course is graded on the English Language scale.

AE 044: *Intro to IELTS Academic.* 2 credits.
Offered by INTO Mason. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to English Language level students.

Schedule Type: Lecture

Grading:
This course is graded on the English Language scale.

AE 045: *Developing Spelling Skills.* 2 credits.
Offered by INTO Mason. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to English Language level students.

Schedule Type: Lecture

Grading:
This course is graded on the English Language scale.

AE 046: *Developing Pronunciation Skill.* 2 credits.
Offered by INTO Mason. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to English Language level students.

Schedule Type: Lecture

Grading:
This course is graded on the English Language scale.

AE 047: *Intro to TOEFL iBT.* 2 credits.
Offered by INTO Mason. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to English Language level students.

Schedule Type: Lecture

Grading:
This course is graded on the English Language scale.

AE 048: *Present Yourself.* 2 credits.
Offered by INTO Mason. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to English Language level students.

Schedule Type: Lecture

Grading:
This course is graded on the English Language scale.

AE 050: *Level 5 Core.* 10 credits.
Focuses on reading and writing in academic settings. Focuses on comprehension and retention of modified academic and informational texts and writing a variety of academic essays. Introduces summary writing and APA citation. Develops vocabulary and grammar at the CEFR B2 level. Designed for non-native English speakers at a low-advanced level in written skills. Offered by INTO Mason. May be repeated within the degree for a maximum 20 credits.

Registration Restrictions:
Enrollment is limited to English Language level students.

Schedule Type: Lecture

Grading:
This course is graded on the English Language scale.

AE 051: *Level 5 Oral Comm Skills.* 6-8 credits.
Focuses on listening and speaking skills in academic settings. Develops note-taking, formal presentations, conversation management, functions, vocabulary, grammar, and pronunciation at the CEFR B2 level. Designed for non-native English speakers at a low-advanced level in oral skills. Offered by INTO Mason. May be repeated within the degree for a maximum 16 credits.

Registration Restrictions:
Enrollment is limited to English Language level students.

Schedule Type: Lecture

Grading:
This course is graded on the English Language scale.

AE 052: *Level 5-6 Special Topics.* 2-4 credits.
Offered by INTO Mason. May be repeated within the term for a maximum 12 credits.

Registration Restrictions:
Enrollment is limited to English Language level students.

Schedule Type: Lecture

Grading:
This course is graded on the English Language scale.

AE 053: *Newspaper Productioon.* 2 credits.
Offered by INTO Mason. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to English Language level students.

Schedule Type: Lecture

Grading:
This course is graded on the English Language scale.

AE 054: *TED Talks.* 2 credits.
Offered by INTO Mason. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to English Language level students.

Schedule Type: Lecture

Grading:
This course is graded on the English Language scale.

AE 055: *Let's Talk Math.* 2 credits.
Offered by INTO Mason. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to English Language level students.

Schedule Type: Lecture

Grading:
This course is graded on the English Language scale.

AE 056: *Business English.* 2 credits.
Offered by INTO Mason. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to English Language level students.

Schedule Type: Lecture

Grading:
This course is graded on the English Language scale.

AE 060: *Level 6 Core.* 10 credits.
Focuses on reading and writing in academic settings. Develops comprehension and retention of modified academic and informational texts and writing longer academic essays and a short research paper. Covers vocabulary and grammar at the CEFR B2+ level. Designed for non-native English speakers at a mid-advanced level in written skills. Offered by INTO Mason. May be repeated within the degree for a maximum 20 credits.

Registration Restrictions:
Enrollment is limited to English Language level students.

Schedule Type: Lecture

Grading:
This course is graded on the English Language scale.

AE 061: *Level 6 Oral Comm Skills.* 6-8 credits.
Focuses on listening and speaking skills in academic settings. Develops note-taking, formal presentations, conversation management, functions, vocabulary, grammar, and pronunciation at the CEFR B2+ level. Designed for non-native English speakers at a mid-advanced level in listening and speaking. Offered by INTO Mason. May be repeated within the degree for a maximum 16 credits.

Registration Restrictions:
Enrollment is limited to English Language level students.

Schedule Type: Lecture

Grading:
This course is graded on the English Language scale.

AE 062: *Level 6-7 Special Topics.* 2-4 credits.
Offered by INTO Mason. May be repeated within the term for a maximum 12 credits.

Registration Restrictions:
Enrollment is limited to English Language level students.

Schedule Type: Lecture

Grading:
This course is graded on the English Language scale.

AE 063: *American TV Comedy.* 2 credits.
Offered by INTO Mason. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to English Language level students.

Schedule Type: Lecture

Grading:
This course is graded on the English Language scale.

AE 064: *English through Pop Music.* 2 credits.
Offered by INTO Mason. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to English Language level students.

Schedule Type: Lecture

Grading:
This course is graded on the English Language scale.

AE 065: *Advanced Pronunciation Skills.* 2 credits.
Offered by INTO Mason. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to English Language level students.

Schedule Type: Lecture

Grading:
This course is graded on the English Language scale.

AE 067: *Acting with Americans.* 2 credits.
Offered by INTO Mason. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to English Language level students.

Schedule Type: Lecture

Grading:
This course is graded on the English Language scale.

AE 068: *China 1-2-1 Orientation.* 3 credits.
Offered by INTO Mason. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to English Language or English Language level students.

Schedule Type: Lecture

Grading:
This course is graded on the English Language scale.

AE 069: *China 1-2-1 Orientation.* 1 credit.
Offered by INTO Mason. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to English Language or English Language level students.

Schedule Type: Lecture

Grading:
This course is graded on the English Language scale.

AE 070: *Level 7 Core.* 10 credits.
Focuses on reading and writing in academic settings. Develops comprehension and retention of academic readings and writing data set descriptions, abstracts, longer academic essays, and a research paper. Covers vocabulary and grammar at the CEFR C1 level. Designed for non-native English speakers at a high-advanced level in written skills. Offered by INTO Mason. May be repeated within the degree for a maximum 20 credits.

Registration Restrictions:
Enrollment is limited to English Language level students.

Schedule Type: Lecture

Grading:
This course is graded on the English Language scale.

AE 071: *Level 7 Oral Comm Skills.* 6-8 credits.
Focuses on listening and speaking skills in academic settings. Develops note-taking, formal presentations, conversation management, functions, vocabulary, grammar, and pronunciation at the CEFR C1 level. Designed for non-native English speakers at a high-advanced level in listening and speaking. Offered by INTO Mason. May be repeated within the degree for a maximum 16 credits.

Registration Restrictions:
Enrollment is limited to English Language level students.

Schedule Type: Lecture

Grading:
This course is graded on the English Language scale.

AE 072: *Level 6-7-8 Special Topics.* 2-4 credits.
Offered by INTO Mason. May be repeated within the term for a maximum 12 credits.

Registration Restrictions:
Enrollment is limited to English Language level students.

Schedule Type: Lecture

Grading:
This course is graded on the English Language scale.

AE 073: *Dialogue with Americans.* 4 credits.
Offered by INTO Mason. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to English Language level students.

Schedule Type: Lecture

Grading:
This course is graded on the English Language scale.

AE 074: *Giving Presentations.* 2 credits.
Offered by INTO Mason. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to English Language level students.

Schedule Type: Lecture

Grading:
This course is graded on the English Language scale.

AE 075: *Advanced Vocabulary.* 2 credits.
Offered by INTO Mason. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to English Language level students.

Schedule Type: Lecture

Grading:
This course is graded on the English Language scale.

AE 076: *Preparation for GRE.* 2 credits.
Offered by INTO Mason. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to English Language level students.

Schedule Type: Lecture

Grading:
This course is graded on the English Language scale.

AE 077: *Preparation for IELTS.* 2 credits.
Offered by INTO Mason. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to English Language level students.

Schedule Type: Lecture

Grading:
This course is graded on the English Language scale.

AE 078: *Preparation for TOEFL iBT.* 2 credits.
Offered by INTO Mason. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to English Language level students.

Schedule Type: Lecture

Grading:
This course is graded on the English Language scale.

AE 079: *Advanced English Grammar.* 4 credits.
Offered by INTO Mason. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to English Language level students.

Schedule Type: Lecture

Grading:
This course is graded on the English Language scale.

AE 080: *Level 8 Core.* 10 credits.
Offered by INTO Mason. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to English Language level students.

Schedule Type: Lecture

Grading:
This course is graded on the English Language scale.

AE 081: *Level 8 Oral Comm Skills.* 6-8 credits.
Offered by INTO Mason. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to English Language level students.

Schedule Type: Lecture

Grading:
This course is graded on the English Language scale.

AE 082: *Level 7-8 Special Topics.* 2 credits.
Offered by INTO Mason. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to English Language level students.

Schedule Type: Lecture

Grading:
This course is graded on the English Language scale.

AE 083: *SuperTOEFL.* 4 credits.
Offered by INTO Mason. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to English Language level students.

Schedule Type: Lecture

Grading:
This course is graded on the English Language scale.

AE 088: *Elective Topic 3.* 2 credits.
Offered by INTO Mason. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to English Language level students.

Schedule Type: Seminar

Grading:
This course is graded on the English Language scale.

Accounting (ACCT)

200 Level Courses

ACCT 203: *Survey of Accounting.* 3 credits.
Introduction to financial and managerial accounting. Financial accounting from viewpoint of those who prepare and use financial information. Financial accounting topics include recording financial transaction, creating financial statements, the study of cash and internal controls. Managerial accounting topics include introduction to job order costing, breakeven analysis, standard costs and variances and short term decision making. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts. Equivalent to ACCT 204.

Recommended Prerequisite: ECON 103

Registration Restrictions:
Students with the terminated from BU major attribute may **not** enroll.

Schedule Type: Lecture, Recitation

Grading:

This course is graded on the Undergraduate Regular scale.

ACCT 204: *Honors Survey of Accounting.* 3 credits.
Introduction to financial and managerial accounting. Financial accounting from viewpoint of those who prepare & use financial information. Financial accounting topics include recording financial transaction, creating financial statements, the study of cash and internal controls. Managerial accounting topics include introduction to job order costing, breakeven analysis. Offered by School of Business. Limited to two attempts. Equivalent to ACCT 203.

Recommended Prerequisite: Cum GPA of 3.5 or higher and ECON 103

Registration Restrictions:
Enrollment limited to students with the Honors College (Business)., Honors College (STEM). or Honors College. attributes.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

300 Level Courses

ACCT 303: *Accounting for Decision Making.* 3 credits.
Students will examine how economic transactions are measured and recorded in financial statements using generally accepted accounting principles to help users of accounting information to make financing, operating, and investing decisions for businesses. Students will also learn how the tax system impacts business decision making, how managers could use managerial accounting information to make operating and compensation decisions, and understand the importance of internal and external audits to business and capital markets. Notes: Students cannot receive credit for ACCT 301 and ACCT 303/ACCT 330. School of Business students will not be permitted to make more than three attempts to achieve a C or higher in ACCT 303. The third attempt requires School of Business academic advisor approval. Those who do not successfully complete this course within three attempts will be terminated from their major and will not be eligible to receive a degree from the School of Business. Offered by School of Business. Limited to two attempts.

Recommended Prerequisite: BUS 103 and BUS 200 are strongly recommended.

Registration Restrictions:
Required Prerequisites: (ACCT 203[C], U203, 203[XS], 204[C] or U204) and (BUS 210[C], U210 or 210[XS]) and (MATH 108[C], U108, 108[XS], 113[C], U113, 113[XS], 114[C], U114, 114[XS], HNRT 225[C], 225[XS] or U225).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the terminated from BU major attribute may **not** enroll.

Schedule Type: Lecture, Recitation

Grading:
This course is graded on the Undergraduate Regular scale.

ACCT 311: *Managerial and Cost Accounting.* 3 credits.
Develops skills in identifying business processes, transforming data into useful information, and making managerial decisions. Designed for students in all areas of management, especially those whose career aims include cost management. Topics include analyzing and managing costs, developing cost systems that facilitate decision making, identifying opportunities for improving business process, creating financial and operating budgets for planning and control, and developing measures to assess performance. Mid-term and final exams may be scheduled on Saturdays for this class. The number of class sessions will be modified to compensate for mid-term examination time. Accommodations will be made for religious conflicts, Saturday classes, and certain official university activities. A third attempt requires School of Business academic advisor approval. Offered by School of Business. Limited to two attempts.

Recommended Prerequisite: Degree status.

Registration Restrictions:
Required Prerequisites: (ACCT 303[C], L303, 303[XS], 301[C], L301, 330[C], L330 or 330[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take FNAN crses, Ineligible to take FPWM crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ACCT 315: *Personal Financial Planning.* 3 credits.
This is an elective course in the Financial Planning and Wealth Management concentration which reviews, defines and helps student evaluate personal financial decision. Offered by School of Business. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: ((ACCT 203[C], U203, 203[XS], 204[C] or U204) and (BUS 210[C], 210[XS] or U210) and (MATH 108[C], U108, 108[XS], 113[C], U113, 113[XS], 114[C], U114, 114[XS], HNRT 225[C], 225[XS] or U225)).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the Ineligible to take FNAN crses, Ineligible to take FPWM crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ACCT 320: *Introduction to Government Accounting.* 3 credits.
Introductory course focusing on the financial reporting environment of government entities and financial reporting issues. Topics include introduction to government accounting framework; government financial reporting; government budgetary process; government cost accounting concepts and impact of government financial accounting on government policy setting. Due to presentation and application of course material, course only open to students enrolled in the School of Business. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Registration Restrictions:

Required Prerequisites: ACCT 303[C], L303 or 303[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the Ineligible to take FNAN crses, Ineligible to take FPWM crses or terminated from BU major attributes may **not** enroll.

Enrollment limited to students in the School of Business college.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ACCT 330: *Financial Accounting I.* 3 credits.
This is the first of the three-course financial accounting sequence that examines financial accounting from the viewpoint of preparers and users of financial statements, including preparing financial statements to reflect financing, operating, and investing decisions of the firm and using financial statement information to make financing, operating and investing decisions for the firm. Notes: ACCT 330 is required for all School of Business Accounting and Finance majors. School of Business students will not be permitted to make more than three attempts to achieve a C or higher in ACCT 330. The third attempt requires School of Business academic advisor approval. Those who do not successfully complete this course within three attempts will be terminated from their major. For more information about this, see the "Termination from the Major" section under Academic Policies. Offered by School of Business. Limited to two attempts.

Recommended Prerequisite: BUS 103 and BUS 200 are strongly recommended.

Registration Restrictions:
Required Prerequisites: (ACCT 203[C], U203, 203[XS], 204[C] or U204) and (BUS 210[C], U210 or 210[XS]) and (MATH 108[C], U108[C], 108[XS], 113[C], U113, 113[XS], 114[C], U114, 114[XS], HNRT 225[C], 225[XS] or U225).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the terminated from BU major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ACCT 331: *Intermediate Accounting I.* 3 credits.
This is the first of the two-course financial accounting sequence that examines financial accounting from the viewpoint of preparers and users of financial statements, including preparing financial statements to reflect financing, operating, and investing decisions of the firm and using financial statement information to make financing, operating and investing decisions for the firm. Mid-term and final exams may be scheduled on Saturdays for this class. Accommodations will be made for religious conflicts, Saturday classes, and certain official university activities. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (ACCT 303[C], L303, 303[XS], 330[C], L330, 330[XS], 301[C] or L301).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take FNAN crses, Ineligible to take FPWM crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ACCT 332: *Intermediate Accounting II.* 3 credits.
This is the second of the two-course financial accounting sequence that examines financial accounting from the viewpoint of preparers and users of financial statements, including preparing financial statements to reflect financing, operating, and investing decisions of the firm and using financial statement information to make financing, operating and investing decisions for the firm. Continuation of ACCT 331. Mid-term and final exams may be scheduled on Saturdays for this class. Accommodations will be made for religious conflicts, Saturday classes, and certain official university activities. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: ((ACCT 331[C] or 331[XS]) and (FNAN 301[C], L301, 303[C], L303 or 303[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take FNAN crses, Ineligible to take FPWM crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ACCT 351: *Taxation and Managerial Decision Making.* 3 credits.
Introduction to fundamental topics in taxation using a business-entities approach. Specific topics include gross income, deductions, losses, and property transactions. The course emphasizes the identification of planning and compliance issues and the application of tax law to resolve those issues. Both tax and non-tax factors affecting decision making are considered. Mid-term and final exams may be scheduled on Saturdays for this class. Accommodations will be made for religious conflicts, Saturday classes, and certain official university activities. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: ((ACCT 301[C] or L301) or (ACCT 303[C], L303 or 303[XS]) or (ACCT 330[C], L330 or 330[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take FNAN crses, Ineligible to take FPWM crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ACCT 361: *Accounting Analytics.* 3 credits.
This course involves the collection, storage, and processing of financial and non-financial data used to report information to internal and external users. The focus is on relational database systems to capture the business processes of an organization and the internal controls embedded in those processes. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: ((ACCT 301[C], L301, 303[C], L303, 303[XS], 330[C], L330 or 330[XS]) and (MIS 301[C], L301, 303[C], L303 or 303[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take FNAN crses, Ineligible to take FPWM crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ACCT 370: *International Accounting.* 3 credits.
International Accounting is study of entity reported as multinational company or entity whose reporting obligations to stakeholders are located in a different country. Course focuses on effects of financial reporting, managerial planning and control, international taxation, and international financial statement analysis on multinational reporting entity, and as the convergence of U.S. Generally Accepted Accounting Principles and International Financial Reporting Standards. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: ACCT 301[C], 303[C], 330[C], 303[XS], 330[XS], L301, L303, L330, 301T, 303T or 330T.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take FNAN crses, Ineligible to take FPWM crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ACCT 372: *Financial Statement Analysis.* 3 credits.
Detailed overview of financial statement analysis by users of financial statements. Students learn about common features of mandatory and voluntary accounting disclosures, behaviors and interactions among different users of financial statement information. Primary focus is analysis of financial statement information in body of financial statements and footnotes, and implications of those disclosures for firm valuation, fraud prediction, taxation, and governance. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (ACCT 301[C], L301, 303[C], 303[XS], L303, 330[C], 330[XS] or L330).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take FNAN crses, Ineligible to take FPWM crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ACCT 390: *Introduction to Financial Planning and Wealth Management.* 3 credits.
This course provides an introduction to the financial planning process for students interested in a career in financial planning and wealth management. Course topics include education, insurance, and retirement planning. The course also will cover professional responsibilities and regulations governing the financial services industry. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts. Equivalent to FNAN 390.

Registration Restrictions:
Required Prerequisites: (FNAN 303[B-] or L303) and ((ACCT 303[C] or L303) or (ACCT 330[C], 330[XS] or L330)).
[B-] Requires minimum grade of B-.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take FNAN crses, Ineligible to take FPWM crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

ACCT 408: *Taxes Insurance and Risk Management.* 3 credits.
This course provides a detailed look at tax issues that investors and businesses face. In addition, the class will focus on risk management strategies from the perspective of the business and individual and a detailed look at insurance and insurance products in full detail. The course also will cover professional responsibilities and regulations governing the financial services industry. Offered by School of Business. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: ((FNAN 303[B-], 301[B-] or L303) and (ACCT 303[B-], 330[B-], 301[B-], L303, L330 or L301)).
[B-] Requires minimum grade of B-.

Students with a class of Freshman may **not** enroll.

Students with the Ineligible to take FNAN crses, Ineligible to take FPWM crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ACCT 411: *Advanced Managerial Accounting.* 3 credits.
Managerial uses of accounting information in planning, controlling, motivating, and decision making. Emphasizes quantitative and behavioral aspects of managerial accounting. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (ACCT 311[C] or 311[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman or Sophomore may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take FNAN crses, Ineligible to take FPWM crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ACCT 433: *Advanced Financial Accounting.* 3 credits.
Focuses on advanced topics in financial accounting. Students study accounting business combinations, preparation of consolidated financial statements, accounting for foreign currency transactions, translation and remeasurement of foreign currency financial statements, partnership accounting, interim and segment reporting, and Securities and Exchange Commission reporting issues. International Financial Reporting Standards (IFRS) are discussed. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (ACCT 332[C] or 332[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman or Sophomore may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take FNAN crses, Ineligible to take FPWM crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ACCT 441: *Estate Planning.* 3 credits.
Students will learn to plan efficient and effective wealth transfers to meet clients' goals. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (ACCT 351[C] or 351[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take FNAN crses, Ineligible to take FPWM crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ACCT 451: *Advanced Federal Taxation.* 3 credits.
Federal taxation of corporations, partnerships, fiduciaries, and gratuitous transfers. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (ACCT 351[C] or 351[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman or Sophomore may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take FNAN crses, Ineligible to take FPWM crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ACCT 461: *Assurance and Audit Services.* 3 credits.
Introduction to audit and other assurance services' objectives, theory, and practices. Focuses on developing skills for interpreting business strategies and identifying related business risks, describing internal control solutions to those risks, identifying evidential sources, providing assurance about those risks and controls, and designing strategies to provide assurance services about the reliability of business information. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Specialized Designation: Writing Intensive in Major

Registration Restrictions:
Required Prerequisites: ((ACCT 331[C] or 331[XS]) and (ACCT 361[C] or 361[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman or Sophomore may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take FNAN crses, Ineligible to take FPWM crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ACCT 462: *Honors Seminar in Accounting.* 3 credits.
An in-depth study and analysis of contemporary developments and topics of interest in accounting. Enrollment in this course is limited and competitive. Notes: The topics and format will vary. Enrollment in this course is limited and competitive. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Specialized Designation: Mason Impact.

Recommended Prerequisite: Accounting major, senior standing, permission of instructor.

Registration Restrictions:
Students with a class of Freshman or Sophomore may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take FNAN crses, Ineligible to take FPWM crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ACCT 465: *Advanced Accounting Analytics.* 3 credits.
This course presents advanced topics in analytics used in the accounting and finance professions. The course focuses on the development of skills required to analyze data captured in enterprise resource planning (ERP) systems – the type of data most often used by accountants – and the exploration and presentation of data for decision making. The topics include a continuation of business process knowledge and advanced skills in data visualization and analysis introduced in ACCT 361. Emerging issues in the accounting and finance professions are also introduced, such as blockchain technology and distributed databases and ledgers. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: ((ACCT 361[C] or 361[XS]) and (ACCT 361[C], 361[XS], MIS 310[C] or 310[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ACCT 472: *Government and Not-for-Profit Accounting.* 3 credits.
Introduction to accounting for nonbusiness organizations. Emphasizes accounting issues unique to these entities, including non-exchange transactions and lack of ownership interest. Includes accounting and reporting for state and local governments, charitable organizations, and the federal government. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (ACCT 331[C] or 331[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman or Sophomore may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take FNAN crses, Ineligible to take FPWM crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ACCT 491: *Seminar in Accounting.* 3 credits.
Advanced study of accounting concepts and selected topics. A third attempt will require academic advisor approval. Offered by School of Business. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Required Prerequisites: (ACCT 331[C] or 331[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman or Sophomore may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take FNAN crses, Ineligible to take FPWM crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

ACCT 492: *Internship in Accounting.* 3 credits.
Opportunity to gain practical, professional experience in conjunction with academic development. An internship is an important part of academic and career preparation. May be used as elective credit, but may not be repeated. Notes: No more than 6 credits of School of Business internship coursework (BUS 492 or ACCT 492) can be applied towards a student's 120 (BU) degree applicable credits. Students must receive departmental approval in order to register for this course; please contact the School of Business Office of Career Services for internal eligibility requirements. Offered by School of Business. May be repeated within the degree for a maximum 6 credits. Equivalent to BUS 492, FNAN 492, MGMT 492, MIS 492, MKTG 492, OM 492, OSCM 492.

Recommended Prerequisite: 75 credit hours

Registration Restrictions:
Required Prerequisites: (ACCT 330[B-], 330[XS] or L330) or (ACCT 303[B-], 303[XS] or L303).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Students with a class of Freshman or Sophomore may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take FNAN crses, Ineligible to take FPWM crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

ACCT 493: *Financial Planning and Wealth Management Capstone.* 3 credits.
Financial planners need unique skills and knowledge to successfully serve clients. Students will learn the cognition and decision-making of clients and planners, the techniques to facilitate effective counsel, and the planners' professional responsibilities including those of the CFP(c) Board. Students will apply their knowledge through a collaboration with an employer or a financial planning clinic in which they will create a financial plan for an actual client. A third attempt will require academic advisor approval. Offered by School of Business. May be repeated within the degree for a maximum 6 credits. Equivalent to FNAN 493.

Specialized Designation: Writing Intensive in Major

Recommended Corequisite: FNAN 411

Registration Restrictions:
Required Prerequisites: ((ACCT 390[C], FNAN 390[XS] or 390[C]) and ((FNAN 311[C] or 311[XS]) and (ACCT 351[C] or 351[XS]))).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Senior Plus or Senior.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take FNAN crses, Ineligible to take FPWM crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ACCT 499: *Independent Study.* 1-3 credits.
Research and analysis of selected problems or topics in accounting. Notes: Must be arranged with an instructor, and students must receive written approval from the associate dean for undergraduate programs before registration. Written report required. May be repeated if topics vary. Offered by School of Business. May be repeated within the term for a maximum 6 credits.

Recommended Prerequisite: 9 hours in upper-level accounting courses.

Registration Restrictions:
Students with a class of Freshman or Sophomore may **not** enroll.

Non-Degree or Washington Consortium level students may **not** enroll.

Students with the Ineligible to take FNAN crses, Ineligible to take FPWM crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

500 Level Courses

ACCT 520: *Fundamentals of Accounting.* 3 credits.
This course will provide students with an understanding of the principles of financial and managerial accounting. Students will gain knowledge and skills needed to prepare the accounting information for external and internal users. Topics include: transactions analysis, the accounting cycle, financial statement analysis, revenue recognition and cost measurement, job costs accounting, analyzing cost-volume-profit relationships, standard costs and variances. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ACCT 531: *Foundations of Financial Reporting I.* 3 credits.
Upon completing course students will be knowledgeable about global business and trade as it applies to international financial reporting standards. Students will be capable of recording, analyzing, interpreting, and communicating financial and non-financial information for users of such information in accordance with applicable professional authoritative literature. Offered by School of Business. May not be repeated for credit.

Recommended Prerequisite: ACCT 301 or BMGT 613, or equivalent with grade of B- or higher or permission of program director.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Accounting or Forensic Accounting.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Enrollment limited to students in a Master of Science degree.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ACCT 532: *Foundations of Financial Reporting II.* 3 credits.
Upon completing course students will be knowledgeable about global business and trade as it applies to international financial reporting standards. Students explore topics including: current liabilities and contingencies, bonds and long term notes, leases, accounting for income taxes, pensions, shareholder's equity and share based compensation. Offered by School of Business. May not be repeated for credit.

Recommended Prerequisite: ACCT 331, ACCT 531, or equivalent and FNAN 301, BMGT 643 or equivalent, both with a grade of B- or higher or permission of program director.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Accounting or Forensic Accounting.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Enrollment limited to students in a Master of Science degree.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ACCT 551: *Foundations of Taxation of Business Entities.* 3 credits.
The objective of this course is to build a sound conceptual and technical foundation for the study of federal income taxation that provides students with the tools necessary to stay current with the ever-changing tax law. Offered by School of Business. May not be repeated for credit.

Recommended Prerequisite: Permission of program director.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Accounting or Forensic Accounting.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Enrollment limited to students in a Master of Science degree.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ACCT 561: *Foundations of Assurance Services.* 3 credits.
The course focuses on planning, performing and reporting on an audit of financial statements conducted in accordance with U.S. generally accepted auditing standards (U.S. GAAS). It also introduces the public accounting profession and the services CPAs provide. Offered by School of Business. May not be repeated for credit.

Recommended Prerequisite: ACCT 331 or ACCT 531 with a B- or better or permission of MSA Program Director.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Accounting or Forensic Accounting.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Enrollment limited to students in a Master of Science degree.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

600 Level Courses

ACCT 601: *Online MSA Orientation Course.* 0 credits.
The main objective of this course is to help students understand program expectations and time commitment and prepare themselves for online communication and technology requirements necessary to successfully complete their online MSA degree. Offered by School of Business. May not be repeated for credit.

Recommended Prerequisite: Enrollment in the online MSA program or permission of the MSA academic director.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Special scale.

ACCT 611: *Advanced Issues in Managerial Accounting.* 3 credits.
Examines the firm's planning and control decisions that require a more sophisticated approach than the rule-of-thumb procedures advocated for traditional cost accounting problems. Students will work with real-world issues and problems and apply the appropriate analytical model to develop relevant management accounting treatments. Offered by School of Business. May not be repeated for credit.

Recommended Prerequisite: ACCT 311 and admission to the MSA program or permission of the program director.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ACCT 621: *GovCon Acquisition Regulations and Reporting.* 3 credits.
This course will provide students with an understanding on the regulation governing government agency procurement contracts. Students will gain knowledge about various acquisition regulations and requirements applicable to government contracts. Offered by School of Business. May not be repeated for credit.

Recommended Prerequisite: Enrollment in Graduate Certificate in Accounting for Government Contracts or permission of the program director.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ACCT 623: *Project Accounting and Cost Management.* 3 credits.
This course will provide students with an understanding of the rules for government-wide procurement that have been designed to achieve uniformity and consistency in the cost accounting practices governing measurement, assignment, and allocation of costs to governments contracts. Students will learn project management techniques including budgeting, revenue recognition and cost allocations. Offered by School of Business. May not be repeated for credit.

Recommended Prerequisite: Enrollment in Graduate Certificate in Accounting for Government Contracts or permission of the program director.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ACCT 624: *GovCon Business Systems and Control.* 3 credits.
This course will provide students an understanding of web-based software and technology solutions used by businesses to manage project based contracts. Students will learn how to navigate various stand-alone or cloud based platforms like resource management, budgeting, timesheets billing, CRM, analytics and project accounting. Offered by School of Business. May not be repeated for credit.

Recommended Prerequisite: Enrollment in Graduate Certificate in Accounting for Government Contracts or permission of the program director.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ACCT 625: *GovCon Audit and Compliance.* 3 credits.
This course will provide students with an understanding of the audit and assurance requirements for government contracts. Offered by School of Business. May not be repeated for credit.

Recommended Prerequisite: Enrollment in Graduate Certificate in Accounting for Government Contracts or permission of the program director.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ACCT 630: *Advanced Financial Accounting.* 3 credits.
This course covers advanced topics in financial accounting like business combinations and preparation of consolidated financial statements. Students are also introduced to specialized accounting issues related to partnerships and segment reporting. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (ACCT 332[C] or 332[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Enrollment is limited to students with a major in Accounting, Business Administration or Forensic Accounting.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ACCT 633: *Advanced Issues in Financial Reporting.* 3 credits.
Students will gain knowledge and skills used in the interpretation of complex corporate financial accounting issues and in the preparation of complex financial statements. Topics include acquisitions, consolidations, derivatives, segment reporting, partnerships, and SEC reporting. Students also will learn to conduct research using the FASB Accounting Standards Codification to resolve ambiguous reporting issues. Offered by School of Business. May not be repeated for credit.

Recommended Prerequisite: Permission of MSA Director if not already enrolled in the MSA program.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Enrollment is limited to students with a major, minor, or concentration in Accounting or Business Administration.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ACCT 636: *Fraud Examination.* 3 credits.
Introduces strategies and techniques for fraud prevention and detection. Focuses on financial fraud such as bribery, contract rigging and kickbacks, embezzlement, fraudulent financial reporting, payroll fraud, and misappropriation of inventory and other assets. Several real-life cases and examples will be used to illustrate how to detect and prevent

fraud. Offered by School of Business. May not be repeated for credit. Equivalent to GBUS 744, MBA 744.

Recommended Prerequisite: Admission to MSA program or permission of program director.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Enrollment is limited to students with a major in Accounting or Forensic Accounting.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ACCT 641: *Estate Planning.* 3 credits.
Students will learn to plan efficient and effective wealth transfers to meet clients' goals. Topics include transfers of property outright or with trusts, wills, and powers of appointment; use of the marital deduction; valuation of assets; and buy-sell agreements. Students will learn differences in planning for citizens and non-citizen as well as traditional and non-traditional families. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Graduate.

Enrollment is limited to students with a major in Accounting.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ACCT 651: *Advanced Issues in Taxation.* 3 credits.
Examines the application of the federal income tax law to C-corporations, S-corporations, and partnerships. Topics will include the formation, operations, and dissolutions of such entities. Students will read and apply primary tax authorities to client fact patterns and engage in significant professional research and writing. Offered by School of Business. May not be repeated for credit.

Recommended Prerequisite: Admission to the MSA program or permission of the program director. ACCT 351 or equivalent.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Enrollment is limited to students with a major, minor, or concentration in Accounting.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ACCT 661: *Accounting Analytics.* 3 credits.
This course involves the collection, storage, and processing of financial and nonfinancial data used to report information to internal and external users. The focus is on relational database systems to capture the business processes of an organization and the internal controls embedded in those processes. Technical skills including the design and implementation of ERP systems is emphasized. Offered by School of Business. May not be repeated for credit.

Recommended Prerequisite: Have not completed ACCT 361 or equivalent, or permission of the Program Director

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ACCT 665: *Advanced Accounting Analytics.* 3 credits.
This course presents advanced topics in analytics used in business professions. The course focuses on the development of skills required to analyze data captured in enterprise resource planning (ERP) systems – the type of data most often used by business professionals – and the exploration and presentation of data for decision-making. The topics include a continuation of business process knowledge and advanced skills in data visualization and analysis. Emerging issues in business are also introduced, such as blockchain technology and distributed databases and ledgers. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: ((ACCT 661^{C}, 661^{XS} or 661^{XP}) or (ACCT 361^{C} or 361^{XS}) or (MIS 310^{C} or 310^{XS})).
^{C} Requires minimum grade of C.
^{XS} Requires minimum grade of XS.
^{XP} Requires minimum grade of XP.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Enrollment is limited to Graduate or Undergraduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ACCT 670: *International Accounting.* 3 credits.
International Accounting is study of entity reported as multinational company or entity whose reporting obligations to stakeholders are located in a different country. Course focuses on effects of financial reporting, managerial planning and control, international taxation, and

international financial statement analysis on multinational reporting entity, and as the convergence of U.S. Generally Accepted Accounting Principles and International Financial Reporting Standards. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: BUS 200[C], ACCT 303[C], 330[C], FNAN 303[C], BUS 200[XS], ACCT 303[XS], 330[XS] or FNAN 303[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Enrollment is limited to Graduate or Undergraduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ACCT 671: *Managing Data Quality and Integrity.* 3 credits.
This course provides students with the current techniques used by business professionals to manage and improve data quality for later analysis and use in managerial decision making. The course focuses on the development of the skills required to collect and extract data and validate data integrity. The topics covered include data extraction, data transformation, data cleansing, data classification, and data automation. Further, the course introduces students to the topics of data warehousing and advances their knowledge of data mining techniques. Offered by School of Business. May not be repeated for credit.

Recommended Prerequisite: Demonstrated proficiency in introductory database management theory may substitute for required prerequisites.

Registration Restrictions:
Required Prerequisites: ACCT 661[C], 661[XS], 661[XP], 361[C], MIS 310[C], ACCT 361[XS] or MIS 310[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.
[XP] Requires minimum grade of XP.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ACCT 672: *Governmental and Nonprofit Accounting.* 3 credits.
Accounting and Reporting for non-business organizations. Emphasizes accounting issues unique to these entities, including non-exchange transactions and lack of ownership interest. Includes accounting and reporting for state and local governments, nongovernment organizations, and the federal government. Offered by School of Business. May not be repeated for credit.

Recommended Prerequisite: Admission to the MSA program or permission of the program director.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Enrollment is limited to students with a major in Accounting or Government Accounting.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ACCT 690: *Professional Accounting Colloquium.* 3 credits.
The Professional Accounting Colloquium is designed to give graduate accounting students the opportunity to identify, develop, and improve professional skills and attributes critical to success in the accounting profession. Students will gain an understanding of these professional accounting skills and attributes from both a theoretical and applied perspective. Offered by School of Business. May not be repeated for credit.

Recommended Prerequisite: Admission to the MSA program or permission of the program director.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Enrollment is limited to students with a major, minor, or concentration in Accounting.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

ACCT 695: *Graduate Field Experience.* 1-3 credits.
This course provides a framework for approaching, successfully completing, and reflecting upon a professional field experience in accounting. The course is designed for students who will complete semester long internship in the field of accounting either in public accounting or in industry. Offered by School of Business. May be repeated within the degree for a maximum 3 credits.

Recommended Prerequisite: Permission of MSA Program Director.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Enrollment is limited to students with a major in Accounting or Forensic Accounting.

Enrollment is limited to Graduate or Undergraduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Graduate Regular scale.

ACCT 696: *Directed Studies in Accounting.* 1-3 credits.
Approval by faculty member and program director required prior to registration. Studies specialized topics in business not otherwise available in the curriculum. Offered by School of Business. May be repeated within the degree for a maximum 3 credits.

Recommended Prerequisite: Admission to the MSA program or permission of the program director.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Enrollment is limited to Graduate or Undergraduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Regular scale.

ACCT 697: *Special Topics in Accounting.* 1-3 credits.
Sections established as necessary to focus on various topical issues that emerge in practice of accounting. Offered by School of Business. May be repeated within the term for a maximum 6 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: Admission to the MSA program or permission of the program director.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

700 Level Courses

ACCT 701: *Business Valuation.* 3 credits.
Provides hands-on-experience in financial statement analysis and valuation. Takes an accounting-based valuation perspective and offers a comprehensive framework for analyzing financial statements consisting of (a) Business Strategy, (b) Accounting Analysis, (c) Financial Analysis, and (d) Prospective Analysis and Valuation. Offered by School of Business. May not be repeated for credit. Equivalent to MBA 701.

Recommended Prerequisite: Admission to the MSA program or permission of instructor. Grade of B or better in MBA 613.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ACCT 708: *Taxes and Business Strategy.* 3 credits.
Provides a framework for making managerial decisions in a global tax environment. Examines business decisions such as location of facilities, employee compensation, mergers and acquisitions, capital and asset structure, and business form. Focuses on tax planning concepts and the effect of taxes on business decisions. Offered by School of Business. May not be repeated for credit. Equivalent to MBA 708.

Recommended Prerequisite: Admission to the MSA program or permission of instructor. Completion of MBA core requirements.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ACCT 737: *Fraud and the Law.* 3 credits.
Provides an overview of US legal system including law-making process, structure of court system, and how frauds are brought to trial, prosecuted and resolved. Explores common fraud statutes used to penalize wrongdoers. Course will examine evidentiary rules including types of evidence, hearsay, impeachment and privileges. Highlight the legal requirements for serving as an expert witness and testifying in court. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ACCT 738: *Advanced Topics in Fraud.* 3 credits.
Course will cover advanced topics in forensic accounting. The focus will be on contemporary issues in fraud. Examples of topics include litigation support, money laundering, consumer fraud, bankruptcy, divorce and tax fraud, fraud in e-commerce, insurance fraud and mortgage fraud. The course will provide a comprehensive look at fraud investigation. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:

Required Prerequisites: ACCT 636[C], 636[XS], 636[XP], MBA 744[C], 744[XS] or 744[XP].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.
[XP] Requires minimum grade of XP.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ACCT 741: *Information Technology Auditing.* 3 credits.
Introduces methodologies to assess security and control issues concerning accounting and other information systems. Key feature of course is applying computer-assisted audit tools and techniques to test effectiveness of application controls. Offered by School of Business. May not be repeated for credit.

Recommended Prerequisite: Permission of program director if not already admitted to MSA or MBA program.

Registration Restrictions:
Enrollment is limited to students with a major in Accounting or Business Administration.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ACCT 742: *Governance and Ethics.* 3 credits.
Focuses on developing understanding of corporate governance issues and ethical decision making. Topics include examination of internal and external international governance issues, and ethical analysis in current business environment. Offered by School of Business. May not be repeated for credit. Equivalent to MBA 742.

Recommended Prerequisite: Permission of program director if not already admitted to MSA or MBA program.

Registration Restrictions:
Enrollment is limited to students with a major in Accounting, Business Administration, Forensic Accounting or Government Accounting.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ACCT 743: *Corporate Financial Reporting.* 3 credits.
Addresses contemporary issues in corporate financial reporting. Focuses on role of financial reporting in providing decision-useful information to participants of capital market, and theoretical and empirical assessments of its performance. Offered by School of Business. May not be repeated for credit.

Recommended Prerequisite: Permission of program director if not already admitted to MSA or MBA program.

Registration Restrictions:
Enrollment is limited to students with a major in Accounting or Business Administration.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

ACCT 771: *Audit Analytics.* 3 credits.
This course prepares students to enter a rapidly changing audit environment. The course provides students with current techniques used by accounting and finance professionals to improve audit efficiency and effectiveness through data analytics. The topics covered include auditing through information systems, continuous auditing, automated audit procedures, and artificial intelligence to support judgment and decision-making. Emerging issues that impact the audit function are also covered, such as blockchain technologies, information assets and digital currencies. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (ACCT 665[C], 665[XS] or 665[XP]) and (ACCT 671[C], 671[XS] or 671[XP]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.
[XP] Requires minimum grade of XP.

Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Enrollment is limited to students with a major in Accounting Analytics or Accounting.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ACCT 772: *Federal Accounting and Reporting.* 3 credits.
Designed to give graduate students the opportunity to learn about accounting and reporting issues facing government accounting professionals. The course discusses the differences between the federal sector and other sectors, and the integral use of budgetary accounting versus the more traditional financial accounting. Students will learn about federal reporting at both the agency and government-wide level, be introduced to innovative reporting practices in the federal government and will build critical writing and reporting skills. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: ACCT 672[C], 672[XS], 672[XP], 472[C] or 472[XS].

[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.
[XP] Requires minimum grade of XP.

Enrollment is limited to students with a major in Accounting or Government Accounting.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ACCT 781: *Tax Analytics.* 3 credits.
This course prepares accounting students to be effective tax leaders. It focuses on emerging issues in tax analytics using case studies and applied technologies. The topics include extracting and analyzing tax data for risk analysis, tax strategy, transfer pricing, artificial intelligence, and technology automation related to the tax function. Emerging issues that impact the tax profession are also covered, such as blockchain technologies, information assets and digital currencies. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (ACCT 665[C], 665[XS] or 665[XP]) and (ACCT 671[C], 671[XS] or 671[XP]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.
[XP] Requires minimum grade of XP.

Enrollment is limited to students with a major in Accounting Analytics or Accounting.

Enrollment limited to students in a Graduate Certificate or Master of Science degrees.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ACCT 792: *Seminar in Accounting.* 3 credits.
Selective analysis of topics addressing important issues in contemporary accounting practice. Discussion of two or three major topics. Offered by School of Business. May be repeated within the term for a maximum 6 credits.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

ACCT 795: *Global Accounting Environment.* 3 credits.
Examines the activities of accounting firms competing in the global business environment. Students will observe these activities in residency and study the decision-making processes of international accounting firms to develop an understanding of the regulatory environment of global accounting. Offered by School of Business. May not be repeated for credit.

Recommended Prerequisite: Admission to the MSA program or permission of the program director.

Registration Restrictions:
Enrollment is limited to students with a major, minor, or concentration in Accounting.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ACCT 796: *Independent Studies/Directed Readings.* 1-3 credits.
Research and analysis of selected problems or topics in accounting not otherwise available in curriculum. Notes: Approval of faculty member and program director required. Offered by School of Business. May not be repeated for credit.

Recommended Prerequisite: Permission of Program Director.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Regular scale.

African and African American Studies (AFAM)

200 Level Courses

AFAM 200: *Introduction to African American Studies.* 3 credits.
Interdisciplinary introduction to the field of African American studies. Includes comparative analysis of approaches, methodologies, and key concepts related to the study of people of African descent in the United States, continental Africa, and throughout the African diaspora. Lectures and discussion integrate attention to such issues as diversity and multiculturalism from national and global perspectives. Offered by African & Af-American Studies. Limited to three attempts.

Mason Core: Social/Behavioral Sciences

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

300 Level Courses

AFAM 390: *Special Topics in African and African American Studies.* 3 credits.
Study of selected topics related to the study of people of African descent in Africa, the United States, the Caribbean, Latin Americas and throughout

the African Diaspora. Notes: May be repeated when topic is different. Offered by African & Af-American Studies. May be repeated within the term for a maximum 12 credits.

Specialized Designation: Topic Varies

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

AFAM 490: *Internship.* 1-6 credits.
Approved work-study program in cooperation with specific organizations including area museums; NGOs; and local, state, and federal agencies. Students should arrange for an internship in the semester before they wish to enroll. Permission required from program director. Offered by African & Af-American Studies. Limited to three attempts.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

AFAM 499: *Independent Study.* 1-3 credits.
Investigation of an area related to African American studies according to individual interest, with emphasis on research. Permission required from program director. Offered by African & Af-American Studies. May be repeated within the term for a maximum 9 credits.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

Anthropology (ANTH)

100 Level Courses

ANTH 114: *Introduction to Cultural Anthropology.* 3 credits.
Overview of major ideas and approaches to the study of cultures around the world. Surveys kinship, social organization, political economy, religious beliefs, language and other aspects of non-Western cultures. Offered by Sociology & Anthropology. Limited to three attempts.

Mason Core: Social/Behavioral Sciences

Specialized Designation: Non-Western Culture

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ANTH 120: *Unearthing the Past: Prehistory, Culture and Evolution.* 3 credits.
Introduction to archaeology. Explores the ways in which the archaeological record contributes to issues and debates about the human past and present, as well as the lab and field methods used for understanding archaeological remains. Offered by Sociology & Anthropology. Limited to three attempts.

Mason Core: Social/Behavioral Sciences

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ANTH 121: *People of the Earth: Humanity's First Five Million Years.* 3 credits.
Introduction to world prehistory. Begins with the biological, cultural, and technological evolution of the human species during a period known as the Paleolithic, followed by a consideration of developments following the end of the last Ice Age, focusing primarily on the origins of agriculture and the rise of complex societies around the globe. Offered by Sociology & Anthropology. Limited to three attempts.

Mason Core: Social/Behavioral Sciences

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ANTH 135: *Introduction to Biological Anthropology.* 3 credits.
Uses an evolutionary perspective to introduce students to the study of humans and non-human primates as biological organisms. The course will analyze the genetic and environmental bases for modern human biological variation, understand primate behavior and biological relationships, and reconstruct the fossil record. Discussions about prehistoric skeletal remains will emphasize biological responses to changes in subsistence and social structure. Offered by Sociology & Anthropology. Limited to three attempts.

Mason Core: Natural Science Overview, Social/Behavioral Sciences

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

300 Level Courses

ANTH 300: *Civilizations.* 3 credits.
Cross-cultural and transtemporal examination of complex societies and civilizations. Explores developmental schema for rise, articulation, spread, and decline of historic and contemporary civilizations. Offered by Sociology & Anthropology. Limited to three attempts.

Specialized Designation: Non-Western Culture

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ANTH 302: *Peoples and Cultures of Latin America.* 3 credits.
Examines Latin American cultures and selected aspects of historical record. Offered by Sociology & Anthropology. Limited to three attempts.

Mason Core: Global Understanding

Specialized Designation: Non-Western Culture

Recommended Prerequisite: ANTH 114, 60 hours, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ANTH 307: *Ancient Mesoamerica.* 3 credits.
Examines the peoples and cultures of ancient Mesoamerica, including Olmec, Maya, Teotihuacan, and Aztec societies. Major topics include

the rise of civilization, the development of the Mesoamerican cultural tradition, the growth of cities, trade, exchange, writing systems, political organization, religion, conflict, and the archaeological study of this indigenous heritage. Offered by Sociology & Anthropology. Limited to three attempts.

Mason Core: Global Understanding

Specialized Designation: Non-Western Culture

Recommended Prerequisite: ANTH 120, 60 credits, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ANTH 308: *Peoples and Cultures of the Middle East.* 3 credits.
Examines the anthropological literature on peoples and cultures of the Middle East, with particular attention to political and social change over the course of the 20th century. Offered by Sociology & Anthropology. Limited to three attempts.

Mason Core: Global Understanding

Specialized Designation: Non-Western Culture

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ANTH 309: *Peoples and Cultures of India.* 3 credits.
Examination of South Asia, with emphasis on India. Includes general overview of prehistory and history; impact of colonialism; contemporary Indian culture, including the changing relations of caste and class, family organization, and the roles of women, religion, and ideology; and current trends in economic development and socioeconomic differences in different parts of the country. Offered by Sociology & Anthropology. Limited to three attempts.

Mason Core: Global Understanding

Specialized Designation: Non-Western Culture

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ANTH 312: *Political Anthropology.* 3 credits.
Examines cultural and ecological contexts of political structures and competition for power in selected societies; and cross-cultural and comparative approaches to study of political conflict, leadership, values, and symbolism. Offered by Sociology & Anthropology. Limited to three attempts.

Mason Core: Global Understanding

Recommended Prerequisite: ANTH 114, 60 hrs, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ANTH 313: *Myth, Magic, and Mind.* 3 credits.
Examines religion as a cultural system. Topics include mythology, ritual, symbolism, and dogma. Emphasizes cross-cultural and predominantly non-Western material. Offered by Sociology & Anthropology. Limited to three attempts.

Mason Core: Global Understanding

Specialized Designation: Non-Western Culture

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ANTH 314: *Zombies.* 3 credits.
Explores how human beings across cultures have historically expressed social anxieties through references to the one particular manifestation of the undead: zombies, figures representing a state in which human beings are animate and affective in the world around them, but lack consciousness or free will. Offered by Sociology & Anthropology. Limited to three attempts.

Specialized Designation: Non-Western Culture

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ANTH 320: *Global Africa.* 3 credits.
Explores the complex and distance-defying connections shaping Africa and being shaped by Africans on the continent. Emphasizes the diversity and change characterizing peoples who are at the center of world processes. Topics include popular representations of Africa and Africans, colonial and postcolonial histories, gender, money, family, religion, environment, and health. Offered by Sociology & Anthropology. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ANTH 322: *Pirates, Conquest, and Death: Archaeology and Globalism since 1500.* 3 credits.
Examines materials, theories, and methods of archaeology derived from and applied to historical sites, as they complement archival records. Offered by Sociology & Anthropology. Limited to three attempts.

Recommended Prerequisite: ANTH 120, 60 hrs, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ANTH 324: *Warfare, Violence, and Sacrifice in Antiquity.* 3 credits.
Examines origin and nature of conflict in human society with an emphasis on the ancient past. Major topics include the possible role of violence in human evolution, cross-cultural studies of conflict in indigenous society, warfare in early states, and sacrifice as a ritual practice. Offered by Sociology & Anthropology. Limited to three attempts.

Recommended Prerequisite: ANTH 120, 60 credits, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ANTH 325: *Field Techniques in Archaeology.* 3-6 credits.
Intensive study of archaeological field techniques by directed group projects in site survey, site testing, recording techniques, and stratigraphy through discussions, demonstrations, and hands-on experience. Offered by Sociology & Anthropology. May be repeated within the term for a maximum 6 credits.

Recommended Prerequisite: ANTH 120, 60 hours, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ANTH 330: *Peoples and Cultures of Selected Regions: Non-Western.* 3 credits.
Examines cultures of a specific region such as Africa and the Middle East. Focuses primarily on non-Western cultures. Offered by Sociology & Anthropology. Limited to three attempts.

Specialized Designation: Non-Western Culture

Recommended Prerequisite: ANTH 114, 60 credits, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ANTH 331: *Refugees.* 3 credits.
Introduction to causes and consequences of forced dislocation as a global issue. Covers formally recognized refugees, as well as people such as internally displaced persons and asylum seekers who are in refugee-like circumstances. Focuses on understanding the personal experiences of refugees and examining efforts on their behalf at national and international levels. Offered by Sociology & Anthropology. Limited to three attempts.

Mason Core: Global Understanding

Recommended Prerequisite: ANTH 114, 60 credits, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ANTH 332: *Cross-Cultural Perspectives on Globalization.* 3 credits.
Examines the varieties of cultural experience. Several cultures are studied in depth; with attention to local histories, global contexts, and shifting perspectives on the practice of ethnography. Notes: May be used for credit toward the BA in sociology. Offered by Sociology & Anthropology. Limited to three attempts.

Mason Core: Global Understanding

Specialized Designation: Non-Western Culture

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ANTH 340: *Comparative Perspectives on Immigration.* 3 credits.
Considers the dimensions and meanings of the immigrant experience in the United States, with a focus on the diversity of immigrants and refugees who have arrived during the past 30 years. Emphasis on the social context in which immigration occurs and on the bearing of institutional and cultural influences on patterns of adaptation, assimilation, and exclusion from the host society. Offered by Sociology & Anthropology. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ANTH 345: *Ritual and Power in Social Life.* 3 credits.
Domains of religion and ritual are conjoined by questions of power: its deployment, distribution, and forms of resistance it engenders. Course investigates connections among religious thought, ritual practice, and social action by drawing on a variety of theoretical orientations in the social sciences including structuralism, semiotics, and performance theory. Offered by Sociology & Anthropology. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ANTH 350: *Human Growth and Development.* 3 credits.
Introduces human developmental stages in terms of behavior, biology, and genetics. Addresses the history and methods of human growth research. Explores the environmental and socioeconomic influences on human growth. Investigates the evolution of uniqueness in human developmental stages of the human species in comparison of other primates. Offered by Sociology & Anthropology. Limited to three attempts.

Recommended Prerequisite: ANTH 135.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ANTH 353: *Anthropological Genomics.* 3 credits.
Deepens knowledge of genome technologies, the history of genome research, and how genomics has contributed to our understanding of humanity past and present. Considers how different paradigms of evolutionary thought have influenced the field and how forces of evolution act to shape genome variation in humans. Considers the central role of genomics in the both the rise of and resistance to race science, and how an anthropological perspective is essential to gain a fuller understanding of the social and political dimensions of genome science. Provides hands-on training of laboratory techniques for generating, analyzing, and interpreting human genome data and contextualizes these methods within historical and ethical frameworks. Traces how genome scientists have used these techniques to better understand human evolution, population history, health, and biodiversity. Evaluates the power of genome science to impact questions of human agency, kinship,

identity, ancestry, and belonging. Offered by Sociology & Anthropology. Limited to three attempts.

Recommended Prerequisite: ANTH 135 or similar introductory level coursework in biology.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ANTH 355: *Human Origins.* 3 credits.
Explores the fossil evidence for human and primate evolution. Exposes students to evidence for the origins of mammals and primates, and to discussions of human evolution. Uses human fossils as tools to understand evolutionary relationships (phylogenetics), behavior, functional anatomy, and broader adaptation. Offered by Sociology & Anthropology. Limited to three attempts.

Recommended Prerequisite: ANTH 135.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ANTH 357: *Bioarchaeology.* 3 credits.
Introduces students to the study of human skeletal remains and their associated archaeological artifacts, focusing on using the human skeleton to address behavior, growth, stress, ritual, social complexity, diet, disease, and violence in the past. Uses the human body and associated artifacts to provide a detailed analysis of cultural transitions, expression of socioeconomic inequality, the origins of ritual complexity, violence, and disease. Offered by Sociology & Anthropology. Limited to three attempts.

Recommended Prerequisite: ANTH 135.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ANTH 363: *Humans, Disease, and Death.* 3 credits.
Explores human health and disease from anthropological and evolutionary perspectives. Examines what a disease is, what causes them, how we have co-evolved with diseases, how disease patterns have changed over human history, and the future of disease. Offered by Sociology & Anthropology. Limited to three attempts.

Mason Core: Social/Behavioral Sciences

Specialized Designation: Mason Impact.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ANTH 365: *Scientific Racism and Human Variation.* 3 credits.
Explores scientific methods of classification as a reflection of social values. Explains the harms of "race" and eugenics committed under the aegis of science. While critiquing the biological concept of race, considers how the social construction of race becomes part of living bodies through racism. Details modern human variation as a product of evolutionary forces. Offered by Sociology & Anthropology. Limited to three attempts.

Recommended Prerequisite: ANTH 135, 60 hours or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ANTH 366: *Food and Human Evolution.* 3 credits.
Explores the relationship between diet and human adaptation from biological, archaeological, cultural, and evolutionary perspectives. Examines how humans are unique in our ability to find and process a wide range of foods. Introduces agriculture as a co-evolutionary strategy between humans and other species. Offered by Sociology & Anthropology. Limited to three attempts.

Specialized Designation: Mason Impact.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ANTH 367: *DNA, Identity, and Power.* 3 credits.
Considers the history and development of genomics in relation to questions of human identities and belonging, including issues of race, cultural heritage, sex, gender, sexuality, violence, and monogamy. Evaluates how genomics has become a seemingly authoritative source of knowledge about human identities and our relations to one another, and assesses the consequences of genomic truth claims in society today. Evaluates the field of genomics as a form of knowledge production and also as a culturally and politically situated process. Brings science into better relation with critical race theories, Indigenous studies, and queer and feminist science studies to disrupt and reinvent how genomic knowledge of humans is made and understood. Offered by Sociology & Anthropology. Limited to three attempts.

Recommended Prerequisite: ANTH 135 or additional introductory coursework in one or more of the following areas: Biological and/or Cultural Anthropology; Biology; Science and Technology Studies; History of Science and/or Medicine; African and African-American Studies; Native American Studies; Latin American Studies; LGBTQ Studies; and Women and Gender Studies.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

ANTH 370: *Environment and Culture.* 3 credits.
Examines relationships among environment, culture, and human behavior with an emphasis on cultural ecological explanations in mainly non-Western contexts. Offered by Sociology & Anthropology. Limited to three attempts.

Specialized Designation: Green Leaf Focused Course

Recommended Prerequisite: ANTH 114, or 60 hours, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ANTH 373: *Archaeological Science.* 3 credits.
Explores the use of the biological and physical sciences in archaeology. Topics include dating, site discovery, prehistoric ecology, diet and technology. Emphasizes the ways in which data deriving from the archaeological sciences can contribute to a more contextualized and theoretically sophisticated understanding of the human past. Offered by Sociology & Anthropology. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: ANTH 120[C], 120[XS], 135[C] or 135[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ANTH 374: *Archaeology of Hunter-Gatherers.* 3 credits.
Explores the nature of traditional hunter-gatherer societies and the range of methods and theories employed by archaeologists to reconstruct the lifeways and practices of prehistoric hunter-gatherers. Topics include ecology, diet, social organization, mobility, ritual, and technology from a cross-cultural perspective; case studies will derive primarily from tropical/sub-tropical and northern forager populations. Offered by Sociology & Anthropology. Limited to three attempts.

Recommended Prerequisite: ANTH 114 or ANTH 120

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ANTH 375: *Culture, Power, History.* 3 credits.
Use of ethnographic, archaeological, linguistic, and documentary data, in light of anthropological theory, to interpret the past and processes of change among indigenous peoples throughout the world. Offered by Sociology & Anthropology. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ANTH 376: *Food and Culture.* 3 credits.
Examines a variety of experiences through foods, which bring not only nutritional but also sociocultural debates to our table (e.g. identity, memory, senses, ethnicity, gender, geopolitics, climate change, and globalization). Focuses on both Western and non-Western cultures. Offered by Sociology & Anthropology. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ANTH 377: *Mortuary Archaeology.* 3 credits.
Focuses on the study of burial patterns and death rituals in antiquity by introducing students to the methods of burial excavation, examining the history of mortuary archaeology theory and engagement with processual and postprocessual schools of thought, and examining case studies from around the world to decode the complex symbolisms encoded in burial practices. Offered by Sociology & Anthropology. Limited to three attempts.

Recommended Prerequisite: ANTH 135.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ANTH 378: *Humans and Animals.* 3 credits.
Provides an introduction to anthropology of human's relationship with animals across a large geographic and temporal span. From domestication of animals to animism, pets and animal classification systems, course explores society's attitudes toward and dynamic interactions with the animal kingdom. Offered by Sociology & Anthropology. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ANTH 379: *Andean Archaeology.* 3 credits.
Examines 12,000 years of pre-Hispanic cultures of the Andean region of western South America. Focuses on the development and key achievements of some of the most remarkable civilizations of the New World, including the Chavin, Paracas, Cupisnique, Moche, Sicán, Nasca, Chimú, Wari, and Inka. Considers as well the nature, priorities, and accomplishments of scientific Andean archaeology. Offered by Sociology & Anthropology. Limited to three attempts.

Recommended Prerequisite: ANTH 135.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ANTH 380: *Language and Culture.* 3 credits.
Anthropological analyses of language behavior, origins, and change. Emphasizes the interplay of language, culture, anthropology, and linguistics. Offered by Sociology & Anthropology. Limited to three attempts.

Recommended Prerequisite: ANTH 114, 60 credits, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ANTH 381: *Medical Anthropology.* 3 credits.
Surveys the discipline of medical anthropology, focusing on traditional medical beliefs and the diverse responses to modern scientific medicine in developing countries and among cultural minorities in the United States. Offered by Sociology & Anthropology. Limited to three attempts.

Specialized Designation: Non-Western Culture

Recommended Prerequisite: ANTH 114, 60 credits, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ANTH 382: *Urban Anthropology.* 3 credits.
Uses tools and resources of sociocultural anthropology to study life in cities in a comparative, global context, including topics such as poverty, discrimination, migration, transnationalism, and urban planning. Case studies draw from different urban environments in Asia, Latin America, Europe, Africa, and North America. Offered by Sociology & Anthropology. Limited to three attempts.

Mason Core: Global Understanding

Recommended Prerequisite: ANTH 114 and 60 credits, or Permission of Instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ANTH 386: *Quantitative Methods in Anthropology.* 3 credits.
Introduces students to statistical methods used in anthropology. Emphasizes appropriate and creative application of statistical tests to anthropological problems and careful interpretation of results. Explores methods used to compare means, variances, and correlations within and between samples. Provides instruction on methods used in anthropological demography. Builds fluency in the use of statistical software. Offered by Sociology & Anthropology. Limited to three attempts.

Recommended Prerequisite: ANTH 114, 120, 135

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ANTH 387: *Zooarchaeology.* 4 credits.
Explores the methods and theories applied in zooarchaeology through integrating hands-on assignments working with a comparative collection. Examines how archaeologists can understand human-animal relationships in the past including their role in reconstructing paleoenvironments, their contribution to ancient foodways, domestication of animals, and ritual uses of fauna. Offered by Sociology & Anthropology. Limited to three attempts.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ANTH 388: *Human Osteology.* 3 credits.
Introduces students to the methods of modern human skeletal analysis in bio- and forensic anthropology. Covers introductory human skeletal and dental gross anatomy and describes analytical techniques spanning including age and sex estimation, osteometry, and paleopathology. Offered by Sociology & Anthropology. Limited to three attempts.

Recommended Prerequisite: ANTH 135.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ANTH 389: *Human Osteology Lab.* 2 credits.
Laboratory course associated with ANTH 388. Offered by Sociology & Anthropology. Limited to three attempts.

Recommended Prerequisite: ANTH 135.

Recommended Corequisite: ANTH 388.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

ANTH 390: *History of Anthropological Thought.* 3 credits.
Overview of the major theoretical traditions and schools of thought in anthropology. Notes: Required for Anthropology majors, and for students applying to the Accelerated Master's program in Anthropology. Offered by Sociology & Anthropology. Limited to three attempts.

Recommended Prerequisite: ANTH 114 and 60 credits, including 6 credits of ANTH 300-level (or above) courses, or permission of instructor

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ANTH 391: *Forensic Anthropology.* 3 credits.
Human remains play key roles in medicolegal investigations. Provides an overview of contemporary forensic anthropology including age and sex estimation from human remains, estimation of the time since death, analysis of sharp force, blunt force, and gunshot trauma, mass disaster contexts, and the forensic archaeological recovery of buried remains. Offered by Sociology & Anthropology. Limited to three attempts.

Recommended Prerequisite: ANTH 135.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ANTH 392: *Forensic Anthropology Lab.* 2 credits.
This lab class in the companion to ANTH 391. Involves hands-on lab exercises in the learning of methods in modern forensic anthropology, covering age and sex estimation from human remains, estimation of the time since death, analysis of traumatic trauma, individual identification, and archaeological recovery of buried remains. Offered by Sociology & Anthropology. Limited to three attempts.

Recommended Prerequisite: ANTH 135.

Recommended Corequisite: ANTH 391.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

ANTH 393: *Paleopathology.* 3 credits.
Provides an introduction to the field of paleopathology which involves identification of pathological conditions in human skeletal remains, and reconstruction of the natural history and co-evolution of disease with humans. Covers the differential diagnosis and history of infectious pathogens, skeletal trauma, oral diseases, metabolic abnormalities,

developmental defects, and more. Offered by Sociology & Anthropology. Limited to three attempts.

Recommended Prerequisite: ANTH 135.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ANTH 394: *Archaeology of Climate Change.* 3 credits.
Explores the contributions that archaeology can make to the study of climate change, past and present. Emphasizes the methods and theories used by archaeologists to reconstruct past environments and to evaluate the nature of human responses to climate change. Explores cases in which climate change has been evoked as a causal mechanism for human biological and behavioral change (spanning from the origins of the human lineage to the collapse of civilizations), while also addressing the ways in which archaeological data can contribute to dialogue about the changes in climate we are experiencing today and how climate change is impacting the preservation of cultural heritage. Offered by Sociology & Anthropology. Limited to three attempts.

Recommended Prerequisite: ANTH 120

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

ANTH 395: *Work, Technology, and Society: An IT Perspective.* 3 credits.
Introduction to the anthropology of work, technology, and society, with emphasis on information technology. Covers general conceptual issues of information technology and also involves specific practical exercises with computers, their operating systems, the logic of automated production, databases, and web-based communication. Attention also directed to social and ethical issues raised by contemporary information technology. Offered by Sociology & Anthropology. Limited to three attempts.

Mason Core: Info Tech & Computing

Recommended Prerequisite: ANTH 114, 60 hours, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ANTH 396: *Issues in Anthropology: Social Sciences.* 3 credits.
Topic of contemporary interest in anthropology, focusing on social science topics of interest. Notes: May be repeated when topic is different. Offered by Sociology & Anthropology. May be repeated within the term for a maximum 18 credits.

Mason Core: Social/Behavioral Sciences

Specialized Designation: Non-Western Culture

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ANTH 398: *Study Abroad.* 1-6 credits.
Field project or study abroad experience leading to the production of a written report Notes: May be repeated with permission of department. Offered by Sociology & Anthropology. May be repeated within the degree for a maximum 6 credits.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ANTH 399: *Issues in Anthropology.* 3 credits.
Topic of contemporary interest in anthropology, changing from semester to semester, and focusing on topics such as sex roles, anthropology and ethics, and primate social organization. Notes: May be repeated for credit when topic is different. Offered by Sociology & Anthropology. May be repeated within the term.

Recommended Prerequisite: ANTH 114, 60 hours, and permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

ANTH 400: *Engaging the World: Anthropological Perspectives.* 3 credits.
Examines selected topics with emphasis on the integration of different kinds of knowledge and the balancing of alternative ways of assessing meaning and relevance. Topics usually drawn from issues of global economic processes, civic rights and responsibilities, ethics, museums, public policy, the environment, and migration. Notes: May be repeated when topic is different. Offered by Sociology & Anthropology. May be repeated within the term for a maximum 9 credits.

Mason Core: Synthesis

Recommended Prerequisite: ANTH 114, 60 credits, or permission of instructor.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

ANTH 440: *Applied Anthropology.* 3 credits.
Examines the needs and problems of communities and organizations and develops professional skills for a career in applied anthropology. Topics include the history of applied anthropology, research methods and ethics, fields in which applied anthropologists work, career options, and professionalization. Students prepare a career portfolio and other documents common in the workplace for applied anthropologists. Offered by Sociology & Anthropology. Limited to three attempts.

Recommended Prerequisite: ANTH 114, 60 hours, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ANTH 450: *Qualitative Methods: Nonstatistical Approaches in Culture and Social Research.* 3 credits.
Explores some of the most useful nonquantitative research techniques in social sciences and offers practice in their application. Offered by Sociology & Anthropology. Limited to three attempts.

Recommended Prerequisite: 60 credits and 6 credits of ANTH including ANTH 114, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ANTH 488: *Gender, Sexuality, and Culture.* 3 credits.
Examines how gender, sexuality, race, and class come together as analytically distinct, yet practically intertwined, systems of meaning and practice. Examples highlight questions of political economy and history while focusing on specific ethnographic or historical readings. Offered by Sociology & Anthropology. Limited to three attempts.

Recommended Prerequisite: 60 hours and ANTH 340 or Permission of Instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ANTH 490: *Theories, Methods, and Issues II.* 3 credits.
Second of a two-course sequence that reviews major theoretical traditions and schools of thought in anthropology. Notes: Required for anthropology majors and usually taken as a senior seminar. Offered by Sociology & Anthropology. Limited to three attempts.

Specialized Designation: Writing Intensive in Major

Recommended Prerequisite: 60 hours and 9 hours of ANTH, including ANTH 390, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ANTH 495: *Internship.* 1-6 credits.
Supervised project in applying anthropology in relevant settings including public and historical archaeology, developmental anthropology, museums, non-profit organizations, advocacy, communications, or consulting organizations. Notes: Students must complete 45 hours of work at the internship site for each credit. Offered by Sociology & Anthropology. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: 60 credits or permission of instructor.

Schedule Type: Internship

Grading:
This course is graded on the Satisfactory/No Credit scale.

ANTH 496: *Evolutionary Theory.* 3 credits.
Considers evolution as a biological as well as cultural concept. Parallels and contrasts among conceptual approaches allow a critique of the potential of evolution as a unifying biosocial theory. Offered by Sociology & Anthropology. Limited to three attempts.

Recommended Prerequisite: 60 hours and 9 hours of ANTH, including ANTH 390, or Permission of Instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ANTH 499: *Independent Research.* 1-12 credits.
Individual research on a topic to be organized in advance by student and instructor. Offered by Sociology & Anthropology. May be repeated within the term for a maximum 12 credits.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

500 Level Courses

ANTH 535: *Anthropology and the Human Condition: Seminar I.* 3 credits.
Examines some of the major theorists of 19th- and early 20th-century cultural theory. Marx, Freud, Durkheim, and Weber are surveyed as foundational thinkers for reading the works of such 20th-century theorists as Boas, Malinowski, Benedict, and Sapir. Offered by Sociology & Anthropology. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

ANTH 536: *Anthropology and the Human Condition: Seminar II.* 3 credits.
Examines contemporary theorists of anthropology, covering ongoing debates over epistemology and the multiple strands that inform anthropological theory and practice. Offered by Sociology & Anthropology. May not be repeated for credit.

Recommended Prerequisite: ANTH 535.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

ANTH 545: *Ritual and Power in Social Life.* 3 credits.
Domains of religion and politics are conjoined by questions of power: its deployment, distribution, and forms of resistance it engenders. Course investigates connections among religious thought, ritual practice, and political action by drawing on a variety of theoretical orientations in the

social sciences including structuralism, semiotics, psychoanalysis, and performance theory. Offered by Sociology & Anthropology. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ANTH 555: *Policy and Culture.* 3 credits.
Examines the relevance of cultural processes to policymaking and the culture of policymaking organizations. Topics include development, welfare policy, environmental and energy policy, regulation and risk; health care and immigration policy; and the war on drugs. Offered by Sociology & Anthropology. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

ANTH 556: *Human Growth and Development.* 3 credits.
Introduces human developmental stages in terms of behavior, biology, and genetics. Addresses the history and methods of human growth research. Explores the environmental and socioeconomic influences on human growth. Investigates the evolution of uniqueness in human developmental stages of the human species in comparison of other primates. Offered by Sociology & Anthropology. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ANTH 557: *Human Origins.* 3 credits.
Explores the fossil evidence for human and primate evolution. Exposes students to evidence for the origins of mammals and primates, and to discussions of human evolution. Uses human fossils as tools to understand evolutionary relationships (phylogenetics), behavior, functional anatomy, and broader adaptation. Offered by Sociology & Anthropology. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ANTH 570: *Andean Archaeology.* 3 credits.
Examines 12,000 years of pre-Hispanic cultures of the Andean region of western South America - that constituted the most remarkable complex civilizations of the New World. Focuses on the development and key achievements of the Chavin, Paracas, Cupisnique, Moche, Sican, Nasca, Chimu, Wari, and Inka cultures, and the nature, priorities, and accomplishments of scientific Andean archaeology. Offered by Sociology & Anthropology. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ANTH 573: *Archaeological Science.* 3 credits.
Explores the use of the biological and physical sciences in archaeology. Topics include dating, site discovery, prehistoric ecology, diet and technology. Emphasizes the ways in which data deriving from the archaeological sciences can contribute to a more contextualized and theoretically sophisticated understanding of the human past. Offered by Sociology & Anthropology. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ANTH 574: *Archaeology of Hunter-Gatherers.* 3 credits.
Explores the nature of traditional hunter-gatherer societies and the range of methods and theories employed by archaeologists to reconstruct the lifeways and practices of prehistoric hunter-gatherers. Topics include ecology, diet, social organization, mobility, ritual, and technology from a cross-cultural perspective; case studies will derive primarily from tropical/sub-tropical and northern forager populations. Offered by Sociology & Anthropology. May not be repeated for credit.

Registration Restrictions:

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ANTH 576: *American Cultures.* 3 credits.
Examines U.S. cultures and explores concept of an American culture. Course readings and discussions explore underpinnings of the American experience, document broad historical shifts, and detail the experience of diverse groups of Americans, thus forming the basis for a critical, analytical, and comparative discussion of American life and life in America. Offered by Sociology & Anthropology. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ANTH 577: *Mortuary Archaeology.* 3 credits.
Focuses on the study of burial patterns and death rituals in antiquity by introducing students to the methods of burial excavation, examining the history of mortuary archaeology theory and engagement with processual and postprocessual schools of thought, and examining case studies from around the world to decode the complex symbolisms encoded in burial practices. Offered by Sociology & Anthropology. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ANTH 578: *Humans and Animals.* 3 credits.
Provides an introduction to anthropology of human's relationship with animals across a large geographic and temporal span. From domestication of animals to animism, pets and animal classification systems, course explores society's attitudes toward and dynamic interactions with the animal kingdom. Offered by Sociology & Anthropology. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ANTH 580: *Environmental Anthropology.* 3 credits.
Covers major theoretical trends and ethnographic works in environmental anthropology, focusing on the frameworks developed and used by environmental anthropologists, including cultural ecology, ecological anthropology, environmentalism, political ecology, new ecology, and science and technology studies. Explores how environmental anthropologists have contributed to broader debates about modernity, globalization, power, kinship, science and technology, and human-environmental relations. Offered by Sociology & Anthropology. May not be repeated for credit.

Specialized Designation: Green Leaf Related Course

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ANTH 582: *Human Osteology.* 3 credits.
Introduces students to the methods of modern human skeletal analysis in bioarchaeological and forensic science. Covers introductory human skeletal and dental gross anatomy and describes analytical techniques spanning including age and sex estimation, osteometry, and paleopathology. Offered by Sociology & Anthropology. May not be repeated for credit.

Recommended Corequisite: ANTH 583.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ANTH 583: *Human Osteology Lab.* 2 credits.
Laboratory course associated with ANTH 582. Offered by Sociology & Anthropology. May not be repeated for credit.

Recommended Corequisite: ANTH 582.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory

Grading:
This course is graded on the Graduate Regular scale.

ANTH 584: *Paleopathology.* 3 credits.
Provides an introduction to the field of paleopathology which involves identification of pathological conditions in human skeletal remains, and reconstruction of the natural history and co-evolution of disease with humans. Covers the differential diagnosis and history of infectious pathogens such as tuberculosis and syphilis, skeletal trauma, oral diseases, metabolic abnormalities neoplasms developmental defects joint disease and more. Offered by Sociology & Anthropology. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ANTH 585: *Bioarchaeology.* 3 credits.
Explores the cutting-edge methods of bioarchaeological science and reconstructs ancient living worlds from the remarkable information encoded in bones via patterns of demography, disease, diet, trauma, violence, lifestyle, social structures, sex and gender, ethnicity, and identities on a global scale and over the last 10,000 years of history. Offered by Sociology & Anthropology. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ANTH 586: *Quantitative Methods in Anthropology.* 3 credits.
Introduces students to statistical methods used in anthropology. Emphasizes appropriate and creative application of statistical tests to anthropological problems and careful interpretation of results. Explores methods used to compare means, variances, and correlations within and between samples. Provides instruction on methods used in anthropological demography. Builds fluency in the use of statistical software. Offered by Sociology & Anthropology. May not be repeated for credit. Equivalent to ANTH 650.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ANTH 587: *Zooarchaeology.* 4 credits.
Explores the methods and theories applied in zooarchaeology through integrating hands-on assignments working with a comparative collection. Examines how archaeologists can understand human-animal relationships in the past including their role in reconstructing paleoenvironments, their contribution to ancient foodways, domestication of animals, and ritual uses of fauna. Offered by Sociology & Anthropology. May not be repeated for credit. Equivalent to ANTH 593.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Graduate Regular scale.

ANTH 590: *Forensic Anthropology.* 3 credits.
Provides an overview of contemporary forensic anthropology. Topics include: age and sex estimation from human remains, estimation of the postmortem interval, analysis of sharp force, blunt force, and gunshot trauma, individual identification, forensic taphonomy, mass disaster contexts, and the forensic archaeological recovery of buried remains. Offered by Sociology & Anthropology. May not be repeated for credit.

Recommended Corequisite: ANTH 591.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:

This course is graded on the Graduate Regular scale.

ANTH 591: *Forensic Anthropology Lab.* 2 credits.
Laboratory course associated with ANTH 590. Involves hands-on lab exercises in the learning of methods in modern forensic anthropology, covering age and sex estimation from human remains, estimation of postmortem intervals, analyses of traumatic trauma, individual identification, forensic taphonomy, and archaeological recovery of buried remains. Offered by Sociology & Anthropology. May not be repeated for credit.

Recommended Corequisite: ANTH 590.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory

Grading:
This course is graded on the Graduate Regular scale.

ANTH 594: *Archaeology of Climate Change.* 3 credits.
Explores the contributions that archaeology can make to the study of climate change, past and present. Emphasizes the methods and theories used by archaeologists to reconstruct past environments and to evaluate the nature of human responses to climate change. Explores cases in which climate change has been evoked as a causal mechanism for human biological and behavioral change (spanning from the origins of the human lineage to the collapse of civilizations), while also addressing the ways in which archaeological data can contribute to dialogue about the changes in climate we are experiencing today and how climate change is impacting the preservation of cultural heritage. Offered by Sociology & Anthropology. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

600 Level Courses

ANTH 616: *Anthropology of the City.* 3 credits.
Examines classic and contemporary works in urban theory, in light of broader scholarly discussions of modernity and globalization. Uses a case-study approach to analyze topics such as: public and private space, citizenship and governance, architecture and design, housing, transportation, formal and informal settlements, and the contest over space and environmental resources in cities around the world. Notes: Course may be offered fall or spring. Offered by Sociology & Anthropology. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

ANTH 619: *Disrupting Nature: Queer, Feminist, and Indigenous Science Studies.* 3 credits.
Introduces bodies of theory at the intersections of queer, feminist, and Indigenous studies and science and technology studies (STS), and questions how the concepts now known as “nature”, “sex”, and “life” were made. Illuminates connections between science and colonialism and how scientific concepts of nature have helped produce and maintain inequalities. Examines how colonial modes of thought have worked to isolate natural phenomena from their cultural contexts, and imposed divisions that have become the basis of colonial violence. Engages with multiple sustained efforts to resist these divides and/or rethink connections between nature and culture. Offered by Sociology & Anthropology. May not be repeated for credit.

Recommended Prerequisite: One introductory graduate level social theory course in any discipline or consent of professor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

ANTH 631: *Refugees in the Contemporary World.* 3 credits.
Explores major refugee flows since the mid-20th century, emphasizing mechanisms for providing assistance, asylum, and resettlement. Offered by Sociology & Anthropology. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ANTH 635: *Regional Ethnography.* 3 credits.
In-depth study of peoples and cultures of a specific world region (Latin America, East Asia, the Pacific, or United States). Content may include cultures defined by diaspora, migration, and other global forces and processes. Notes: May be repeated when topic is different. Offered by

Sociology & Anthropology. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

ANTH 640: *Applied Anthropology.* 3 credits.
Explores the application of contemporary anthropological ideas, theories, and methods to find solutions to practical problems as defined by various organizations and institutions including business, government, nongovernmental organizations, and various institutions. Offered by Sociology & Anthropology. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ANTH 650: *Methods in Anthropology.* 3 credits.
Reviews and examines major research methods commonly employed in cultural anthropological field study, with emphasis on ethnographic research design and the use of standard ethnographic techniques. Includes practice in designing ethnographic research project and using ethnographic methods and techniques in a field setting. Offered by Sociology & Anthropology. May not be repeated for credit. Equivalent to ANTH 586.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ANTH 670: *Regional Studies in Archaeology.* 3 credits.
Regional survey of specific culture area in archaeology to be chosen by student and instructor. Offered by Sociology & Anthropology. May not be repeated for credit.

Recommended Prerequisite: Permission of Instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Regular scale.

ANTH 677: *Anthropology and History.* 3 credits.
Considers anthropological approaches to the study of history, the ways in which people construct their histories, and social historians' effort to incorporate anthropological and ethnographic orientations into their accounts. Attention to tensions between culture and power in the constitution of historiography and to methodological challenges of interpreting qualitative and quantitative data. Offered by Sociology & Anthropology. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ANTH 684: *Independent Study in Sociocultural Anthropology.* 1-6 credits.
Directed reading and research on a specific topic, agreed on by student and faculty member, resulting in a written project. May be repeated for maximum of 6 credits. Offered by Sociology & Anthropology. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Special scale.

ANTH 687: *Medical Anthropology.* 3 credits.
Explores the wide variety of cultural interpretations of health, illness, and curing. Examines a number of different curing systems, both traditional and modern, and compares them with cosmopolitan biomedicine. Several book-length case studies cover a wide variety of cultural groups, health topics, and theoretical orientations. Offered by Sociology & Anthropology. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ANTH 690: *Internship.* 3-6 credits.
All internships must be approved by faculty advisor to ensure suitability to the student's course of study. Introduction to applied anthropology through approved work and study at a museum, institute, agency, or other approved site. Offered by Sociology & Anthropology. May be repeated within the term for a maximum 6 credits.

Recommended Prerequisite: Graduate standing, with 3 hours of methods and 12 hours in program, or by permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Graduate Special scale.

ANTH 698: *Study Abroad.* 1-6 credits.
Intended for participation in formally organized course offered by Center for Global Education or an overseas institution or engagement in a field project related to the Master's thesis or project. May be repeated for a maximum of 6 credits. Offered by Sociology & Anthropology. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Regular scale.

ANTH 699: *Contemporary Issues in Sociocultural Anthropology.* 3 credits.
Explores current issues and debates in sociocultural anthropology. Notes: May be repeated when topic is different. Offered by Sociology & Anthropology. May be repeated within the term for a maximum 6 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

700 Level Courses

ANTH 721: *Culture, Power, and Conflict.* 3 credits.
Explores power and social conflict through the lens of cultural analysis. Special attention to the role of cultural differences in the structuring of conflict and the deployment of cultural theory in formulating a practice of conflict resolution. Offered by Sociology & Anthropology. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ANTH 750: *Ethnographic Genres.* 3 credits.
"Genre" refers to kind, sort, or type. Course surveys the various modes of representation anthropologists use in elaborating participant-observation field work, as well as how these styles refer to and construct ethnographic "others." Explores a set of central philosophical and methodological issues in social-cultural anthropology such as framing, perspective, authority, reflexivity, and politics of style. Offered by Sociology & Anthropology. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ANTH 796: *Master's Research Project.* 1-6 credits.
Capstone research project conducted under the supervision of a faculty project director and project evaluation committee. Project should be a substantial contribution to anthropological knowledge and is in lieu of a thesis. Notes: Students must initially enroll for a minimum of 3 credits of ANTH 796 and maintain continuous enrollment in 796 until project is submitted. A maximum of 6 credits of ANTH 796 may be applied to the degree. Offered by Sociology & Anthropology. May be repeated within the degree for a maximum 12 credits.

Recommended Prerequisite: Approval of project proposal.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Satisfactory/No Credit scale.

ANTH 798: *Thesis or Project Proposal.* 3 credits.
Work on research proposal that forms basis for master's thesis or project. Offered by Sociology & Anthropology. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Completion of 15 credits, including all other core courses.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Thesis

Grading:
This course is graded on the Satisfactory/No Credit scale.

ANTH 799: *Master's Thesis.* 1-6 credits.
Master's thesis research and writing under direction of thesis committee. Notes: Students must register for a minimum of three credit hours in their first semester of 799 and maintain continuous enrollment in 799 while writing and submitting a thesis. A maximum of 6 credits of 799 may be applied to the degree. Offered by Sociology & Anthropology. May be repeated within the degree for a maximum 24 credits.

Recommended Prerequisite: Approval of thesis proposal.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Thesis

Grading:
This course is graded on the Satisfactory/No Credit scale.

Applied Information Technology (AIT)

500 Level Courses

AIT 500: *Quantitative Foundations for Information Systems Analysis.* 3 credits.
Provides common background in basic quantitative areas focused on decision making, information processing, and telecommunications. Topics include review of precalculus, introduction to matrix algebra, problems in optimization, and introduction to probability and statistics. Notes: Does not fulfill any VSITE graduate degree requirement. Offered by Info Sciences & Technology. May not be repeated for credit.

Recommended Prerequisite: MATH 108 or equivalent.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

AIT 502: *Programming Essentials.* 3 credits.
Introduces basic procedural and object-oriented programming. Topics include: variables, data types, assignments, conditionals, loops, arrays, input/output, static methods, libraries, recursion, data types, API, classes, access modifiers, instance variables, constructors, instance methods, testing, encapsulations, immutability, interface inheritance, implementation inheritance, exceptions, assertions, analysis of algorithms, order of growth, memory usage, binary search, insertion sort, merge sort, stacks, array implementation of stacks, linked list implementation of stacks, queues, generics, autoboxing, iteration, symbol tables, hash tables, binary search trees, examples and applications. Offered by Info Sciences & Technology. May not be repeated for credit.

Recommended Prerequisite: Basic information technology knowledge.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

AIT 504: *Issues of Cyberspace.* 3 credits.
Student panels explore, report on, and make recommendations regarding major and novel problems presented by the explosive and intrusive growth of 'cyberspace'. Legal, ethical, financial, security, utility and value to users and organizations, feasibility, and desirability aspects are considered. Each semester features a major topic area. Offered by Info Sciences & Technology. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

AIT 510: *Learning Technology: Theory, Application and Design.* 3 credits.
Introduces students to theory, application and design of learning technologies, discussing why technology should be used for learning and education, how it should be applied, and how one can design digital tools to improve learning and education. Use of data, analytics, and emerging

applications such as social media will also be discussed. Offered by Info Sciences & Technology. May not be repeated for credit.

Recommended Prerequisite: (IT 415 or equivalent) and (SYST 469 or equivalent).

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

AIT 512: *Algorithms and Data Structures Essentials.* 3 credits.
Introduces analysis of algorithms and basic data structures assuming basic programming knowledge. Topics include: collections, sorting, searching, graphs, strings, B-Trees, and analysis of algorithms. Offered by Info Sciences & Technology. May not be repeated for credit.

Recommended Prerequisite: AIT 502 with B- or above, or other academic or industry experience with programming.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

AIT 521: *Software Engineering Essentials.* 3 credits.
Provides an overview of essential topics in software engineering, including problem solving with computers, requirements, software design, software development, testing, verification, validation, usability, and management. Discuss concepts related to building software, including data structures, object-oriented programming, event handling in GUIs, and web application technologies and how these concepts are handled in various languages, but without requiring the students to program. Notes: This course does not count towards MS programs offered in the Computer Science Department and cannot be used to satisfy course requirements for PhD IT students. Offered by Info Sciences & Technology. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

AIT 524: *Database Management Systems.* 3 credits.
Relational database management systems. Covers logical and physical database design; query languages and database programming; and examines commercial systems. Computing lab. Notes: This course does not count towards MS programs offered in the Computer Science Department and cannot be used to satisfy course requirements for PhD IT students. Offered by Info Sciences & Technology. May not be repeated for credit.

Recommended Prerequisite: Academic or industry experience with database systems.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

AIT 526: *Introduction to Natural Language Processing.* 3 credits.
This is an introductory course in natural language processing (NLP). It explores a broad set of NLP tasks and introduces the students to the data, methods, and baseline solutions related to each. Topics covered include n-gram language models, text classification, part of speech tagging, word sense disambiguation, named entity extraction, information retrieval, and question answering. Methods explored include rule-based systems, classification with naïve bayes, sequence labeling with hidden Markov models and conditional random fields, as well as end-to-end systems. Offered by Info Sciences & Technology. May not be repeated for credit.

Recommended Prerequisite: Python programming. Statistics or probability. Machine learning (desirable).

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

AIT 542: *Fundamentals of Computing Platforms.* 3 credits.
Contemporary information systems are platforms inextricably combining operating systems and networks. This graduate course provides an overview of OS and networking elements of information systems, and examines the particular issues relating to the range of platforms, from

handheld mobile devices to cloud and supercomputer systems. Offered by Info Sciences & Technology. May not be repeated for credit.

Recommended Prerequisite: Academic of industry experience with operating systems and computer networks.

Registration Restrictions:
Enrollment limited to students with a class of Graduate or Senior Plus.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

AIT 580: *Analytics: Big Data to Information.* 3 credits.
Course provides an overview of Big Data and its use in commercial, scientific, governmental and other applications. Topics include technical and non-technical disciplines required to collect, process and use enormous amounts of data available from numerous sources. Lectures cover system acquisition, law and policy, and ethical issues. It includes brief discussions of technologies involved in collecting, mining, analyzing and using results. Offered by Info Sciences & Technology. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

AIT 581: *Problem Formation and Solving in Big Data.* 3 credits.
The course explores challenges facing analysts exploiting Big Data or Bespoke Data in combination with Big Data, and looks at solutions, mindful of the fact that our intellectual and practical practices are based entirely on the 5000 year old Bespoke Data paradigm, and considering that Big Data practices are too recent to lead to comparable Big Data tools and practices. Notes: Course may be used in other certificate and degree programs. Offered by Info Sciences & Technology. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

AIT 582: *Metadata Analytics for Big Data.* 3 credits.
Course explores technical and analytical issues, solutions and gaps in processing large volumes of data by leveraging metadata. The goal is to find "facts of interest" (Intelligence) that represent threats to, or even opportunities for, a given industry or domain (e.g., healthcare, finance or national intelligence/national defense) where there is limited time. Notes: Course may be used in other Certificate or Degree programs. Offered by Info Sciences & Technology. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

AIT 590: *Topics in Applied Information Technology.* 3 credits.
Topics in the application of information technology. Students are expected to participate actively through class dialogues and the crafting of IT solutions to specific problem areas. Notes: Course cannot be used to satisfy course requirements for PhD IT students. Offered by Info Sciences & Technology. May be repeated within the term for a maximum 6 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

AIT 597: *Developing IT Leaders of Integrity.* 3 credits.
Considers the cultural and organizational influences and focuses on leadership's ethical dimensions. Students identify their core values, study the attributes of effective and toxic leaders, and examine the difference between managing and leading through selected readings, discussions, team projects, in-class activities and guest presentations. Students practice and receive in-class coaching to hone their leadership skills. Notes: Course cannot be used to satisfy course requirements for PhD IT

students. Offered by Info Sciences & Technology. May not be repeated for credit.

Recommended Prerequisite: Registered student in MS, Applied IT or instructor's permission.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

600 Level Courses

AIT 601: *Foundations of Applied Information Technology.* 3 credits.
Introduces students to foundational scholarship in applied information technology. Reviews seminal readings and applications of information technology. Students learn about the interdisciplinary history of the field, are introduced to influential scholars and important topics, and get an overview of key theoretical paradigms in applied information technology. Offered by Info Sciences & Technology. May not be repeated for credit.

Recommended Prerequisite: Admission to a graduate program in Applied IT.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

AIT 602: *Introduction to Research in Applied Information Technology.* 3 credits.
Introduces students to research methods required to conduct data-driven and theory-based research in information sciences and technology. The course will review different research approaches and methods, discusses issues of data collection, reliability, data analysis, and interpretation. Throughout, seminal research papers will be used as case studies, and students will learn to understand and design research. Offered by Info Sciences & Technology. May not be repeated for credit.

Recommended Prerequisite: Admission to a graduate program in Applied IT.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

AIT 603: *Research Practice.* 3 credits.
Complementing AIT 602's treatment on the nature of AIT research, this course examines various pragmatic aspects of conducting research, including: research venues, public & private funding sources, grant proposals, publishing, regulation and reporting obligations, operating labs and centers, legal and intellectual property issues, collaboration nationally and internationally. Offered by Info Sciences & Technology. May not be repeated for credit.

Recommended Prerequisite: AIT 602 or equivalent.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

AIT 614: *Big Data Essentials.* 3 credits.
Hands-on course discusses emerging technologies for big data analytics and their applications in real-world environments. Students apply learned concepts and best practices using several emerging technology tools simulating development, implementation, and use of big data analytical systems. Topics include RDBMS, SQL, NoSQL, R, MapReduce Programming paradigm, Hadoop, HDFS, HIVE, PIG and others in the Hadoop ecosystem for unstructured data analytics. Offered by Info Sciences & Technology. May not be repeated for credit.

Recommended Prerequisite: AIT 524, or industry experience with database systems.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

AIT 622: *Determining Needs for Complex Big Data Systems.* 3 credits.
Explores the requirements, design, organization, and management of large data analytics ("Big Data") projects, including architecture of data analytics systems, roles of Data Scientists and Data Analytics Project Managers, tools and methods for conducting data analytics research, and data governance, security, curation, privacy, and legal issues. Includes review of case studies from social media, government, and industry, definitions and concepts, and communication requirements. Principles, explained and demonstrated, are applied by students to case study based projects and individual assignments/labs. Offered by Info Sciences & Technology. May not be repeated for credit.

Recommended Prerequisite: Admission to a graduate program in Applied IT or Health Informatics, or permission of the instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

AIT 624: *Knowledge Mining from Big-Data.* 3 credits.
Introduction to methods and tools related to knowledge mining/representation/visualization, and annotation and retrieval for Big-Data Applications from an applied perspective with the focus on emerging research problems. This course combines survey lectures with in-depth presentation of relevant issues through seminars, and hands-on experience using existing technologies and public data sources. Offered by Info Sciences & Technology. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: AIT 582[B-] or 582[XS].
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

AIT 631: *Advanced Decision Making in IT Ventures.* 3 credits.
The course provides students with an understanding of decision making processes and methodologies needed to successfully run IT companies. Topics include: assessment of IT ideas and investments; measuring IT investments performance; forecasting methods; multi-criteria information technology decision making methods; decision support systems; value analysis and benefit/risk methodologies. Offered by Info Sciences & Technology. May not be repeated for credit.

Recommended Prerequisite: IT 496 or equivalent.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

AIT 636: *Interpretable Machine Learning.* 3 credits.
One of the most common tasks performed by data scientists and data analysts is prediction and machine learning. Machine learning combines advanced topics in statistics, probabilities, linear algebra, and calculus to design mathematical models that learn from data or experience to solve new problems. Computers usually do not explain their predictions which is a barrier to the adoption of machine learning. This course focuses on making the decisions from algorithms more understandable for humans. In other words, making machine learning models and their decisions interpretable. This course covers simple, interpretable models such as decision trees, decision rules and linear regression. It also covers general model-agnostic methods for interpreting black box models like feature importance and model settings. Offered by Info Sciences & Technology. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

AIT 650: *Distributed Systems and Overlay Networking.* 3 credits.
This graduate level seminar examines advanced networking research topics and potential applications, including distributed systems, peer-to-peer and overlay net workings, routing, protocols, replication strategies,

tree formation, resource sharing, fault tolerance, and network modeling. Offered by Info Sciences & Technology. May not be repeated for credit.

Recommended Prerequisite: Thorough understanding of computer networking, IP and TCP protocols, congestion control, queuing, and addressing and routing mechanisms.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

AIT 655: *Applied Project Management for IT Professional.* 3 credits.
This course provides knowledge of industry standard methodologies and best practices utilized by IT professionals for managing technical projects in organizations. The course will have a focus on the project planning process including methods for creating successful project plans, efficient and accurate project scheduling, cost determination, resources evaluation and allocation, constraints definition, integration planning and risk assessment. It will provide a thorough understanding of the project development and implementation methods to include problem solving strategies, conflict resolution techniques, change management, quality management and effective team management. Throughout the course the students will learn, analyze and hold discussions on current and impending project management practices, tools and methodologies. This is a highly interactive course and active course participation will be required from all students. Offered by Info Sciences & Technology. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

AIT 660: *Cyber Security Fundamentals.* 3 credits.
Introduces fundamental security principles and real-world applications of cyber security. Topics covered in the course include access control, common classes of attacks, monitoring, attack and intrusion detection, basic cryptography, computer security models, legal and privacy issues, and risk analysis. The course also provides students with opportunities to gain hands-on experience with several security tools (e.g., protocol analyzers). Offered by Info Sciences & Technology. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

AIT 664: *Information: Representation, Processing and Visualization.* 3 credits.
The course explores basic concepts to understand and analyze the design of information systems, and focuses on conceptual understanding of data, information, and knowledge, boundaries in representing and processing information for humans and machines, information theory, and basic techniques to organize, structure, and interact with the information through visualization. Offered by Info Sciences & Technology. May not be repeated for credit.

Recommended Prerequisite: AIT 524 or permission of department.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

AIT 665: *Managing Information Technology Programs in the Federal Sector.* 3 credits.
This case-study and research seminar introduces students to the unique complexities of acquisition in the Federal Sector including Congressional and Executive Branch oversight and reporting. Offered by Info Sciences & Technology. May not be repeated for credit.

Recommended Prerequisite: Permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

AIT 670: *Cloud Computing Security.* 3 credits.
Offers a survey of security and privacy issues in Cloud Computing systems, along with an overview of current solutions and available technologies. Examines cloud computing models and threat model and security issues related to data and computation outsourcing, and explores practical applications of secure Cloud Computing. Offered by Info Sciences & Technology. May not be repeated for credit.

Recommended Prerequisite: AIT 542.

Registration Restrictions:
Required Prerequisite: AIT 660[B-].
[B-] Requires minimum grade of B-.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

AIT 671: *Information System Infrastructure Lifecycle Management.* 3 credits.
Examines information system infrastructure lifecycle management including the audit process, IT governance and best practices, system and infrastructure control, IT service delivery and support, protection of information assets, physical security, business and disaster recovery. Offered by Info Sciences & Technology. May not be repeated for credit.

Recommended Prerequisite: Registration in MS, Applied IT program or permission of Instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

AIT 672: *Identity and Access Management.* 3 credits.
Provides a hands-on in-depth description of the principles, concepts, and technology of Identity Management. Topics include digital identity, credentials, authentication, authentication protocols, trust frameworks, cryptography and digital signatures, identity tokens (smart cards), and smart card-based identity verification and authorization applications. Offered by Info Sciences & Technology. May not be repeated for credit.

Recommended Prerequisite: Admission into MS AIT program or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

AIT 673: *Cyber Incident Handling and Response.* 3 credits.
Examines Computer Emergency Response Team (CERT), including Incident Response, Vulnerability Assessment, Incident Analysis, Malcode Analysis, Forensics and Investigations. Includes exercises in CERT operations and a final Incident Handling project. Offered by Info Sciences & Technology. May not be repeated for credit.

Recommended Prerequisite: AIT 670 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

AIT 674: *Research, Development and Technology in the Intelligence Community.* 3 credits.
Provides overview of research, development and engineering components of agencies within U.S. Intelligence Community, how they prioritize research and deliver products used in collection, processing, and dissemination of information. Examines different types of technical intelligence and related phenomenologies employed in their collection. Highlights evolution of technologies used in gathering and discusses new and emerging trends in intelligence collection and analysis. Offered by Info Sciences & Technology. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

AIT 675: *Overview of the National Intelligence Community.* 3 credits.
Introduces structure and basic operations of the U.S. national intelligence community (IC). Students learn general information about organization,

structure and missions of the IC and about the tools and techniques employed by intelligence agencies of the U.S. and other intelligence services. Surveys the range of intelligence problems and challenges, types of data and data collectors employed, and how information is processed, analyzed, and disseminated. Offered by Info Sciences & Technology. May not be repeated for credit.

Recommended Prerequisite: Admission into the MS-AIT degree program or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

AIT 676: *Intelligence Technologies, Research and Development in the Intelligence Community.* 3 credits.
Overview of R & D and engineering components of agencies within U.S. Intelligence. Describes: process by which these agencies prioritize research and deliver products to collect, process and disseminate information; types of technical intelligence and the related phenomenologies employed in their collection; evolution of technologies used in gathering, and; discusses new and emerging trends in intelligence collection and analysis. Offered by Info Sciences & Technology. May not be repeated for credit.

Recommended Prerequisite: Admission into the MS-AIT degree program or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

AIT 677: *Intelligence Analysis Methods.* 3 credits.
Presents various intelligence analysis methods addressing basic topics: substance-blind analysis of evidence and its credentials, chain of custody analysis, combination of evidence, divide and conquer paradigm for analysis, sources of uncertainty, competing hypotheses and analyses. Discusses case studies in various domains following a hands-on approach using educational analysis tools. Offered by Info Sciences & Technology. May not be repeated for credit.

Recommended Prerequisite: AIT 524.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

AIT 678: *National Security Challenges.* 3 credits.
Presents the process by which decision makers identify and prioritize intelligence problems and allocate collection and analysis resources to their solutions. Discusses nation-state issues such as Russia, China, and Iran, and transnational issues such as terrorism, weapons proliferation, narcotics and smuggling, and cyber conflict and the intelligence shortcomings and needs in regard to these problems. Offered by Info Sciences & Technology. May not be repeated for credit.

Recommended Prerequisite: Admission into the MS-AIT degree program or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

AIT 679: *Law and Ethics of Big Data.* 3 credits.
Course examines key ethical and legal issues for entry level professionals in data science and analytics. Topics include Intellectual Property, Privacy, Algorithm Bias, Free Speech, and Commercial data exploitation. Students will examine and discuss case studies and assigned readings on these topics, examine the ethical basis and practices of Big Data Analytics. Students will be expected to identify and report on technical, legal, and ethical issues with the use of big data and to discuss the appropriate laws, policies, and ethical frameworks which might be used to resolve them. Offered by Info Sciences & Technology. May not be repeated for credit.

Recommended Prerequisite: Admission to the MS, AIT program or permission of instructor.

Registration Restrictions:

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

AIT 680: *Social Media in Homeland Security Operations.* 3 credits.
Overview of social media uses by Homeland Security agencies and U.S. adversaries, in both active and passive modes, including recruitment and disinformation. Examines regulations and laws governing social media usage. Explores future technological developments. Offered by Info Sciences & Technology. May not be repeated for credit.

Recommended Prerequisite: Registered students in Homeland Security Information Systems and Cyber MS or permission of Instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

AIT 681: *Secure Software Development.* 3 credits.
Provides secure software development approaches for putting software security principles into practice and addressing software-induced security risk by studying software security fundamentals and software security best practices. Offered by Info Sciences & Technology. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: AIT 542[B-] or 542[XS].
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

AIT 682: *Network and Systems Security.* 3 credits.
Introduces the principles and practices of cryptography, network security, and secure software by covering security policies, models, and mechanisms for secrecy, integrity, and availability; basic cryptography and its applications; secret key cryptography; hash functions; basic number theory and public key cryptography; trusted intermediaries, and network security (firewalls, IDS, IPsec, and SSL) etc. Offered by Info Sciences & Technology. May not be repeated for credit.

Recommended Prerequisite: AIT 660.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

AIT 684: *Interactive Visualization and Data Analytics.* 3 credits.
The course is designed for students who aim at understanding core theoretical concepts and practical skills that a broader data science community share when (1) collecting and processing data in a scalable way, (2) creating cognitively efficient interactive visualization, (3) formulating statistical testing and conducting analysis, and (4) topics in interactive ML. The course is suitable for students who aim at establishing their background as data scientists, quantitative researchers, marketers, and other relevant roles. Offered by Info Sciences & Technology. May not be repeated for credit.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

AIT 685: *Capstone Seminar.* 3 credits.
Student team-based experience grounded on solid understanding of the proceeding nine courses mastered in each of the program's three areas of study. Teams analyze cases of mega-system programs from the 20th Century. Notes: Course cannot be used to satisfy course requirements for PhD IT students. Offered by Info Sciences & Technology. May not be repeated for credit.

Recommended Prerequisite: Completion of all core courses and at least nine credits of concentration courses in the program, or permission of department.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment limited to students in the VS-MS-AIT program.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

AIT 686: *Capstone: Student Design Solution.* 3 credits.
Student teams examine several historical or hypothetical cases that demonstrate vulnerabilities to the homeland security of the nation. Task is to choose one case, conduct appropriate outside research, then design and brief detection/prevention/mitigation processes that can protect the nation. Must be among the last two courses attempted in the degree program. Offered by Info Sciences & Technology. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

AIT 690: *Advanced Topics in Applied Information Technology.* 3 credits.
Students participate actively through class dialogues and the crafting of IT solutions to specific problem areas. Notes: Course cannot be used to satisfy course requirements for PhD IT students. Offered by Info Sciences & Technology. May be repeated within the term.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

AIT 697: *Leading Organizations Through Change.* 3 credits.
Introduces students to the critical tools for leading organizations through sustainable change. Through selected readings, discussions, team projects, in-class activities and guest appearances, students learn how to prepare the organization, plan the details, execute a change process across an organization and measure the plan's effectiveness and the change it brings to achieve continuous improvement. Students practice and receive in-class coaching to hone their leadership skills. Offered by Info Sciences & Technology. May not be repeated for credit.

Recommended Prerequisite: Graduate Standing in MS, AIT program or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

AIT 699: *Research Project.* 3 credits.
Research project chosen and completed under guidance of graduate faculty member that results in technical report. Offered by Info Sciences & Technology. May not be repeated for credit.

Recommended Prerequisite: Open only to students in the MS AIT program with at least 18 credit hours of coursework prior to registration and with advisor approval.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major, minor, or concentration in Applied Information Technology.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Regular scale.

700 Level Courses

AIT 701: *Cyber Security: Emerging Threats and Countermeasures.* 3 credits.
The course covers the most modern and challenging cyber threats organization must defend against, and discusses existing solutions and open research problems. Topics include, but are not limited to, advanced persistent threats, attacks on cyber physical systems, ransomware, and identity theft. Through the course, students are challenged to think about innovative solutions to address some of the most pressing open problem. Offered by Info Sciences & Technology. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (AIT 660[B-] or 660[XS]) and (AIT 512[B-] or 512[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

AIT 702: *Incident Handling and Penetration Testing.* 3 credits.
Presents students with a principled approach to ethical hacking, and offers an in-depth analysis of the overall process, including aspects related to scanning, testing, ethically attacking, and eventually securing systems and networks. The course covers popular attack tools such as Social Engineering and DDoS, and concludes with a discussion about open challenges and current research in the area. Offered by Info Sciences & Technology. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: AIT 660[B-] or 660[XS].
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

AIT 710: *Design of Learning and Educational Technologies.* 3 credits.
Examines foundations, theoretical perspectives, underlying learning theories, case studies, and key enabling technologies to provide context for understanding, designing, and researching learning and educational technologies. Considers technologies for diverse areas and users including teachers, instructors, higher education and K-12 learners, and learning among informal communities of interest. Technologies demonstrations are combined with hands-on activities involving participation in multiple learning environments. Offered by Info Sciences & Technology. May not be repeated for credit.

Recommended Prerequisite: AIT 501 or permission of department.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

AIT 711: *Rapid Development of Scalable Applications.* 3 credits.
Presents software engineering, programming techniques, security practices, platforms and tools necessary for rapid development of applications. Provides a survey of programming techniques and static code analysis, including security and privacy consideration throughout the application life cycle. Students work in small teams and develop or maintain scalable applications exercising risk based analysis and techniques and practices presented in the course. Offered by Info Sciences & Technology. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (AIT 512[B-] or 512[XS]) and (AIT 524[B-] or 524[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

AIT 712: *Applied Biometric Technologies.* 3 credits.
The need for accurate automatic human identification has been increasing as people are becoming more electronically connected. Thus, the use of biometrics has spread rapidly. Identity is very valuable and the ability to establish identity is critical to many transactions. Biometric recognition has been incorporated in several high security applications such as protection of critical resources, fraud prevention and border control. This course concentrates on advantages that biometrics brings to computer security as well as on current challenging issues such as security strength, recognition rates, and privacy. Offered by Info Sciences & Technology. May not be repeated for credit.

Recommended Prerequisite: Basic knowledge of Digital Image Processing

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

AIT 716: *Human Computer Interaction.* 3 credits.
Covers the foundations of Human Computer Interaction, including: (1) Basic definitions and motivations of HCI, history, theories, interaction paradigms, design principles and models; (2) User-centered design methods, studies, design approaches for interfaces and interaction, quality factors, evaluation methods and techniques for data analysis; (3) Research frontiers of HCI, accessibility, universal design, and ubiquitous computing (mobile and wearable applications). Offered by Info Sciences & Technology. May not be repeated for credit.

Registration Restrictions:

Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

AIT 721: *Design of IT Artifacts, Applications and Systems.* 3 credits.
This course will introduce students to design principles and design thinking in applied information technology. Students will learn different approaches to design IT applications across a range of domains. Students will learn how to approach design of systems for large organizations and also for individuals. Students will learn about the interdisciplinary nature of design and get introduced to influential designers. Offered by Info Sciences & Technology. May not be repeated for credit.

Recommended Prerequisite: Enrollment in the IST concentration of the PhD in IT program and AIT 501, or permission of department.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

AIT 722: *Theories and Models in Geo-Social Data Analytics.* 3 credits.
This course introduces a broad spectrum of theories, conceptual models, machine learning, and computational modeling that are used in and related to geospatial and social data. Course contents include discussions of, and hands-on exercise with, geo-social data analytics, map-based visualization, community dynamics models, smart cities theories, and GIS-based system development. This course aims to help students grow as IT professionals who can (1) understand critical issues in smart and connected communities (S&CC), (2) combine data-driven approaches in understanding and addressing the problems, and (3) communicate the geographically-embedded social patterns based on data analysis results through visualizations and interactive systems. Offered by Info Sciences & Technology. May not be repeated for credit.

Recommended Prerequisite: Programming (Python or R); Statistics

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

AIT 724: *Data Analytics in Social Media.* 3 credits.
Introduce the necessary theories and the state-of-the art techniques in Web mining, network analysis, information retrieval, and predictive modeling to study emerging problems with social media. These problems include information diffusion, recommendations, behavior analysis, and event analytics in social media. Offered by Info Sciences & Technology. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: AIT 664[B-] or 664[XS].
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

AIT 726: *Natural Language Processing with Deep Learning.* 3 credits.
This is an advanced course in natural language processing (NLP). It explores deep learning methods in NLP. Topics covered include feedforward neural nets as applied to NLP and deep networks for NLP applications. Class reviews language structure and studies context free grammars, dependency parsing, semantic role labeling along with applications such sentiment classification and information extraction. Offered by Info Sciences & Technology. May not be repeated for credit.

Recommended Prerequisite: Python programming. Statistics or probability. Machine learning.

Registration Restrictions:
Required Prerequisites: AIT 526[B] or 526[XS].
[B] Requires minimum grade of B.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

AIT 734: *Advanced Web Analytics Using Semantics.* 3 credits.
Covers a range of current practices for metadata extraction, knowledge discovery from big complex data, as well as knowledge representation and reasoning. This course discusses Data Modeling issues in Web Information Systems and Internet of Things (IoT) Web Semantics. Current trends and open problems are also covered in this course. Offered by Info Sciences & Technology. May not be repeated for credit.

Recommended Prerequisite: AIT 582, 624.

Registration Restrictions:

Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

AIT 736: *Applied Machine Learning.* 3 credits.
Machine learning as a field is now incredibly pervasive with several applications such as homeland security face recognition, self-driving car, social media, bioinformatics, etc. This course provides a broad introduction to machine learning, deep learning, and statistical pattern recognition. It introduces interdisciplinary machine learning techniques such as statistics, linear algebra, optimization, and computer science to create automated systems able to make predictions or decisions without human intervention. This class will familiarize students with a broad cross-section of models and algorithms for machine learning, and prepare students for research or industry application of machine learning techniques. The course also provides students with opportunities to gain hands-on experience with several machine learning tools. Offered by Info Sciences & Technology. May not be repeated for credit.

Recommended Prerequisite: Basic knowledge of probability theory, statistics, linear algebra and programming.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

AIT 746: *Advanced Applied Machine Learning.* 3 credits.
Using machine learning in real-world problems often requires more skills than those needed to apply machine learning in academic problems. It is common, for instance, that the number of labeled samples is small but abundance of unlabeled samples is available or the number of labeled samples from different classes are extremely imbalanced. It is sometimes possible to use an already trained machine in a different domain. A machine could take advantage of external pieces of knowledge, in addition to labeled data to make more accurate predictions. In addition, not all real-world problems fit in a straightforward classification or regression problem, such as finding anomalies or outliers among data, especially streaming data. Besides aforementioned topics, this course will familiarize students with deep learning, reinforcement learning, multi-classifiers, genetic algorithms, and clustering textual documents. Among other evaluation criteria, this course entails a heavy experimental project. Offered by Info Sciences & Technology. May not be repeated for credit.

Recommended Prerequisite: Familiarity with Python.

Registration Restrictions:
Required Prerequisites: (AIT 636[B-], 636[XS], 736[B-], 736[XS], CS 504[B-] or 504[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

AIT 790: *Advanced Special Topics in Applied Information Technology.* 3 credits.
This course covers doctoral-level topics of interest not routinely covered by existing courses. Course material may be chosen from various areas of applied information technology. Students are expected to participate actively through class dialogues and the crafting of IT solutions to specific problem areas. This course may be repeated for credit when subject differs. Offered by Info Sciences & Technology. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

AIT 799: *Master's Thesis.* 1-6 credits.
Research project chosen and completed under guidance of graduate faculty member that results in a thesis manuscript and a presentation accepted by a committee of three faculty members. Offered by Info Sciences & Technology. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Open only to students in the MS AIT program with at least 18 credit hours of coursework prior to registration and with advisor approval.

Registration Restrictions:
Required Prerequisite: AIT 699[B].
[B] Requires minimum grade of B.

Enrollment is limited to students with a major, minor, or concentration in Applied Information Technology.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Thesis

Grading:

This course is graded on the Satisfactory/No Credit scale.

800 Level Courses

AIT 800: *Applied Information Technology Colloquium.* 1 credit.
Students attend a series of colloquia including talks by distinguished speakers, faculty candidates and Mason faculty. Topic areas include research advances in technology, its application, and policy issues. Notes: Students must attend a minimum of three events per semester to earn one credit in this course. PhD INFT students with a concentration in Information Science and Technology must complete at least two credits of AIT 800. Offered by Info Sciences & Technology. May be repeated within the degree for a maximum 3 credits.

Recommended Prerequisite: Completion of AIT Core and at least 6 credits of AIT Field Requirements in PhD program.

Schedule Type: Seminar

Grading:
This course is graded on the Satisfactory/No Credit scale.

Arabic (ARAB)

100 Level Courses

ARAB 101: *Introduction to the Arabic Language.* 3 credits.
Introduction to Arabic language, dialects, countries, and culture. Beginning modern standard and classical Arabic, with emphasis on the written language, script and phonology. Basic grammar covering gender, numbers, cases, prepositions, nominal sentences, and basic conversation and greetings. Offered by Modern & Classical Languages. Limited to three attempts. Equivalent to ARAB 110.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Arabic

ARAB 102: *Introduction to the Arabic Language.* 3 credits.
Introduction to developing reading skills in formal settings. Emphasizes modern standard Arabic in oral communication. Beginning grammar level focuses on verbal sentences, present tenses, questions, and compound nouns. Offered by Modern & Classical Languages. Limited to three attempts. Equivalent to ARAB 110.

Recommended Prerequisite: ARAB 101.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Arabic

ARAB 110: *Elementary Arabic.* 6 credits.
Introduces elements of grammar, vocabulary, oral skills, listening comprehension, and reading. Offered by Modern & Classical Languages. Limited to three attempts. Equivalent to ARAB 101, ARAB 102.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Arabic

200 Level Courses

ARAB 201: *Intermediate Arabic I.* 3 credits.
Further development of listening, speaking, reading, and writing skills. Advanced level of vocabulary. Grammar covers past tenses, subordinated conjunctions, and introduction to passive voice. Notes: Also introduces Arabic dictionary. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: ARAB 101, 102.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Arabic

ARAB 202: *Intermediate Arabic II.* 3 credits.
Emphasis on application of language skills to reading, composition, and discussion. Focuses on language structure, format of developing vocabulary from verbs, covering different derivations, and language patterns. Leads to learning the use of Arabic dictionary in depth. Grammar covers passive voice and verbal nouns. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: ARAB 201.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Fulfills Frgn Lng requirment, Taught in Arabic

300 Level Courses

ARAB 300: *Advanced Arabic.* 3 credits.
Introduces new complex syntactical and grammatical structures for critical enhancement of fluency in Modern Standard Arabic. Emphasis is plced on sentence structure and vocabulary enrichment. Students also gain additional exposure to linguistic diglossia, culture, and history. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: ARAB 202 or equivalent, appropriate placement score, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Arabic

ARAB 325: *Major Arab Writers/Stories.* 3 credits.
Studies works of major Arab writers or collections such as The Arabian Nights. Notes: Knowledge of Arabic helpful but not required. May be repeated when topic is different with permission of department. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 6 credits.

Mason Core: Literature

Recommended Prerequisite: ENGL 101/ENGH 101 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ARAB 330: *Reading and Conversation I.* 3 credits.
Development of conversational fluency and reading skills in modern standard Arabic through class discussion, reports, and presentations. Includes readings from newspapers, journals, magazines, web sites, literary works, and other sources. Notes: ARAB 330 and 331 must be taken in sequence. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: ARAB 202 or equivalent, appropriate placement score, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Arabic

ARAB 331: *Reading and Conversation II.* 3 credits.
Continuation of ARAB 330. Offered by Modern & Classical Languages. Limited to three attempts.

Specialized Designation: Writing Intensive in Major

Recommended Prerequisite: ARAB 300, appropriate placement score, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Arabic

ARAB 350: *Media Arabic I (Written Media).* 3 credits.
Develops advanced reading skills through work with current written media in Arabic. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: ARAB 330 and 331 or appropriate placement score or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Arabic

ARAB 351: *Media Arabic II (Spoken Media).* 3 credits.
Develops advanced listening and speaking skills through work with current broadcasts in Arabic TV and Radio. Offered by Modern & Classical Languages. Limited to three attempts.

Mason Core: Capstone

Recommended Prerequisite: ARAB 350 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Arabic

ARAB 355: *Advanced Arabic Media: Debates & Context.* 3 credits.
Multilevel open-source media analysis and advanced language acquisition class. In addition to developing effective strategies for discourse analysis in Arabic, students will gain exposure to core issues and debates within the current Arab world. Secondary source readings and lecture material focus on issues of rhetorical and aesthetic persuasion, propaganda, censorship, media bias and fake news. Offered by Modern & Classical Languages. Limited to two attempts.

Mason Core: Capstone

Recommended Prerequisite: ARAB 300

Registration Restrictions:
Required Prerequisites: ARAB 202[C] or 202[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Arabic

ARAB 360: *Topics in Arabic Cultural Production.* 3 credits.
Focuses on major trends and issues in modern Arabic cultural production. In addition to material from the Middle East and North Africa, the course surveys works of art, cinema, media, and literature from across the global Arabic diaspora. Notes: Some knowledge of Arabic is preferable. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies, Non-Western Culture

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ARAB 370: *Arabic for the Professions.* 3 credits.
Students gain access to career-specific lexica as developed and administered by professionals in the field. Drawing on the wealth of Arabic-speaking professionals in the DC metro area, this course aims to provide students the opportunity to interact and network directly with regional experts. Experiential dimensions of course may include site visits, guest lecturers, or workshops. Students may undertake case studies or research projects relevant to the expertise of the instructor and the subject matter of the class. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Required Prerequisites: ARAB 202[C] or 202[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Arabic

ARAB 375: *Study Abroad - Arab World.* 1-6 credits.
Designated study abroad programs in the Arab world. Notes: must be approved by Arabic program coordinator. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: ARAB 110.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Arabic

ARAB 380: *Arabic Dialects.* 3 credits.
Study of the structure of one Arabic dialect with comparison to Modern Standard Arabic and the classical Fus-ha. Includes study of literature, proverbs, and culture associated with that dialect. Notes: May be repeated when dialect covered is different. Offered by Modern & Classical Languages. May be repeated within the term for a maximum 6 credits.

Recommended Prerequisite: ARAB 202 or equivalent, appropriate placement score, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Arabic

ARAB 390: *Translation Methods: Arabic to English.* 3 credits.
Provides students with essential tools and techniques to translate Arabic texts to English. Includes practice applying these techniques to a variety of documents including literary, media, and legal texts. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: ARAB 330 and 331 or appropriate placement score or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Arabic

400 Level Courses

ARAB 420: *Survey of Arabic Literature.* 3 credits.
A survey of Arabic literature from its genesis to the present day. Offered by Modern & Classical Languages. Limited to three attempts.

Specialized Designation: Non-Western Culture

Recommended Prerequisite: Six credits of 300 level courses taught in Arabic or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Arabic

ARAB 430: *Advanced Arabic Grammar.* 3 credits.
Introduction to traditional Arabic grammar. Covers parts of speech, sentence structure, case marking, and verb structure. Combines traditional with modern approaches to Arabic grammar and includes practical drills. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: 6 credits of 300 level Arabic or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Arabic

ARAB 440: *Topics in Arabic Religious Thought and Texts.* 3 credits.
Survey of the religious and intellectual heritage of the Arab world. Notes: May be repeated when topic and texts are different. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 9 credits.

Mason Core: Capstone

Specialized Designation: Topic Varies, Non-Western Culture

Recommended Prerequisite: Six credits of 300 level Arabic or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Arabic

ARAB 470: *Special Topics in Modern Arabic Studies.* 3 credits.
Addresses core topics in the study of the Arab world through the lens of literature, language and aesthetics. Topics may include the Nahdha or 'Renaissance' period of the late nineteenth century, Black and minority cultural productions, diaspora studies, post-colonialism or literary movements of the twentieth and twenty-first century. Topics will vary. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: ARAB 325

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

ARAB 498: *Independent Study.* 1-6 credits.
Designated independent study in the United States or abroad under the direction of a full-time faculty member. Notes: Must be approved by Arabic program coordinator. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: ARAB 202 or equivalent, appropriate placement score, or permission of instructor.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Arabic

Art and Visual Technology (AVT)

100 Level Courses

AVT 101: *New Majors Colloquium.* 1 credit.
Provides a common core experience of contemporary perspectives on the broad range of professional career options open to studio art majors. Lectures address practical concerns but emphasize social, ethical, and philosophical aspects of visual arts professions. Notes: Students who enrolled at Mason in Fall 2007 or later must take AVT 101 during or before their first semester as an AVT major. Required of all AVT majors. May be taken prior to declaring the major or during the first semester as a declared AVT major. Offered by School of Art. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 103: *Introduction to the Artist's Studio.* 3 credits.
Through projects, readings, class critiques, visuals, and field trips, students explore materials, techniques, concepts, and processes essential to understanding the language of visual arts and the artist's role. Develops imaginative thinking and sensitivity to visual environment. Note: for non-majors only. Offered by School of Art. Limited to three attempts.

Mason Core: Arts

Registration Restrictions:
Students cannot enroll who have a major in Art and Visual Technology.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 104: *Two-Dimensional Design and Color.* 3 credits.
Explores elements and principles of two-dimensional design, establishment of visual vocabulary, and critical analysis that supports conceptual development. Studio projects build fundamental knowledge, skills, understanding of precedents, and contemporary practices in visual arts. Offered by School of Art. Limited to three attempts.

Mason Core: Arts

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 105: *Three-Dimensional Design and Beyond.* 3 credits.
Explores elements and principles of three-dimensional design, establishment of visual vocabulary, and critical analysis that supports conceptual development. Studio projects explore form and composition, time-based media, materials, precedents, and contemporary practices in visual arts. Offered by School of Art. Limited to three attempts.

Recommended Prerequisite: AVT 104, or permission of instructor.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 110: *Digital Design Studio.* 3 credits.
Introduces digital software from a graphic design perspective. Digital Design Studio will teach students industry standard software proficiencies in Adobe InDesign, Illustrator, and Photoshop. Students do not need any prior knowledge of Adobe software to complete this class. Offered by School of Art. Limited to three attempts.

Mason Core: Info Tech & Computing

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 180: *New Media in the Creative Arts.* 3 credits.
Introduces computing from artist's perspective. Emphasizes computer use for artistic creation and research. Overview of image making and time-based media within the broad context of contemporary art, new media art, and mediated culture. Offered by School of Art. Limited to three attempts.

Mason Core: Info Tech & Computing

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

200 Level Courses

AVT 204: *Visual Thinking.* 3 credits.
Explores the ways contemporary artists use principles of design and perception to challenge how we see our world physiologically, psychologically, or socially. Examples drawn from film, photography, new media art, and other contemporary artistic media. Offered by School of Art. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 206: *Color.* 3 credits.
Color theory and principles of color interaction, including additive, subtractive, and partitive color experience; study of harmony, contrast, focus, space, opacity, transparency, temperature and value in both wet and dry media; and related applications of color technology. Offered by School of Art. Limited to three attempts.

Recommended Prerequisite: AVT 104, or permission of instructor.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 215: *Typography.* 3 credits.
Introduction to history and use of type. Reading and projects develop awareness of type as a linguistic and visual communication tool. Introduces typographic design elements, including color, hierarchy, integration with imagery, structure, and content. Offered by School of Art. Limited to three attempts.

Mason Core: Arts

Registration Restrictions:
Required Prerequisites: (AVT 110^{C} or 110^{XS}).

[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 217: *Introduction to Web Design.* 3 credits.
An introduction to contemporary web design, in particular to standards, as a successful tool in design communication. Students gain hands-on experience on design issues specific to Web-based presentations, learn web page layout, effective navigation and delve into the design process. Offered by School of Art. Limited to three attempts.

Recommended Prerequisite: Admittance into the Graphic Design Undergraduate Certificate or permission of instructor.

Registration Restrictions:
Required Prerequisites: (AVT 110[C] or 110[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 222: *Drawing I.* 3 credits.
Introduction and exploration of the fundamentals of drawing methods and materials, with emphasis on observational study and critical analysis of the effective and expressive use of line, mass, value, perspective, and formal composition. Emphasis on problems involved in representational and abstract visual interpretations of forms. Notes: AVT majors encouraged to take AVT 222 with AVT 104. Offered by School of Art. Limited to three attempts.

Mason Core: Arts

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 232: *Painting I.* 3 credits.
Introduction to the basic methods and principles of painting with a focus on observation, paint application, formal composition, color mixing, and the articulation of form. Students develop a visual awareness as they become familiar with the language of image making, construction, analysis, and awareness. Students prepare portfolios for collaborative and reflective critique. Offered by School of Art. Limited to three attempts.

Mason Core: Arts

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 243: *Printmaking I.* 3 credits.
Introduction to basics of hand printing. Emphasis on translation and transferal of images, tools, equipment, and technical skills for making a well-defined print. Students explore drawing, synthesis, and multiplicity in this interactive and collaborative course. Presentations and field trips focus on aesthetic and cultural concerns of making multiple images. Offered by School of Art. Limited to three attempts.

Mason Core: Arts

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 252: *Darkroom Photography I.* 3 credits.
Introduces photographic study and investigation of the fundamental practices and techniques of both film and digital forms with attention to its history and contemporary practices. Class discussions, field trips and critiques enhance visual and verbal vocabularies. Offered by School of Art. Limited to three attempts.

Mason Core: Arts

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 253: *Digital Photography I.* 3 credits.
Introduction to the digital camera as a tool for electronic photographic image making. Students will be introduced to principles and exploration of the aesthetics of digital photography and also learn basic image-editing skills in a computer environment. Offered by School of Art. Limited to three attempts.

Mason Core: Arts

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 254: *Photography.* 3 credits.
Introduces photographic study and investigation of the fundamental practices and techniques of both film and digital forms with attention to its history and contemporary practices. Class discussions, field trips and critiques enhance visual and verbal vocabularies. Offered by School of Art. Limited to three attempts.

Recommended Prerequisite: Restricted to AVT majors and AVT minors.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 262: *Sculpture I.* 3 credits.
Projects in sculpture that emphasizes contemporary theory and issues, the development of individual concepts, and creative solutions. Explores the application of materials, tools, and imaginative processes. Faculty demonstrations, lectures, gallery and museum visits, and regular student work critiques. Offered by School of Art. Limited to three attempts.

Mason Core: Arts

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 272: *Interdisciplinary Arts.* 3 credits.
Introduces contemporary interdisciplinary art practice through readings and studio projects in performance and installation. Provides students with opportunities to deepen understanding of conceptual art, nontraditional media practices, and collaborative practice in visual arts. Offered by School of Art. Limited to three attempts.

Mason Core: Arts

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 280: *Introduction to New Media Arts.* 3 credits.
Investigates ways in which contemporary artists employ tools in response to social, political and cultural conditions. Students create meaningful works of art that demonstrate conceptual and contextual awareness plus technical ability. Offered by School of Art. Limited to three attempts.

Recommended Prerequisite: AVT 104, or permission of instructor.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

300 Level Courses

AVT 300: *Artsbus Attendance.* 0 credits.
Students travel to New York or other destinations aboard the AVT Artsbus to attend faculty-selected exhibitions. Notes: AVT majors must satisfactorily complete course once for each semester they are enrolled as majors, up to five times. Repeatable up to three times per semester. Offered by School of Art. May be repeated within the term.

Schedule Type: Laboratory

Grading:
This course is graded on the Satisfactory/No Credit scale.

AVT 301: *Visual Voices Colloquium.* 1 credit.
Students attend AVT Visual Voices lecture series during the semester and complete assignments related to the topics covered. Notes: AVT majors must accumulate at least 3 credits in this colloquium to graduate. Offered by School of Art. May be repeated within the degree for a maximum 8 credits.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 305: *Creative Processes.* 3 credits.
Study of the creative process in general, with emphasis on the inspiration, working methods, and final creations of various artists. Students explore their own creative processes through journal keeping, collaborative exercises, and projects. Offered by School of Art. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 307: *Aesthetics.* 3 credits.
Interdisciplinary course examines broad range of contemporary art and culture to engage an expansive conception of aesthetic experience. Students engage with historical and contemporary aesthetic theories, build heightened aesthetic sensibility, and explore their personal aesthetic. Offered by School of Art. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 309: *Art as Social Action.* 3 credits.
Interdisciplinary exploration of work by citizen-artists whose art-making engages the social world. Students learn about the history of socially engaged art-making and experiment with individual and collaborative projects addressing social issues. Offered by School of Art. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 311: *Graphic Design Methods and Principles.* 3 credits.
Emphasis on developing design solutions requiring demographic, historical, and/or cultural research. Course strengthens design and typography skills, introduces conceptual problem solving, audience considerations, and broad-based tools designers use to develop effective visual communication solutions. Offered by School of Art. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (AVT 215[C] or 215[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 313: *Editorial Design.* 3 credits.
Development and production of long-form design projects (magazines, newspapers, catalogs, and other serial and/or multipage publications). Emphasis on narrative, consistency, structure, clarity. Addresses information design issues and reinforces conceptual skills and integration of imagery and text. Offered by School of Art. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (AVT 311[C] or 311[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 318: *History of Graphic Design.* 3 credits.
A survey of design history. Looks at print and web design as both a reaction to and shaper of the broader culture (including other fine applied arts) through the study of major movements and designers. Offered by School of Art. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 319: *Mobile App Design.* 3 credits.
Introduces students to designing user interfaces, and experiences for mobile devices. Students wdl be exposed to designing for a variety of mobile platforms including tablet, phone, and mobile web interfaces. Offered by School of Art. Limited to three attempts.

Recommended Prerequisite: C or higher in AVT 311.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 323: *Drawing II.* 3 credits.
Students develop observational, sketching, and rendering skills. Introduction to a range of materials, methods, formal concepts, drawing in series, and critique vocabulary. Offered by School of Art. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: AVT 222[C] or 222[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 324: *Figure Drawing.* 3 credits.
Drawing with an emphasis on the observational study of the human body. Human anatomy and proportion are examined through a series of methodological approaches, including gesture, contour, mass, and modeling. Offered by School of Art. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: AVT 222[C] or 222[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 326: *Nontraditional Approaches to Drawing.* 3 credits.
Encourages students to challenge some traditional approaches to drawing by creating innovative works that combine familiar drawing techniques with a variety of materials, approaches, and unusual formats. Offered by School of Art. Limited to three attempts.

Recommended Prerequisite: AVT 222 or permission of instructor.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 327: *Illustration.* 3 credits.
This course is intended to provide an overview of illustration as a visual communication medium. Sharing the tools and techniques of gallery artists and the communicative goals of graphic designers, illustrators work across media to make concepts understandable and powerful in the service of editorial, informational or persuasive goals. Students will begin to discover individually unique methods of problem solving by developing a personal visual vocabulary and relating it to historical and contemporary trends of art, design and illustration. Offered by School of Art. Limited to three attempts.

Recommended Prerequisite: AVT 324

Registration Restrictions:
Required Prerequisites: ((AVT 323[C], 323[XS], 324[C] or 324[XS]) and (AVT 180[C], 180[XS], 110[XS] or 110[C])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 328: *Mixed Media.* 3 credits.
Students investigate the contemporary innovations and disciplinary cross-pollination which have revolutionized and expanded the boundaries of traditional fine arts. Projects incorporate text, sound, computer generated imagery, collaboration and installation. Offered by School of Art. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: AVT 104[C] or 104[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 333: *Painting II.* 3 credits.
Focuses on the development of formal and technical skills, with an emphasis on paint application, color interaction, and support building and preparation. Introduces concepts, methodologies, and approaches relevant to contemporary painting. Offered by School of Art. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: AVT 232[C] or 232[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 336: *Experimental Painting.* 3 credits.
Using contemporary painting practices as starting place, students explore a variety of experimental and conceptual approaches to painting. Offered by School of Art. Limited to three attempts.

Recommended Prerequisite: AVT 232 or permission of instructor.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 337: *Figurative Painting.* 3 credits.
Working primarily with live models, students explore the human form as the main subject for a variety of visual and expressive inquiries. Offered by School of Art. Limited to three attempts.

Recommended Prerequisite: AVT 232, or permission of instructor.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 340: *Zines and Self-Publishing.* 3 credits.
Zines and artist publications exist largely outside the mainstream. This course will develop your understanding of the relationship between a community and independent or DIY publishing, providing a way to connect with a group of people with the same interests and concerns as you. Offered by School of Art. Limited to three attempts.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 341: *Comics.* 3 credits.
This is a course that explores Comics as a medium to tell stories and, using the language of mini-comics, zines, and DIY distribution, to make physical editions of comic books. Students will be looking at the geography of the comic book as object and exploring the diversity comics field as a medium and discipline. Offered by School of Art. Limited to three attempts.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 343: *Printmaking II.* 3 credits.
An introduction to relief, screenprint, and intaglio printing; including the study of historical antecedents and their relevancy to contemporary printmaking. Students learn reductive and additive techniques in preparing printing surfaces. Offered by School of Art. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: AVT 243[C] or 243[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 344: *Book Arts: Books & Enclosures.* 3 credits.
This course will introduce the basic concepts of book arts. Physical properties of book structures and binding methods will be developed alongside a conceptual rigor necessary to explore ideas of narrative and space within the book form. Through projects, readings, lectures, group discussions, individual reviews, and critiques, the course will introduce the history, tools, equipment, materials and processes that built the contemporary book. Offered by School of Art. Limited to three attempts.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 345: *Paper/Print/Book as Language.* 3 credits.
Introduces the artist's book as both physical structure and creative association of words and images. Students learn techniques of bookmaking, binding, and traditional and digital printmaking to produce an artist-made book with narrative and sequential elements. Offered by School of Art. Limited to three attempts.

Recommended Prerequisite: AVT 180, or permission of instructor.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 346: *Digital Printmaking.* 3 credits.
A beginning course in hand printing digitally processed images. Projects focus on electronic means of creating and manipulating imagery. Students achieve skills in multiple steps and incremental development required in making prints. Offered by School of Art. Limited to three attempts.

Recommended Prerequisite: AVT 180, or permission of instructor.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 350: *Alternative Photo Processes.* 3 credits.
Introduction to experimental and nontraditional photographic processes. Through hands-on engagement with chemical and digital based materials, the class will explore and discuss photography's influences, application, and use in other mediums. Offered by School of Art. Limited to three attempts. Equivalent to AVT 454.

Recommended Prerequisite: Successful completion of any 200 level AVT course.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 353: *Darkroom Photography II.* 3 credits.
Continuation of Fundamentals of Photography with further investigation into the aesthetics of photography through experimentation with new camera formats, films, papers, developers and development of a photographic portfolio. Offered by School of Art. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: AVT 252[C], 252[XS] or 254[C].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 354: *Digital Photography II.* 3 credits.
A computer-intensive class in which students create digital images from the viewpoint of a photographic artist. Emphasis on digital photo

techniques, including making digital negatives, concept development, and visual aesthetics. Offered by School of Art. Limited to three attempts.

Recommended Prerequisite: AVT 180, or permission of instructor.

Registration Restrictions:
Required Prerequisites: AVT 253[C] or 253[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 356: *Photo Studio Techniques.* 3 credits.
Introduces Theory, concepts and applications of photographic studio lighting. Emphasis on the ability to control and manipulate light in a photographic lighting studio environment using large format film cameras. Offered by School of Art. Limited to three attempts.

Recommended Prerequisite: AVT 353 or AVT 354, or permission of instructor.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 357: *Photobook: Concepts & Form.* 3 credits.
The photobook is an increasingly diverse and versatile artistic medium. Through demos, readings, lectures, workshops, assignments and critiques the course will cover the fundamentals of current photobook theory. Upon successful completion of this course students will have created several books that demonstrate an understanding of, and comfort with, book development and production. Offered by School of Art. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: AVT 253[C] or 253[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 359: *Photography Seminar.* 3 credits.
A combined studio and lecture course investigating photography's history, critical theory, philosophy, and practice. Lectures, discussions, readings, and projects focus on a medium that has enormously influenced art and culture. Offered by School of Art. Limited to three attempts.

Recommended Prerequisite: AVT 353 or permission of the instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 363: *Sculpture II.* 3 credits.
Expands on the principles and processes introduced in Sculpture I, developing a higher level of technical competence and critical sophistication. Notes: Lectures, independent student research, and gallery and museum visits required. Vigorous critiques. Offered by School of Art. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: AVT 262[C] or 262[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 370: *Entrepreneurship in the Arts.* 3 credits.
Combined lecture and studio course in developing entrepreneurial skills in arts. Special focus on developing communication skills and planning strategies, as well as on nurturing skills that enable students to creatively solve problems and think about opportunities. Offered by School of Art. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 371: *Visual Perception and the Arts.* 3 credits.
Review of major approaches to the study of visual perception. Topics include analysis of picture perception, visual thinking, the relationship between symbolic and non-symbolic thinking and representation, and how pathologies of vision affect art production. Offered by School of Art. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 372: *Hip Hop Culture.* 3 credits.
Examines hip hop as an art form within a continuum of cultural expression. Explores multilayered social, political, and aesthetic aspects of hip hop, historical causes and precedents, and contemporary derivatives and implications. Offered by School of Art. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 373: *Performance Studio.* 3 credits.
Studio course focused on theory and practice of collaborative performance art. Detailed analysis of creation and production processes from interdisciplinary perspective in conjunction with practical training in multimedia technologies, body sculpture, and theater of images. Offered by School of Art. Limited to three attempts.

Recommended Prerequisite: AVT 272, or permission of instructor.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 374: *Sound Art I.* 3 credits.
Introduction to the physics, phenomenology, and production of sound as an expressive medium. Using analog and digital tools, students will

explore constructing with sound. Offered by School of Art. Limited to three attempts.

Recommended Prerequisite: AVT 180, or 280, or permission of instructor.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 376: *Live Movies.* 3 credits.
Advanced performance studio emphasizing cinematic forms and multimedia technologies. Also covers sound design, scenic design and materials, production planning, and interdisciplinary approaches to narrative and content in performance. Notes: Students collaborate on production projects. Offered by School of Art. Limited to three attempts.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 377: *Cyberpunk.* 3 credits.
Traces the ways that cinema, music, fiction, cultural theory, visual art, television, theater, and performance have embraced and been shaped by cyberpunk and cyberculture. Includes readings, writings, discussion, screenings, guest speakers, and research projects. Offered by School of Art. Limited to three attempts.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 380: *Thinking Through Animation.* 3 credits.
Students will be encouraged to expand their abilities and capabilities as thinkers, artists and citizens. This course will provide an introduction to issues relating to the production and reception of animated media bracketing the turn of the 21st century. Offered by School of Art. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 382: *2D Experimental Animation.* 3 credits.
Introduces conceptual, contextual, technical, and aesthetic practices of two-dimensional experimental animation. Students learn to animate hand-drawn and computer-generated images. Students work to create an imaginative and meaningful short animation with sound. Offered by School of Art. Limited to three attempts.

Recommended Prerequisite: AVT 280, or permission of instructor.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 383: *3D Experimental Animation.* 3 credits.
Students create socially relevant 3D scenes with scaled objects, surface textures, lights, and shadows. These scenes serve as environments for short, thought-provoking animations. Emphasis on idea development, critical examination of animation practices, and visual aesthetics. Offered by School of Art. Limited to three attempts.

Recommended Prerequisite: AVT 280 or permission of instructor.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 385: *EcoArt.* 3 credits.
Develop collaborative projects that explore art and visual culture, the environment, and sustainability. Students are given access to the School of Art Permaculture Studio as a "green" work space for developing course projects. Offered by School of Art. May be repeated within the degree for a maximum 8 credits.

Mason Core: Arts, Encore: Sustainability, Synthesis, Encore: Well-Being

Specialized Designation: Green Leaf Focused Course

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 390: *Video Art.* 3 credits.
Integrates study of contemporary art theory, montage theory, and artistic practices with application to new media and technology. Special focus on visual culture and video art, sound design, and the sociopolitical implications of media. Offered by School of Art. Limited to three attempts.

Recommended Prerequisite: AVT 280 or permission of instructor.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 393: *Field Experience in the Arts.* 1-6 credits.
Introductory working and learning experience with an organization or individual in the arts or as a teaching assistant. Students must complete 45 hours of work at the internship site for each credit. Note: Departmental permission required to register. Notes: Placement documentation to include 45 hours of work per credit. Offered by School of Art. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Junior standing and permission of instructor and academic advisor.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 394: *Honors Seminar.* 1 credit.
Offers highly motivated students opportunities to interact with art world professionals through field trips, research, critiques, and creative assignments. Notes: Students accrue credits toward graduation with AVT honors. Offered by School of Art. May be repeated within the degree for a maximum 8 credits.

Recommended Prerequisite: Open only to qualified AVT honors students by invitation.

Schedule Type: Seminar

Grading:

This course is graded on the Undergraduate Regular scale.

AVT 395: *Writing for Artists.* 3 credits.
Practical writing seminar in which students practice typical writing needs of creative professionals; including artist's statements, grant proposals, and reviews; while also exploring ways in which artists have used writing, books, and language in art making. Offered by School of Art. Limited to three attempts.

Specialized Designation: Writing Intensive in Major

Registration Restrictions:
Required Prerequisites: ENGH 302[C], ENGL 302[C] or ENGH 302[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 396: *Writing for Designers.* 3 credits.
Practical writing seminar in which students practice typical statements, design briefs and proposals, and reviews; while also exploring ways in which designers have used writing, publications, and language in expressing critical design thinking. Offered by School of Art. Limited to three attempts.

Specialized Designation: Writing Intensive in Major

Registration Restrictions:
Required Prerequisites: ENGH 302[C] or 302[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

AVT 407: *Advanced Aesthetics.* 3 credits.
Advanced examination of aesthetic concepts and theories, focusing on issues pertinent to artmaking. Offered by School of Art. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: AVT 307[C] or 307[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 408: *Visual Communication Theories.* 3 credits.
Advanced lecture course focusing on key theories and themes that have informed 20th and 21st century design practice. Explores theory and criticism in a variety of contexts, from popular to scholarly, and considers the role of the designers as thinkers and writers. Offered by School of Art. Limited to three attempts.

Recommended Prerequisite: C or higher in ENGH/ENGL 302 or permission of instructor.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 409: *User Experience Design.* 3 credits.
User Experience Design is an introduction to user experience research and design. The course focuses on research techniques, concept development, information architecture, prototyping, and design. Offered by School of Art. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (AVT 215[C] or 215[XS]) and (AVT 311[C] or 311[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 410: *Experiential Design History.* 3 credits.
This hybrid lecture/studio course provides a historical perspective of the evolution of graphic design and examines graphic design's contribution to culture through writing and design projects. The course will have both lecture and studio content, providing 'hands-on' experiential opportunities in traditional graphic techniques. Offered by School of Art. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: ENGH 302[C] or 302[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 411: *Motion Design.* 3 credits.
Motion Design introduces the theories, techniques and practices of motion design and the integration of design, image, sound, video and animation. Offered by School of Art. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (AVT 217[C] or 217[XS]) and (AVT 311[C] or 311[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Graphic Design or Web Design.

Enrollment limited to students in the AR-BFA-AVT program.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 412: *Advanced Typography.* 3 credits.
An advanced exploration of type, design and the graphic organization of visual information. Emphasis is on the aesthetic and technical execution of typographic hierarchy in visual communications. Offered by School of Art. Limited to three attempts.

Registration Restrictions:

Required Prerequisites: AVT 313[C] or 313[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 413: *Professional Design Practices.* 3 credits.
Addresses the nature of the professional graphic designer in terms of career development and self-marketing, visual presentations of design work, preparation of written materials and interview techniques. Special emphasis will be given to the development of a design business, as well as freelance and pro-bono design work. Offered by School of Art. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (AVT 313[C] or 313[XS]) and (AVT 414[C] or 414[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 414: *Corporate Design and Branding.* 3 credits.
Fundamentals of branding and identity design. Topics include logo development, product packaging, marketing and advertising collaterals, web branding, and broadcast advertising development. Special attention is given to the creation of a graphics standards guide. Offered by School of Art. Limited to three attempts.

Recommended Prerequisite: Admittance into the Graphic Design Undergraduate Certificate, or Graphic Design Minor, or permission of instructor.

Registration Restrictions:
Required Prerequisites: (AVT 252[C], 252[XS], 253[XS] or 253[C]) and ((AVT 311[C] or 311[XS]) and (AVT 396[C] or 396[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 415: *Web Design and Usability.* 3 credits.
Introduces students to web design, usability, and the use of popular applications for static, interactive, and motion-based web development. Offered by School of Art. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (AVT 217[C] or 217[XS]) and (AVT 311[C] or 311[XS]) and (AVT 313[C], 313[XS], 414[C] or 414[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 416: *Advertising Design.* 3 credits.
Provides insight and practice in the creative design process behind effective and memorable advertising. Emphasis on the design and presentation of a series of portfolio-ready advertising campaigns for actual client use. Offered by School of Art. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: AVT 414[C] or 414[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment limited to students in the AR-BFA-AVT program.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 417: *Package Design.* 3 credits.
Provides a focused studio experience to conceptualize and design multiple applications for contemporary package design. Offered by School of Art. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: AVT 414[C] or 414[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a concentration in Graphic Design.

Enrollment limited to students in the AR-BFA-AVT program.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 419: *Topics in Graphic Design.* 1-6 credits.
Rotating subjects give students a deep look into and appreciation of a specific topic in design practice. Notes: Topics and credit vary with instructor. May be repeated when taken under different topics. Offered by School of Art. May be repeated within the term.

Specialized Designation: Topic Varies

Registration Restrictions:
Required Prerequisites: (AVT 311[C] or 311[XS]) and (AVT 313[C], 313[XS], 414[C] or 414[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 420: *Advanced Web Design.* 3 credits.
Building on the principles and skills gained in AVT 415, this course delves deeper into web-related concepts and techniques. Students will gain advanced knowledge in evolving web technology, preparing them for professional entry into the web design field. Offered by School of Art. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: AVT 415[C] or 415[XS].
[C] Requires minimum grade of C.

XS Requires minimum grade of XS.

Enrollment limited to students in the AR-BFA-AVT program.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 422: *Drawing III.* 3 credits.
Builds on intermediate drawing skills, emphasizing individual exploration and expressive techniques. Along with rigorous observational study, students work from a variety of sources to develop a broad understanding of visual solutions within contemporary art practice. Offered by School of Art. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: AVT 323C or 323XS.
C Requires minimum grade of C.
XS Requires minimum grade of XS.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 423: *Drawing IV.* 3 credits.
Students learn and practice advanced drawing skills and techniques in a variety of media and formats. Emphasis on development of content, personal sources, techniques, presentation strategies, and methods of analysis through critique. Offered by School of Art. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: AVT 422C or 422XS.
C Requires minimum grade of C.
XS Requires minimum grade of XS.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 432: *Painting III.* 3 credits.
Intermediate course with an emphasis on developing personal content, concepts, painting strategies, and a practical understanding of contemporary ideas in painting. Offered by School of Art. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: AVT 333C or 333XS.
C Requires minimum grade of C.
XS Requires minimum grade of XS.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 433: *Advanced Painting I.* 3 credits.
Students engage in a self-directed studio practice through the development of content, personal sources, techniques, presentation strategies, and methods of analysis through critique. Offered by School of Art. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: AVT 432C or 432XS.
C Requires minimum grade of C.
XS Requires minimum grade of XS.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 434: *Advanced Painting II.* 3 credits.
Students work rigorously and independently, advancing individual studio practice through in-depth dialogue with faculty and formal group critiques. Emphasis on individual decision making, personal initiative, and critical vocabularies. Offered by School of Art. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: AVT 433C or 433XS.
C Requires minimum grade of C.
XS Requires minimum grade of XS.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 435: *Advanced Painting III.* 3 credits.
Advanced directed research in painting. Employing rigorous concepts, presentation strategies, and in-depth critique, students develop independent projects into a cohesive body of work. Offered by School of Art. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: AVT 434C or 434XS.
C Requires minimum grade of C.
XS Requires minimum grade of XS.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 442: *Printmaking III.* 3 credits.
An intermediate print media course with an emphasis on a wider variety of tools and concepts that investigate photo-based imagery and advance personal narrative. Offered by School of Art. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: AVT 343C or 343XS.
C Requires minimum grade of C.
XS Requires minimum grade of XS.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 443: *Printmaking IV.* 3 credits.
An advanced print media course that uses hand-drawn, digital, and photo-based imagery. Students explore traditional and new printmaking techniques in a series of related prints and explore their relevancy to contemporary printmaking. Offered by School of Art. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: AVT 442C or 442XS.
C Requires minimum grade of C.

[XS] Requires minimum grade of XS.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 444: *Printmaking V.* 3 credits.
Advanced print media course incorporating three-dimensional applications of hand printmaking. Students develop concepts in digital printmaking, book making, sculptural prints, and installation works. Explores issues in contemporary printmaking through critical discussions, reading, and writing assignments. Offered by School of Art. Limited to three attempts.

Registration Restrictions:
Required Prerequisite: AVT 443[C].
[C] Requires minimum grade of C.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 453: *Professional Practices.* 3 credits.
This course prepares studio art majors for their professional careers. Each student will select a facet of interest to develop assets for a professional portfolio. Emphasis will be placed on developing your professional brand and accompanying materials such as portfolio, websites, CVs etc. with critiques focusing on the individual's process. Offered by School of Art. Limited to three attempts.

Recommended Prerequisite: Completion of 60 credits, including 12 credits of upper-level studio coursework.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 455: *Digital Printing Techniques.* 3 credits.
Continuation of 354 Digital Photo Methods with further examination into digital techniques, personal expression and digital printing. Course emphasis is on the fine art and craft of the digital print and portfolio development. Notes: Continuation of AVT 354 Offered by School of Art. Limited to three attempts.

Recommended Prerequisite: AVT 354, or permission of instructor.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 457: *Documentary Photography.* 3 credits.
Introduces documentary photography: techniques, history, choices, and ideas necessary to create meaningful photo essays that incorporate a personal, committed, in-depth approach to seeing and depicting lives and situations. Offered by School of Art. Limited to three attempts.

Recommended Prerequisite: AVT 353 or permission of instructor.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 458: *Advanced Studio Lighting.* 3 credits.
The advanced study of photographic studio lighting concepts using electronic strobes and power packs with emphasis placed on constructing studio materials, metering techniques, staging complex sets, and on-location photography. Offered by School of Art. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: AVT 356[C] or 356[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 462: *Sculpture III.* 3 credits.
Advanced studio course for continued individual, conceptual, and critical development in sculpture. Biweekly seminar, independent research, museum and gallery visits, vigorous individual and group critiques, required documentation, and portfolio preparation supporting studio projects. Offered by School of Art. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: AVT 363[C] or 363[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 463: *Sculpture IV.* 3 credits.
Intensive studio course for advanced sculpture students to further individual, conceptual, and critical development. Students produce a body of work based on technical exploration, critical discussion, reading, and writing. Offered by School of Art. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: AVT 462[C] or 462[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 464: *Sculpture V.* 3 credits.
Advanced studio course for rigorous and independent production of sculpture. Weekly topical seminar, vigorous critiques, museum and gallery visits, professional documentation, and research resulting in a body of work to be exhibited. Offered by School of Art. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: AVT 463[C] or 463[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 465: *Sculpture VI.* 3 credits.
Students work rigorously and independently, gaining insights into personal process and direction through one-on-one critical dialogue with faculty and formal group critiques. Emphasizes individual decision making and personal initiative. Notes: Continuation of advanced work in AVT 465. Offered by School of Art. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: AVT 464[C] or 464[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 472: *Critical Theory in the Visual Arts.* 3 credits.
Examination of currents in theory and criticism that inform contemporary practice and critical analysis in the visual arts. Offered by School of Art. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: ARTH 374[C] or 374[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 473: *Advanced Performance Studio.* 3 credits.
Advanced laboratory for performance. Emphasis on new technologies and their applications, multimedia scriptwriting and storyboarding, and the creation of audiovisual performance. Students participate in collaborative production. Offered by School of Art. Limited to three attempts.

Recommended Prerequisite: AVT 373 or Permission of Instructor.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 474: *Sound Art II.* 3 credits.
Extends a working knowledge of the materiality of sound into an in-depth exploration of creation in the sonic realm. May include synthesis, circuit-bending, use of field recordings and other samples, and live performance. Offered by School of Art. Limited to three attempts.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 479: *Digital Media and Web Design Capstone.* 3 credits.
Student team-based experience grounded in the work of the preceding courses in the digital media and web design minor. Each individual student will produce a portfolio of digital media and web-design related products and features that demonstrate core competencies in coding, design, content, and accessibility. Students will work in cross-disciplinary teams to carry out a client-based web design project, the process and outcomes of which will also be represented in the individual portfolio. Offered by School of Art. Limited to two attempts. Equivalent to COMM 479, ENGH 479, IT 479.

Recommended Prerequisite: Before enrolling in the Capstone seminar, students need to have completed all required courses for the Digital Media and Web Design Minor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 482: *Advanced Image Making.* 3 credits.
In-depth look at the processes and mechanisms used to generate, reconstruct, and/or create new media images. Students are required to create a series of contextually related images and to further develop their critical analysis abilities. Offered by School of Art. Limited to three attempts.

Recommended Prerequisite: AVT 280, or permission of instructor.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 483: *RS: Art and Interactivity.* 3 credits.
Provides a context for art making as an interactive and participatory experience while critically examining the ways in which technologies may aid and also inhibit engagement with the social and political world. Offered by School of Art. Limited to three attempts.

Specialized Designation: Research/Scholarship Intensive

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 487: *Advanced Topics: New Media Art.* 3 credits.
Provides a context for exploring current developments in new media art practice in and outside the studio. Specific course content adapts and responds to ongoing movements in new media art and contemporary culture. Offered by School of Art. May be repeated within the term for a maximum 9 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: AVT 280 plus one 3XX-level New Art Course, or permission of instructor.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 489: *Internship in Art and Visual Technology.* 1-6 credits.
Unpaid professional-level work experience in a professional organization or with an individual artist, related to the student's concentration and career plans. Students must complete 45 hours of work at the internship site for each credit. Note: departmental permission required to register. Notes: Placement documentation to include 45 hours of work per credit. Offered by School of Art. May be repeated within the degree for a maximum 12 credits.

Recommended Prerequisite: Senior standing, completion of 12 concentration credits, and permission of instructor.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 491: *Independent Study in Art and Visual Technology.* 1-6 credits.
Opportunity for development of advanced skills and concepts in a field of interest. Study proposal must be approved by instructor prior to registration. Students must complete 45 hours of work at the internship site for each credit. Notes: Project documentation to include 45 hours of work per credit. Offered by School of Art. May be repeated within the term for a maximum 24 credits.

Recommended Prerequisite: Senior standing, completion of 12 concentration credits, and permission of instructor.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 493: *Teaching Visual Thinking Through Media, PK-12.* 3 credits.
Investigates range and appropriateness of media and materials that encourage creative expression in the art classroom for PK-12 students, and expands the artist-teacher's visual repertoire. Incorporates art history, criticism, and aesthetics, as well as language arts and other content areas that challenge students' artistic growth and human development. Offered by School of Art. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: AVT 495[C] or 495[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 494: *Strategies in Art Room: PK-12.* 3 credits.
The study of various media, skills and concepts adapted for PK-12 curriculum. Includes instructor demonstrations, prototypes, practicum, and class presentations. Participants will learn appropriate instructional strategies for implementation. Offered by School of Art. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: AVT 495[C] or 495[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 495: *Introduction to Art Teaching and Learning.* 3 credits.
Explores art-teaching profession through readings, discussion, hands-on activities, and visits to diverse area public schools. Students discover a variety of ways that art is taught and evaluated to meet multiple educational needs of today's PK-12 students. Notes: Prior to enrollment, students must complete art education inquiry form. Offered by School of Art. Limited to three attempts.

Recommended Prerequisite: Junior standing, and completion of at least 20 credits of AVT coursework with a C or higher; or permission of art education advisor.

Registration Restrictions:
Required Prerequisites: (ENGH 302[C] or 302[XS]) and (AVT 307[C] or 307[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 496: *Special Topics.* 1-4 credits.
Explores topical studies in AVT including theoretical and critical aspects of art or studio production. Notes: Topics and credit vary with instructor. May be repeated when taken under different topics. Offered by School of Art. May be repeated within the degree.

Specialized Designation: Topic Varies

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 497: *Senior Project.* 3 credits.
Capstone course in which students develop and present a cohesive body of work along with written materials and documentation. Students participate in critiques with visiting artists or AVT faculty and in workshops supporting professional goals. Offered by School of Art. Limited to three attempts.

Mason Core: Capstone, Synthesis

Recommended Prerequisite: Senior Art and Visual Technology major, completion of 12 concentration credits, and completion or concurrent enrollment in all required Mason Core courses.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

AVT 498: *Senior Design Project.* 3 credits.
Capstone course in which students develop and present a design project exploring the possibilities of personal or professional expression. Students participate in critiques with visiting artists or AVT faculty and in workshops supporting professional goals. Offered by School of Art. Limited to three attempts.

Mason Core: Capstone, Synthesis

Recommended Prerequisite: Senior Art and Visual Technology major.

Registration Restrictions:
Required Prerequisites: (AVT 311[C] or 311[XS]) and (AVT 313[C] or 313[XS]) and (AVT 414[C] or 414[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

500 Level Courses

AVT 507: *Advanced Aesthetics.* 3 credits.
Graduate seminar in aesthetic concepts and theories, focusing on issues pertinent to artmaking. Offered by School of Art. May not be repeated for credit.

Recommended Prerequisite: Admission to the MFA program or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

AVT 519: *Special Topics in Graphic Design.* 3 credits.
Exploration of topical studies in graphic design, including theoretical and critical aspects of studio production. Offered by School of Art. May be repeated within the term for a maximum 9 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: Admission to AVT graduate program or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Studio

Grading:
This course is graded on the Graduate Regular scale.

AVT 522: *Drawing V.* 3 credits.
Drawing on an advanced level, emphasizing individual decision-making and personal initiative. Offered by School of Art. May not be repeated for credit.

Recommended Prerequisite: Admission to the AVT graduate program, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Studio

Grading:
This course is graded on the Graduate Regular scale.

AVT 523: *Drawing VI.* 3 credits.
Drawing on an advanced level, emphasizing individual decision-making and personal initiative. Offered by School of Art. May not be repeated for credit.

Recommended Prerequisite: Admission to the AVT graduate program, AVT 522, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Studio

Grading:
This course is graded on the Graduate Regular scale.

AVT 595: *Introduction to Art Teaching and Learning.* 3 credits.
Explores art-teaching profession through readings, discussion, hands-on activities, visits to diverse area public schools and action research. Students analyze ways that art is taught and evaluated to meet multiple educational needs of today's PK-12 students. Offered by School of Art. May not be repeated for credit.

Recommended Prerequisite: Admission to the MAT Program or permission of the art education advisor or director.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

AVT 596: *Independent Study.* 1-6 credits.
Independent reading and research on specific project under department faculty member's direction. Notes: Written reports required. Offered by School of Art. May be repeated within the term.

Recommended Prerequisite: Admission to AVT graduate program or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Regular scale.

AVT 599: *Special Topics in Art and Visual Technology.* 3 credits.
Exploration of topical studies in AVT, including theoretical and critical aspects of art or studio production. Notes: Topics and credit vary with instructor. May be repeated when taken under different topics. Offered by School of Art. May be repeated within the term.

Specialized Designation: Topic Varies

Recommended Prerequisite: Admission to the AVT graduate program, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

600 Level Courses

AVT 600: *Research Methodologies.* 3 credits.
Graduate seminar focusing on development of independent research project in student's area of emphasis. Explores principal methods of researching and documenting art and arts practice. Along with traditional methods of library research, emphasizes new processes of examination and investigation through the use of computer-aided research systems. Offered by School of Art. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Art Education, Art and Visual Technology, Graphic Design or Visual and Performing Arts.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

AVT 605: *Issues and Research in Art Education.* 3 credits.
Readings and projects explore historical and contemporary ideas, issues, philosophies, pedagogy, and research in art education. Investigates teachers' use of research-oriented questions and data to explore classroom issues and improve teaching and learning. Offered by School of Art. May not be repeated for credit.

Recommended Prerequisite: Admission to the MAT graduate program and permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

AVT 606: *Creativity and Cognition in the Arts and Media.* 3 credits.
Focuses on research on cognition, development, learning, and creativity in the visual arts and media in formal and informal educational settings. Offered by School of Art. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

AVT 610: *Graduate Seminar.* 2 credits.
Students present their work or the work of contemporary artists for discussion and peer and faculty critiques. Special focus on developing public communication and presentation skills on contemporary issues in the arts. Notes: Seminar course required of all AVT graduate students four times during course of study. Offered by School of Art. May be repeated within the degree for a maximum 8 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Art Education, Art and Visual Technology, Graphic Design or Visual and Performing Arts.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

AVT 611: *Graduate Design Seminar.* 2 credits.
A laboratory for the exploration of contemporary design theory and practice through writing and design making, this class will have rotating topical content. Offered by School of Art. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Art and Visual Technology, Graphic Design or Visual and Performing Arts.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

AVT 612: *Independent Project Research.* 1 credit.
Provides the development and research phase in preparation for AVT 794: Independent Design Project, the capstone course in the Graphic Design masters program. Students will prepare their written final project proposal for presentation to the AVT GD Graduate Faculty Committee. Notes: To be completed prior to enrolling in AVT 794: Independent Design Project. Offered by School of Art. May be repeated within the degree.

Recommended Prerequisite: completion of 30 graduate credits

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment limited to students in the AR-MA-GD program.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Special scale.

AVT 613: *Experiential Design History.* 3 credits.
This hybrid lecture/studio course provides a historical perspective of the evolution of graphic design and examines graphic design's contribution to culture through writing and design projects. The course will have both lecture and studio content, providing hands-on experiential opportunities in traditional graphic techniques. Offered by School of Art. May not be repeated for credit.

Recommended Prerequisite: Admission to the AVT graduate program or permission of the instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

AVT 614: *Brand Identity Design.* 3 credits.
This is an advanced design course with an emphasis on brand identity development. Topics include logo development, product packaging, marketing and advertising collaterals, web branding, and broadcast advertising development. Special attention is given to the creation of a graphic standards guide. Offered by School of Art. May not be repeated for credit.

Recommended Prerequisite: Admission to the AVT graduate program or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Studio

Grading:
This course is graded on the Graduate Regular scale.

AVT 615: *Technology for Art Teachers.* 3 credits.
Addresses use of technology in PK-12 art classroom. Focuses on research, presentation and instruction, and image creation. Students develop technology-enhanced teaching units for different grade levels and explore related issues, including copyright, plagiarism, and appropriation. Offered by School of Art. May not be repeated for credit.

Recommended Prerequisite: Admission to the Art Education concentration ASTL and/or permission of art education director.

Registration Restrictions:
Enrollment limited to students with a class of Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

AVT 616: *Advanced Art and Interactivity.* 3 credits.
Studio, lecture course investigating art as networked activity. Particular attention focused on Internet as context for creation, distribution, and patronage of art. Offered by School of Art. May not be repeated for credit.

Recommended Prerequisite: Admission to AVT graduate program.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Studio

Grading:
This course is graded on the Graduate Regular scale.

AVT 617: *Advanced Typography.* 3 credits.
Students will produce a body of work exploring the opportunities and limitations of typographical design. Offered by School of Art. May not be repeated for credit.

Recommended Prerequisite: Admission to graphic design MFA program or permission of the instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Studio

Grading:
This course is graded on the Graduate Regular scale.

AVT 618: *Visual Communication Theories.* 3 credits.
Advanced graduate seminar focusing on key theories and themes that have informed 20th and 21st century design practice. Explores theory and criticism in a variety of contexts, from popular to scholarly, and considers the role of designers as thinkers and writers. Offered by School of Art. May not be repeated for credit.

Recommended Prerequisite: Admission to MFA program, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

AVT 619: *Advanced Web Design.* 3 credits.
Develops skills for the application of information, interaction, usability, and visual design for web site developments. Students gain in-depth knowledge of user behaviors and broader context of social, cultural, and contemporary issues in web communication. Students learn professional design processes and integrate multiple web developing technologies. Offered by School of Art. May not be repeated for credit.

Recommended Prerequisite: Admission to graphic design MFA program or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Studio

Grading:
This course is graded on the Graduate Regular scale.

AVT 620: *Theory, Criticism, and the Arts.* 3 credits.
Cross-disciplinary graduate seminar focusing on key theories and themes that have informed 20th- and 21st-century arts practice. Explores theory and criticism in a variety of contexts, from popular to scholarly, and considers the role of artists as thinkers and writers. Offered by School of Art. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Art Education, Art and Visual Technology, Graphic Design or Visual and Performing Arts.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

AVT 621: *Art Writing Seminar.* 3 credits.
Includes criticism, the artist statement, manifestos, and language as visual art. Offered by School of Art. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment limited to students in the AR-MFA-AVT or AR-MFA-VPA programs.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

AVT 622: *Advanced Drawing.* 3 credits.
Advanced directed research in drawing with continued development of individual aesthetic. Study of historical and philosophical precedents integral. Offered by School of Art. May not be repeated for credit.

Recommended Prerequisite: Admission to the AVT graduate program, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Studio

Grading:
This course is graded on the Graduate Regular scale.

AVT 632: *Graduate Painting I.* 3 credits.
Entering students are expected to be competent painters, with technical proficiency, a disciplined process, and a directed personal vision. Students work rigorously and independently toward the understanding and mastery of techniques, methods, and concepts relevant to formal expression of personal content. Students expected to participate in critical discourse with supervising faculty. Achievement measured by faculty review board at mid-semester and term's end. Offered by School of Art. May not be repeated for credit.

Recommended Prerequisite: Admission to the AVT graduate program, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Studio

Grading:
This course is graded on the Graduate Regular scale.

AVT 633: *Graduate Painting II.* 3 credits.
Building on research and practices established in Graduate Painting I, students continue to develop strategies for the expression of personal vision and style. Progress tracked and assessed through periodic one-on-one critical discussions with supervising faculty. Achievement measured by faculty review board at mid-semester and term's end. Offered by School of Art. May not be repeated for credit.

Recommended Prerequisite: AVT 632, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Studio

Grading:
This course is graded on the Graduate Regular scale.

AVT 634: *Advanced Graduate Painting I.* 3 credits.
Working independently on a cohesive body of work, students must demonstrate a thorough understanding and mastery of techniques, methods, and concepts relevant to their own practices, and be able to discuss their work within the context of historical and contemporary art practices. Progress tracked and assessed through periodic one-on-one critical discussions with supervising faculty. Achievement measured by faculty review board at mid-semester and term's end. Offered by School of Art. May not be repeated for credit.

Recommended Prerequisite: AVT 633, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Studio

Grading:
This course is graded on the Graduate Regular scale.

AVT 635: *Advanced Graduate Painting II.* 3 credits.
Advanced independent studio production. Progress tracked and assessed through periodic critical discussions with supervising faculty. Achievement measured by faculty review board at mid-semester and end of term. Offered by School of Art. May not be repeated for credit.

Recommended Prerequisite: AVT 634, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Studio

Grading:
This course is graded on the Graduate Regular scale.

AVT 641: *Graduate Graphic Design I.* 3 credits.
Working independently on a cohesive body of work, students must demonstrate a thorough understanding and mastery of techniques, methods, and concepts relevant to their own practices, and be able to discuss their work within the context of historical and contemporary design practices. Progress tracked and assessed through periodic one-on-one critical discussions with supervising faculty. Achievement measured by faculty review board at term's end. Offered by School of Art. May not be repeated for credit.

Recommended Prerequisite: Completion of 30 graduate credits in the graphic design MFA program.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Independent Study

Grading:

This course is graded on the Graduate Regular scale.

AVT 642: *Graduate Printmaking I.* 3 credits.
Directed research and practice in printmaking focuses on individualized development of content and technique. Explores intellectual and expressive aspects of printmaking process. Offered by School of Art. May not be repeated for credit.

Recommended Prerequisite: Admission to the AVT graduate program, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Studio

Grading:
This course is graded on the Graduate Regular scale.

AVT 643: *Graduate Printmaking II.* 3 credits.
Directed research and practice in printmaking focuses on individualized development of content and technique. Explores intellectual and expressive aspects of printmaking process. Offered by School of Art. May not be repeated for credit.

Recommended Prerequisite: AVT 642, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Studio

Grading:
This course is graded on the Graduate Regular scale.

AVT 644: *Advanced Graduate Printmaking I.* 3 credits.
Intensive course of creative exploration in print media that furthers students' independence through production of individualized body of work reflecting interests within the broader contexts of contemporary social, technological, and cultural issues. Students also engage in collaborative studio practices to integrate visual technologies in their work. These may include digital imaging, drawing, graphic design, painting, performance, photography, and sculpture. Offered by School of Art. May not be repeated for credit.

Recommended Prerequisite: Admission to the AVT graduate program, AVT 643, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Studio

Grading:
This course is graded on the Graduate Regular scale.

AVT 645: *Advanced Graduate Printmaking II.* 3 credits.
Intensive studio course that furthers student independence through production of a body of work reflecting a broad context of social, cultural and contemporary issues. Offered by School of Art. May not be repeated for credit.

Recommended Prerequisite: Admission to MFA program, and AVT 644.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Regular scale.

AVT 646: *Graduate Graphic Design II.* 3 credits.
Continuing to work independently on a cohesive body of work, students must demonstrate a thorough understanding and mastery of techniques, methods, and concepts relevant to their own practices, and be able to discuss their work within the context of historical and contemporary art and design practices. Progress tracked and assessed through periodic one-on-one critical discussions with supervising faculty. Achievement measured by faculty review board at term's end. (This is the second course in a two-course sequence.) Offered by School of Art. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: AVT 641[B-] or 641[XS].
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Regular scale.

AVT 647: *Advanced Graduate Graphic Design I.* 3 credits.
Working independently on a cohesive body of work, students must demonstrate a thorough understanding and mastery of techniques, methods, and concepts relevant to their own practices, and be able to discuss their work within the context of historical and contemporary design practices. Progress tracked and assessed through periodic one-on-one critical discussions with supervising faculty. Achievement

measured by faculty review board at term's end. Offered by School of Art. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: AVT 646[B-] or 646[XS].
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Regular scale.

AVT 648: *Advanced Graphic Design II.* 3 credits.
Continuing to work independently on a cohesive body of work, students must demonstrate a thorough understanding and mastery of techniques, methods, and concepts relevant to their own practices, and be able to discuss their work within the context of historical and contemporary art and design practices. Progress tracked and assessed through periodic one-on-one critical discussions with supervising faculty. Achievement measured by faculty review board at term's end. (This is the second course in a two course sequence.) Offered by School of Art. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: AVT 647[B-] or 647[XS].
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Regular scale.

AVT 652: *Graduate Photography I.* 3 credits.
Critical theory and directed practice in photography focusing on development of a personal voice and working method through intellectual activity and creative work. Emphasizes ability to explore concepts, develop skills, and evolve as a communicator of ideas and photographic artist. Offered by School of Art. May not be repeated for credit.

Recommended Prerequisite: Admission to the AVT graduate program, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Studio

Grading:
This course is graded on the Graduate Regular scale.

AVT 653: *Graduate Photography II.* 3 credits.
An intensive critique class concentrating on the development of creative work with emphasis on articulating responses to others' work, the cultural climate, and issues involved in one's own work as it progresses. Notes: Continuation of Graduate Photography I. Weekly classes share equal time with critical theory and hands-on studio work. Includes readings, visiting artists and lecturers, and field trips. Offered by School of Art. May not be repeated for credit.

Recommended Prerequisite: Admission to the AVT graduate program, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Studio

Grading:
This course is graded on the Graduate Regular scale.

AVT 654: *Advanced Graduate Photography I.* 3 credits.
Intensive critique class concentrating on the development of creative work with emphasis on articulating responses to others' work, the cultural climate, and issues involved in one's own work as it progresses. Notes: Advanced graduate photography course. Weekly classes share equal time with critical theory and hands-on studio work. Includes readings, visiting artists and lecturers, and field trips. Offered by School of Art. May not be repeated for credit.

Recommended Prerequisite: Admission to the AVT graduate program, AVT 653, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Studio

Grading:
This course is graded on the Graduate Regular scale.

AVT 655: *Advanced Graduate Photography II.* 3 credits.
AVT 655, Advanced Graduate Photography II, Advanced independent studio production. Progress tracked and assessed through periodic critical discussions with supervising faculty. Achievement measured by faculty review board at mid-semester and end of term. Offered by School of Art. May not be repeated for credit.

Recommended Prerequisite: AVT 652, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Studio

Grading:
This course is graded on the Graduate Regular scale.

AVT 662: *Graduate Sculpture I.* 3 credits.
Intensive studio course that furthers student independence through production of a body of work reflecting interests, including a broader context of social, cultural, and contemporary issues. Emphasizes self-evaluation, critical discussion, reading, and writing. Offered by School of Art. May not be repeated for credit.

Recommended Prerequisite: Admission to the AVT graduate program, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Studio

Grading:
This course is graded on the Graduate Regular scale.

AVT 663: *Graduate Sculpture II.* 3 credits.
Intensive studio course that furthers student independence through production of a body of work reflecting interests, including a broader context of social, cultural, and contemporary issues. Emphasizes self-evaluation, critical discussion, reading, and writing. Offered by School of Art. May not be repeated for credit.

Recommended Prerequisite: Admission to the AVT graduate program, AVT 662, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Studio

Grading:
This course is graded on the Graduate Regular scale.

AVT 664: *Advanced Graduate Sculpture I.* 3 credits.
Emphasizes individual creative production and development, with periodic exposure of student's work and ideas to the critical attention of the AVT teaching faculty and other graduate students. Notes: Writing and reading components. Offered by School of Art. May not be repeated for credit.

Recommended Prerequisite: Admission to the AVT graduate program, AVT 663, or Permission of Instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Studio

Grading:
This course is graded on the Graduate Regular scale.

AVT 665: *Advanced Graduate Sculpture II.* 3 credits.
Advanced independent studio production. Progress tracked and assessed through periodic critical discussions with supervising faculty. Achievement measured by faculty review board at mid-semester and end of term. Offered by School of Art. May not be repeated for credit.

Recommended Prerequisite: AVT 664 or permission of the instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Studio

Grading:
This course is graded on the Graduate Regular scale.

AVT 667: *Two-Dimensional Art Making and Differentiated Instruction.* 3 credits.
Through studio work and research on basic and innovative drawing strategies, students explore expressive visual qualities, composition, and color. Students develop professional portfolios that incorporate meaningful themes and contexts for developing visual literacy in PK-12. Offered by School of Art. May not be repeated for credit.

Recommended Prerequisite: Admission to the MAT in Art Education program and permission of instructor based on a portfolio review.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Studio

Grading:

This course is graded on the Graduate Regular scale.

AVT 668: *Three-Dimensional Art Making Across Cultures.* 3 credits.
Explores the diversity of art forms in world cultures and work of traditional and contemporary artists. Students learn basic three-dimensional art-making techniques, including ceramics and fibers, and learn to design three-dimensional art instruction for PK-12 levels. Offered by School of Art. May not be repeated for credit.

Recommended Prerequisite: Admission to the MAT program or Art Education Concentration ASTL and/or permission of the art education director

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Studio

Grading:
This course is graded on the Graduate Regular scale.

AVT 669: *Four Dimensional Art Making: Technology and New Media.* 4 credits.
Develops teacher skills for the application of advanced technology for the PK-12 art program and examines the changing nature and uses of technology for expanding visual literacy through pedagogical strategies. Offered by School of Art. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Studio

Grading:
This course is graded on the Graduate Regular scale.

AVT 670: *Teaching Practicum.* 2 credits.
Supervised classroom teaching practicum in Mason's undergraduate program or community college program. Offered by School of Art. May be repeated within the degree for a maximum 4 credits.

Recommended Prerequisite: Admission to the AVT graduate program or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Special scale.

AVT 672: *Performance Studio I.* 4 credits.
Introductory studio course looking at performance as a visual art practice and focusing on time, space and the body. Emphasizes artist as performer. Students study the work of performance practitioners, make short performance pieces, document and exhibit their work, and go to galleries and performances locally and in New York. Notes: Substantial research project required. Offered by School of Art. May not be repeated for credit.

Recommended Prerequisite: Admission to AVT graduate program or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Studio

Grading:
This course is graded on the Graduate Regular scale.

AVT 674: *Advanced Performance Studio.* 4 credits.
Advanced laboratory for creating and producing performance art. Emphasizes new technologies and their applications, multimedia scriptwriting and storyboarding, and the creation of audiovisual performance. Students work independently and also contribute to collaborative production. Offered by School of Art. May not be repeated for credit.

Recommended Prerequisite: AVT 673 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Studio

Grading:
This course is graded on the Graduate Regular scale.

AVT 676: *Graduate Sound Art.* 3 credits.
Assuming basic competency in digital audio production and within the theory of sounded experience, students will be assisted in the incorporation of sonic material into their graduate research projects. Offered by School of Art. May not be repeated for credit.

Recommended Prerequisite: Admission to the AVT graduate program, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Studio

Grading:
This course is graded on the Graduate Regular scale.

AVT 678: *Interface and CD-ROM Design.* 5 credits.
Combined lecture and studio course in multimedia interface and CD-ROM design. Focuses on exporting traditional visual and aural artistic aesthetic to the computer environment within a multimedia context. Assigned class readings augmented and supported by presentations of various digital interfaces and CD-ROM examples. Discusses commercial, entertainment, and educational titles, as well as CD-ROM experimental art works. Studio time divided between AVT labs and area multimedia facilities. Students conceive, design, and develop two CD-ROM or kiosk interfaces due at midterm, and complete a dual platform CD-ROM project due at semester end. Offered by School of Art. May not be repeated for credit.

Recommended Prerequisite: Admission to the AVT graduate program or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Studio

Grading:
This course is graded on the Graduate Regular scale.

AVT 682: *Experimental 2D Animation.* 3 credits.
Designed to broaden range of visually expressive, time-based media from cell animation and stop motion animation to rotoscoping and two-dimensional digital animation. Emphasizes idea generation, concept development, and visual aesthetics. Offered by School of Art. May not be repeated for credit.

Recommended Prerequisite: Admission to the AVT graduate program, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Studio

Grading:
This course is graded on the Graduate Regular scale.

AVT 684: *Advanced Image Making.* 3 credits.
Overview of two-dimensional computer-imaging applications in the arts, including painting, printmaking, mixed media, illustration, video, and animation. Lectures combine technical and aesthetic material, including image processing for artists and color reproduction. Emphasis on developing advanced studio portfolio. Offered by School of Art. May not be repeated for credit.

Recommended Prerequisite: Admission to AVT Graduate Program.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Studio

Grading:
This course is graded on the Graduate Regular scale.

AVT 685: *Video Art.* 3 credits.
Explores video as medium that is transforming art and is transformed by art. Emphasizes developing an approach to personal narrative, creative skills, and construction of meaning, as well as on acquiring technical skills. Offered by School of Art. May not be repeated for credit.

Recommended Prerequisite: Admission to the AVT graduate program, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Studio

Grading:
This course is graded on the Graduate Regular scale.

AVT 686: *Experimental 3D Animation.* 3 credits.
Teaches how to create realistic, three-dimensional scenes with scaled objects, surface textures, lights, and shadows. Emphasizes idea generation, concept development, visual aesthetics, and technical abilities. Students required to render a portfolio of high-resolution images. Offered by School of Art. May not be repeated for credit.

Recommended Prerequisite: Admission to AVT Graduate Program.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Studio

Grading:
This course is graded on the Graduate Regular scale.

AVT 687: *Advanced Topics: New Media.* 3 credits.
Advanced course in digital media, including layer compositing, digital video editing, rotoscoping, and cell animation. Emphasizes integrating traditional techniques with software applications; and publishing projects to CD-ROM, DV tape, DVD, and Internet. Offered by School of Art. May not be repeated for credit.

Specialized Designation: Topic Varies

Recommended Prerequisite: Admission to the AVT program, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Studio

Grading:
This course is graded on the Graduate Regular scale.

AVT 688: *Hybrid Animation.* 3 credits.
Study of digital two-dimensional and three-dimensional animation practices. Introduces lighting, camera movement, object motion, timing, and texture mapping as students plan and produce a short animation. Emphasizes idea generation, concept development, visual aesthetics, and technical abilities. Offered by School of Art. May not be repeated for credit.

Recommended Prerequisite: Admission to the AVT graduate program, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Studio

Grading:
This course is graded on the Graduate Regular scale.

AVT 691: *Elementary Art Education.* 3 credits.
Concepts and methods in early childhood and elementary art education. Notes: Students spend three hours per week in class and one hour per week in required field experience in public schools and other educational settings. Offered by School of Art. May not be repeated for credit.

Recommended Prerequisite: Admission to the MAT program and permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

AVT 692: *Secondary Art Education.* 3 credits.
Concepts and methods in secondary art education. Notes: Students spend three hours per week in class, and one hour per week in required field experience in the public schools and other educational settings. Offered by School of Art. May not be repeated for credit.

Recommended Prerequisite: AVT 691, or permission of the instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

AVT 694: *Advanced Studies in Teaching Critical Response to Art, PK-12.* 3 credits.
Develops visual literacy and critical thinking skills by examining diverse theoretical models and applying strategies to expand knowledge about art and artifacts in the PK-12 classroom and museum. Offered by School of Art. May not be repeated for credit.

Recommended Prerequisite: Admission to the Art Education concentration ASTL and/or permission of the art education director.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

AVT 695: *Internship in Art Education (Student Teaching).* 5 credits.
Full-time internship in which students teach in elementary and secondary schools with guidance from cooperating mentor teachers. College supervisors make periodic site visits to observe, assess, and evaluate progress. Offered by School of Art. May not be repeated for credit.

Recommended Prerequisite: Completion of all other MAT program requirements.

Recommended Corequisite: AVT 696.

Registration Restrictions:

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Satisfactory/No Credit scale.

AVT 696: *Internship in Art Education Seminar.* 1 credit.
Weekly professional seminar focused on needs and concerns of student teachers. Covers issues as they emerge in practice, and concludes with an "Art of Teaching Art" exhibit of work by students of preservice teachers. Offered by School of Art. May not be repeated for credit.

Recommended Corequisite: AVT 695.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Satisfactory/No Credit scale.

AVT 697: *Advanced Strategies and Curricular Innovations in the Visual Arts.* 3 credits.
Synthesizing knowledge and understandings gained in ASTL program, seminar focuses on innovative curriculum design, mastery of effective instructional strategies, and developing leadership potential for the field of visual art education. Offered by School of Art. May not be repeated for credit.

Recommended Prerequisite: Completion of all ASTL Art Education Concentration courses.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

AVT 698: *Independent Study/Directed Readings.* 1-3 credits.
Offered by School of Art. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Admission to the MAT or Art Education Concentration (ASTL) and permission of art education director

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Special scale.

700 Level Courses

AVT 794: *Graphic Design Project.* 4 credits.
The capstone course in the graphic design Master of Arts degree. Provides for the independent development, design, production and presentation of a graduate-level design project guided by faculty and design professionals. Offered by School of Art. May not be repeated for credit.

Recommended Prerequisite: Admission to the AVT Graphic Design graduate program and completion of 30 graduate credits.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Special scale.

AVT 796: *Directed Reading.* 1-3 credits.
The development of independent research into the historical precedents, theoretical underpinnings, cultural forms, and idea territories pertinent to student's individual studio practice. Individualized section under the direction of division member. Notes: One of three courses comprising the MFA comprehensive experience for AVT students. Offered by School of Art. May not be repeated for credit.

Recommended Prerequisite: Admission to the AVT graduate program or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Regular scale.

AVT 798: *Directed Project and Exhibition.* 1-6 credits.
The construction and presentation of a professional-quality public exhibition. Course includes significant independent studio production of a comprehensive body of work, leading to the MFA Thesis Exhibition. Exhibition must demonstrate student's mastery of studio craft and concept. Individualized section under the direction of division member. Notes: One of three courses comprising the MFA comprehensive experience for AVT students. Offered by School of Art. May be repeated within the degree for a maximum 9 credits.

Recommended Prerequisite: Admission to the AVT graduate program or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Thesis

Grading:
This course is graded on the Graduate Regular scale.

AVT 799: *Thesis.* 1-3 credits.
The written thesis informs, documents, and enhances the MFA thesis exhibition, which is the student's primary creative research activity. The content of the written thesis may vary in accordance with artistic discipline and final exhibition. Individualized section under the direction of division member. Notes: One of three courses comprising the MFA comprehensive experience for AVT students. Offered by School of Art. May be repeated within the degree.

Recommended Prerequisite: Admission to the AVT graduate program or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Thesis

Grading:
This course is graded on the Satisfactory/No Credit scale.

Art History (ARTH)

100 Level Courses

ARTH 101: *Introduction to the Visual Arts.* 3 credits.
Introduction to the content and principles of the visual arts. Approach varies with instructor. Offered by History & Art History. Limited to three attempts.

Mason Core: Arts

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ARTH 102: *Symbols and Stories in Art.* 3 credits.
Introduces themes and imagery in art. Approaches and traditions to explore vary with the instructor. Offered by History & Art History. Limited to three attempts.

Mason Core: Arts

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ARTH 103: *Introduction to Architecture.* 3 credits.
Introduces study, principle, and understanding of art of architecture. Approach varies with instructor; may be historical, geographical, technical, or thematic. Notes: Field trips required. Offered by History & Art History. Limited to three attempts.

Mason Core: Arts

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ARTH 104: *Design in the 20th Century.* 3 credits.
This class will offer a chronological overview of the history of design in the 20th century, including industrial design, communication design, interior and landscape architecture, as well as corporate branding and new media from each period/major design movement. Topics discussed will include major design styles and movements, significant designers, manufacturers, and design-related companies, innovations in technology and material use, and the development of sales, marketing, and user-focused design. Offered by History & Art History. Limited to three attempts.

Mason Core: Arts

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

200 Level Courses

ARTH 200: *History of Western Art I.* 3 credits.
Major periods, monuments, and themes of Western art and architecture. Introduces Washington, D.C., museum collections and a historical framework for further study in art history. Covers prehistory, the ancient world, and the Middle Ages. Notes: Designed as a two-course sequence, but each part may be taken independently without prerequisite. Offered by History & Art History. Limited to three attempts.

Mason Core: Arts

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ARTH 201: *History of Western Art II.* 3 credits.
Major periods, monuments, and themes of Western art and architecture. Introduces Washington, D.C., museum collections and a historical framework for further study in art history. Covers the art of the Renaissance, the baroque period, and modern Europe and the Americas. Notes: Designed as a two-course sequence, but each part may be taken independently without prerequisite. Offered by History & Art History. Limited to three attempts.

Mason Core: Arts

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ARTH 203: *Survey of Asian Art.* 3 credits.
Introduces the arts of South, Southeast, and east Asia. Examines aspects of the culture and history of Asia. Discusses monuments and artifacts in a variety of media and their relation to social and historical contexts. Offered by History & Art History. Limited to three attempts.

Mason Core: Arts

Specialized Designation: Non-Western Culture

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ARTH 204: *Survey of Latin American Art.* 3 credits.
Introduces arts of Latin America from pre-Columbian to modern era. Discusses important examples of painting, sculpture, and architecture in relation to culture and history of region. Offered by History & Art History. Limited to three attempts.

Mason Core: Arts

Specialized Designation: Non-Western Culture

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ARTH 206: *Survey of African Art.* 3 credits.
Introduces arts of Africa, from antiquity to the present day. Presents a variety of arts In relatlon to their historical and cultural contexts, and makes use of local museum resources. Offered by History & Art History. Limited to three attempts.

Mason Core: Arts

Specialized Designation: Non-Western Culture

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

300 Level Courses

ARTH 303: *National Traditions.* 1-3 credits.
Studies traditions of art and architecture within a single selected country or historical region. Notes: May be repeated when topic is different. Offered by History & Art History. May be repeated within the term for a maximum 6 credits.

Recommended Prerequisite: 24 hours or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ARTH 311: *Design of Cities.* 3 credits.
Explores problems in urban design in a particular geographical region or historical period. Approach varies with instructor and may involve archaeological or theoretical approaches appropriate to the specific context. Notes: May be repeated when topic is different. Offered by History & Art History. May be repeated within the degree for a maximum 6 credits.

Mason Core: Arts

Recommended Prerequisite: Completion of 24 credits.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ARTH 315: *Modern Architecture.* 3 credits.
This course covers the history of modern architecture in the Western world from the mid-19th century to the present. Introduces movements such as Art Nouveau, Futurism, Modernism, and Post-Modernism in their political, social, and cultural contexts. Offered by History & Art History. Limited to three attempts.

Recommended Prerequisite: 24 credits.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ARTH 318: *Art and Archaeology of Ancient Egypt.* 3 credits.
Explores the art, architecture, and archaeology of ancient Egypt in its cultural and historic context. Besides the famous monuments, students will also examine the influence of ancient attitudes about cultural identity on the art of the period as well as the impact of ancient Egyptian art on ancient Greece and modern western culture. Offered by History & Art History. Limited to three attempts.

Specialized Designation: Non-Western Culture

Recommended Prerequisite: 24 credits (sophomore standing)

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ARTH 319: *Art and Archaeology of the Ancient Near East.* 3 credits.
Aspects of the art, archaeology, and culture of ancient Near East and Bronze Age Mediterranean. Approach varies depending on instructor; emphasis may be on Mesopotamia, Iran, Egypt, Anatolia, the Levant, or the Aegean. Offered by History & Art History. Limited to three attempts.

Mason Core: Global Understanding

Specialized Designation: Non-Western Culture

Recommended Prerequisite: 24 credits.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ARTH 320: *Art of the Islamic World.* 3 credits.
Introduction to Islamic art, from the time of Muhammad to present. Cultural and regional approach, utilizing local museum collections. Offered by History & Art History. Limited to three attempts.

Mason Core: Global Understanding

Specialized Designation: Non-Western Culture

Recommended Prerequisite: Completion of 24 hours.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ARTH 321: *Greek Art and Archaeology.* 3 credits.
History of ancient Greek architecture, sculpture, and painting. Offered by History & Art History. Limited to three attempts.

Mason Core: Arts

Recommended Prerequisite: Completion of 24 credits.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ARTH 322: *Roman Art and Archaeology.* 3 credits.
History of Roman architecture, sculpture, and painting. Offered by History & Art History. Limited to three attempts.

Mason Core: Arts

Recommended Prerequisite: Completion of 24 hours.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ARTH 324: *From Alexander the Great to Cleopatra: The Hellenistic World.* 3 credits.
Arts of the Hellenistic age within the context of history and culture of the period. Explores the powerful dynasties ruling wealthy empires; achievements in learning and literature housed in the Great Library at Alexandria; baroque sculpture adorning the Altar of Zeus at Pergamon; and Roman collectors of Greek art and antiques. Offered by History & Art History. Limited to three attempts.

Mason Core: Arts

Recommended Prerequisite: 24 credits.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ARTH 333: *Early Christian and Byzantine Art.* 3 credits.
Aspects of medieval art and culture in eastern Mediterranean world. Topics may include late antiquity, early Christianity, and the Byzantine empire and its neighbors. Designed to take advantage of unique local museum resources. Notes: Specific focus varies with instructor. Offered by History & Art History. Limited to three attempts.

Mason Core: Arts

Recommended Prerequisite: Completion of 24 hours.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ARTH 334: *Western Medieval Art.* 3 credits.
Aspects of art and architecture in medieval Europe, from the fall of the Roman Empire through the Gothic period. Notes: May be repeated when topic is different. Offered by History & Art History. Limited to three attempts.

Mason Core: Arts

Recommended Prerequisite: Completion of 24 credits.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ARTH 335: *Arts of Medieval England.* 3 credits.
Explores aspects of the art, architecture, and archeology of medieval England. Special emphasis may be placed on Cultural contexts and literary sources. Offered by History & Art History. Limited to three attempts.

Mason Core: Arts

Recommended Prerequisite: 24 credits.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ARTH 340: *Early Renaissance Art in Italy, 1300-1500.* 3 credits.
Studies in architecture, sculpture, and painting in the age of Giotto, Ghiberti, Masaccio, and Botticelli. Offered by History & Art History. Limited to three attempts.

Mason Core: Arts

Recommended Prerequisite: Completion of 24 credits.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ARTH 341: *Northern Renaissance Art.* 3 credits.
Studies in the art of France, Germany, and the Netherlands in the age of Van Eyck and Durer. Offered by History & Art History. Limited to three attempts.

Mason Core: Arts

Recommended Prerequisite: 24 hours.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ARTH 342: *High Renaissance Art in Italy, 1480-1570.* 3 credits.
Studies in architecture, sculpture, and painting in the age of Leonardo, Michelangelo, Raphael, and Titian. Offered by History & Art History. Limited to three attempts.

Mason Core: Arts

Recommended Prerequisite: Completion of 24 hours.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ARTH 343: *The Art of Venice.* 3 credits.
This course studies Venetian society and culture through the visual arts. Venice was a center of maritime trade in the late medieval and early modern Europe. Situated on the northeast coast of Italy, Venice was a

hub for merchants, pilgrims, diplomats, soldiers, and sailors traveling around the Mediterranean region. These encounters shaped Venice's rich visual and material culture, which integrated features from other parts of Italy, northern Europe, the Byzantine Empire, Ottoman Turkey, North Africa, and Classical Greece and Rome into a distinctive aesthetic. In this course, we will study the major monuments (e.g., the church of San Marco and the Ducal Palace) and the celebrated artists (e.g., the Bellini family, Titian, Palladio, and Tiepolo). We will also consider other media that are often left out of art history surveys but were equally important to Venetian art, including the city's famous glass production, luxury textile industry, print and publishing, and mosaics. Offered by History & Art History. Limited to three attempts.

Mason Core: Arts

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ARTH 344: *Baroque Art in Italy, France, and Spain, 1600-1750.* 3 credits.
Studies in architecture, sculpture, and painting in the age of Caravaggio, Bernini, Velazquez, and Poussin. Offered by History & Art History. Limited to three attempts.

Mason Core: Arts

Recommended Prerequisite: Completion of 24 credits.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ARTH 345: *Northern Baroque Art, 1600-1750.* 3 credits.
Studies in architecture, sculpture, and painting in the age of Rubens, Van Dyck, Rembrandt, and Vermeer. Offered by History & Art History. Limited to three attempts.

Mason Core: Arts

Recommended Prerequisite: Completion of 24 hours.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ARTH 350: *History of Photography.* 3 credits.
Development of photography from origins in France in the 19th century to the present. Offered by History & Art History. Limited to three attempts.

Mason Core: Arts

Recommended Prerequisite: 24 credits.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ARTH 360: *Nineteenth-Century European Art.* 3 credits.
Movements from neoclassicism to symbolism discussed in relation to social, cultural, political, and technological changes in Europe. Offered by History & Art History. Limited to three attempts.

Mason Core: Arts

Recommended Prerequisite: Completion of 24 credits.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ARTH 362: *Twentieth-Century European Art.* 3 credits.
Study of major movements (fauvism, cubism, futurism, constructivism, surrealism, and expressionism) and important artists in 20th-century painting and sculpture. Focus may vary. Offered by History & Art History. Limited to three attempts.

Mason Core: Arts

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ARTH 370: *Arts of the United States.* 3 credits.
Introduces students to high art (painting and sculpture) and popular material and visual cultural forms (prints, furniture, textiles) through a chronological and thematic survey of U.S. Art, 1600 to 1950. Explores changing roles of arts, artists, craftsmen; issues of gender, race, class; and formation of national identify through the arts. Lectures and discussion are featured. Offered by History & Art History. Limited to three attempts.

Mason Core: Arts

Recommended Prerequisite: 24 hours of undergraduate credit.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ARTH 371: *American Architecture and Material Culture.* 3 credits.
Studies in the history of American architecture or decorative arts in cultural context. Topics range from 17th century to 20th century, depending on instructor. Offered by History & Art History. Limited to three attempts.

Mason Core: Arts

Recommended Prerequisite: Completion of 24 hours.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

ARTH 372: *Studies in 18th- and 19th-Century Art of the United States.* 3 credits.
Developments in visual culture and the changing status of art practitioners throughout these periods. Focus is either chronological (Colonial Period, Gilded Age) or thematic (19th-century genre scenes, the American landscape and national identity). Notes: May be repeated when topic is different. Offered by History & Art History. May be repeated within the degree for a maximum 6 credits.

Mason Core: Arts

Recommended Prerequisite: 24 hours.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ARTH 373: *Studies in 20th-Century Art of the United States.* 3 credits.
Developments in 20th-century American visual culture across all media. Notes: May be repeated when topic is different. Offered by History & Art History. May be repeated within the degree for a maximum 6 credits.

Mason Core: Arts

Recommended Prerequisite: Completion of 24 credits.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ARTH 374: *Art Now.* 3 credits.
Explores visual art production since 1980, drawing on regional resources. Examines social, institutional, and political issues in recent art and its markets. Notes: Requires students to work collaboratively and make several field trips, including one Saturday bus trip to New York. Specific topics and assignments vary with the changing art season and instructor. Lecture, discussion. Offered by History & Art History. Limited to three attempts.

Recommended Prerequisite: Completion of 24 credits and one course in ARTH or AVT, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ARTH 376: *Twentieth-Century Latin American Art.* 3 credits.
Major movements and important artists in 20th-century Latin American art discussed in relation to social, cultural, and political conditions in the region. Offered by History & Art History. Limited to three attempts.

Mason Core: Arts

Recommended Prerequisite: 24 credits.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ARTH 382: *Arts of India.* 3 credits.
History, culture, and arts of south Asia from earliest civilizations along the Indus River to onset of Western colonialism. Emphasizes role of material evidence in the creation of the South Asian history and how political, social, and religious developments affected the arts. Discusses monuments and artifacts in a variety of media in relation to historical contexts. Offered by History & Art History. Limited to three attempts.

Mason Core: Global Understanding

Specialized Designation: Non-Western Culture

Recommended Prerequisite: 24 credits.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ARTH 383: *Arts of Southeast Asia.* 3 credits.
Examines various cultural and artistic traditions of ancient Southeast Asia, from the earliest archaeological evidence to onset of colonialism. Lectures and discussions focus on material culture of the great civilizations that arose within borders of modern Thailand, Cambodia, Indonesia, Burma (Myanmar), Vietnam, Laos, and Malaysia. Offered by History & Art History. Limited to three attempts.

Mason Core: Global Understanding

Specialized Designation: Non-Western Culture

Recommended Prerequisite: Completion of 24 credits.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ARTH 384: *Arts of China.* 3 credits.
Explores the complex and dynamic history of China by examining ways in which social, religious, and political shifts have given rise to new and variant forms of material culture. Offered by History & Art History. Limited to three attempts.

Mason Core: Global Understanding

Specialized Designation: Non-Western Culture

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ARTH 385: *Arts of Japan.* 3 credits.
Art and architecture of Japan, with particular attention to the ways political changes, religious movements, and social developments influenced and shaped those creations. Discusses monuments and artifacts in a variety of media in relation to social and historical contexts. Offered by History & Art History. Limited to three attempts.

Mason Core: Global Understanding

Specialized Designation: Non-Western Culture

Recommended Prerequisite: 24 credits.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ARTH 386: *The Silk Road.* 3 credits.
Explores luxury arts and material culture of Eurasian trade routes between Mediterranean and China in historical, religious, and social contexts. Emphasizes cultural interactions in medieval Central Asia. Offered by History & Art History. Limited to three attempts.

Mason Core: Global Understanding

Specialized Designation: Non-Western Culture

Recommended Prerequisite: 24 credits.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ARTH 393: *Art History Internships.* 3-6 credits.
Internship with a professional arts institution, organization, or individual in the Washington, D.C., area. Project to be arranged by student in consultation with faculty instructor and field supervisor. Notes: Strongly recommended for advanced art history students seeking exposure to professional work in visual arts. May be taken for 3 to 6 credits, or repeated for up to 6 credits. Offered by History & Art History. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Art History major or minor and permission of instructor.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

ARTH 394: *The Museum.* 3 credits.
Examines history, theory, practice, ethics, and current problems of collecting and displaying art and artifacts to the public. Emphasizes issues central to museums in Washington, D.C., or museums in other locations; focus varies with instructor. Offered by History & Art History. Limited to three attempts.

Mason Core: Synthesis

Recommended Prerequisite: 6 credits in art history at the 300-level and completion or concurrent enrollment in ENGH 302.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ARTH 398: *Study Abroad in the History of Art.* 1-6 credits.
Study abroad. Course topics, content, and locations vary. Notes: A maximum of 6 credits may be applied to the major or minor with permission of the program. Offered by History & Art History. May be repeated within the term for a maximum 12 credits.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

ARTH 399: *Special Topics in the History of Art.* 3 credits.
Topics vary. Notes: May be repeated when topic is different. Offered by History & Art History. May be repeated within the term.

Specialized Designation: Topic Varies

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

ARTH 400: *Historiography and Methods of Research in Art History (Topic Varies).* 3 credits.
Historical investigation of theories, methods, and critiques involved in the discipline of art history. Approach or focus may vary with instructor. Offered by History & Art History. Limited to three attempts.

Specialized Designation: Topic Varies, Writing Intensive in Major

Recommended Prerequisite: ENGL 302/ENGH 302 and 6 credits in art history at the 300 level or permission of instructor.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

ARTH 420: *Advanced Studies in Ancient Art.* 3 credits.
Studies a particular area of ancient art of the Mediterranean, Near East, or Middle East. Topics may be art form or medium, geographical area, theme, function, or context. Notes: May be repeated for credit when topic is different. Offered by History & Art History. May be repeated within the term.

Specialized Designation: Writing Intensive in Major

Recommended Prerequisite: ENGL 302/ENGH 302 and 6 credits in Art History at the 300 level, or permission of instructor.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

ARTH 430: *Advanced Studies in Medieval or Islamic Art.* 3 credits.
Studies a single topic in medieval or Islamic art. May focus on a particular period, region, or medium, or may explore cultural interconnections within medieval Eurasian world. Notes: May be repeated when topic is different. Offered by History & Art History. May be repeated within the term for a maximum 12 credits.

Specialized Designation: Writing Intensive in Major

Recommended Prerequisite: ENGL 302/ENGH 302 and a 300-level course in medieval or Islamic art, or permission of instructor.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

ARTH 440: *RS: Advanced Studies in Renaissance and Baroque Art.* 3 credits.
Studies a particular aspect of Renaissance or baroque art. Topics may be monographic, thematic, or concentrated on the art of a smaller time period or a particular area. Notes: May be repeated for credit when topic is different. Offered by History & Art History. May be repeated within the term.

Specialized Designation: Research/Scholarship Intensive, Topic Varies, Writing Intensive in Major

Recommended Prerequisite: ENGL 302/ENGH 302 and 6 credits in Art History at the 300 level, or permission of instructor.

Schedule Type: Seminar

Grading:

This course is graded on the Undergraduate Regular scale.

ARTH 460: *RS: Advanced Studies in 20th-Century European Art.* 3 credits.
Study of a particular topic in 20th century European art. Course may focus on a specific period, region, movement, medium, or theoretical issue, or explore cultural connections and transfer between regions. Notes: May be repeated when topic is different. Offered by History & Art History. May be repeated within the term for a maximum 9 credits.

Specialized Designation: Research/Scholarship Intensive, Topic Varies, Writing Intensive in Major

Recommended Prerequisite: ENGL 302/ENGH 302 and 3XX level course in 19th or 20th century European or American art, or permission of instructor.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

ARTH 471: *Advanced Studies in Art of the United States.* 3 credits.
Studies a particular area of American art, focusing on a form, such as landscape or genre painting; theme, such as nationalism, regionalism, or iconography of the family; or movement, such as American modernism. Offered by History & Art History. Limited to three attempts.

Specialized Designation: Writing Intensive in Major

Recommended Prerequisite: ENGL 302/ENGH 302 and 6 credits in art history at the 3XX level or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ARTH 472: *RS: Advanced Studies in 20th-Century Latin American Art.* 3 credits.
Study of a particular topic in 20th-century Latin American art. Course may focus on a specific period, region, movement, medium, or theoretical issue, or explore cultural connections and transfer between regions. Notes: May be repeated when topic is different. Offered by History & Art History. May be repeated within the degree for a maximum 9 credits.

Specialized Designation: Research/Scholarship Intensive, Writing Intensive in Major

Recommended Prerequisite: ENGL 302/ENGH 302 and a 3XX level course in 19th or 20th century art of Europe or the Americas, or permission of instructor.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

ARTH 474: *Advanced Studies in Contemporary Art.* 3 credits.
Study of a topic in contemporary art in a research seminar setting. Focus on particular theme, region, artist, or medium, or take a comparative approach. Notes: May be repeated when topic is different. Offered by History & Art History. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Writing Intensive in Major

Recommended Prerequisite: ENGL 302/ENGH 302; 3XX level coursework in modern or contemporary art; or permission of instructor.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

ARTH 482: *RS: Advanced Studies in Asian Art.* 3 credits.
Seminar-style discussions on a specific topic in Asian art. May focus on the art of a particular period, movement, reign, or region, as well as theoretical issues or works in a particular medium. Notes: May be repeated when topic is different. Offered by History & Art History. May be repeated within the term for a maximum 6 credits.

Specialized Designation: Research/Scholarship Intensive, Non-Western Culture, Writing Intensive in Major

Recommended Prerequisite: ENGL 302/ENGH 302, and 3XX-level course in any area of Asian art; or permission of instructor.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

ARTH 490: *Independent Study in Art History.* 3 credits.
Intensive study of a particular artist, period, or theoretical problem to be conducted by an individual student in consultation with instructor. Offered by History & Art History. Limited to three attempts.

Specialized Designation: Writing Intensive in Major

Recommended Prerequisite: 60 credits, ENGH 302, permission of instructor and chair, plus 9 credits in art history beyond ARTH 200, 201. Study proposal submitted prior to registration.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

ARTH 491: *Independent Study in Art History.* 3 credits.
Intensive study of a particular artist, period, or theoretical problem to be conducted by an individual student in consultation with instructor. Offered by History & Art History. Limited to three attempts.

Specialized Designation: Writing Intensive in Major

Recommended Prerequisite: 60 credits, ENGH 302, permission of instructor and chair, plus 9 credits in art history beyond ARTH 200, 201. Study proposal submitted prior to registration.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

ARTH 492: *Honors Directed Readings.* 3 credits.
Linked individualized courses, usually given by same instructor. Involves directed readings. Notes: Students must have completed at least one course in the field, or with the professor, chosen for these honors courses. The 3 credits of readings should be taken before the 3 research credits, or they may be taken concurrently. Offered by History & Art History. Limited to three attempts.

Specialized Designation: Writing Intensive in Major

Recommended Prerequisite: Admission to Art History Honors Program, ENGH 302, permission of instructor and chair, departmental approval of Honors Proposal submitted term prior to registration.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

ARTH 493: *Honors Directed Research.* 3 credits.
Linked individualized courses, usually given by same instructor. Culminates in research paper related to subject of readings. Notes: Students must have completed at least one course in the field, or with the professor, chosen for these honors courses. The 3 credits of readings should be taken before the 3 research credits, or they may be taken concurrently. Offered by History & Art History. Limited to three attempts.

Specialized Designation: Writing Intensive in Major

Recommended Prerequisite: Admission to Art History Honors Program, ENGH 302, permission of instructor and chair.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

ARTH 495: *RS: Objects and Archives in Art History.* 3 credits.
Conduct hands-on research with objects and primary and secondary sources. Select particular artifacts, works of art, or group of objects and undertake original research, and bring objects from storage to publication to exhibition. Develops skills in material analysis, critical reading, and academic writing. Focuses on VA/DC/MD libraries, archives, and storerooms. Offered by History & Art History. May be repeated within the degree for a maximum 9 credits.

Specialized Designation: Research/Scholarship Intensive, Writing Intensive in Major

Recommended Prerequisite: 6 credits of 300-level courses in the College of Humanities and Social Sciences and ENGH 302.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

ARTH 499: *Advanced Studies in Art History.* 3 credits.
Seminar-style discussion on specific subjects in art history. Notes: May be repeated when topic is different. Offered by History & Art History. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Writing Intensive in Major

Recommended Prerequisite: ENGL 302/ENGH 302 and 3XX level course in Art History; or permission of instructor.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

500 Level Courses

ARTH 593: *Internship in Art History.* 3-6 credits.
Internship with a professional arts institution, organization, or individual in the Washington, D.C., area. Project to be arranged by student in consultation with faculty instructor and field supervisor. Notes: Recommended for advanced art history students seeking exposure to professional work in visual arts. Offered by History & Art History. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: BA or equivalent or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Graduate Regular scale.

ARTH 594: *The Museum.* 3 credits.
Examines history, theory, practice, ethics, and current problems of collecting and displaying art and artifacts to the public. Emphasizes issues central to museums in Washington, D.C., or museums in other locations. Focus may vary with instructor. Offered by History & Art History. May not be repeated for credit.

Recommended Prerequisite: Baccalaureate degree or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ARTH 596: *Independent Study.* 1-3 credits.
Independent reading and research on specific project under direction of department member. Notes: Written report is required. May be repeated for credit. Offered by History & Art History. May be repeated within the term for a maximum 9 credits.

Recommended Prerequisite: Baccalaureate degree or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Regular scale.

ARTH 599: *Special Topics in Art History.* 1-6 credits.
Topics vary. Notes: May be repeated for credit when topic is different. Offered by History & Art History. May be repeated within the term.

Specialized Designation: Topic Varies

Recommended Prerequisite: Baccalaureate degree or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

600 Level Courses

ARTH 600: *Methods and Research in Art History.* 3 credits.
Investigates theories, methods, and research strategies in discipline of art history. Designed for first-semester students in art history MA program; foundation for further graduate-level work in the program. Offered by History & Art History. May not be repeated for credit.

Recommended Prerequisite: Admission to the Art History MA program.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

ARTH 601: *Colloquium in Art History.* 3 credits.
Offers graduate-level survey in academic art history led by an instructor of record, with input from full Art History faculty. Participants review the current field through lectures, focused readings and group discussions with relevant faculty member. Participants may read in more depth in areas of special interest. Provides preparation for MA exams and professional preparation for teaching. Offered by History & Art History. May not be repeated for credit.

Recommended Prerequisite: Admission to the MA Program in Art History.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ARTH 630: *Material Culture Studies.* 3 credits.
Introduction to traditions that have contributed to the field of material culture study. Examines a broad range of the material world from the past to the present. Surveys the field's historical roots and examines approaches to material culture scholarship. Notes: May be repeated for credit when topic is different. Offered by History & Art History. May be repeated within the term for a maximum 24 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in History of Decorative Arts.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ARTH 696: *Independent Directed Readings.* 3 credits.
Designed to prepare students for comprehensive exams by integrating past work and filling gaps in expected knowledge before the exam. Notes: Taken in final semester of art history MA. Offered by History & Art History. May not be repeated for credit.

Recommended Prerequisite: Admission to Art History MA program and permission instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Regular scale.

ARTH 699: *Topics in Art History.* 3 credits.
Research seminar on aspects of art history. Topics vary, but course entails extensive critical readings and discussion, development of bibliographies, and advanced-level research papers. Notes: May be repeated when topic is different. Offered by History & Art History. May be repeated within the term for a maximum 15 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

700 Level Courses

ARTH 799: *Master's Thesis.* 1-3 credits.
Research and writing on approved thesis topic under direction of thesis committee. Notes: Students must register for a minimum of three credits in their first semester of 799 and maintain continuous enrollment in 799 while writing and submitting a thesis. A maximum of 3 credits of 799 may be applied to the MA in art history and a maximum of 6 credits to the MA in the history of decorative arts. Offered by History & Art History. May be repeated within the degree for a maximum 24 credits.

Recommended Prerequisite: Completion of 24 credits (for art history) or 45 credits (for history of decorative arts) and approval of thesis proposal by the faculty and program director.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Thesis

Grading:
This course is graded on the Satisfactory/No Credit scale.

Arts Management (AMGT)

400 Level Courses

AMGT 402: *Professional Development.* 1 credit.
Seminar course that involves the development of workplace frameworks for success. Offered by Coll Visual & Performing Arts. Limited to three attempts.

Recommended Prerequisite: Junior standing, admission to the arts administration minor, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

AMGT 405: *Introduction to Arts Management.* 3 credits.
Focuses on not-for-profit visual and performing arts organizations. Topics covered include the evolution of the field, the internal culture and structure, external influences, governance, planning, human resources, marketing, fundraising, financial management, economic impact, and other topics. Students will be introduced to a wide range of arts organizations, working arts administrators, and institutional models through field trips, guest lectures, readings, and institutional data. Offered by Coll Visual & Performing Arts. Limited to three attempts.

Recommended Prerequisite: Junior standing, admission to arts administration minor, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

AMGT 410: *The Arts and Community Engagement.* 3 credits.
This course is an overview of the arts and community engagement as practiced by the arts manager, artist, and educator. Students will learn to identify the need for community engagement and to develop successful techniques to implement outreach. Other topics will include accessibility, diversity, volunteerism, and governance. Offered by Coll Visual & Performing Arts. Limited to three attempts.

Recommended Prerequisite: Junior standing or permission of program director.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

AMGT 471: *Introduction to Grant Writing.* 1 credit.
Course focuses on developing the skills necessary for successful grant applications for arts organizations. Study of relevant funding sources, awareness of available research materials, ability to construct coherent proposals, and defining fund-raising strategy for an arts organization. Offered by Coll Visual & Performing Arts. Limited to three attempts.

Recommended Prerequisite: Junior standing, admission to the arts administration minor, or permission of the instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

AMGT 472: *Technology in the Arts.* 1 credit.
The one constant in life is change. In today's world, both technology and arts organizations are changing. This course will give a broad overview of the technologies commonly used in entrepreneurial, small, and large arts organizations and examines the intersection of technology, management, and the arts. Offered by Coll Visual & Performing Arts. Limited to three attempts.

Recommended Prerequisite: Junior standing.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

AMGT 489: *Internship in Arts Management.* 1-4 credits.
Apprenticeship, internship, or project with organization or individual in the arts. Must be prearranged with the minor coordinator before enrollment. Offered by Coll Visual & Performing Arts. May be repeated within the degree for a maximum 4 credits.

Recommended Prerequisite: Junior Standing, completion of 6 credits of courses in area of residency, AMGT 305, or permission of instructor.

Schedule Type: Internship

Grading:

This course is graded on the Undergraduate Regular scale.

500 Level Courses

AMGT 504: *Professional Development Arts Management.* 1 credit.
Combines experimental facets happening within the creative community and the development of an increasing awareness of self. Professional development is not only for the manager, but also for those who work for that manager. It is collaborative, ideally incorporating an evaluative stage. Topics addressed include professional development, consultation, coaching, communities of practice, lesson study, mentoring, reflective supervision and technical assistance. Offered by Coll Visual & Performing Arts. May not be repeated for credit.

Recommended Prerequisite: Admission to Arts Management program or permission of program director.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

AMGT 511: *Introduction to Grant Writing.* 1 credit.
Places components of the grant writing process; including research, proposal writing, terminology, oral and written techniques, and specific focus; within broader context of nonprofit management. Introduction to perspectives of grant seeker and maker. Discover resources and compelling writing skills pertaining to proposal and letters of intent. Offered by Coll Visual & Performing Arts. May not be repeated for credit.

Recommended Prerequisite: Admission to Arts Management program or permission of program director.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

AMGT 512: *Grant Writing in the Arts.* 1 credit.
Places components of grant writing process within broader context of nonprofit management. Introduction to perspectives of grant seeker and maker. The grant writing process: research, proposal writing, terminology, oral and written techniques, and specific focus. Discover resources and compelling writing skills pertaining to proposal and letters of intent. Offered by Coll Visual & Performing Arts. May not be repeated for credit.

Recommended Prerequisite: Admission to Arts Management program or permission of program director.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

AMGT 513: *Technology in the Arts.* 1 credit.
The one constant in life is change. In today's world, both technology and arts organizations are changing. This course will give a board overview of the technologies commonly used in entrepreneurial, small, and large arts organizations and examines the intersection of technology, management, and the arts. Offered by Coll Visual & Performing Arts. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

AMGT 599: *Special Topics in Arts Management.* 1-6 credits.
Provides opportunity to explore special and timely topics in arts management including theoretical and applied areas. Topics and credit vary; may be repeated for up to 12 credits taken under different topics. Offered by Coll Visual & Performing Arts. May be repeated within the term for a maximum 12 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: Admission to Arts Management program or permission of program director.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

600 Level Courses

AMGT 601: *Fund Raising/Development I.* 3 credits.
Overview for students seeking general knowledge, as well as introductory course for those who will complete the fund-raising concentration. Teaches role of fund raising as management function and part of overall

strategic intention of arts organizations, presenting fund raising as a multifaceted, team-based process. Analyzes tools and techniques for effective fund raising. Offered by Coll Visual & Performing Arts. May not be repeated for credit.

Recommended Prerequisite: Admission to Arts Management program or permission of program director.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

AMGT 602: *Seminar in Arts Management.* 3 credits.
Develops tools and techniques necessary for successful pursuit of a management career in visual and performing arts. Introduces wide range of arts organizations, working arts administrators, and institutional models through guest lectures, readings, field trips, and analysis of institutional data. Students gain understanding of organizational structures and functions, as well as models for general management. Offered by Coll Visual & Performing Arts. May not be repeated for credit.

Recommended Prerequisite: Admission to Arts Management program or permission of program director.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to English Language, Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

AMGT 603: *The Arts in Society.* 3 credits.
Examines role of visual and performing arts, with emphasis on historic traditions and trends that have most directly influenced contemporary American practice. Consideration is given to the functions of art in society in addressing questions: What constitutes good or bad art? What is the value of art? What encouragements or impediments does our society offer to the creative artist or arts institution? Offered by Coll Visual & Performing Arts. May not be repeated for credit.

Recommended Prerequisite: Admission to Arts Management program or permission of program director.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

AMGT 604: *Public Relations and Marketing Strategies for the Arts I.* 3 credits.
Teaches strategic way of thinking about audience, community, and markets. Structured into four modules, beginning with fundamentals of strategic planning. Students learn about external and internal environments and the interplay among them; discuss marketing fundamentals pertaining to arts audiences; and are introduced to fundamentals of applied marketing media and advertising fundamentals. Offered by Coll Visual & Performing Arts. May not be repeated for credit.

Recommended Prerequisite: Admission to Arts Management program or permission of program director.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

AMGT 606: *Governance and Leadership.* 3 credits.
Board development including oversight and management of a board, as well as understanding board functions. Board relationships, including volunteers, are essential through all of the stages of a management career. Offered by Coll Visual & Performing Arts. May not be repeated for credit.

Recommended Prerequisite: Admission to Arts Management program or permission of program director.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

AMGT 609: *Performing Arts Management.* 3 credits.
Bridging strategic planning and marketing; audience development; financial management; and board and volunteer management with issues of scheduling, ticketing and sales, mission integration and strategic challenges of new facilities, and growth and operations of existing ones. Offered by Coll Visual & Performing Arts. May not be repeated for credit.

Recommended Prerequisite: Admission to Arts Management program or permission of program director.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

AMGT 610: *Visual Arts Management.* 3 credits.
Covers the many facets of visual art gallery management, from practical considerations of daily operations to the broader examination of gallery's role in art education, criticism, and art market. Topics such as exhibition coordination and installation, contracts, artist representation, fine art insurance, exhibition policies, budgets, and marketing are covered, along with the responsibility of educating a diverse public. Offered by Coll Visual & Performing Arts. May not be repeated for credit.

Recommended Prerequisite: Admission to Arts Management program or permission of program director.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

AMGT 620: *Legal Aspects in Arts Management.* 3 credits.
Overview of practical legal issues that will be encountered by arts managers of both for-profit and not-for-profit arts organizations, including contracts, copyrights, licensing, and for-profit and non-profit incorporation. Offered by Coll Visual & Performing Arts. May not be repeated for credit.

Recommended Prerequisite: Admission to Arts Management program or permission of program director.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

AMGT 640: *Programming and Project Arts Management.* 3 credits.
Provides both a theoretical framework for thinking about and assessing the value of various programming options and practical examples of the potential partners and resources available for program and project implementation. Offered by Coll Visual & Performing Arts. May not be repeated for credit.

Recommended Prerequisite: Admission to Arts Management program or permission of program director.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

700 Level Courses

AMGT 704: *Finance and Budgeting for Arts I.* 3 credits.
Introduces budget and finance as fundamentals of the budget process, specifically tailored to needs of arts organizations. Provides overview of accounting as tool to manage and control arts organizations. Involves laboratory component for teaching software application frequently encountered in fiscal operation of arts organizations. Offered by Coll Visual & Performing Arts. May not be repeated for credit.

Recommended Prerequisite: Admission to Arts Management program or permission of program director.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

AMGT 705: *Finance and Budgeting for Arts II.* 2 credits.
Introduces budgeting, planning, and finance as fundamentals of the strategic planning process and management control, specifically tailored to the needs of arts organizations. Offered by Coll Visual & Performing Arts. May not be repeated for credit.

Recommended Prerequisite: AMGT 704

Registration Restrictions:
Required Prerequisites: AMGT 704[B-] or 704[XS].
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:

This course is graded on the Graduate Regular scale.

AMGT 706: *Festivals and Special Events.* 3 credits.
Technical aspects of events and festival management. Topics may include cultural understanding, tourism, sponsorship, fund raising and development, logistics of scheduling and contracts, and the relationship to larger venues, marketing and sales, and budgeting. Offered by Coll Visual & Performing Arts. May not be repeated for credit.

Recommended Prerequisite: Admission to Arts Management program or permission of program director.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

AMGT 710: *Arts Policy.* 3 credits.
Reviews current state of the sector, familiarizing students with most common rationales for public support of the arts and respective roles of federal, state, and local governments and private policy actors. Examines dilemmas that arts organizations face in balancing need for government support and artistic integrity with push and pull of the market. Compares U.S. policies to other developed countries. Offered by Coll Visual & Performing Arts. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (AMGT 602[B-] or 602[XS]) and (AMGT 603[B-] or 603[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

AMGT 711: *Directed Readings and Project.* 1-6 credits.
Opportunity to engage in a more intensive study or project in arts management. Students partner with faculty member for intensive readings and project in strategy and planning in the arts, fundraising and development, entrepreneurial project work, arts marketing, arts policy and law, or other specialized areas pertinent to arts administration. Offered by Coll Visual & Performing Arts. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Admission to Arts Management program or permission of program director.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Regular scale.

AMGT 742: *Internship I.* 3 credits.
Provides a specific work environment to build on skills developed in the classroom and integrates work experience with specific academic exercises. Minimum 42 hours/credit. Required for developing practical application. Offered by Coll Visual & Performing Arts. May not be repeated for credit.

Recommended Prerequisite: Admission to Arts Management program, 15 credit standing; or permission of program director.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Graduate Special scale.

AMGT 752: *Arts Entrepreneurship.* 3,6 credits.
Lecture course in discovering and developing entrepreneurial skills in the arts. Students will conceive, develop, and present a for-profit or not-for-profit business plan and strategy; which will include model(s), market overview, management structure, along with revenue streams, an acquisition strategy, and technical and information technology strategies. Advanced course focuses on developing financial planning skills, funding strategies, marketing and arts sales. Offered by Coll Visual & Performing Arts. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Admission to Arts Management program or permission of program director; AMGT 704.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

AMGT 792: *Internship II.* 3 credits.
Provides a specific work environment to build on skills developed in the classroom and integrates work experience with specific academic exercises. Elective. Minimum 42 hours/credit. Required for developing practical application. Offered by Coll Visual & Performing Arts. May not be repeated for credit.

Recommended Prerequisite: Admission to Arts Management program, 15 credit standing; or permission of program director.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Graduate Special scale.

AMGT 795: *Capstone in Arts Management.* 1 credit.
Required in order to complete the MA AMGT degree and must be taken in the last semester. Provides students with the opportunity to deepen, expand, and demonstrate mastery of one area of arts management expertise. Builds on work undertaken in a completed AMGT course or internship. Faculty will provide guidance and approve capstone topics. The capstone is a required one-credit course. Students may register for the capstone after having completed all core course requirements for the MA AMGT degree. Offered by Coll Visual & Performing Arts. May be repeated within the degree for a maximum 2 credits.

Recommended Prerequisite: All core course requirements for the MA AMGT degree.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Satisfactory/No Credit scale.

Assistive Technology (EDAT)

400 Level Courses

EDAT 410: *Introduction to Assistive Technology.* 3 credits.
Provides an understanding of assistive technology and application in instructional programs, career tasks, and life skills for individuals with disabilities. Enables students to better use assistive technology in education, work, community, and home environments. Offered by School of Education. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EDAT 421: *Augmentative Communication.* 3 credits.
Provides an overview of augmentative and alternative communication tools for use by individuals with speech and communication disabilities. Enables students to locate, use and train others on the range of AAC technologies available. Field experience may be required. Offered by School of Education. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EDAT 422: *Assistive Technology for Individuals with Sensory Impairments.* 3 credits.
Provides an overview of specific technology and resources available to enhance and improve the ability of individuals who are visually impaired/blind or hearing-impaired/deaf. Offered by School of Education. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EDAT 423: *Accessibility and Input Modifications.* 3 credits.
Provides an overview of accessibility strategies and input modifications designed for use by individuals with disabilities. Enables students to locate, use and train others on the range of technologies available as well as design opportunities for constructing unique devices. Offered by School of Education. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

500 Level Courses

EDAT 510: *Introduction to Assistive Technology.* 3 credits.
Provides an understanding of assistive technology and application in instructional programs, career tasks, and life skills for individuals with disabilities. Presentation and exploration experiences enable students to better use assistive technology in education, work, community, and home environments. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDAT 521: *Augmentative Communication.* 3 credits.
Provides an overview of augmentative and alternative communication tools for use by individuals with speech and communication disabilities. Exploration experiences enable students to locate, use and train others on the range of AAC technologies available. Field experience may be required. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDAT 522: *Assistive Technology for Individuals with Sensory Impairments.* 3 credits.
Provides an overview of specific technology and resources available to enhance and improve the ability of individuals who are visually impaired/blind or hearing-impaired/deaf. Field experience may be required. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDAT 523: *Accessibility and Input Modifications.* 3 credits.
Provides an overview of accessibility strategies and input modifications designed for use by individuals with disabilities. Exploration experiences enable students to locate, use and train others on the range of technologies available as well as design opportunities for constructing unique devices. Field experience may be required. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDAT 524: *Universal Design for Learning.* 3 credits.
Describes the foundations and principles of Universal Design for Learning (UDL). Focuses on teaching students with various disabilities including those with learning disabilities from preschool to postsecondary education implementing technology-based and other UDL strategies. Applies UDL principles to the design of accessible instructional materials. Students have the opportunity to develop and implement UDL lesson plans. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDAT 525: *Software and Mobile Applications for Individuals with Disabilities.* 3 credits.
Provides overview with software, mobile applications, and accessibility features. Identifies design features to meet individual's special needs; provides hands-one experiences with the range of software and mobile applications that incorporate evidence-based strategies for individuals with disabilities across environments, settings and the life span. Field experience may be required. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDAT 527: *Assistive Technology for Independent Living and Employment.* 3 credits.
Provides an overview of assistive technology accommodations and public policy related to independent living for individuals with disabilities throughout their life span. Focuses on assistive technologies that support daily living tasks and workplace accommodations to improve the performance of daily living and work activities for individuals with disabilities. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDAT 599: *Independent Study in Assistive Technology.* 1-6 credits.
Studies assistive technology research, theory, or practice under direction of faculty member. Offered by School of Education. May be repeated within the term for a maximum 6 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

600 Level Courses

EDAT 610: *Designing Adapted Environments.* 3 credits.
Provides an overview of environmental adaptations for individuals with disabilities to increase their access to community, workplace, and school activities. Covers legal issues within the ADA for adapting environments and addresses programmatic and physical access issues. Notes: Field

Experience required. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: EDAT 510[B-] or 510[XS].
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDAT 649: *Assistive Technology Assessment.* 3 credits.
Provides an overview of AT consideration and assessment procedures with emphasis on generated assessment plan and written report. Review and administer existing assistive technology (AT) evaluation instruments. Notes: Field Experience required. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: EDAT 510[B-] or 510[XS].
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

Astronomy (ASTR)

100 Level Courses

ASTR 103: *Astronomy.* 3 credits.
Introduction to origin of life, Earth, planets and sun, stars, galaxies, quasars, nature of space radiation, and general theory of relativity. Note: ASTR 103 with ASTR 112 or ASTR 114 can be used to fulfill a 4-credit lab science requirement. Not for physics majors. Offered by Physics & Astronomy. Limited to three attempts.

Mason Core: Natural Science Overview

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ASTR 111: *The Solar System.* 3 credits.
Topics include history of astronomy, evolution of the solar system, properties of planets, scientific method, critical thinking, nature of light, and principles of telescope design. Notes: ASTR 111 and 112 can be used to fulfill a 4-credit lab science requirement; not for physics majors. Offered by Physics & Astronomy. Limited to three attempts.

Mason Core: Natural Science with Lab, Natural Science Overview

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ASTR 112: *The Solar System Lab.* 1 credit.
Laboratory course associated with ASTR 111. Notes: ASTR 111 and 112 can be used to fulfill a 4-credit lab science requirement; not for physics majors. Offered by Physics & Astronomy. Limited to three attempts.

Mason Core: Natural Science with Lab

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

ASTR 113: *Stars, Galaxies, and the Universe.* 3 credits.
Topics include electromagnetic radiation, stellar evolution, interstellar medium, galaxies, cosmology, scientific method, and critical thinking. Notes: ASTR 113 and 114 can be used to fulfill a 4-credit lab science requirement; not for physics majors. Offered by Physics & Astronomy. Limited to three attempts.

Mason Core: Natural Science with Lab, Natural Science Overview

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ASTR 114: *Stars, Galaxies, and the Universe Lab.* 1 credit.
Laboratory course associated with ASTR 113. Notes: ASTR 113 and 114 can be used to fulfill a 4-credit lab science requirement; not for physics majors. Offered by Physics & Astronomy. Limited to three attempts.

Mason Core: Natural Science with Lab

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

ASTR 115: *Finding New Worlds.* 4 credits.
Topics include the search for planets outside the solar system, and new developments in the theory of solar system formation with an emphasis on student-led investigation using public data sources. Notes: ASTR 115 can be used to fulfill a 4-credit lab science requirement; not for physics majors. Offered by Physics & Astronomy. Limited to three attempts.

Mason Core: Natural Science with Lab

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ASTR 124: *Introduction to Observational Astronomy.* 1 credit.
Practical introduction to observational astronomy using the campus observatory. Introduces the basic principles of light, telescopes,

astrophotography, and image analysis. Offered by Physics & Astronomy. Limited to three attempts.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

200 Level Courses

ASTR 210: *Introduction to Astrophysics.* 3 credits.
Introduction to astrophysics for scientists. Topics include astronomical measurement, celestial mechanics, electromagnetic radiation, stellar structure and evolution, the interstellar medium, galaxies, and a selection of topics at the forefront of astrophysics including space physics, exoplanets, galaxies, and cosmology. Offered by Physics & Astronomy. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: PHYS 160[C], 170[C] or 160[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

300 Level Courses

ASTR 301: *Astrobiology.* 3 credits.
Physical science perspective on origin and evolution of life on Earth and how life, in turn, has significantly influenced Earth's evolution. Topics include origin of Earth, mechanisms and sites for origin of life, co-evolution of life and Earth's atmosphere, habitability of planets, and the search for extraterrestrial life. Offered by Physics & Astronomy. Limited to three attempts.

Recommended Prerequisite: MATH 108 or 113.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ASTR 302: *Foundations of Cosmological Thought.* 3 credits.
Examines scientific, historical, and philosophical foundations and development of cosmological thought from antiquity to the present. Emphasizes qualitative understanding of the development of cosmology concluding with the present concept of origin and evolution of universe. Notes: No advanced background in mathematics or natural sciences required. This course does not satisfy elective-category requirements for the physics and astronomy majors. Offered by Physics & Astronomy. Limited to three attempts.

Mason Core: Natural Science Overview

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ASTR 303: *Black Holes.* 3 credits.
Introduction to black hole systems. Topics include qualitative understanding of gravity in Newton's and Einstein's perspectives, stellar evolution and compact objects, characteristics of stellar and supermassive black holes, observational evidence of black holes from electromagnetic radiation and gravitational waves. Offered by Physics & Astronomy. Limited to three attempts.

Mason Core: Natural Science Overview

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ASTR 328: *Stars.* 3 credits.
Stellar structure and evolution; radiative transfer. Includes computational work. Previous programming experience is not required, as it will be developed in the course, but it is helpful. Offered by Physics & Astronomy. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: ((ASTR 210[C] or 210[XS]) and (PHYS 260[C], 260[XS] or 270[C])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ASTR 390: *Topics in Astronomy.* 1-4 credits.
Selected topics not covered in fixed-content courses. May be repeated for credit with permission of department if topics are different. Notes: May not be included for credit by physics majors in the 45 credits of physics courses required for BS degree, or in 31 credits of physics courses required for BA degree. Offered by Physics & Astronomy. May be repeated within the term for a maximum 9 credits.

Specialized Designation: Topic Varies

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

ASTR 401: *Computer Simulation in Astronomy.* 3 credits.
Techniques and methods to simulate astronomical phenomena using a computer. Examples taken from a wide variety of astronomical phenomena, including radiation transfer in astrophysical objects, self-gravitating systems, hydrodynamics, and stellar models. Notes: Emphasizes hands-on projects. Offered by Physics & Astronomy. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: ((ASTR 210[C] or 210[XS]) and (PHYS 251[C] or 251[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ASTR 402: *RS: Methods of Observational Astronomy.* 4 credits.
An introduction to the observational, statistical, and computational techniques used by observational astronomers. The course covers some of the basic skills needed to pursue a career in astronomy and is

designed around preparing for and executing an observational research project. Fulfills writing intensive requirement in the major. Offered by Physics & Astronomy. Limited to three attempts.

Mason Core: Capstone

Specialized Designation: Research/Scholarship Intensive, Writing Intensive in Major

Registration Restrictions:
Required Prerequisites: (PHYS 260[C], 260[XS] or 270[C]) and (ASTR 124[C] or 124[XS]) and (ASTR 210[C] or 210[XS]) and ASTR 401[*C] and (ASTR 328[C], 328[XS], 403[C], 420[C], 420[XS], 480[C] or 480[XS]).
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ASTR 403: *Planetary Science.* 3 credits.
Introduction to the physics and chemistry of planets and their natural satellites, asteroids, and comets. Topics include history of the solar system; origin and evolution of planets, their internal structure and atmospheres; and analytical techniques used in remote and in situ study. Offered by Physics & Astronomy. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: ((ASTR 210[C] or 210[XS]) and (PHYS 260[C], 260[XS] or 270[C])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ASTR 404: *Galaxies and Cosmology.* 3 credits.
The structure of the Milky Way as the basis for our knowledge of galaxies; the properties of galaxies from our local neighborhood out to the youngest galaxies in the far distant universe; observational and theoretical approaches to the structure and evolution of galaxies; the basics of cosmology and the formation of structure in the universe. Computational tools introduced in ASTR 328 are developed further. Offered by Physics & Astronomy. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (ASTR 328[C] or 328[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ASTR 405: *Honors Thesis in Astronomy I.* 3 credits.
Project chosen and completed under the guidance of a faculty member, resulting in a written thesis. An oral progress report is required for ASTR 405. Offered by Physics & Astronomy. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (((ASTR 210[C] or 210[XS]) and (ASTR 328[C] or 328[XS])) or ASTR 402[C], 402[XS], PHYS 303[C], 303[XS], 305[C] or 305[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major in Astronomy.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ASTR 406: *Honors Thesis in Astronomy II.* 3 credits.
Project chosen and completed under the guidance of a faculty member, resulting in a written thesis. An oral progress report is required for ASTR 406. Offered by Physics & Astronomy. Limited to three attempts.

Registration Restrictions:
Required Prerequisite: ASTR 405[C].
[C] Requires minimum grade of C.

Enrollment is limited to students with a major in Astronomy.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ASTR 408: *Senior Research.* 3 credits.
Independent work under guidance of faculty member on research project in experimental, observational, or theoretical astronomy. Notes: Students may not receive more than 6 credits of ASTR 408 and 409. Written report on project required. May be taken twice with department permission. Offered by Physics & Astronomy. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Required Prerequisites: (ASTR 210[C] or 210[XS]) and (ASTR 328[C], 328[XS], 402[C], 402[XS], PHYS 303[C], 303[XS], 305[C] or 305[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Research

Grading:
This course is graded on the Undergraduate Regular scale.

ASTR 409: *Astronomy Internship.* 3 credits.
On-the-job experience for astronomy majors in industry or government laboratories, including summer research programs. Students work in observational, experimental, or theoretical astronomy, and prepare written report at end of internship. Notes: See department for other requirements and application procedure prior to enrollment. Students may not receive more than 6 credits of ASTR 408 and 409. Offered by Physics & Astronomy. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (ASTR 210[C] or 210[XS]) and (ASTR 328[C], 328[XS], 402[C], 402[XS], PHYS 303[C], 303[XS], 305[C] or 305[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Internship

Grading:

This course is graded on the Undergraduate Regular scale.

ASTR 420: *Exoplanets.* 3 credits.
Survey of exoplanet science. Topics include techniques for detecting and characterizing exoplanets, including their composition, atmospheres, and demographics. Offered by Physics & Astronomy. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (ASTR 210[C] or 210[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ASTR 480: *The Interstellar Medium.* 3 credits.
Physical processes in the interstellar medium. Topics include the production and transfer of radiation, ionization and recombination, atomic and molecular excitation, dust physics, gas heating and cooling, and star formation. Offered by Physics & Astronomy. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: ((ASTR 210[C] or 210[XS]) and (PHYS 260[C], 260[XS] or 270[C])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

500 Level Courses

ASTR 532: *Phys Interplanetary Med.* 3 credits.
Offered by Physics & Astronomy. May not be repeated for credit.

Recommended Prerequisite: PHYS 303, 305, 308; MATH 214.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ASTR 590: *Selected Topics in Astronomy and Astrophysics.* 1-6 credits.
Advanced topics from recent theoretical or observational developments and their applications. Satisfies needs of professional community to keep abreast of current developments. Offered by Physics & Astronomy. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: Permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

600 Level Courses

ASTR 601: *Computer Simulation in Astronomy.* 3 credits.
Techniques and methods to simulate astronomical phenomena using a computer. Examples taken from a wide variety of astronomical phenomena, including radiation transfer in astrophysical objects, self-gravitating systems, hydrodynamics, and stellar models. Offered by Physics & Astronomy. May not be repeated for credit.

Recommended Prerequisite: ASTR 210, PHYS 251

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ASTR 602: *Methods of Observational Astronomy.* 4 credits.
An introduction to the observational, statistical, and computational techniques used by observational astronomers. The course covers some of the basic skills needed to pursue a career in astronomy and is designed around preparing for and executing an observational research project. Offered by Physics & Astronomy. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Graduate Regular scale.

ASTR 603: *Planetary Sciences.* 3 credits.
Offered by Physics & Astronomy. May not be repeated for credit.

Recommended Prerequisite: ASTR 210, PHYS 260.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ASTR 604: *Galaxies and Cosmology.* 3 credits.
The structure of the Milky Way as the basis for our knowledge of galaxies; the properties of galaxies from our local neighborhood out to the youngest galaxies in the far distant universe; observational and theoretical approaches to the structure and evolution of galaxies; the basics of cosmology and the formation of structure in the universe. Offered by Physics & Astronomy. May not be repeated for credit.

Recommended Prerequisite: ASTR 328 and MATH 214.

Recommended Corequisite: PHYS 308.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ASTR 620: *Exoplanets.* 3 credits.
Survey of exoplanet science. Topics include techniques for detecting and characterizing exoplanets, including their composition, atmospheres, and demographics. Offered by Physics & Astronomy. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ASTR 660: *Plasma Physics for Space and Astrophysics.* 3 credits.
Offered by Physics & Astronomy. May not be repeated for credit. Equivalent to PHYS 660.

Recommended Prerequisite: PHYS 305

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ASTR 680: *Physics of Interstellar Media.* 3 credits.
Physical processes in the interstellar media. Topics include the production and transfer of radiation, ionization and recombination, atomic and molecular excitation, dust physics, gas heating and cooling, and star formation. Offered by Physics & Astronomy. May not be repeated for credit.

Recommended Prerequisite: PHYS 402 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

700 Level Courses

ASTR 730: *Stellar Astrophysics.* 3 credits.
Survey of contemporary astrophysics. Topics include physical concepts, stellar spectra, Hertzsprung-Russell diagram, stellar atmospheres, stellar structure, interstellar matter, stellar evolution, high-energy phenomena, hydrodynamical processes in astrophysics, accretion disk formation, and shock formation. Offered by Physics & Astronomy. May not be repeated for credit.

Recommended Prerequisite: MATH 214, PHYS 303, 305, 308.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ASTR 764: *Computational Astrophysics.* 3 credits.
Covers statistical mechanics concepts important in astrophysics. Presents unified approach to particle acceleration and interaction theory based on analytical and numerical analysis of Boltzmann and Liouville equations. Discusses computational methods relevant to particle transport problems, with emphasis on Fokker-lanck and Monte Carlo solution techniques. Applications from space sciences include studies of cosmic ray acceleration, photon comptonization, particle transport in the near-Earth environment, energy transport in stellar atmospheres, and self-gravitating system dynamics. Offered by Physics & Astronomy. May not be repeated for credit. Equivalent to CSI 764.

Recommended Prerequisite: ASTR 530.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ASTR 765: *High-Energy and Accretion Astrophysics.* 3 credits.
Overview of the field of atomic and nuclear physics, including nuclear reactions of use to high-energy astrophysics. Discusses radiation processes in cosmic plasmas emphasizing quantum mechanical calculations; stellar evolution and nucleosynthesis; computational models of stellar evolution; binary stars and accretion disks; numerical models of the structure of accretion disks; compact stars, white dwarfs, neutron stars, and black holes; acceleration processes and cosmic rays; interstellar medium and propagation of cosmic rays; high-energy processes in the center of galaxies; and ground- and space-based techniques and observations. Offered by Physics & Astronomy. May not be repeated for credit.

Recommended Prerequisite: PHYS 502 and 513, and ASTR 530; or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ASTR 790: *Topics in Astronomy and Astrophysics.* 1-6 credits.
Topics from recent theoretical or observational developments and applications not covered in fixed-content astronomy and astrophysics courses. Notes: Satisfies need of professional community to keep abreast of current developments. Offered by Physics & Astronomy. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ASTR 796: *Directed Reading and Research.* 1-12 credits.
Reading and research on a specific topic in astronomy, astrophysics, or related field under direction of faculty member. Offered by Physics & Astronomy. May be repeated within the degree for a maximum 12 credits.

Recommended Prerequisite: Admission to masters program and permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Research

Grading:
This course is graded on the Graduate Regular scale.

ASTR 798: *Research Project.* 3 credits.
Research project chosen and completed under the guidance of a graduate faculty member resulting in an acceptable technical report. Offered by Physics & Astronomy. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Nine graduate credits or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Thesis

Grading:
This course is graded on the Satisfactory/No Credit scale.

ASTR 799: *Master's Thesis.* 1-6 credits.
Research project chosen and completed under guidance of graduate faculty member resulting in acceptable technical report and oral defense acceptable to three-faculty-member thesis committee. Offered by Physics & Astronomy. May be repeated within the degree.

Recommended Prerequisite: 9 graduate credits and permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Thesis

Grading:
This course is graded on the Satisfactory/No Credit scale.

900 Level Courses

ASTR 998: *Doctoral Dissertation Proposal.* 1-12 credits.
Covers development of a research proposal under the guidance of a dissertation director and the doctoral committee. The proposal forms the basis for the doctoral dissertation. Notes: Note: No more than 24 credits in ASTR/PHYS 998 and ASTR/PHYS 999 may be applied toward satisfying doctoral degree requirements in the physics PhD program. Out of the 24, no more than 12 credits of ASTR/PHYS 998 may be applied. Offered by Physics & Astronomy. May be repeated within the degree for a maximum 21 credits.

Recommended Prerequisite: Admission to the Physics doctoral program, and permission of advisor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

ASTR 999: *Doctoral Dissertation.* 1-12 credits.
Doctoral research performed under direction of dissertation director. Notes: No more than 24 credits in ASTR/PHYS 998 and ASTR/PHYS 999 may be applied toward satisfying doctoral degree requirements in the

physics PhD program. Offered by Physics & Astronomy. May be repeated within the degree for a maximum 24 credits.

Recommended Prerequisite: Admission to doctoral candidacy in Physics PhD program and permission of advisor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy.

Enrollment is limited to Graduate level students.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

Athletic Training Education Program (ATEP)

100 Level Courses

ATEP 120: *First Aid and Emergency Care.* 2 credits.
Covers emergency management procedures for various injuries and sudden illnesses, including 1- and 2- person CPR, and use of an Automated External Defibrillator (AED) for cardiac emergencies and basic first aid techniques; certification in first aid and CPR. Offered by School of Kinesiology. Limited to two attempts.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Satisfactory/No Credit scale.

ATEP 150: *Introduction to Athletic Training and Preventative Care Techniques.* 3 credits.
Introduces the profession of athletic training and the basic principles of preventative care commonly used in the profession. Topics will include athletic training facility organization and procedures; protective sports equipment; construction of protective devices; and application of protective taping, braces, wrapping, and protective pads. Areas to be studied include the role of the athletic trainer in sports medicine, mechanisms of athletic injuries, tissue response to injury, blood-borne pathogens, introductory techniques of the assessment and evaluation of athletic injuries and emergency procedures. Offered by School of Kinesiology. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

200 Level Courses

ATEP 201: *Medical and Scientific Terminology.* 3 credits.
Foundations of scientific and medical vocabulary including prefixes, suffixes and stems used to form compound words. Offered by School of Kinesiology. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ATEP 203: *Prevention, Recognition, and Management of Athletic and Fitness Related Injuries.* 3 credits.
Provides coaches and fitness professionals with theory on the prevention, recognition, and management of injuries and conditions that occur in athletic competition and recreational fitness activities. Offered by School of Kinesiology. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ATEP 205: *Cultural Competence.* 3 credits.
Explores cultural competence and its integration for effective professional practice. Includes communication styles, daily living practices, common sensitivities, self-awareness, and historical cultural implications in multicultural environments. Offered by School of Kinesiology. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

300 Level Courses

ATEP 300: *Functional Anatomy.* 3 credits.
Increase students' knowledge and exposure to the structural and functional components of human anatomy including musculoskeletal origins, insertions, actions and innervations. Offered by School of Kinesiology. Limited to three attempts.

Recommended Prerequisite: C or better in BIOL 124 and BIOL 125.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ATEP 310: *Advanced Functional Anatomy.* 3 credits.
Investigates the musculoskeletal anatomy including innervation, vascular anatomy, and function of the neck, trunk and limbs. Synthesizes anatomy physiology, and human movement as it relates to injury; case studies are used to enhance the understanding of human anatomy and interpret movement impairments. Offered by School of Kinesiology. Limited to three attempts.

Recommended Corequisite: ATEP 320.

Registration Restrictions:
Required Prerequisites: ((ATEP 300[C] or 300[XS]) and (KINE 310[C] or 310[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Special scale.

ATEP 320: *Therapeutic Interventions Foundations.* 3 credits.
Explores foundational knowledge and skills necessary for the safe, effective, and evidence-based application of therapeutic interventions. Investigates physiologic response to injury and healing, physiologic cause of pain, physiologic response of tissue to therapeutic intervention including modalities and exercise. Offered by School of Kinesiology. Limited to three attempts.

Recommended Corequisite: ATEP 310.

Registration Restrictions:
Required Prerequisites: (ATEP 325[C] and (KINE 310[C] or 310[XS]) and (KINE 320[C] or 320[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Special scale.

ATEP 325: *Athletic Training Foundations.* 3 credits.
Investigates the knowledge, skill and professional foundations of the athletic training. Emphasizes is placed on the role of the athletic trainer as a member of the health care system by decision-making through evidence-based practice and foundational skills including fitting protective equipment and devices, and prophylactic preventative taping. Admission to the professional phase of the ATEP. Offered by School of Kinesiology. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: ((ATEP 120[C] or 120[XS]) and ATEP 150[C] and (ATEP 201[C] or 201[XS]) and (ATEP 300[C] or 300[XS]) and (BIOL 124[C] or 124[XS]) and (BIOL 125[C] or 125[XS]) and (HEAL 230[C] or 230[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ATEP 330: *Emergency Procedures for Athletic Trainers.* 3 credits.
Investigates the scientific and philosophical foundations of pre-hospital emergency care principles pertinent to athletic trainers. Develops knowledge, critical thinking and problem solving skills necessary to correctly apply emergency care principles and associated skills in a variety of clinical and professional settings. Admission to the professions phase of ATEP. Offered by School of Kinesiology. Limited to three attempts.

Recommended Corequisite: ATEP 340, 345, 351, 354.

Registration Restrictions:
Required Prerequisites: (ATEP 310[C] and (ATEP 320[C] or 320[XS]) and (KINE 450[C] or 450[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ATEP 340: *Lower Body Physical Assessment.* 3 credits.
Analyzes principles of lower body physical assessment. Investigates mechanisms of injury, the evaluation process, and testing leading to diagnosis. Admission to the professional phase of the ATEP. Offered by School of Kinesiology. Limited to three attempts.

Recommended Corequisite: ATEP 330, ATEP 340, ATEP 351, ATEP 354.

Registration Restrictions:
Required Prerequisites: (KINE 450[C] or 450[XS]) and ATEP 310[C] and 320[C].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ATEP 345: *Athletic Training Clinical Techniques 1.* 3 credits.
Applies principles of lower body, thoracic and lumbar spine physical assessment. develops evaluation skills including special testing leading to diagnosis. Admission to the professional phase of ATEP. Offered by School of Kinesiology. Limited to three attempts.

Recommended Corequisite: ATEP 330, ATEP 340, ATEP 351, ATEP 354.

Registration Restrictions:
Required Prerequisites: (KINE 450[C] or 450[XS]) and ATEP 310[C] and 320[C].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

ATEP 351: *Lower Body Therapeutic Interventions.* 3 credits.
Develops, implements, and evaluates treatment plans using therapeutic modalities and rehabilitation interventions in the treatment of lower body injuries and conditions. Establishes an evidence-based approach to therapeutic interventions use in patient treatment. Admission to the professional phase of the ATEP. Offered by School of Kinesiology. Limited to three attempts.

Recommended Corequisite: ATEP 330, ATEP 340, ATEP 345, ATEP 354.

Registration Restrictions:
Required Prerequisites: (KINE 450[C] or 450[XS]) and ATEP 310[C] and 320[C].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ATEP 354: *Athletic Training Clinical Techniques 2.* 3 credits.
Applies therapeutic interventions for the lower body in a laboratory setting. Develops rehabilitation treatment plans and skills necessary to carry out patient care. Admission to the professional phase of the ATEP. Offered by School of Kinesiology. Limited to three attempts.

Recommended Corequisite: ATEP 330, ATEP 340, ATEP 345, ATEP 351.

Registration Restrictions:
Required Prerequisites: (KINE 450[C] or 450[XS]) and ATEP 310[C] and 320[C].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

ATEP 360: *Therapeutic Interventions 2.* 3 credits.
Integrated approach to the use of therapeutic modalities and rehabilitation in the treatment of injuries and conditions. Special

consideration to specific body regions including a focus on the development, implementation, and evaluation of treatment plans. Notes: Formal acceptance into the professional phase of the ATEP. Offered by School of Kinesiology. Limited to three attempts.

Recommended Prerequisite: Grade of C or higher in ATEP 150, 180, 250, 255, 256, 260, 265, 266, 270, 300; BIOL 124, 125; HEAL 110, 230; KINE 310.

Recommended Corequisite: ATEP 365, 366.

Registration Restrictions:
Enrollment is limited to students with a major, minor, or concentration in Athletic Training.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ATEP 361: *Upper Body Therapeutic Interventions.* 3 credits.
Utilizes an integrated approach to therapeutic interventions including modalities and rehabilitation in the treatment of upper body, head and neck injuries and conditions. Includes development, implementation, and evaluation of treatment plans for upper body, head and neck injuries. Admission to the professional phase of the ATEP. Offered by School of Kinesiology. Limited to three attempts.

Recommended Corequisite: ATEP 365, ATEP 367, ATEP 370, ATEP 375.

Registration Restrictions:
Required Prerequisites: ATEP 351[C], 354[C], 330[C], 340[C] and 345[C].
[C] Requires minimum grade of C.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ATEP 365: *Athletic Training Clinical Techniques 4.* 3 credits.
Applies therapeutic interventions for the upper body, head and neck in a laboratory setting. Develops rehabilitation treatment plans and skills necessary to carry out patient care. Offered by School of Kinesiology. Limited to three attempts.

Registration Restrictions:
Students with a class of Freshman or Sophomore may **not** enroll.

Enrollment is limited to students with a major in Athletic Training.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

ATEP 366: *Practicum IV: Therapeutic Rehabilitation.* 3 credits.
A clinical practicum field experience under the direct supervision of a preceptor with emphasis on therapeutic rehabilitation. Notes: Formal acceptance into the professional phase of the ATEP; Current Emergency Cardiac Care (ECC) Certification. Offered by School of Kinesiology. Limited to three attempts.

Recommended Prerequisite: Grade of C or Better ATEP 150, 180, 250, 255, 256, 260, 265, 266, 270, 350, 355, 356; BIOL 124, 125; HEAL 110, 230; PHED 300 and 450.

Recommended Corequisite: ATEP 360, ATEP 365.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

ATEP 367: *Athletic Training Practicum 1.* 2 credits.
Emphasizes physical assessment and therapeutic interventions of the lower body in a clinical immersion practicum field experience under the direct supervision of a preceptor for 150 hours. Offered by School of Kinesiology. Limited to three attempts.

Recommended Corequisite: ATEP 361, ATEP 365, ATEP 370, ATEP 375.

Registration Restrictions:
Required Prerequisites: ATEP 330[C], 340[C], 345[C], 351[C] and 354[C].
[C] Requires minimum grade of C.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Special scale.

ATEP 370: *Upper Body Physical Assessment.* 3 credits.
Analyzes the principles of upper body physical assessment. Investigates mechanisms of injury, the evaluation process, and testing leading to diagnosis. Offered by School of Kinesiology. Limited to three attempts.

Recommended Corequisite: ATEP 361, ATEP 365, ATEP 367, ATEP 375.

Registration Restrictions:
Required Prerequisites: ATEP 330[C], 340[C], 345[C], 351[C] and 354[C].
[C] Requires minimum grade of C.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ATEP 375: *Athletic Training Clinical Techniques 3.* 3 credits.
Applies principles of upper body, heard and neck physical assessment. Develops evaluation skills including special testing leading to diagnosis. Offered by School of Kinesiology. Limited to three attempts.

Recommended Corequisite: ATEP 361, ATEP 365, ATEP 367, ATEP 370.

Registration Restrictions:
Required Prerequisites: ATEP 330[C], 340[C], 345[C], 351[C] and 354[C].
[C] Requires minimum grade of C.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

ATEP 400: *Pathopharmacology.* 3 credits.
Examines the assessment and management techniques of general medical conditions and pharmacological principles and interventions. Offered by School of Kinesiology. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: ((ATEP 300[C] or 300[XS]) and (KINE 310[C] or 310[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ATEP 441: *Senior Seminar in Athletic Training.* 3 credits.
Capstone educational experience focusing on current topics in the Athletic Training Profession and career development issues. Offered by School of Kinesiology. Limited to three attempts.

Mason Core: Capstone

Recommended Prerequisite: Grade of C or higher in ATEP 150, 180, 250, 255, 256, 260, 265, 266, 270, 300, 350, 355, 356, 360, 365, 366; BIOL 124, 125; HEAL 110, 230; KINE 300, 360.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

ATEP 450: *Administration and Management in Athletic Training.* 3 credits.
Focuses on the professional management and administrative issues in athletic training including the planning, designing, development, organization, implementation, direction, and evaluation of a health care program. Discusses current issues in athletic training related to professional conduct and practice. Offered by School of Kinesiology. Limited to three attempts.

Registration Restrictions:
Students with a class of Freshman or Sophomore may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ATEP 456: *Practicum 5 Professional Integration.* 6 credits.
A clinical practicum field experience under the direct supervision of a preceptor with emphasis on professional skill integration. Notes: Formal acceptance into the professional phase of the ATEP; Current Emergency Cardiac Care (ECC) Certification. Offered by School of Kinesiology. Limited to three attempts.

Recommended Prerequisite: Grade of C or higher in ATEP 150, 180, 250, 255, 256, 260, 265, 266, 270, 300, 350, 355, 356, 360, 365, 366, BIOL 124, 125; HEAL 110, 230, KINE 310, 360.

Recommended Corequisite: ATEP 450.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

ATEP 457: *Athletic Training Practicum 2.* 1 credit.
Emphasizes physical assessment and therapeutic interventions of the upper body with non-sport populations and assessment of general medical conditions in a clinical practicum field experience under the direct supervision of a preceptor for 75 hours. Offered by School of Kinesiology. Limited to three attempts.

Recommended Corequisite: ATEP 450.

Registration Restrictions:
Required Prerequisites: ((ATEP 361[C] or 361[XS]) and (ATEP 365[C] or 365[XS]) and (ATEP 367[C] or 367[XS]) and (ATEP 370[C] or 370[XS]) and (ATEP 375[C] or 375[XS]) and (ATEP 400[C] or 400[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Special scale.

ATEP 460: *Pediatric Sports Medicine.* 3 credits.
Examines evidence-based practices for injury preventions, sport safety, emergency preparedness, and risk management within youth and scholastic sport. Offered by School of Kinesiology. Limited to three attempts.

Recommended Corequisite: ATEP 470, 476.

Registration Restrictions:
Required Prerequisites: (ATEP 300[C] or 300[XS]) and (KINE 310[C] or 310[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ATEP 466: *Athletic Training Practicum 3.* 2 credits.
Emphasizes injury prevention administration physical assessment and therapeutic intervention during athletics preseason in a clinical practicum field experience under the direct supervision of a preceptor for 150 hours. Offered by School of Kinesiology. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: ((ATEP 361[C] or 361[XS]) and (ATEP 365[C] or 365[XS]) and (ATEP 367[C] or 367[XS]) and (ATEP 370[C] or 370[XS]) and (ATEP 375[C] or 375[XS]) and (ATEP 400[C] or 400[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Special scale.

ATEP 470: *Post Rehabilitative Therapeutic Interventions.* 2 credits.
Explores current topics of musculoskeletal injury prevention and intervention. Investigates injury epidemiology, pain and nutritional theories. Offered by School of Kinesiology. Limited to three attempts.

Recommended Corequisite: ATEP 476.

Registration Restrictions:
Required Prerequisites: (ATEP 450[C] and (ATEP 457[C] or 457[XS]) and (ATEP 466[C] or 466[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ATEP 476: *Athletic Training Practicum 4.* 4 credits.
Emphasizes physical assessment and therapeutic interventions of the upper body in a clinical practicum field experience under the direct supervision of a preceptor for 300 hours. Offered by School of Kinesiology. Limited to three attempts.

Recommended Corequisite: ATEP 470.

Registration Restrictions:
Required Prerequisites: (ATEP 450[C] and (ATEP 457[C] or 457[XS]) and (ATEP 466[C] or 466[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

ATEP 480: *Athletic Training Research.* 3 credits.
Examines methods for critically evaluating clinical research techniques and interventions to improve patient outcomes specific to the practice of athletic training. Offered by School of Kinesiology. Limited to three attempts.

Recommended Corequisite: ATEP 486.

Registration Restrictions:
Required Prerequisites: (ATEP 460[C] and 470[C] and (ATEP 476[C] or 476[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ATEP 499: *Independent Study in Athletic Training.* 1-6 credits.
Study of a topic area in athletic training research, theory, or practice under direction of a faculty member. May be repeated, but not more than 6 total credits may be earned. Offered by School of Kinesiology. May be repeated within the degree.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

500 Level Courses

ATEP 510: *Advanced Functional Anatomy.* 3 credits.
Investigates the musculoskeletal anatomy including innervation, vascular anatomy, and function of the neck, trunk and limbs. Synthesizes anatomy, physiology, and human movement as it relates to injury; case studies are used to enhance the understanding of human anatomy and interpret movement impairments. Offered by School of Kinesiology. May not be repeated for credit.

Recommended Prerequisite: Basic human anatomy and physiology and functional anatomy knowledge.

Recommended Corequisite: ATEP 520 and 525.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

ATEP 520: *Therapeutic Interventions Foundations.* 3 credits.
Explores foundational knowledge and skills necessary for the safe, effective, and evidenced-based application of therapeutic interventions. Investigates physiologic response to injury and healing, physiologic cause of pain, physiologic response of tissue to therapeutic intervention including modalities and exercise. Offered by School of Kinesiology. May not be repeated for credit.

Recommended Prerequisite: Basic human anatomy and physiology and functional anatomy knowledge.

Recommended Corequisite: ATEP 510 and 525.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

ATEP 525: *Athletic Training Foundations.* 3 credits.
Investigates the knowledge, skill and professional foundations of the athletic training. Emphasizes is placed on the role of the athletic trainer as a member of the health care system by decision-making through evidence-based practice and foundational skills including fitting protective equipment and devices, arid prophylactic preventative taping. Offered by School of Kinesiology. May not be repeated for credit.

Recommended Corequisite: ATEP 510 and 520.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ATEP 530: *Emergency Procedures for Athletic Trainers.* 3 credits.
Investigates the scientific and philosophical foundations of pre-hospital emergency care principles pertinent to athletic trainers. Develops knowledge, critical thinking and problem solving skills necessary to correctly apply emergency care principles and associated skills in

a variety of clinical and professional settings. Offered by School of Kinesiology. May not be repeated for credit.

Recommended Corequisite: ATEP 540, 545, 550, 555.

Registration Restrictions:
Required Prerequisites: (ATEP 510[B-] or 510[XS]) and (ATEP 520[B-] or 520[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Athletic Training.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ATEP 540: *Lower Body Physical Assessment.* 3 credits.
Analyzes principles of lower body physical assessment. Investigates mechanisms of injury, the evaluation process, and testing leading to diagnosis. Offered by School of Kinesiology. May not be repeated for credit.

Recommended Corequisite: ATEP 530, 545, 550, 555.

Registration Restrictions:
Required Prerequisites: (ATEP 510[B-] or 510[XS]) and (ATEP 520[B-] or 520[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Athletic Training.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ATEP 545: *Athletic Training Clinical Techniques 1.* 3 credits.
Applies principles of lower body, thoracic and lumbar spine physical assessment. Develops evaluation skills including special testing leading to diagnosis. Offered by School of Kinesiology. May not be repeated for credit.

Recommended Corequisite: ATEP 530, 540, 550, 555.

Registration Restrictions:
Required Prerequisites: (ATEP 510[B-] or 510[XS]) and (ATEP 520[B-] and 520[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Athletic Training.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory

Grading:
This course is graded on the Graduate Regular scale.

ATEP 550: *Lower Body Therapeutic Interventions.* 3 credits.
Develops, implements, and evaluates treatment plans using therapeutic modalities and rehabilitation interventions in the treatment of lower body injuries and conditions. Establishes an evidence-based approach to therapeutic interventions use in patient treatment. Offered by School of Kinesiology. May not be repeated for credit.

Recommended Corequisite: ATEP 530, 540, 545, 555.

Registration Restrictions:
Required Prerequisites: (ATEP 510[B-] or 510[XS]) and (ATEP 520[B-] or 520[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Athletic Training.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ATEP 555: *Athletic Training Clinical Techniques 2.* 3 credits.
Applies therapeutic interventions for the lower body in a laboratory setting. Develops rehabilitation treatment plans and skills necessary o carry out patient care. Offered by School of Kinesiology. May not be repeated for credit.

Recommended Corequisite: ATEP 530, 540, 545, 550.

Registration Restrictions:
Required Prerequisites: (ATEP 510[B-] or 510[XS]) and (ATEP 520[B-] or 520[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Athletic Training.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory

Grading:
This course is graded on the Graduate Regular scale.

ATEP 560: *Upper Body Therapeutic Interventions.* 3 credits.
Utilizes an integrated approach to therapeutic interventions including modalities and rehabilitation in the treatment of upper body, head and neck injuries and conditions. Includes development, implementation, and evaluation of treatment plans for upper body, head and neck injuries. Offered by School of Kinesiology. May not be repeated for credit.

Recommended Corequisite: ATEP 565, 566, 570, 575, 600.

Registration Restrictions:
Required Prerequisites: (ATEP 530[B-] or 530[XS]) and (ATEP 540[B-] or 540[XS]) and (ATEP 545[B-] or 545[XS]) and (ATEP 550[B-] or 550[XS]) and (ATEP 555[B-] or 555[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Athletic Training.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ATEP 565: *Athletic Training Clinical Techniques 4.* 3 credits.
Applies therapeutic interventions for the upper body, head and neck in a laboratory setting. Develops rehabilitation treatment plans and skills necessary to carry out patient care. Offered by School of Kinesiology. May not be repeated for credit.

Recommended Corequisite: ATEP 560, 566, 570, 575, 600.

Registration Restrictions:
Required Prerequisites: (ATEP 530[B-] or 530[XS]) and (ATEP 540[B-] or 540[XS]) and (ATEP 545[B-] or 545[XS]) and (ATEP 550[B-] or 550[XS]) and (ATEP 555[B-] or 555[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Athletic Training.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory

Grading:
This course is graded on the Graduate Regular scale.

ATEP 566: *Athletic Training Practicum 1.* 2 credits.
Emphasizes clinical examination and acute care of injuries during a clinical immersion practicum field experience under the direct supervision of a preceptor for 150 to 200 hours. Offered by School of Kinesiology. May not be repeated for credit.

Recommended Corequisite: ATEP 560, ATEP 565, ATEP 570, ATEP 575, 600.

Registration Restrictions:
Required Prerequisites: (ATEP 530[B-] or 530[XS]) and (ATEP 540[B-] or 540[XS]) and (ATEP 545[B-] or 545[XS]) and (ATEP 555[B-] or 555[XS]) and (ATEP 550[B-] or 550[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Athletic Training.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Graduate Special scale.

ATEP 570: *Upper Body Physical Assessment.* 3 credits.
Analyzes principles of upper body physical assessment. Investigates mechanisms of injury, the evaluation process, and testing leading to diagnosis. Offered by School of Kinesiology. May not be repeated for credit.

Recommended Corequisite: ATEP 560, 565, 566, 575, 600.

Registration Restrictions:
Required Prerequisites: (ATEP 530[B-] or 530[XS]) and (ATEP 540[B-] or 540[XS]) and (ATEP 545[B-] or 545[XS]) and (ATEP 550[B-] or 550[XS]) and (ATEP 555[B-] or 555[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Athletic Training.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ATEP 571: *Orthopedic Bracing.* 3 credits.
Provide instruction and experience in the fabrication, fitting and delivery of orthotic devices and related durable medical equipment. Offered by School of Kinesiology. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Required Prerequisites: (ATEP 540[B] and 570[B]).
[B] Requires minimum grade of B.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Athletic Training.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ATEP 572: *Orthopedic Casting.* 3 credits.
Provide instruction and experience in the fabrication, fitting and delivery of orthotic casting and related durable medical equipment. Offered by School of Kinesiology. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Required Prerequisites: (ATEP 540[B] and 570[B]).
[B] Requires minimum grade of B.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Athletic Training.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ATEP 573: *Special Topics.* 3 credits.
Provide an understanding and appreciation of evidence-based practices in special topic areas of orthopedic practice including but not limited to: diagnostic imagining, surgical preparation practices and healthcare administration and leadership in clinical practice. Offered by School of Kinesiology. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Required Prerequisites: (ATEP 540[B] and 570[B]).
[B] Requires minimum grade of B.

Enrollment is limited to students with a major in Athletic Training.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ATEP 575: *Athletic Training Clinical Techniques 3.* 3 credits.
Applies principles of upper body, head and neck physical assessment. Develops evaluation skills including special testing. leading to diagnosis. Offered by School of Kinesiology. May not be repeated for credit.

Recommended Corequisite: ATEP 560, 565, 566, 570, 600.

Registration Restrictions:
Required Prerequisites: (ATEP 530[B-] or 530[XS]) and (ATEP 540[B-] or 540[XS]) and (ATEP 545[B-] or 545[XS]) and (ATEP 550[B-] or 550[XS]) and (ATEP 555[B-] or 555[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Athletic Training.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory

Grading:
This course is graded on the Graduate Regular scale.

600 Level Courses

ATEP 600: *Pathopharmacology.* 3 credits.
Examines the assessment and management techniques of general medical conditions and pharmacological principles and interventions. Offered by School of Kinesiology. May not be repeated for credit.

Recommended Prerequisite: Basic human anatomy and physiology and Funcational Anatomy knowledge needed.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ATEP 650: *Administration and Management in Athletic Training.* 3 credits.
Focuses on the professional management and administrative issues in athletic training including the planning, designing, development, organization, implementation, direction, and evaluation of a health care program. Discusses current issues in athletic training related to professional conduct and practice. Offered by School of Kinesiology. May not be repeated for credit.

Recommended Corequisite: ATEP 656.

Registration Restrictions:

Required Prerequisites: (ATEP 560[B-] or 560[XS]) and (ATEP 565[B-] or 565[XS]) and (ATEP 566[B-] or 566[XS]) and (ATEP 570[B-] or 570[XS]) and (ATEP 575[B-] or 575[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ATEP 656: *Athletic Training Practicum 2.* 1 credit.
Emphasizes therapeutic interventions with non-sport populations during a clinical practicum field experience under the direct supervision of a preceptor for 75 to 125 hours. Offered by School of Kinesiology. May not be repeated for credit.

Recommended Corequisite: ATEP 650.

Registration Restrictions:
Required Prerequisites: (ATEP 560[B-] or 560[XS]) and (ATEP 565[B-] or 565[XS]) and (ATEP 566[B-] or 566[XS]) and (ATEP 570[B-] or 570[XS]) and (ATEP 575[B-] or 575[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Graduate Special scale.

ATEP 660: *Pediatric Sports Medicine.* 3 credits.
Examines evidence-based practices for injury prevention, sport safety, emergency preparedness, and risk management within youth and scholastic sport. Offered by School of Kinesiology. May not be repeated for credit.

Recommended Prerequisite: Basic human anatomy and physiology and Funcational Anatomy knowledge needed.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ATEP 667: *Athletic Training Practicum 3.* 2 credits.
Emphasizes injury prevention, healthcare administration, clinical evaluation during and athletics pre-season clinical practicum field experience under the direct supervision of a preceptor for 150 to 200 hours. Offered by School of Kinesiology. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (ATEP 650[B-] or 650[XS]) and (ATEP 656[B-] or 656[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Graduate Special scale.

ATEP 670: *Post Rehabilitative Therapeutic Interventions.* 2 credits.
Explores current topics of musculoskeletal injury prevention and intervention. Investigates injury epidemiology, pain and nutritional theories. Offered by School of Kinesiology. May not be repeated for credit.

Recommended Corequisite: ATEP 660, 676.

Registration Restrictions:
Required Prerequisites: (ATEP 650[B-] or 650[XS]) and (ATEP 656[B-] or 656[XS]) and (ATEP 667[B-] or 667[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ATEP 676: *Athletic Training Practicum 4.* 4 credits.
Emphasizes clinical examination, therapeutic interventions, and psychosocial strategies during a clinical practicum field experience under the direct supervision of a preceptor for 300 to 400 hours. Offered by School of Kinesiology. May not be repeated for credit.

Recommended Corequisite: ATEP 660, 670.

Registration Restrictions:
Required Prerequisites: (ATEP 650[B-] or 650[XS]) and (ATEP 656[B-] or 656[XS]) and (ATEP 667[B-] or 667[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Graduate Regular scale.

ATEP 680: *Athletic Training Research.* 3 credits.
Examines methods for critically evaluating clinical research techniques and interventions to improve patient outcomes specific to the practice of athletic training. Offered by School of Kinesiology. May not be repeated for credit.

Recommended Corequisite: ATEP 686.

Registration Restrictions:
Required Prerequisites: (ATEP 660[B-] or 660[XS]) and (ATEP 670[B-] or 670[XS]) and (ATEP 676[B-] or 676[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ATEP 686: *Athletic Training Practicum 5.* 6 credits.
Emphasizes professional development, evidence-based practice and integration of knowledge, skills and clinical decision-making during a clinical practicum field experience under the direct supervision of a preceptor for 450 to 600 hours. Offered by School of Kinesiology. May not be repeated for credit.

Recommended Corequisite: ATEP 680.

Registration Restrictions:
Required Prerequisites: (ATEP 660[B-] or 660[XS]) and (ATEP 670[B-] or 670[XS]) and (ATEP 676[B-] or 676[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Graduate Regular scale.

Bachelor of Individualized Study (BIS)

300 Level Courses

BIS 300: *Understanding Interdisciplinary Studies.* 3 credits.
Focuses on literature and issues relevant to interdisciplinary and multidisciplinary studies and the BIS program. Students explore selected topics, develop and gather feedback on individualized concentration proposals, and review BIS program requirements. Offered by School of Integrative Studies. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIS 301: *Adult Learner Transition.* 3 credits.
A comprehensive, research-based, problem-solving educational experience in which adult students learn the multiple factors that affect adult degree completion, assess their situation regarding these factors, and develop skills and plans to overcome the challenges of completing a bachelor's degree as an adult. Offered by School of Integrative Studies. Limited to three attempts.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

BIS 304: *Introduction to BIS.* 1 credit.
This course serves new transfer students in the Bachelors of Individualized Studies (BIS) program, and assists them with a successful transition to Mason. Students develop relationships with peers, staff, and faculty. They are introduced to campus resources, with special emphasis on research and writing resources and tools, and work closely with BIS academic advisors and faculty. Notes: Only transfer students in their first or second semester at Mason are eligible to take this course. Only one of BIS 304, UNIV 300, UNIV 302, UNIV 303, UNIV 304, UNIV 305, or UNIV 308 may be taken for credit. Offered by School of Integrative Studies. Limited to three attempts. Equivalent to UNIV 304.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

BIS 390: *The Research Process.* 3 credits.
Focuses on skills to develop a research project, find and organize relevant information, examine and critique evidence, establish criteria, and create plan to complete senior project. Notes: Open only to pre-BIS students and BIS majors. Students cannot receive credit for both BIS 390 and 391. Offered by School of Integrative Studies. Limited to three attempts. Equivalent to BIS 391.

Specialized Designation: Writing Intensive in Major

Recommended Prerequisite: BIS 300 and grade of 2.0 or above in ENGL 302/ENGH 302.

Registration Restrictions:
Enrollment is limited to students with a major in Individualized Study.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIS 391: *The Research Process for Honors.* 3 credits.
Focuses on skills to develop an honors-level research project, find and organize relevant information, examine and critique evidence, establish criteria, and create plan to complete Honors Senior Research Project (BIS 490). Approved research proposal required prior to registration in BIS 490. Notes: Students cannot receive credit for both BIS 390 and 391. Offered by School of Integrative Studies. Limited to three attempts. Equivalent to BIS 390.

Recommended Prerequisite: Acceptance to pursue honors in the major.

Registration Restrictions:
Enrollment is limited to students with a major in Individualized Study.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

BIS 399: *Special Topics.* 1-3 credits.
Selected topics reflecting interest in specialized areas. Notes: May be repeated when topic is different. Offered by School of Integrative Studies. May be repeated within the term for a maximum 6 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment is limited to students with a major in Individualized Study.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

BIS 489: *Directed Readings and Research.* 1-3 credits.
Readings and research on a topic directly relevant to student's core concentration. Notes: Open only to pre-BIS students and BIS majors. Individualized sections by arrangement. Guided by instructor with expertise. Topics must be approved by instructor and BIS director prior to enrollment. Offered by School of Integrative Studies. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Open only to degree students in the Bachelor of Individualized Study Program.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

BIS 490: *RS: Senior Project.* 4 credits.
Project or thesis on a topic directly relevant to student's concentration, which will be formally presented to an audience of peers and faculty. Guided by student's faculty advisor and 490 instructor. Notes: Open only to BIS majors. Individualized sections for BIS honors. Capstone course in BIS core concentration. Research proposals must be approved by faculty mentor, executive committee, and BIS director prior to enrollment. Offered by School of Integrative Studies. Limited to three attempts.

Mason Core: Synthesis

Specialized Designation: Research/Scholarship Intensive

Recommended Prerequisite: BIS 390.

Registration Restrictions:
Enrollment limited to students in the LA-BIS-INDV program.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Special scale.

BIS 495: *Career Practicum.* 1-6 credits.
Supervised experience in application of specified area. Offered by School of Integrative Studies. May be repeated within the degree for a maximum 9 credits.

Recommended Prerequisite: Permission of instructor or BIS Director.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Special scale.

Bachelor's of Applied Science (BAS)

300 Level Courses

BAS 300: *Building Professional Competencies.* 3 credits.
This course serves as an orientation to the BAS degree program. Current strengths are assessed and future planning is highlighted. Core competency areas related to personal effectiveness and academic/workplace success are stressed. Introduction to the university online learning system and other available resources useful for degree completion are also emphasized. Offered by Provost's Office. Limited to three attempts.

Registration Restrictions:
Enrollment limited to students in a Bachelor of Applied Science degree.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

BAS 490: *Introduction to Research Methods.* 3 credits.
This course introduces students to fundamental research methods and processes. Students will explore their research interests and identify one topic as well as learn to set up research questions, review literature, and define appropriate methods for data collection. This course intends to prepare students for their practicum study in BAS 491. Offered by Provost's Office. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (BAS 300[C] or 300[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major in Applied Science.

Enrollment limited to students in the UN-BAS-APLS program.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BAS 491: *Applied Sciences Capstone.* 3 credits.
Students participate in an approved fieldwork study program and complete a research project as identified in BAS 490 Introduction to Research Methods. The Capstone project involves choosing and researching a workplace problem; designing, implementing and evaluating a specific plan of action; and formally presenting the project once completed. Offered by Provost's Office. Limited to three attempts.

Mason Core: Capstone

Registration Restrictions:
Required Prerequisites: (BAS 490[C] or 490[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major in Applied Science.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

Biodefense (BIOD)

600 Level Courses

BIOD 604: *Emerging Infectious Diseases I: Bacteria and Toxins.* 3 credits.
Covers the microbiology, pathogenesis, clinical effects, and epidemiology of bacteria and toxins that pose threats to global health or can be utilized as biological weapons. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOD 605: *Emerging Infectious Diseases II: Viral Agents.* 3 credits.
Covers the microbiology, pathogenesis, clinical effects, and epidemiology of viruses that pose threats to global health or can be utilized as biological weapons. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOD 609: *Biodefense Strategy.* 3 credits.
Introduces students to the biodefense and biosecurity strategies and policies of the United States, other nations, and international organizations. Evaluates the effectiveness of these policies in strengthening defenses, improving intelligence, increasing oversight, enhancing nonproliferation, and reinforcing norms. Examines the interaction of biodefense and biosecurity with homeland, national, and international security. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOD 610: *Advanced Topics in Global Health Security.* 1-4 credits.
Different topics, depending on instructor's specialty. Topics include ethical, legal, scientific, security, political, and/or policy aspects of global health security, emphasizing current problems and research. Notes: May be repeated when topic is different. Offered by Schar School of Policy & Govt. May be repeated within the term for a maximum 18 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOD 620: *Global Health Security Policy.* 3 credits.
Explores issues emerging from the interaction of health and security that represent novel challenges to policy makers confronting a rapidly changing international landscape. Examines the origin and evolution of the concept of health security. Analyzes strategic impact of infectious disease outbreaks, global health security case studies, global health governance, and formulation and implementation of U.S. global health security policy. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOD 621: *Ethics and International Security.* 3 credits.
Challenges students to wrestle with dilemmas raised by the desire to behave ethically in an international system in which consensus about ethical matters is absent. Students will develop, apply, and justify their own perspective on an ethical problem related to international security using ethical theory and social science research. Ethical issues related to nuclear, biological, and chemical weapons that confront researchers, policy makers, and practitioners will be addressed. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOD 622: *Negotiating in the International Arena.* 3 credits.
Provides students with the concepts and tools for analyzing complex negotiation processes and introduces them to the challenges facing international negotiators. Students will read about the frameworks and perspectives that have guided the scholarly research on negotiation, as well as the latest findings from that research; analyze complex cases of actual negotiations in the security, trade, and environmental areas; and negotiate key issues on the agendas of nations and international organizations. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

700 Level Courses

BIOD 705: *Intelligence: Theory and Practice.* 3 credits.
Theory and practice of intelligence, including the intelligence cycle, organization of the intelligence community, and the origins and impact of recent reforms. Examines the capabilities and limitations of the different collection disciplines, analytic methodologies and pathologies, and the relationship between intelligence and policy. Analyzes challenges posed by collecting and analyzing intelligence on weapons of mass destruction programs conducted by states and terrorists. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOD 706: *Nuclear, Biological, and Chemical Weapons Policy and Security.* 3 credits.
Explores the causes, conduct, and consequences of the proliferation of nuclear, biological, and chemical weapons. Covers the historical, technological, normative, and strategic factors that have promoted and restrained the spread of these weapons. Addresses the motives for states to develop these weapons and the debate over the security implications of nuclear, biological, and chemical weapon proliferation. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOD 709: *Nonproliferation and Arms Control.* 3 credits.
Examines the array of national and international measures used to slow, halt, and reverse the spread of nuclear, biological, chemical, and missile weapons. Explores the theory and practice of proliferation to provide insights into the supply and demand aspects of proliferation. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOD 710: *Health Security Preparedness.* 3 credits.
Examines national and international public health and medical preparedness for and response to natural disasters, terrorist acts, and disease outbreaks. Explores organizational and policy architecture, implementation challenges, and strategies for preventing, detecting, and mitigating these threats. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:

This course is graded on the Graduate Regular scale.

BIOD 722: *Examining Terrorist Groups.* 3 credits.
Introduction to terrorism including the history and evolution of terrorism, case studies of key terrorist groups, the current nature of the terrorist threat and counterterrorism strategies. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOD 723: *Legal Dimensions of Homeland Security.* 3 credits.
Introduces the impact of legal issues on homeland security and biodefense. Topics include the origins of the Department of Homeland Security, the relationship between public health and law enforcement, the role of the military in homeland security, trade-offs between privacy and security, legal aspects of public-private cooperation in biodefense and homeland security, quarantine authority and enforcement, ensuring compliance with international treaties, and implementing biosecurity regulations. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOD 725: *Terrorism and Weapons of Mass Destruction.* 3 credits.
Examines the capabilities and intentions of terrorists to acquire and use chemical, biological, radiological, and nuclear (CBRN) weapons. The course provides an in-depth understanding of the history of CBRN terrorism, the current challenges posed by this threat, and the range of national and international policy tools available to address this threat. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOD 726: *Food Security.* 3 credits.
Analyzes threats to food security globally including those related to climate change and environmental degradation; animal and plant diseases; access to clean water; agricultural terrorism; and antimicrobial resistance. Explores the national and global health, economic, social, and ethical impacts of these disruptive forces. Examines strategies for enhancing the security of the global food production and supply systems. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOD 751: *Biosurveillance.* 3 credits.
Provides an understanding of the capabilities required to provide reliable early warning of disease outbreaks and identify their etiological agents. Assesses strengths and limitations of physicians, laboratories, epidemiologists, aerosol sensors, and syndromic surveillance systems. Considers challenges posed by the integration and analysis of the information collected by these sources. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Recommended Prerequisite: BIOD 604 and BIOD 605; or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOD 760: *National Security Technology and Policy.* 3 credits.
Introduces students to the intersection of science, technology, and policy in national security. Will examine the players in the formation of science policy; the roles they play; how the types, uncertainties, and availability of data affect science policy debates; and how science policy decisions are made. Topics to be covered include weapons of mass destruction, nonlethal weapons, nanotechnology, bioengineering, energy security, and pandemic influenza. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate, Non-Degree or Washington Consortium level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOD 762: *Biotechnology and Society.* 3 credits.
Examines the growing role of biotechnology in modern society, including benefits to human and animal health, industrial applications, and potential for misuse. Analyzes key variables influencing the revolution in biotechnology and impact in both developed and developing countries. Explores the political, economic, social, legal, security, and ethical implications of advances in life sciences and biotechnology. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Recommended Prerequisite: BIOD 604 and 605 or permission of instructor.

Registration Restrictions:

Enrollment is limited to students with a major in Biodefense, Biological Threat and Defense or Microbial Biodefense.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOD 766: *Development of Vaccines and Therapeutics.* 3 credits.
Analyzes the process of developing new medical countermeasures against biological weapons and emerging infectious diseases such as SARS and pandemic influenza. Special attention is paid to the scientific, technical, political, regulatory, and economic obstacles to developing new vaccines and therapeutics. Examines the causes and potential solutions of public and private sector failures. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: BIOD 604[B-], 604[XS], 605[B-] or 605[XS].
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOD 780: *Master's Supervised Internship.* 1-6 credits.
Internship under supervision of qualified professional in biodefense at a government agency, consulting firm, industrial firm, or other acceptable agency. Offered by Schar School of Policy & Govt. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Permission of program director or advisor.

Registration Restrictions:
Enrollment is limited to students with a major in Biodefense, Biological Threat and Defense or Microbial Biodefense.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Satisfactory/No Credit scale.

BIOD 790: *Global Health Security Capstone.* 3 credits.
Provides students with the opportunity to hone their research, writing, collaboration, and presentation skills through completion of a capstone project that synthesizes the theoretical and subject matter knowledge students have gained in the program. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

BIOD 793: *Directed Studies in Biodefense.* 1-3 credits.
Individualized study of topics not otherwise available in graduate program. May involve reading assignments, tutorials, lectures, papers, presentations, or lab or field study, determined in consultation with instructor. Offered by Schar School of Policy & Govt. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Permission of instructor and program director.

Registration Restrictions:
Enrollment is limited to students with a major in Biodefense, Biological Threat and Defense or Microbial Biodefense.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Special scale.

BIOD 798: *Master's Research Project in Biodefense.* 3 credits.
Research project related to student's concentration under supervision of faculty advisor. Student produces substantial and original contribution to the field of biodefense on the model of an article in a scholarly journal. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Recommended Prerequisite: 24 credits in BIOD and permission of project director.

Registration Restrictions:
Enrollment is limited to students with a major in Biodefense, Biological Threat and Defense or Microbial Biodefense.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Thesis

Grading:
This course is graded on the Satisfactory/No Credit scale.

800 Level Courses

BIOD 810: *Advanced Seminar in Biodefense.* 3 credits.
Explores issues of contemporary and emerging concern in biodefense and biosecurity. Topics may include legal, ethical, scientific, economic, and political aspects of biodefense and biosecurity. Notes: May be repeated when topic is different. Offered by Schar School of Policy & Govt. May be repeated within the term for a maximum 9 credits.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:

This course is graded on the Graduate Regular scale.

BIOD 890: *Doctoral Supervised Internship.* 1-6 credits.
Internship under supervision of qualified biodefense professional at government agency, consulting firm, industrial firm, or other acceptable agency. Offered by Schar School of Policy & Govt. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Permission of program director or advisor.

Registration Restrictions:
Enrollment is limited to students with a major in Biodefense, Biological Threat and Defense or Microbial Biodefense.

Enrollment is limited to Graduate level students.

Schedule Type: Internship

Grading:
This course is graded on the Graduate Special scale.

BIOD 899: *Directed Research in Biodefense.* 1-12 credits.
Research on a pertinent topic in biodefense; scope and subject determined by instructor. Offered by Schar School of Policy & Govt. May be repeated within the degree for a maximum 12 credits.

Recommended Prerequisite: Approval of program director.

Registration Restrictions:
Enrollment is limited to students with a major in Biodefense, Biological Threat and Defense or Microbial Biodefense.

Enrollment is limited to Graduate level students.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Regular scale.

900 Level Courses

BIOD 998: *Doctoral Dissertation Proposal.* 1-12 credits.
Development of a research proposal, which forms the basis for doctoral dissertation under guidance of dissertation director committee. Notes: Only 12 credits may be applied to the degree. Offered by Schar School of Policy & Govt. May be repeated within the degree.

Registration Restrictions:
Enrollment is limited to students with a major in Biodefense, Biological Threat and Defense or Microbial Biodefense.

Enrollment is limited to Graduate level students.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

BIOD 999: *Doctoral Dissertation.* 1-12 credits.
Doctoral dissertation research under direction of dissertation chair. Offered by Schar School of Policy & Govt. May be repeated within the degree.

Recommended Prerequisite: BIOD 998.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy.

Enrollment is limited to students with a major in Biodefense, Biological Threat and Defense or Microbial Biodefense.

Enrollment is limited to Graduate level students.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

Bioengineering (BENG)

100 Level Courses

BENG 101: *Introduction to Bioengineering.* 3 credits.
This course introduces students to the field of Bioengineering in general and here at Mason and the use of technology and innovation in solving problems in biology and medicine with an emphasis on engineering tools and concepts. With its recitation, it also introduces mathematical modeling and analysis of bioengineering problems through the use of standard software packages for simulation. Topics include: exploration of the field of Bioengineering, Matlab and other software applications for modeling and analyzing biomedical problems, engineering design, career development, and ethics. Offered by Bioengineering. Limited to two attempts.

Registration Restrictions:
Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture, Recitation

Grading:
This course is graded on the Undergraduate Regular scale.

200 Level Courses

BENG 214: *Physiology for Engineers.* 3 credits.
This course provides a broad introduction to the subject of human physiology, focusing on learning the subject matter from an engineering viewpoint. This course emphasizes organs and physiological systems (e.g. renal, cardiac) and applies engineering modeling concepts (using Matlab) to those systems. Offered by Bioengineering. Limited to two attempts. Equivalent to BENG 313.

Registration Restrictions:
Required Prerequisites: ((BENG 101[C] or 101[XS]) and (BIOL 213[C] or 213[XS]) and MATH 114[B-]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.
[B-] Requires minimum grade of B-.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture, Recitation

Grading:
This course is graded on the Undergraduate Regular scale.

BENG 220: *Physical Bases of Biomedical Systems.* 3 credits.
Introduces the physical basis of biomedical systems and signals. Demonstrates basic concepts of systems and signals theory, and shows their derivation from the biophysical concepts such as mechanics, fluid mechanics, pharmacokinetics and molecular biophysics which underlie the signals in living systems. Aims at providing the student with the mathematical and physical understanding to quantitatively describe biological systems. Offered by Bioengineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: ((BENG 101[C] or 101[XS]) and (MATH 203[C] or 203[XS]) and (PHYS 160[C] or 160[XS])) and (MATH 214[*C], 214[XS], 216[*C] or 216[XS]).
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture, Recitation

Grading:
This course is graded on the Undergraduate Regular scale.

BENG 230: *Continuum Biomechanics and Transport I.* 3 credits.
This course introduces the fundamental concepts and mathematical equations describing biosolids, biofluids and biotransport phenomena; and their application to physiological problems encountered in biomedical engineering. Topics will include elasticity, biofluid flows, transport of mass, momentum, and heat in biological systems. Upon completion of this course students should have a fundamental understanding of the basic conservation laws describing biomechanical systems and should be able to apply these concepts to solve a variety of problems in bioengineering. Offered by Bioengineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (or (PHYS 160[C], 160[XS], 260[*C] or 260[XS]) and (MATH 203[C] or 203[XS]) and (MATH 213[C] or 213[XS]) and (MATH 214[*C] or 214[XS])).
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture, Recitation

Grading:
This course is graded on the Undergraduate Regular scale.

BENG 240: *Biomaterials.* 3 credits.
This course is to introduce Biomaterials science and emphasize its importance in modern medicine. This course will also provide knowledge to students on specific techniques used to characterize biomaterials and on the biological response to implanted materials. This course will emphasize the multidisciplinary nature of biomaterials science and will focus on specific topics including an overview of existing biomaterials (ceramics, metal, polymers and hydrogels), drug delivery applications, development of nanobiomaterials, and the biocompatibility of these materials. Biological testing (in vitro and in vivo) of these biomaterials will also be covered in this course. Offered by Bioengineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: ((CHEM 211[C], 211[XS], 271[C] or 271[XS]) and (MATH 113[C] or 113[XS]) and (BIOL 213[C] or 213[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BENG 241: *Biomechanics and Biomaterials Laboratory.* 1 credit.
This lab course provides students opportunities to learn and get hands-on practice on the basic experimental skills and techniques required in both biomaterial and biomechanics laboratories. The students will begin to learn how to take measurements and properly report their results, in the following topics: mechanical testing, hydrogel experiments, biomaterial degradation, surface modification, nanomaterials for drug delivery, and biomaterial interaction with human body. Offered by Bioengineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: BENG 230[*C], 230[XS], 240[*C] or 240[XS].
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

300 Level Courses

BENG 313: *Physiology for Engineers.* 3 credits.
Provides a broad introduction to the subject of human physiology, focusing on learning the subject matter from an engineering viewpoint. Emphasis on organs and physiological systems where engineering has a significant role. Offered by Bioengineering. Limited to two attempts. Equivalent to BENG 214.

Registration Restrictions:
Required Prerequisites: (BENG 101[C] or 101[XS]) and (MATH 114[B-] or 116[B-]) and (BIOL 213[C] or 213[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.
[B-] Requires minimum grade of B-.

Enrollment is limited to students with a major, minor, or concentration in Bioengineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture, Recitation

Grading:
This course is graded on the Undergraduate Regular scale.

BENG 314: *Pathophysiology and the Role of New Technologies in Human Diseases.* 3 credits.
This course provides examples from clinical medicine of how patients are diagnosed and treated for diseases of their cardiovascular and neurological systems, as well as for cancer and in acute care (emergency) units. The etiology and pathogenesis of disease processes and the current roles of technologies in diagnosis and treatment will be discussed. Unmet needs in these clinical areas that require research and technology development using engineering approaches will be identified and potential pathways towards clinical solutions will be investigated. Offered by Bioengineering. Limited to two attempts. Equivalent to BENG 414.

Registration Restrictions:

Required Prerequisites: ((BENG 214[C] or 214[XS]) or (BENG 313[C] or 313[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Bioengineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BENG 320: *Bioengineering Signals and Systems.* 3 credits.
Introduces the conversion of analog signals to digital ones and methods for using digitally processed signals in biomedical applications. Offered by Bioengineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: ((BENG 101[C] or 101[XS]) and (MATH 214[*B-]) and (CS 112[C] or 112[XS])).
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.
[B-] Requires minimum grade of B-.

Enrollment is limited to students with a major, minor, or concentration in Bioengineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture, Recitation

Grading:
This course is graded on the Undergraduate Regular scale.

BENG 322: *Health Data Challenges.* 3 credits.
Covers methodology and tools used to work with health data structures supporting organizations' needs for reliable data that are captured, stored, processed, integrated, and prepared for further querying, decision making, data mining and knowledge discovery for a variety of clinical and organizational purposes. Data security and privacy, data standards, data interoperability, health information exchange, and big data analytics are discussed. Offered by Bioengineering. Limited to two attempts. Equivalent to IT 322.

Registration Restrictions:
Required Prerequisites: (IT 214[C] or 214[XS]) and (STAT 250[C], 250[XS], 344[C] or 344[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BENG 327: *Cellular, Neurophysiological, and Pharmacological Neuroscience.* 3 credits.
What makes neurons different from other cells? What do they do and how do they work? How do they communicate with each other? In this course, we will answer these questions and many more. We will cover the basics of cellular, neurophysiological, and pharmacological neuroscience, including cellular anatomy and membrane function, electrical properties of neurons, intracellular and intercellular signaling, synaptic plasticity, and circuit connectivity. Offered by Bioengineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: ((CHEM 211[C] or 211[XS]) and (CHEM 213[C] or 213[XS])) or ((CHEM 271[C] or 271[XS]) and (CHEM 272[C] or 272[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BENG 330: *Computational Methods in Bioengineering.* 3 credits.
This course introduces students to the development of computational models for understanding physiological systems, and explores a variety of practical computational methods for biomedical problems. Topics include: introduction to scientific computing, linear and non-linear models, and finite difference methods for biomedical models based on ordinary and partial differential equations. Offered by Bioengineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (CS 112[C] or 112[XS]) and (BENG 320[C] or 320[XS]) and (BENG 230[C] or 230[XS]) and (MATH 214[B-]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.
[B-] Requires minimum grade of B-.

Enrollment is limited to students with a major, minor, or concentration in Bioengineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BENG 331: *Computational Methods in Bioengineering Laboratory.* 1 credit.
This lab course complements BENG 330 to enhance students' knowledge on developing and applying computational models for biomedical engineering problems. Students will be provided analytical problems to solve and computational problems to program in the laboratory. Topics include: introduction to scientific computing, linear and non-linear models, and finite difference methods for biomedical models based on ordinary and partial differential equations. Offered by Bioengineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (BENG 330[*C] or 330[XS]).
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Bioengineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Laboratory

Grading:

This course is graded on the Undergraduate Regular scale.

BENG 341: *Introduction to Biomaterials.* 3 credits.
To provide a fundamental understanding of current, state of the art, and future directions of biomaterials. Offered by Bioengineering. Limited to two attempts.

Specialized Designation: Mason Impact.

Registration Restrictions:
Required Prerequisites: (CHEM 251[C], 211[C] or 211[XS]) and (MATH 113[C] or 113[XS]) and (BIOL 213[C] or 213[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BENG 350: *Neural System Designs.* 3 credits.
This course introduces the essential "design principles" of various parts of the mammalian nervous system. The recurring theme is that Evolution successfully managed to re-arrange the same building blocks (neurons, synaptic transmission, and membrane physiology) in different networks exquisitely tuned to their functions, though often in incompletely understood ways. Topics include: neuronal biophysics, network architecture, cortical systems, neuroinformatics, and neurotechnology applications. Offered by Bioengineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: ((BENG 313[C], 313[XS], 214[C] or 214[XS]) and (BIOL 213[C] or 213[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Bioengineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BENG 360: *Biomedical Imaging.* 3 credits.
This course introduces the physical and engineering foundations of modern medical imaging instruments and image processing methods. These methods enable us to see biological organisms at different levels, starting from the atom level and going all the way to seeing inside the human body. It allows a better understanding of how life and its processes work at different levels, and diagnose disease, monitor treatment and perform minimally-invasive interventions. Different modalities include: microscopy, x-rays, computerized tomography (CT), nuclear imaging, ultrasound, and magnetic resonance imaging (MRI). Topics include: underlying physics, basics of instrumentation, clinical applications, and presentation of case studies. Offered by Bioengineering. Limited to two attempts.

Specialized Designation: Writing Intensive in Major

Registration Restrictions:
Required Prerequisites: ((PHYS 260[C] or 260[XS]) and (BENG 320[C] or 320[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Bioengineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BENG 370: *Bioinstrumentation and Devices I.* 3 credits.
This course involves the design of instruments that allow engineers to both make measurements and intervene with living systems, including the human body. This course aims at providing the foundation for understanding bioinstrumentation electronics, with a special emphasis on sensors and measurements. Topics include: circuit analysis, electronic circuit design, basic sensors and their applications in Bioengineering, as well as learn how to build and make measurements in electronic systems. Offered by Bioengineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: ((BENG 320[C] or 320[XS]) and (BENG 371[*C] or 371[XS]) and (CS 112[C] or 112[XS]) and (PHYS 260[C] or 260[XS])).
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Bioengineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture, Recitation

Grading:
This course is graded on the Undergraduate Regular scale.

BENG 371: *Bioinstrumentation and Devices Laboratory.* 1 credit.
This course introduces the basic concepts and tools for making biomedical measurements, both at the level of electronics and at the device level. At the electronics level, students will learn about basic electronic components, using them to build basic circuits, with emphasis on instrumentation components. At the device level, students will learn to describe instrumentation design and analysis considerations, and discuss practical applications. Students will gain hands-on experience with circuits, basic bioinstrumentation and signal analysis techniques that are fundamental in Bioengineering. Offered by Bioengineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (BENG 370[*C] or 370[XS]).
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Bioengineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

BENG 375: *Intellectual Property, Regulatory Concepts and Product Development.* 3 credits.
The course provides an understanding of 1) intellectual property focusing on patents and the patent process in the US and globally, 2) regulatory frameworks for product approval such as FDA and international regulations, standards (ANSI, ASTM, ISO, GCP, GLP) and 3) product development including ideation and concept development, quality systems, global business models, financing and transactions. An overarching team project will involve invention, proof of concept, patenting, regulatory pathways and product development to market in a global context. Offered by Bioengineering. Limited to two attempts. Equivalent to BENG 475.

Registration Restrictions:
Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BENG 391: *Bioengineering Professional Development.* 1 credit.
This course covers the variety of responsibilities of bioengineers to society and helps prepare them for the workplace and/or graduate or professional school. Topics include exploration of various career paths in biomedical/bioengineering and related fields, ethics and professionalism, job/grad/professional school searching, networking, interviewing, and other career preparation topics. Speakers include faculty, invited guests from industry and government, and alumni. Offered by Bioengineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: BENG 101[C] or 101[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BENG 395: *RS: Mentored Research in Bioengineering.* 1-3 credits.
Introduces the scientific research process through "hands on" experience: students are matched with faculty mentors who are actively involved in Bioengineering-related research. Requires no less than 60 hours per semester working with mentors. Offered by Bioengineering. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Research/Scholarship Intensive

Recommended Prerequisite: At least 60 credit hours applicable to the Bioengineering program.

Registration Restrictions:
Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

BENG 406: *Introduction to Biomechanics.* 3 credits.
This course introduces the fundamental principles of musculoskeletal biomechanics, computational simulation of movement, and OpenSim simulator. Topics include functions and models of the musculoskeletal structures, mathematical description of motion, kinetics, and simulation of movement using OpenSim. Offered by Bioengineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (PHYS 160[C], 160[XS], 243[C] or 243[XS]) and (MATH 203[C] or 203[XS]) and (MATH 214[C] or 214[XS]) and (BENG 220[C], SYST 220[C], 220[XS], ECE 220[C] or 220[XS]) and (BENG 313[C] or 313[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BENG 413: *Molecular Engineering Laboratory.* 3 credits.
The course covers laboratory techniques in molecular and cellular engineering, such as Good Laboratory Practices according to industry standards, maintaining a laboratory notebook, equipment logbooks, NIST-traceable standards, use of statistics and a standard curve to calculate the concentration of an unknown, sensitivity of a laboratory assay, biomaterial-DNA interactions, imaging of cells and signal processing, interpreting data and writing a scientific report. Offered by Bioengineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (BIOL 213[C] or 213[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Bioengineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BENG 417: *Bioengineering World Health.* 3 credits.
This course covers the major types of medical equipment, including the principles of operation, the physiology underlying the measurement, the major functional (system) pieces for each instrument, and typical problems/applications of each instrument. Special focus is placed on making reliable and safe repairs in a low resource setting: Troubleshooting, creative problem solving, calibration and testing. GPA requirement: 3.0 and above Offered by Bioengineering. Limited to two attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BENG 420: *Biomedical Data Analytics.* 3 credits.
This course introduces the fundamental techniques and tools for analyzing biomedical data, important for many biomedical engineering problems. Topics include classification, regression, clustering, dimensionality reduction, data representation, and algorithm performance evaluation. Students will deepen their understanding of the concepts and gain hands-on experience on data analysis by applying algorithms to analyze and interpret various kinds of standard biological and biomedical data encountered in bioengineering fields. This course will be an innovative course leveraging hybrid learning through a combination of lectures, on-line content, and course project. Offered by Bioengineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (CS 112[C] or 112[XS]) and (BENG 330[C] or 330[XS]) and (STAT 350[C], 350[XS], 360[C] or 360[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Bioengineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BENG 421: *Cell and Tissue Engineering.* 3 credits.
This course is designed to provide exposure to the concepts of cell/tissue functions and behavior and strategies to manipulate their responses, biomaterials to construct scaffolds, modern techniques of artificial organ development and wound healing and most importantly, the utilization of engineering principles for biomedical applications. The course schedule has been packaged to not only provide fundamental information on the above topics, but also to stimulate team working skills, awareness of the current scientific developments through literature review, real-time experiences through lab visits and demos, and career opportunities through industrial visits. Offered by Bioengineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (BENG 240[C] or 240[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BENG 426: *Neural Engineering.* 3 credits.
This course is an overview of Neural Engineering. The sequence of topics are designed to cover from fundamentals of Neurophysiology through to applications of neural prosthesis such as retinal and cochlear implants. Other important aspects of Neural Engineering to be discussed include brain-machine interfaces, instrumentation for interfacing electronics to the nervous system, and sensors for neural research. Offered by Bioengineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: ((BENG 370[C] or 370[XS]) and (BENG 371[C] or 371[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment limited to students with the terminated from VSE major attribute.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BENG 429: *Mason-Inova Applied Technologies.* 3 credits.
This Mason-based class will provide students with the opportunity to learn fundamentals concepts in the classroom and interact with clinical technologies, through 3-hour practical experiences at the Fairfax Inova hospital every three to four weeks. Students will work with faculty and clinicians in both an academic and simulated clinical environment. Offered by Bioengineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (BENG 214[C] or 214[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BENG 430: *Continuum Biomechanics and Biotransport II.* 3 credits.
This course provides advanced and unifying treatment of the fundamental field equations describing the laws of continuum biomechanical systems including solids, fluids and transport phenomena in biological systems. Topics will include: blood and circulation, viscoelasticity, poroelasticity, thermoelasticity, and molecular and convective transport in biological systems. Offered by Bioengineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (BENG 230[C] or 230[XS]) and (BENG 330[C] or 330[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Bioengineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BENG 434: *Computational Modelling of Neurons and Networks.* 3 credits.
Introduces the objectives, philosophy, and methodology of neuronal modeling. Instructs students in the use of some of the more popular neural modeling software packages. Students learn the syntax of several software packages, how to create neurons from subcellular components, and how to create networks by connecting neuron models. Offered by Bioengineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (BENG 327[C] or 327[XS]).
[C] Requires minimum grade of C.

XS Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BENG 435: *Multi-scale Modeling and Simulation in Biomedicine.* 3 credits.
This course covers a variety of advanced computational methods for biomedical problems spanning multiple scales, from cells and molecules to tissues, organs and systems. Topics include: advanced computational techniques, finite difference methods, finite element methods, particle methods, stochastic simulations, agent-based methods, coupled problems and high-performance computing. Applications will be drawn from a variety of biomedical fields such as biosolid and biofluid mechanics, cell mechanics, pharmacokinetics, and physiologic systems. Offered by Bioengineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (BENG 230C or 230XS) and (BENG 330C or 330XS).
C Requires minimum grade of C.
XS Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Bioengineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BENG 437: *Medical Image Processing.* 3 credits.
This course aims at familiarizing the student with the basic concepts of image processing as they are applied to medical imaging problems. The class consists of two parts. The first part provides a brief overview of basic image processing, including image enhancement and restoration techniques. The second part addresses problems that are central to medical image processing practice, including registration, segmentation and feature detection. Offered by Bioengineering. Limited to two attempts.

Recommended Prerequisite: BENG 360

Registration Restrictions:
Required Prerequisites: (BENG 320C or 320XS).
C Requires minimum grade of C.
XS Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Bioengineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BENG 438: *Advanced Biomedical Imaging.* 3 credits.
This course will provide an introduction to the physical, mathematical and engineering foundations of modern medical imaging instruments and imaging physics principles that enable us to "see" inside the human body to diagnose disease, monitor treatment and perform minimally-invasive interventions. The emphasis will be on diagnostic ultrasound, x-ray (CT), and MRI imaging methods, although other modalities will also be discussed. The course will also provide an overview of recent developments in the field of medical imaging and discuss some of the challenges and controversies. The students will get hands on experience in applying the methods learnt in class to real-world problems and imaging data. There will be broad scope to individually and collaboratively explore current problems in medical imaging. Offered by Bioengineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (BENG 360C or 360XS).
C Requires minimum grade of C.
XS Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Bioengineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BENG 441: *Nanomedicine and Drug Delivery.* 3 credits.
This course covers the evolving field of drug delivery ranging from basic to applied science. The course aims to teach students in Bioengineering concepts of nanomedicine and how to design effective drug delivery systems to treat diseases such as cancer, diabetes, cardiovascular diseases, etc. To achieve this goal, students will learn the fundamentals of surface chemistry to synthesize nanocarriers that are biocompatible and can be used for targeted delivery with reduced side effects. Students will also learn the most common and useful techniques to characterize the physical, chemical and functional characteristics of nanocarriers. Moreover, in this course, students will learn the interaction of the nanocarriers with animal and human physiologies, and how the drug is released from the nanocarrier. Furthermore, students will learn to test the therapeutic efficacy of the engineered nanovehicles both in vitro and in vivo. Offered by Bioengineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (BENG 240C or 240XS) or ((CHEM 211C, 211XS, 271C or 271XS) and (BIOL 213C or 213XS) and (MATH 113C or 113XS)).
C Requires minimum grade of C.
XS Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Bioengineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BENG 451: *Translation and Entrepreneurship in Bioengineering.* 3 credits.
This course focuses on teaching the process of translational research and on creating both a medical device and a company vision. Emphasis is made on creating a robust medical device prototype based on a deep understanding of the disease. Regulatory and reimbursement processes are also addressed in detail. This course will draw upon lectures and different guest speakers. Offered by Bioengineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (BIOL 213[C] or 213[XS]) and (CHEM 251[C], 251[XS], 211[C] or 211[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BENG 470: *Bioinstrumentation and Devices II.* 3 credits.
This course delves deeper into two aspects of bioinstrumentation: the theory and use of different sensors commonly encountered in Bioengineering devices, and the development of microcontroller-based circuits that interface with such sensors. Students will gain knowledge of microcontroller circuit design and programming, interfacing with sensors and their applications in Bioengineering. Students will demonstrate their understanding of the subject by designing a microcontroller-based device that performs a biomedically-relevant measurement. Offered by Bioengineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (BENG 370[C] or 370[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Bioengineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BENG 487: *Neuroinformatics.* 3 credits.
This class is a hands-on introduction to available and developing neuroinformatics infrastructures focuses on data processing, literature mining, and metadata annotation, with a special emphasis on neuronal morphology and hippocampal neuron types. The aim is to provide students with sufficient practical understanding of basic concepts and representative tools to participate confidently and actively in neuroscience projects with a substantial component of digital data. Prior computational experience is not required, and attendees will start using their newly acquired knowledge immediately. Offered by Bioengineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisite: BENG 350[C].
[C] Requires minimum grade of C.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BENG 492: *Senior Advanced Design Project I.* 3 credits.
This course covers the whole engineering design process from the selection of a project to the design and construction of a prototype. Teams of students select a senior design project in bioengineering while considering the feasibility of the proposed project. The work includes identifying an engineering problem, establishing objectives and constraints, considering standards and requirements, developing preliminary design and a testable prototype (considering different design alternatives), as well as team management and organization. Offered by Bioengineering. Limited to two attempts.

Mason Core: Capstone, Synthesis

Specialized Designation: Impact Associated.

Recommended Prerequisite: 90 credit hours applicable to the Bioengineering Program and BENG 475

Recommended Corequisite: COMM 100 or COMM 101

Registration Restrictions:
Required Prerequisites: (ENGH 302[C], 302[XS], HNRS 110[C] or 110[XS]) and (BENG 320[C] or 320[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BENG 493: *RS: Senior Advanced Design Project II.* 3 credits.
This course is the implementation of a senior design project for which preliminary work was done in BENG 492. It includes testing and refining the initial prototype, enhancing the design and construction of hardware and software, conducting tests via experiments or studies, evaluating/validating complete system. Requires oral presentations and written reports during project and at completion. Offered by Bioengineering. Limited to two attempts.

Specialized Designation: Research/Scholarship Intensive

Registration Restrictions:
Required Prerequisites: (BENG 492[C] or 492[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BENG 499: *Special Topics in Bioengineering.* 0-4 credits.
Topics of special interest to undergraduates. Notes: May be repeated if topics substantially differ. Offered by Bioengineering. May be repeated within the term for a maximum 11 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

500 Level Courses

BENG 500: *Special Topics.* 0-4 credits.
Select contemporary topics in Engineering and Computing. Offered by Bioengineering. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

BENG 501: *Bioengineering Research Methods.* 3 credits.
Examines approaches for scientific research with emphasis on bioengineering. Topics include biophysical origins of bioengineering measures, tools and technology for bioengineering data collection, basic principles of experimental design and statistical analyses, and interpretation of scientific results. Special attention will be given to ethical issues associated with the collection, use, and dissemination of data. Offered by Bioengineering. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BENG 514: *Pathophysiology and the Role of New Technologies in Human Diseases.* 3 credits.
This course will provide examples from clinical medicine of how patients are diagnosed and treated for diseases of their cardiovascular and neurological systems, as well as for cancer and in acute care (emergency) units. The etiology and pathogenesis of disease processes and the current roles of technologies in diagnosis and treatment will be discussed. Unmet needs in these clinical areas that require research and technology development will be identified and potential pathways towards clinical solutions investigated. Offered by Bioengineering. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (BENG 214[C] or 214[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BENG 520: *Biomedical Data Analytics.* 3 credits.
This course introduces the fundamental techniques and tools for analyzing biomedical data, important for many biomedical engineering problems. Topics include classification, regression, clustering, dimensionality reduction, data representation, and algorithm performance evaluation. Students will deepen their understanding of the concepts and gain hands-on experience on data analysis by applying algorithms to analyze and interpret various kinds of standard biological and biomedical data encountered in bioengineering fields. This course will be an innovative course leveraging hybrid learning through a combination of lectures, on-line content, and course project. Offered by Bioengineering. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (BENG 330[C] or 330[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BENG 521: *Cell and Tissue Engineering.* 3 credits.
This course is designed to provide exposure to the concepts of cell/tissue functions and behavior and strategies to manipulate their responses, biomaterials to construct scaffolds, modern techniques of artificial organ development and wound healing and most importantly, the utilization of engineering principles for biomedical applications. The course schedule has been packaged to not only provide fundamental information on the above topics, but also to stimulate team working skills, awareness of the current scientific developments through literature review, real-time experiences through lab visit and demo, and career opportunities through industrial visits. Offered by Bioengineering. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (BENG 240[C] or 240[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BENG 525: *Neural Engineering.* 3 credits.
Provides an overview of topics in Neural Engineering. Topics covered range from sensory and motor prosthetic devices, stimulation of

biological tissue, bioelectrodes and characterization techniques, brain-machine interfaces, and engineered devices to ameliorate neurodisorders. Prior knowledge in electrical or computer engineering disciplines required. Offered by Bioengineering. May not be repeated for credit. Equivalent to ECE 526.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BENG 526: *Neural Engineering.* 3 credits.
Provides an overview of topics in Neural Engineering. Topics covered range from sensory and motor prosthetic devices, stimulation of biological tissue, bioelectrodes and characterization techniques, brain-machine interfaces, and engineered devices to ameliorate neurodisorders. Prior knowledge in electrical or computer engineering disciplines required. Offered by Bioengineering. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BENG 530: *Continuum Biomechanics and Biotransport II.* 3 credits.
This course provides and advanced and unifying treatment of the fundamental field equations describing the laws of continuum biomechanical systems including solids, fluids and transport phenomena in biological systems. Topics will include: blood and circulation, viscoelasticity, poroelasticity, thermoelasticity, and molecular and convective transport in biological systems. Offered by Bioengineering. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (BENG 230[C] or 230[XS]) and (BENG 330[C] or 330[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BENG 535: *Multi-Scale Modeling and Simulation in Biomedicine.* 3 credits.
This course covers a variety of advanced computational methods for modeling biomedical systems spanning multiple scales, from cells and molecules to tissues, organs and systems. Topics include: modeling cell biomechanics, modeling biofluids including blood flows, modeling biotransport phenomena including bioheat and molecular diffusion, and modeling tissue biomechanics, and modeling organs and physiological systems. Computational techniques will include: discrete particle dynamics methods, finite differences and finite element methods, stochastic and agent-based modeling, and high-performance computing. Offered by Bioengineering. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (BENG 230[C] or 230[XS]) and (BENG 330[C] or 330[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BENG 537: *Medical Image Processing.* 3 credits.
This course aims at familiarizing the student with the basic concepts of image processing as they are applied to medical imaging problems. The first part of the course provides a brief overview of basic image processing, including image enhancement and restoration techniques. The second part of the course addresses problems that are central to medical image processing practice, including registration, segmentation and feature detection. This course also includes a project focused on biomedical image applications. Offered by Bioengineering. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (BENG 320[C] or 320[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BENG 538: *Medical Imaging.* 3 credits.
Provides an introduction to the physical, mathematical and engineering foundations of modem medical imaging systems, medical image processing and analysis methods. In addition, this course introduces engineering students to clinical applications of medical imaging. The emphasis is on diagnostic ultrasound and magnetic resonance imaging methods, although several other modalities are covered. The course also provides an overview of recent developments and future trends in the field of medical imaging, discusses some of the challenges and controversies, and involves hands-on experience applying the methods

learned in class to real-world problems. Offered by Bioengineering. May not be repeated for credit. Equivalent to ECE 538.

Recommended Prerequisite: ECE 220 or equivalent

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BENG 541: *Biomaterials.* 3 credits.
Covers the principles of biomaterials and biological interactions with materials, including an overview of biomaterials characterization, design and testing. Specific topics include the use of polymers, ceramics and metallics in biomaterials, drug delivery applications, tissue engineering from an orthopedic and vascular perspective, biocompatibility, acute and chronic biological response to implanted material, and in vitro and in vivo testing of biomaterials. Offered by Bioengineering. May not be repeated for credit.

Recommended Prerequisite: BIOL 213 or BENG 213 with a C or better
CHEM 211 or CHEM 251 or BENG 201 with a C or better

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BENG 550: *Advanced Biomechanics.* 3 credits.
Introduces the fundamental concepts of musculoskeletal biomechanics, and how to apply mechanical principles to quantitatively describe and analyze movement. Topics include properties, functions, and models of the musculoskeletal structures, 3D kinematics, locomotion, and instrumentation systems applied in musculoskeletal biomechanics and movement analysis. Offered by Bioengineering. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BENG 551: *Translational Bioengineering.* 3 credits.
Demonstrates the process for the creation of both medical device prototypes and medical device companies. Focuses on designing and building a robust medical device prototype and writing a business plan. Also addresses cost of healthcare, reimbursement, regulatory processes, intellectual property, and marketing and sales aspects. Course will feature lectures, videos, and guest speakers who are successful medical device entrepreneurs. Offered by Bioengineering. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BENG 570: *Bioinstrumentation and Devices II.* 3 credits.
A major part of Bioengineering involves the design of instruments that allows us to both make measurements and intervene in living systems. This course delves deeper into two aspects of bioinstrumentation: the theory and use of different sensors commonly encountered in bioengineering devices, and the development of microcontroller-based circuits that interface with such sensors. Students will gain knowledge of microcontroller circuit design and programming, interfacing with sensors and their applications in Bioengineering. Students will demonstrate their understanding of the subject by designing a microcontroller-based device that performs a biomedically-relevant measurement. Offered by Bioengineering. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (BENG 370[C] or 370[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BENG 575: *Intellectual Property, Regulatory Concepts and Product Development.* 3 credits.
The course provides an understanding of i) intellectual property focusing on patents and the patent process in the US and globally, ii) regulatory frameworks for product approval such as FDA and international regulations, standards (ANSI, ASTM, ISO, GCP, GLP) and iii) product development including ideation and concept development, quality systems, global business models, financing and transactions. An overarching team project will involve invention, proof of concept, patenting, regulatory pathways and product development to market in a global context. Offered by Bioengineering. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (BENG 240[C] or 240[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BENG 590: *Selected Topics in Bioengineering.* 3 credits.
Addresses selected topics from recent developments in various Bioengineering disciplines. Content may vary each semester depending on instructor and students' interests. Offered by Bioengineering. May be repeated within the term for a maximum 6 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

600 Level Courses

BENG 600: *Bioengineering Seminar.* 0 credits.
Students are required to attend seminars, including talks by distinguished speakers, faculty candidates, and Mason faculty. Notes: Required attendance and participation in a minimum of 2 seminars per semester. Offered by Bioengineering. May be repeated within the degree.

Recommended Prerequisite: Admission to MS Bioengineering program.

Registration Restrictions:
Enrollment limited to students with a class of Graduate.

Schedule Type: Seminar

Grading:
This course is graded on the Satisfactory/No Credit scale.

BENG 601: *Collaborative Bioengineering Basic Science Research.* 3 credits.
This course provides exposure to research in the bioengineering department, provide a broad experience to interdisciplinary research, provide an overview of Biomedical Engineering to new graduate students, and connect students to faculty and scientists in other departments and institutions. Offered by Bioengineering. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BENG 602: *Collaborative Bioengineering Clinical Science Research.* 3 credits.
This course provides exposure to biomedical research in the bioengineering department, provide a broad experience to interdisciplinary research, provide an overview of how biomedical engineering research can address clinical unmet needs to new graduate students, and connect students to faculty and clinicians in a hospital setting and different institutions. Offered by Bioengineering. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BENG 641: *Advanced Nanotechnology in Health.* 3 credits.
Presents interdisciplinary scientific and engineering approaches to solve relevant medical problems. Contents include polymer structure, composition, and material properties, natural and synthetic polymers, and their application to design novel nanocarriers for controlled drug release, scaffolds for tissue engineering, and new vectors for vaccines. The relevance of nanotechnology to advance treatments for cancer, infectious and neurodegenerative diseases are discussed in depth. Offered by Bioengineering. May not be repeated for credit.

Recommended Prerequisite: BENG 541, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:

This course is graded on the Graduate Regular scale.

BENG 699: *Advanced Topics in Bioengineering.* 3 credits.
Advanced topics of current interest in bioengineering. Topics chosen so they do not duplicate other courses in department. Active participation encouraged in form of writing and presenting papers in research areas. Offered by Bioengineering. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: Permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

700 Level Courses

BENG 703: *Laboratory Rotations in Biomaterials and Nanomedicine.* 3 credits.
Intensive introduction to a research laboratory in the area of biomaterials and nanomedicine. The student will read background material pertinent to the problem under study, learn and practice research methods of the laboratory, and formulate a short final project, which may be a proposal or an actual project, demonstrating some mastery of the techniques and approaches employed. Offered by Bioengineering. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Enrollment limited to students with a class of Graduate or Non-Degree.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Regular scale.

BENG 704: *Laboratory Rotations in Biomedical Imaging and Devices.* 3 credits.
Intensive introduction to a research laboratory in the area of biomedical imaging and devices. The student will read background material pertinent to the problem under study, learn and practice research methods of the laboratory, and formulate a short final project, which may be a proposal or an actual project, demonstrating some mastery of the techniques and approaches employed. Offered by Bioengineering. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Regular scale.

BENG 705: *Laboratory Rotations in Computational Biomedical Engineering.* 3 credits.
Intensive introduction to a research laboratory in the area of computational biomedical engineering. The student will read background material pertinent to the problem under study, learn and practice research methods of the laboratory, and formulate a short final project, which may be a proposal or an actual project, demonstrating some mastery of the techniques and approaches employed. Offered by Bioengineering. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Regular scale.

BENG 706: *Laboratory Rotations in Neurotechnology and Computational Neuroscience.* 3 credits.
Intensive introduction to a research laboratory in the area of neurotechnology and computational neuroscience. The student will read background material pertinent to the problem under study, learn and practice research methods of the laboratory, and formulate a short final project, which may be a proposal or an actual project, demonstrating some mastery of the techniques and approaches employed. Offered by Bioengineering. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Regular scale.

BENG 725: *Computational Motor Control.* 3 credits.
Uses approaches from robotics, control theory, and neuroscience to understand biological motor systems. Contents include modeling muscles, reflexes and neural systems to understand how the central nervous system plans and controls movement of the eyes and limbs. The theoretical control problem is compared to known neuronal properties of the motor system and diseases of the motor system affecting movement control. Offered by Bioengineering. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BENG 738: *Advanced Medical Image Processing.* 3 credits.
Advanced Medical Image Processing covers advanced processing techniques used in modern medical imaging. The course aims at developing an understanding of the mathematical background, principles and application of techniques such as segmentation, registration, morphometry, general linear modeling, principal and independent component analysis. Offered by Bioengineering. May not be repeated for credit.

Recommended Prerequisite: BENG 320 (or equivalent), ECE 537 (or equivalent).

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BENG 798: *Independent Reading and Research in Bioengineering.* 1-6 credits.
Independent study in Bioengineering under the supervision of a faculty member, resulting in an acceptable technical report or presentation. This course may be repeated once for a total of 12 credit hours towards a graduate degree in Bioengineering. Offered by Bioengineering. May be repeated within the degree for a maximum 12 credits.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Thesis

Grading:
This course is graded on the Satisfactory/No Credit scale.

BENG 799: *Master's Thesis.* 1-6 credits.
Research project chosen and completed under guidance of graduate faculty member that results in a technical report and an oral defense acceptable to thesis committee of faculty members. Offered by Bioengineering. May be repeated within the degree.

Recommended Prerequisite: 9 graduate credits, and permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Thesis

Grading:
This course is graded on the Satisfactory/No Credit scale.

800 Level Courses

BENG 800: *Bioengineering Colloquium.* 0 credits.
Students are required to attend colloquia including talks by distinguished speakers, faculty candidates, and Mason faculty. Notes: Required attendance and participation in a minimum of 5 seminars per semester. Offered by Bioengineering. May be repeated within the degree.

Recommended Prerequisite: Admission to PhD Bioengineering program.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Seminar

Grading:
This course is graded on the Satisfactory/No Credit scale.

BENG 801: *Bioengineering Colloquium II.* 3 credits.
Formal record of attending the required number of departmental seminars over multiple semesters. Students should first register for BENG 800 – Bioengineering Colloquium until they have attended 5 seminars per semester for 3 semesters. Once they have done so, they should sign up for BENG 801 and attend at least 5 seminars (while registered for this course) to receive credit. Offered by Bioengineering. May not be repeated for credit.

Registration Restrictions:
Required Prerequisite: BENG 800.

Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Satisfactory/No Credit scale.

BENG 830: *Seminar in Biomedical Imaging.* 3 credits.
Selective analysis and discussion of topics in biomedical imaging in areas of current research interest. Topics may include techniques and analyses for ultrasound, magnetic resonance imaging (MRI), functional MRI, nuclear imaging, computer assisted tomography, positron emission tomography, and emergent approaches to imaging for health and disease. Offered by Bioengineering. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Admission to PhD Bioengineering program or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Seminar

Grading:

This course is graded on the Graduate Regular scale.

900 Level Courses

BENG 998: *Doctoral Dissertation Proposal.* 1-12 credits.
Work on research proposal that forms basis for doctoral dissertation. May be repeated as needed. Notes: No more than 24 credits of BENG 998 and 999 may be applied to doctoral degree requirements. Offered by Bioengineering. May be repeated within the degree for a maximum 12 credits.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

BENG 999: *Doctoral Dissertation.* 1-12 credits.
Formal record of commitment to doctoral dissertation research under direction of faculty member in bioengineering. May be repeated as needed. Notes: Once enrolled in 999, students must maintain continuous registration in 999 each semester until graduation, excluding summers. Students who defend in the summer must be registered for at least 1 credit of 999 in the summer Offered by Bioengineering. May be repeated within the degree for a maximum 12 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy.

Enrollment is limited to Graduate level students.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

Bioinformatics (BINF)

300 Level Courses

BINF 334: *Perl for Bioinformatics.* 3 credits.
Introduction into Perl programming language. Topics include data representation, control structures, file input/output, subroutines, regular expressions, debugging, relational databases. Emphasizes bioinformatics applications including DNA sequence analysis, parsing FAST A and GenBank files, processing BLAST output files, SQL or equivalent query language. Offered by School of Systems Biology. Limited to three attempts.

Recommended Prerequisite: Knowledge of programming language or CS 112 or equivalent.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BINF 354: *Foundations in Mathematical Biology.* 3 credits.
Interdisciplinary introduction to life sciences for physicists, chemists, engineers, and mathematicians. Combines knowledge from natural sciences, social and behavioral sciences, quantitative reasoning, and information technology. Covers selected topics in ecology, physiology, biochemistry, and behavior. May include biochemical reaction kinetics, Hodgkin-Huxley model for cellular electrical activity, continuous and discrete population interactions, and neural network models of learning. Techniques utilized include ordinary differential equations, difference equations, algebraic equations, and computer simulations. Offered by School of Systems Biology. Limited to three attempts.

Mason Core: Synthesis

Recommended Prerequisite: Completion or concurrent enrollment in all other required Mason Core courses (must include a chemistry course); MATH 114 or equivalent.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

BINF 401: *Bioinformatics and Computational Biology I.* 3 credits.
Covers the following topics and related methodology: protein sequence, structure prediction, and modeling methods; nucleic acid sequence and structure prediction; gene structure prediction in prokaryotes and eukaryotes; elements of system biology. Students will learn programming approaches to solve bioinformatics problems. Offered by School of Systems Biology. Limited to three attempts.

Recommended Prerequisite: BIOL 213, BIOL 214 and CDS 130 with a grade of C or better, or its equivalent, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BINF 402: *Bioinformatics and Computational Biology II.* 3 credits.
Continuation of BINF401 and studies in-depth several algorithms and methods used in bioinformatics and computational biology. Students will learn sequence alignment and assembly algorithms, hidden Markov models, classification and prediction methods, genome annotation. These techniques will then be applied to current bioinformatics problems. Programming assignments are incorporated in the course program. Offered by School of Systems Biology. Limited to three attempts.

Recommended Prerequisite: BINF 401.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BINF 403: *Bioinformatics and Computational Biology Lab I.* 1 credit.
Laboratories will introduce students to bioinformatics tools designed to answer research problems in the topics covered in lectures, such as sequence alignment, sequence pattern recognition, structural conformation modeling, phylogenetic analysis methods and image comparisons. Offered by School of Systems Biology. Limited to three attempts.

Recommended Corequisite: BINF 401.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

BINF 404: *Bioinformatics and Computational Biology Lab II.* 1 credit.
Laboratories will introduce students to research bioinformatics tools relevant to lecture topics such as: the correspondence of measured fragments to parent biomolecules, inference methods for gene and protein networks, predicting system outputs given specified inputs. Offered by School of Systems Biology. Limited to three attempts.

Recommended Corequisite: BINF 402

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

BINF 450: *Bioinformatics for Life Sciences.* 4 credits.
Teaches students how to understand the basis of and use of bioinformatics software in database searching, sequence analysis, gene identification, genomics, protein structure and phylogeny. Offered by School of Systems Biology. Limited to three attempts.

Recommended Prerequisite: BIOL 213, and either BIOL 482 or CHEM 463 or BIOL 483.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BINF 470: *Molecular Biophysics.* 3 credits.
Offers a broad introduction into molecular biophysics. Demonstrates that the application of methods of physics provides a unique opportunity to tackle complex biological problems. Designed for physics or chemistry majors; also useful for biology majors interested in bioinformatics and computational biology. Offered by School of Systems Biology. Limited to three attempts. Equivalent to PHYS 370.

Recommended Prerequisite: PHYS 307 or CHEM 331, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BINF 490: *Independent Senior Research in Bioinformatics and Computational Biology.* 3 credits.
Course offers individual research in bioinformatics and computational biology under the guidance of faculty member. Written report required upon course completion. Offered by School of Systems Biology. Limited to three attempts.

Recommended Prerequisite: Permission of instructor.

Schedule Type: Research

Grading:
This course is graded on the Undergraduate Regular scale.

BINF 491: *Senior Thesis in Bioinformatics.* 1 credit.
A project is chosen and completed under the guidance of a Bioinformatics Department faculty member. Notes: An oral progress report with a poster at the fall semester Bioinformatics Student Research Day is required. Offered by School of Systems Biology. Limited to three attempts.

Recommended Corequisite: BINF 401.

Schedule Type: Research

Grading:
This course is graded on the Undergraduate Regular scale.

BINF 492: *Senior Thesis in Bioinformatics.* 1 credit.
A project is chosen and completed under the guidance of a Bioinformatics Department faculty member. Notes: A written thesis in standard format is required. Offered by School of Systems Biology. Limited to three attempts.

Recommended Corequisite: BINF 402.

Schedule Type: Research

Grading:
This course is graded on the Undergraduate Regular scale.

500 Level Courses

BINF 530: *Introduction to Bioinformatics Methods.* 3 credits.
Introduction to methods and tools for pairwise sequence comparison, multiple sequence alignment, phylogenetic analysis, protein structure prediction and comparison, database similarity searches, and discovery of conserved patterns in protein sequence and structures. Offered by School of Systems Biology. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Graduate, Non-Degree or Undergraduate level students may **not** enroll.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BINF 531: *Molecular Cell Biology for Bioinformatics.* 3 credits.
Intensive review of biochemistry, molecular biology, and cell biology necessary OT begin research in bioinformatics. Topics include protein biochemistry, nucleic acids biochemistry, DNA replication transcription, and translation, recombinant DNA technology, genomics, molecular structure of genes and chromosomes, and expression and control. Offered by School of Systems Biology. May not be repeated for credit.

Recommended Prerequisite: Undergraduate 300 and 400 level courses in biochemistry or cell biology, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BINF 550: *Introduction to Bioinformatics Database Design.* 3 credits.
Students will acquire skills needed to exploit public biological databases, and establish and maintain personal databases that support their own research. Skills include learning underlying data models and the basics of DBMS and SQL. Offered by School of Systems Biology. May not be repeated for credit.

Recommended Prerequisite: Introductory computer programming course, or permission of the instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

600 Level Courses

BINF 630: *Bioinformatics Methods.* 3 credits.
Introduction to methods and tools for pairwise sequence comparison, multiple sequence alignment, phylogenetic analysis, protein structure prediction and comparison, database similarity searches, and discovery of conserved patterns in protein sequence and structures. Offered by School of Systems Biology. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BINF 631: *Molecular Cell Biology for Bioinformatics.* 3 credits.
Intensive review of biochemistry, molecular biology, and cell biology necessary to begin research in bioinformatics. Topics include protein biochemistry, nucleic acids biochemistry, DNA replication, transcription, and translation, recombinant DNA technology, genomics, molecular structure of genes and chromosomes, and gene expression and control. Offered by School of Systems Biology. May not be repeated for credit.

Recommended Prerequisite: Undergraduate background in biochemistry, or cell biology, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BINF 633: *Molecular Biotechnology.* 3 credits.
Introduction to the theory and practice of molecular biotechnology, with emphasis on the application of tools in today's society. Includes study of recombinant DNA technology, genomics, and bioinformatics as applied to commercially important products. Lectures reflect more recent advances and applications in the commercial aspects of biology. Offered by School of Systems Biology. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BINF 634: *Bioinformatics Programming.* 3 credits.
Data representation, control structures, file input/output, subroutines, regular expressions, debugging, introduction to relational databases. Emphasizes bioinformatics applications including DNA sequence analysis, parsing FASTA and GenBank files, processing BLAST output files, SQL, or equivalent query language. Offered by School of Systems Biology. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BINF 636: *Microarray Methodology and Analysis.* 3 credits.
Theory and practice of genome analysis including genetics, biochemistry, and tools for analyzing global gene expression, and detection and quantification of genes and gene products. Offered by School of Systems Biology. May not be repeated for credit.

Recommended Prerequisite: BINF 633 or permission of instructor.

Registration Restrictions:

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BINF 637: *Forensic DNA Sciences.* 3 credits.
Intensive introduction to parameters affecting data QC and analysis, including factors arising from biochemistry, chemistry, genetics, statistics, instrumentation, and software. Offered by School of Systems Biology. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BINF 639: *Introduction to Biometrics.* 3 credits.
Introduction to methods for measuring humans. Topics include face, speaker, fingerprint, and shoeprint recognition; and handwriting analysis. Students develop computer programs to perform many of these tasks. Offered by School of Systems Biology. May not be repeated for credit.

Recommended Prerequisite: CSI 603 and 604 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BINF 641: *Biomolecular Modeling.* 3 credits.
Introduction to basic principles and practice of computational biomolecular modeling. Students learn the elements of physical chemistry and molecular biology, which constitute the foundation of molecular modeling. Practical application of biomolecular software and development of related skills are emphasized through online lectures, homework, and course project. Offered by School of Systems Biology. May not be repeated for credit.

Recommended Prerequisite: Students are expected to be familiar with basic concepts of physics, calculus, and biology on undergraduate level.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BINF 650: *Introduction to Bioinformatics Database Design.* 3 credits.
Students will acquire skills needed to exploit public biological databases and establish and maintain personal databases that support their own research; such skills include learning underlying data models and the basics of DBMS and SQL. Offered by School of Systems Biology. May not be repeated for credit.

Recommended Prerequisite: BINF 634 or equivalent, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BINF 690: *Numerical Methods for Bioinformatics.* 3 credits.
Computational techniques for solving scientific problems focusing on applications in bioinformatics and computational biology. Students develop the ability to convert a quantitative problem into computer programs to solve the problem. Emphasizes efficiency and readability of code. Offered by School of Systems Biology. May not be repeated for credit.

Recommended Prerequisite: CS 112, MATH 113 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

700 Level Courses

BINF 701: *Systems Biology.* 3 credits.
Systems biology seeks to understand how a complex biological system functions. This involves the use of computational methods and models

to integrate information obtained about these systems through a wide range of methods that span multiple spatial and temporal scales. Current research examples will be used to motivate and demonstrate these approaches. Offered by School of Systems Biology. May not be repeated for credit. Equivalent to BIOS 701.

Recommended Prerequisite: Admission to the Ph.D. program in Biosciences or Bioinformatics, CHEM 663 or equivalent.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BINF 702: *Biological Data Analysis.* 3 credits.
Trains students in research methodologies for life sciences. Covers the three phases of biological research projects: experimental design, data collection and data analysis. Offered by School of Systems Biology. May not be repeated for credit.

Recommended Prerequisite: Admission to PhD program in bioinformatics or biosciences or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BINF 703: *Bioinformatics Lab Rotation.* 1 credit.
Short-term introductory research on a specific topic in computational sciences and informatics under direction of faculty member. Offered by School of Systems Biology. May be repeated within the term for a maximum 3 credits.

Recommended Prerequisite: Permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory

Grading:
This course is graded on the Graduate Special scale.

BINF 704: *Colloquium in Bioinformatics.* 1 credit.
Seminar presentations in a variety of areas of bioinformatics and computational biology by COS faculty, staff, advanced PhD students, and professional visitors. Offered by School of Systems Biology. May be repeated within the degree for a maximum 3 credits.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BINF 705: *Research Ethics.* 1 credit.
Examines ethical issues in scientific research, reflecting on purpose and reviewing foundational principles for evaluating ethical issues. Provides skills for survival in scientific research through training in moral reasoning and teaching of responsible conduct. Students learn to apply critical-thinking skills to design, execution, and analysis of experiments and analysis of ethical issues in research, including use of animals and humans, standards in computer community, and research fraud. Guidelines for data ownership, manuscript preparation, and conduct of people in authority may be presented and discussed. Offered by School of Systems Biology. May not be repeated for credit.

Recommended Prerequisite: Permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BINF 730: *Biological Sequence and Genome Analysis.* 3 credits.
Fundamental methods for analyzing nucleic acid and protein sequences, including pairwise and multiple alignment, database search methods, profile searches, and phylogenetic inference. Development of probabilistic tools, including hidden Markov models and optimization algorithms. Survey of current software tools. Offered by School of Systems Biology. May not be repeated for credit.

Recommended Prerequisite: A course in molecular biology, a course in probability, and ability to program in a high-level language, or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BINF 731: *Protein Structure Analysis.* 3 credits.
Computational methods for analyzing, classifying, and predicting three-dimensional protein structures. Covers theoretical approaches, techniques, and computational tools for protein structure analysis. Offered by School of Systems Biology. May not be repeated for credit.

Recommended Prerequisite: Permission of instructor, or previous courses in molecular biology, biochemistry, and computer programming.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BINF 732: *Genomics.* 3 credits.
Surveys computational tools and techniques to study whole genomes, and explores biological basis of genome analysis algorithms. Topics include genome mapping, comparative genomics, and functional genomics. Offered by School of Systems Biology. May not be repeated for credit.

Recommended Prerequisite: General biology, programming experience, CSI 700 or equivalent, CSI 731, or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BINF 733: *Gene Expression Analysis.* 3 credits.
Analyzes gene expression data. Topics include cluster analysis and visualization of expression data, inference of genetic regulatory networks, and theoretical models of genetic networks. Offered by School of Systems Biology. May not be repeated for credit.

Recommended Prerequisite: Permission of instructor, ability to program in a high-level language and a course in molecular biology: S-Plus or Matlab experience recommended.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BINF 734: *Advanced Bioinformatics Programming.* 3 credits.
Topics include algorithm design, complex data structures, object oriented programming, relational databases, designing modules, and graphics and web programming. Students complete a bioinformatics programming project. Offered by School of Systems Biology. May not be repeated for credit.

Recommended Prerequisite: BINF 634, or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BINF 739: *Topics in Bioinformatics.* 1-3 credits.
Selected topics in bioinformatics not covered in fixed-content bioinformatics courses. Offered by School of Systems Biology. May be repeated within the term for a maximum 6 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: Permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BINF 740: *Introduction to Biophysics.* 3 credits.
Introduces biophysics, focusing on physical and chemical concepts and their relation to rapidly expanding interdisciplinary interfaces among biology, chemistry, and physics. Reveals multiscale nature of biophysics, and includes exploration of macroscopic and microscopic applications. Offered by School of Systems Biology. May not be repeated for credit. Equivalent to PHYS 630.

Recommended Prerequisite: Undergraduate courses in General Physics, Calculus, and Biology.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BINF 741: *Introduction to Computer Simulations of Biomolecules.* 3 credits.
Details computational methods in biomolecular simulations, such as molecular dynamics and Monte Carlo algorithms. Special emphasis given to practical applications. Reviews most recent advances in biomolecular simulations. Offered by School of Systems Biology. May not be repeated for credit.

Recommended Prerequisite: Good programming skills, BINF 690 and 701, or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BINF 751: *Biochemical and Cellular Systems Modeling.* 3 credits.
Mathematical and computational methods for analysis of cellular and subcellular processes. Topics may include ion channels, whole cell models, intracellular signaling, biochemical oscillations, pathway modeling, parameter estimation, and sensitivity analysis. Offered by School of Systems Biology. May not be repeated for credit.

Recommended Prerequisite: Calculus and knowledge of a computer programming language; and BINF 690 and 701; or permission of instructor. Course in differential equations is recommended.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BINF 760: *Machine Learning for Bioinformatics.* 3 credits.
Machine learning and data mining methods relevant to application to problems in computational biology. Methods include decision trees, random forests, rule learning methods, support vector machines, neural networks, genetic algorithms, instance-based learning, Bayesian networks, and evaluation metrics for learning systems. Applications include cancer prediction, gene finding, protein function classification, gene regulation network inference, and other recent bioinformatics applications selected from the literature. Notes: In addition to lectures from the instructor, students will present papers from the literature and complete a machine learning project. Offered by School of Systems Biology. May not be repeated for credit.

Recommended Prerequisite: BINF 630, BINF 631, and BINF 634, or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BINF 795: *Bioinformatics Internship.* 1-3 credits.
Involves off-campus, professional work with approved agencies, institutions, non-profits, or businesses throughout the semester. The internship work must produce one or more products such as; a comprehensive report, a departmental presentation, a research project, or an article. Internship placement and product type must be approved by the student's faculty advisor. Offered by School of Systems Biology. May be repeated within the degree for a maximum 3 credits.

Recommended Prerequisite: Internship placement and parameters must be approved by the faculty advisor prior to registration.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Graduate Regular scale.

BINF 796: *Directed Reading and Research.* 1-6 credits.
Reading and research on specific topic in computational sciences and informatics under direction of faculty member. Offered by School of Systems Biology. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Research

Grading:
This course is graded on the Graduate Regular scale.

BINF 798: *Research Project.* 3 credits.
Project chosen and completed under guidance of graduate faculty member that results in acceptable technical report. Offered by School of Systems Biology. May not be repeated for credit.

Recommended Prerequisite: Twelve graduate credits and permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Thesis

Grading:
This course is graded on the Graduate Special scale.

BINF 799: *Master's Thesis.* 1-6 credits.
Project chosen and completed under guidance of graduate faculty member that results in acceptable technical report (master's thesis) and oral defense. Offered by School of Systems Biology. May be repeated within the degree.

Recommended Prerequisite: Twelve graduate credits and permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Thesis

Grading:
This course is graded on the Satisfactory/No Credit scale.

800 Level Courses

BINF 820: *Advanced Topics in Molecular Cell Biology.* 3 credits.
Topics may include cell structure, biomembranes and cell architecture, cell signaling, receptor activation, gene expression and control, protein targeting and trafficking, and cell cycle regulation. Notes: Advanced molecular and cellular biology foundation for BINF students. Offered by School of Systems Biology. May not be repeated for credit.

Specialized Designation: Topic Varies

Recommended Prerequisite: BINF 631 or equivalent.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BINF 831: *Structural Genomics Project.* 3 credits.
Covers knowledge-based, large-scale protein structure analysis; classification and prediction of protein structure and function; and other current research topics in structural genomics. Projects address entire research enterprise from developing and defending proposal to peer-

reviewed publication. Offered by School of Systems Biology. May not be repeated for credit.

Recommended Prerequisite: BINF 731, or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BINF 841: *Research Topics in Biomolecular Simulations.* 3 credits.
Research-oriented course combining lectures and work on individual projects in biomolecular simulations. Topics include protein and peptide aggregation, binding, and unfolding and folding. Offered by School of Systems Biology. May not be repeated for credit.

Specialized Designation: Topic Varies

Recommended Prerequisite: BINF 741, or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

900 Level Courses

BINF 996: *Doctoral Reading and Research.* 1-6 credits.
Reading and research on specific topic in computational sciences and informatics under direction of faculty member. Offered by School of Systems Biology. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Admission to doctoral program or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Research

Grading:
This course is graded on the Graduate Regular scale.

BINF 998: *Doctoral Dissertation Proposal.* 1-12 credits.
Covers development of research proposal, which forms basis for doctoral dissertation, under guidance of dissertation director and doctoral committee. Offered by School of Systems Biology. May be repeated within the degree.

Recommended Prerequisite: Permission of advisor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

BINF 999: *Doctoral Dissertation.* 1-12 credits.
Doctoral dissertation research under direction of dissertation director. Notes: No more than 24 credits in BINF 998 and 999 may be applied to doctoral degree requirements. Offered by School of Systems Biology. May be repeated within the degree.

Recommended Prerequisite: Admission to doctoral candidacy. Students should contact the department for permission and CRN to register. Please indicate your major and semester in the subject heading.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy.

Enrollment is limited to Graduate level students.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

Biology (BIOL)

100 Level Courses

BIOL 101: *Biology Freshman Seminar.* 1 credit.
This course is for first-seminar freshman with a declared biology major. This elective will serve as a platform for freshman biology students to get practical advice and guidance for how to approach coursework, careers in biology, and professionalism. Offered by Biology. Limited to three attempts.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 102: *Introductory Biology I-Survey of Biodiversity and Ecology.* 4 credits.
This survey course introduces students to the evolution of biological diversity on Earth and explores how organisms interact with each another and their environment. Topics include the domains of life, how new species arise, evolution of populations and major topics in ecology and conservation. Survey course suitable for any major. Biology majors may not take after BIOL 200-level or above courses have been taken. Offered by Biology. Limited to three attempts. Equivalent to BIOL 104.

Mason Core: Natural Science with Lab

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 103: *Introductory Biology II-Survey of Cell and Molecular Biology.* 3 credits.
This survey of Cell and Molecular biology provides students with an understanding of basic cellular biology and an appreciation of the impact of molecular biology research on current societal challenges. Topics include how life emerged on early earth, cell structure and function, genes and heredity, plus viruses and genetic engineering. Notes: Students are encouraged to take BIOL102 or equivalent prior to BIOL103. Survey course suitable for any major. Biology Majors may not take after BIOL200-level or above courses have been taken. Offered by Biology. Limited to three attempts Offered by Biology. Limited to three attempts. Equivalent to BIOL 103T.

Mason Core: Natural Science Overview

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 105: *Introductory Biology II Laboratory.* 1 credit.
Laboratories that cover the chemical basis of life, the structure and function of the cell, Mendelian and human genetics. Offered by Biology. Limited to three attempts.

Mason Core: Natural Science with Lab

Recommended Prerequisite: BIOL 103

Recommended Corequisite: BIOL 103

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 106: *Introductory Biology II Laboratory.* 1 credit.
The structure and function of major organ systems of animals and an examination of the structure and function of plants, emphasizing the higher plants. Notes: Not available to students who have taken BIOL 104 or the equivalent. Offered by Biology. Limited to three attempts.

Mason Core: Natural Science with Lab

Registration Restrictions:
Required Prerequisites: BIOL 107^{*C}, 107^{XS} or $104T^{C}$.
* May be taken concurrently.
^{C} Requires minimum grade of C.
^{XS} Requires minimum grade of XS.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 107: *Intro Biology II Lecture.* 3 credits.
Topics include animal (including human) structure, function, homeostatic mechanisms, organ systems, behavior, higher plant systems, and major concepts in ecology. Note: Students are strongly urged to take BIOL 103 prior to BIOL 107. Survey course suitable for any major. May not be taken after BIOL 200-level or above courses have been taken. Offered by Biology. Limited to three attempts.

Mason Core: Natural Science Overview

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 124: *Human Anatomy and Physiology.* 4 credits.
Introduction to structure and function of body's major organ systems. Note: must be taken in sequence. Does not satisfy the natural science requirement in COS or CHSS. Course requires use of organisms. Not available for Biology major credit. Offered by Biology. Limited to three attempts.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 125: *Human Anatomy and Physiology.* 4 credits.
Introduction to structure and function of body's major organ systems. Notes: Does not satisfy the natural science requirement in COS or CHSS. Course requires the use of organisms. Not available for Biology major credit. Offered by Biology. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (BIOL 124^{C} or 124^{XS}).
^{C} Requires minimum grade of C.
^{XS} Requires minimum grade of XS.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 140: *Plants and People.* 3 credits.
An introduction to the interaction of plants and people from a biological perspective and the tools to continue life-long critical evaluation of emerging issues in human nutrition, agriculture, medicine, and global environmental change as they relate to plant biology. Designated a Green Leaf Course. Offered by Biology. Limited to three attempts.

Mason Core: Natural Science Overview, Encore: Sustainability

Specialized Designation: Green Leaf Related Course

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 177: *Ecological Applications.* 3 credits.
This course introduces ecosystem concepts and applications to natural and managed ecosystems. This course will discuss the natural environment, ecological processes, and human interaction with and management of this environment. Humankind plays a major role in all worldwide environments and there is very little, if any, of the surface of this planet that remains untouched by human actions. Biologists, ecologists, environmental scientists, and policy makers, must provide for the needs of humanity while mitigating negative impacts on the natural environment. Offered by Biology. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

200 Level Courses

BIOL 213: *Cell Structure and Function.* 4 credits.
For science majors and preprofessionals in life sciences. Introduction to cell chemistry, metabolism, and genetics. Note: for science majors and pre-professionals in the life sciences. Offered by Biology. Limited to three attempts.

Mason Core: Natural Science with Lab

Recommended Corequisite: CHEM 211

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 214: *Biostatistics for Biology Majors.* 4 credits.
An introduction to statistics used in the life sciences. Offered by Biology. Limited to three attempts.

Recommended Corequisite: BIOL 213

Schedule Type: Lecture, Recitation

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 246: *Introductory Microbiology.* 3 credits.
Introduction to microbial cell structure, physiology, and pathogenicity. Emphasizes control of microorganisms, host-parasite interactions including immunology, and viral and bacterial pathogens. Note: not available for Biology major credit or to students who have BIOL 305. Offered by Biology. Limited to three attempts.

Recommended Prerequisite: BIOL 124 and 125, one year of general biology, or permission of instructor.

Recommended Corequisite: BIOL 306.

Registration Restrictions:
Students cannot enroll who have a major in Biology.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 295: *Summer Research in Biology.* 1-3 credits.
Students enrolled in this course study life science related topics in an approved research environment during the summer. This course may involve one or more of the following: reading peer reviewed literature, conducting a field or laboratory study, attending scientific seminars and workshops, writing an abstract, preparing and presenting a poster, or writing a research paper. Notes: May be taken for 1 to 3 credits and repeated once for a total of 3 credits. Total limit for BIOL 295 is 3 credits toward 44 credits for BS or BA (as long as the number of 100-200 level credits for the biology areas has not been exceeded). Offered by Biology. May be repeated within the degree for a maximum 3 credits.

Recommended Prerequisite: Permission of instructor and Biology Program Director.

Schedule Type: Research

Grading:
This course is graded on the Undergraduate Regular scale.

300 Level Courses

BIOL 300: *BioDiversity.* 4 credits.
This course explores the fundamental principles governing organismal biology while introducing the three domains of life: the Archaea, the Bacteria, the Eukaryotes, plus viruses. Offered by Biology. Limited to three attempts. Equivalent to BIOL 303, BIOL 304.

Registration Restrictions:
Required Prerequisites: (BIOL 213[C], U213 or 213[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 301: *Biology and Society.* 3 credits.
Biological problems facing society including pollution, cloning, emerging diseases, global warming, and overpopulation. Notes: Not available for biology major or minor elective credit. May be repeated if topic is different. Offered by Biology. May be repeated within the term.

Mason Core: Synthesis

Recommended Prerequisite: BIOL 103 and 60 credits, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 302: *Alternative Careers in Biology.* 1 credit.
This course will explore non-traditional careers that utilize a biology degree. Weekly seminars will allow biology undergraduates to discuss and explore the broad-range of career options that utilize a biology degree with professionals in those fields. Notes: Biology majors only. Offered by Biology. Limited to three attempts.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 303: *Animal Biology.* 4 credits.
Emphasizes structure and function of vertebrates, but surveys all animal groups and protozoa. Also covers evolutionary theory, and evolutionary history of major animal groups. Course requires use of organisms. Offered by Biology. Limited to three attempts. Equivalent to BIOL 300.

Recommended Prerequisite: C or better in BIOL 213 or U213 or permission of instructor.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 304: *Plant Biology.* 4 credits.
Introduction to study of plants, their structure, development, nutrition, and ecology. Emphasizes flowering plants, but surveys all groups and their phylogenetic relationships. Offered by Biology. Limited to three attempts. Equivalent to BIOL 310.

Recommended Prerequisite: C or better in BIOL 213 or U213, or permission of instructor.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 305: *Biology of Microorganisms.* 3 credits.
Morphology, physiology, and pathogenicity of certain groups of bacteria, fungi, and viruses; stresses host-parasite interactions. Offered by Biology. Limited to three attempts.

Recommended Corequisite: BIOL 306.

Registration Restrictions:
Required Prerequisites: (BIOL 213[C], U213 or 213[XS]).

[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students cannot enroll who have a major in Nursing.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 306: *Biology of Microorganisms Laboratory.* 1 credit.
Laboratory techniques in culturing, staining, and identifying microorganisms. Offered by Biology. Limited to three attempts.

Recommended Corequisite: BIOL 305 or 246.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 308: *Foundations of Ecology and Evolution.* 5 credits.
An examination of the principles of ecology, evolution, and the impact of humans on the world around them. Topics will include evolutionary history, biological diversity, and analyzes of interactions among organisms and between organisms and their environment. Offered by Biology. Limited to three attempts. Equivalent to BIOL 308T, BIOL 328, BIOL 338.

Specialized Designation: Writing Intensive in Major

Recommended Prerequisite: BIOL 311.

Registration Restrictions:
Required Prerequisites: ((BIOL 213[C] or 213[XS]) and (BIOL 214[C] or 214[XS])) or (((EVPP 108[C] or 108[XS]) and (EVPP 109[C] or 109[XS]) and (BIOL 214[C]) or BIOL 214[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 309: *Introduction to Oceanography.* 3 credits.
Introduction to chemical, biological, and geological aspects of oceanic environment. May include field trips. Offered by Biology. Limited to three attempts. Equivalent to EVPP 309, GEOL 309.

Recommended Prerequisite: Two of the following lab sciences courses are required for a total of 8 credits: [GEOL 101 or 102], [EVPP 108 and 109 or 112 and 113 or 210], CHEM 211 and 213, [BIOL 103 or 213], [PHYS 160 and 161 or 243 and 244].

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 311: *General Genetics.* 4 credits.
Basic principles of heredity and modern developments in this field. Offered by Biology. Limited to three attempts.

Recommended Prerequisite: BIOL 214.

Registration Restrictions:
Required Prerequisites: (BIOL 213[C] or 213[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 312: *Biostatistics for Bioinformatics.* 4 credits.
Use of probability and descriptive and inferential statistical techniques in interpreting biological data. Offered by Biology. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (BIOL 214[C] or 214[XS]) and (CDS 130[C] or 130[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture, Recitation

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 314: *Introduction to Research Design and Analysis.* 4 credits.
Introduction to research design in a wide range of biological disciplines. Lecture will concentrate on how to design experiments with proper controls for statistical analysis, as well as obtaining permits and approvals from appropriate agencies. In recitation students will be given data sets to analyze. Offered by Biology. Limited to three attempts.

Specialized Designation: Mason Impact.

Recommended Prerequisite: BIOL 213, BIOL 214 or 312 or equivalent introductory statistics course, BIOL 311, CHEM 211, 212, 213, 214; Completion of Biology core recommended; Must be enrolled in Biology Research Semester.

Schedule Type: Lecture, Recitation

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 318: *Conservation Biology.* 3 credits.
Introduction to science used to identify species in need of conservation and techniques to manage and protect organisms. Offered by Biology. Limited to three attempts. Equivalent to EVPP 318.

Recommended Prerequisite: BIOL 308 or BIOL 300, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 320: *Comparative Chordate Anatomy.* 4 credits.
Compares anatomy and morphology of major chordate groups. Lab emphasizes shark, mudpuppy, cat, and rabbit. Offered by Biology. Limited to three attempts.

Recommended Prerequisite: BIOL 308 or BIOL 310 or permission of instructor.

Schedule Type: Laboratory, Lecture

Grading:

This course is graded on the Undergraduate Regular scale.

BIOL 322: *Developmental Biology.* 3 credits.
Principles of embryonic development and differentiation in animal species at cellular, molecular, tissue, and whole organism levels. Offered by Biology. Limited to three attempts.

Recommended Prerequisite: BIOL 213 or U213 and BIOL 311 or L311 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 323: *Lab for Developmental Biology.* 1 credit.
This laboratory will explore early developmental processes using classical and modern developmental, biology techniques. Students will have the opportunity to propose and carry out a small independent project using zebrafish as a model organism. Offered by Biology. Limited to three attempts.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 326: *Animal Physiology.* 3 credits.
General consideration of animal function emphasizing common life problems and methods for solving them. Topics include intercellular communication (nervous and endocrine), metabolism, water and solute balance, and cardiovascular and respiratory physiology. Offered by Biology. Limited to three attempts.

Recommended Prerequisite: (BIOL 213 or U213), or EVPP 210, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 331: *Invertebrate Zoology.* 4 credits.
Survey of invertebrate phyla, excluding insects, showing morphology, phylogeny, and general biology of these groups. Offered by Biology. Limited to three attempts.

Recommended Prerequisite: BIOL 308 or BIOL 300, or permission of instructor.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 332: *Insect Biology.* 4 credits.
Survey of insects including taxonomy, morphology, physiology, behavior, ecology, and economic importance. Offered by Biology. Limited to three attempts.

Recommended Prerequisite: BIOL 308 or BIOL 300, or permission of instructor.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 334: *Vertebrate Paleontology.* 4 credits.
Vertebrate Paleontology explores the evolution of vertebrates from the early Paleozoic to Recent. The course will cover the systematics, anatomy, paleogeography, and ecology of extinct vertebrates. Discussions will include fishes, early tetrapods & amniotes, dinosaurs, birds and mammals. Lab portion includes paleontology techniques, analysis, and study of fossil specimens and casts. A weekend field trip is included. Offered by Biology. Limited to three attempts. Equivalent to GEOL 334.

Recommended Prerequisite: Any two courses from the following list: GEOL 101, GEOL 102, BIOL 103, BIOL 104, BIOL 213, BIOL U213, BIOL 310 or the permission of the instructor.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 335: *Forensic Entomology.* 3 credits.
Explores the use of insects and other arthropods in field of forensic science as it pertains to the investigations of human and animal deaths and abuse, food and other product contamination, thefts, the illegal drug trade and unethical entomological practices. The use and presentation of this information from such investigations in court room proceedings will be discussed. Offered by Biology. Limited to three attempts.

Recommended Prerequisite: BIOL 213 or U 213 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 336: *Invertebrate Paleontology.* 4 credits.
Classification, evolutionary trends, and distribution of common invertebrate fossils. May include field trips. Notes: May include field trips. Offered by Biology. Limited to three attempts. Equivalent to GEOL 312.

Recommended Prerequisite: Either GEOL 101 and GEOL 102; or BIOL 103 and BIOL 102; or BIOL 213 or U213 and BIOL 300.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 338: *Lab for Fundamentals of Ecology and Evolution.* 2 credits.
This is a writing intensive experience and laboratory for transfer students who have previously taken an equivalent course to BIOL 308 that did not have a lab and did not meet the writing intensive requirements in the biology major. This course is paired with BIOL 308. Offered by Biology. Limited to three attempts.

Specialized Designation: Writing Intensive in Major

Recommended Prerequisite: Permission of Biology Program Director and faculty coordinator of BIOL 308.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 340: *Introductory Botany.* 4 credits.
Introduction to study of plants, their structure, development, nutrition, and ecology. Surveys of many groups of plants and their phylogenetic relationships will be studied. Offered by Biology. Limited to three attempts.

Recommended Prerequisite: 100-level introductory biology and/or BIOL 213.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 344: *Plant Diversity and Evolution.* 4 credits.
Investigates the diversity of vascular plants, including angiosperms, their evolutionary relationships, and the bases of their classification and identification. Offered by Biology. Limited to three attempts.

Recommended Prerequisite: BIOL 308 or BIOL 310, or permission of instructor.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 345: *Plant Ecology.* 4 credits.
Investigates the interaction of plants with their abiotic and biotic environment, native Virginian plant communities and their causes, and global processes affecting plant distributions over geological time. Notes: Three Saturday or Sunday field trips required. Offered by Biology. Limited to three attempts.

Recommended Prerequisite: BIOL 308 or BIOL 310, or permission of instructor.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 350: *Freshwater Ecosystems.* 4 credits.
Studies physical, chemical, and biological processes in lakes, streams, and wetlands. Lectures, field trips, and lab exercises teach physical and chemical aspects of aquatic systems and life cycles, and adaptations of aquatic organisms. Offered by Biology. Limited to three attempts. Equivalent to EVPP 350.

Recommended Prerequisite: CHEM 211/ 213 and CHEM 212/214 or CHEM 155/156 and BIOL 308 or EVPP 301.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 351: *Conservation Seminar.* 2 credits.
Examines key conservation issues, based on readings and discussions from the primary literature. Teaches professional development skills for scientists in conservation including fundraising, poster presentations, and interpretation of findings for diverse audiences. Develops skills for obtaining internships, jobs, or graduate positions. Offered by Biology. May be repeated within the degree for a maximum 4 credits. Equivalent to CONS 400.

Recommended Prerequisite: EVPP 301 or EVPP 302 or BIOL 308 or INTS 401 (or equivalent course) or permission of instructor.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 352: *Monitoring and Assessment of Biodiversity.* 4-6 credits.
Assessment, monitoring and conservation of species and habitats. Use tools for sampling species and habitats as well as how to evaluate their effectiveness. Apply this practical, hands-on knowledge to prepare a series of reports and recommendations for future work. Offered by Biology. Limited to three attempts. Equivalent to CONS 404.

Recommended Prerequisite: EVPP 301 or EVPP 302 or BIOL 308 or INTS 401 (or equivalent course) or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 353: *Small Population Management.* 4 credits.
Investigates species vulnerability to extinction and the methodologies of preserving genetic diversity in small populations, both in the wild and in captivity. Teaches modeling and laboratory techniques that promote successful captive breeding, such as hormone analysis and assisted reproductive techniques. Examines captive species in the Smithsonian Conservation Biology Institute to learn husbandry practices and skills from keepers and biologists. Offered by Biology. Limited to three attempts. Equivalent to CONS 406.

Recommended Prerequisite: EVPP 301 or EVPP 302 or BIOL 308 or INTS 401 (or equivalent course) or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 354: *Research in Conservation.* 5 credits.
One-on-one research experience with a conservation practitioner over 5 weeks (about 36 hours per week) on a conservation research project associated with that practitioner's program. Offered by Biology. Limited to three attempts.

Recommended Prerequisite: EVPP 301 or EVPP 302 or BIOL 308 or INTS 401 (or equivalent course) or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 355: *Ecological Engineering and Ecosystem Restoration.* 4 credits.
Provides definition, classification and practice of ecological engineering and ecosystem restoration. Describes general system ecology, ecosystem restoration, and the utilization of natural processes to provide ecosystem services to society and benefits to nature. Provides students with a systems-oriented perspective on environmental studies. Students will study principles in general system ecology and ecological engineering and explore practices in sustainable ecological design by carrying out a hands-on experimental design project with field microcosms/meocosms in a newly established Wetland Mesocosm

Compound on the campus. This course will involve a field trip (1-2 days). Offered by Biology. Limited to three attempts.

Recommended Prerequisite: CHEM 211 and CHEM 213, BIOL 308 or EVPP 301, and PHYS 243.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 356: *Landscape and Macrosystems Ecology.* 4 credits.
Detect and characterize patterns in landscapes. Investigate how they form and change over time, and with anthropogenic influences. Models populations and communities across landscapes, and ways of managing them to achieve goals in managing species and ecosystem proceses at local, regional, and continental scales. Offered by Biology. Limited to three attempts. Equivalent to CONS 405.

Recommended Prerequisite: (EVPP 301 and EVPP 302) or BIOL 308 or INTS 401 or equivalent course.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 357: *Ecology Field Skills.* 4 credits.
In this course, you will be introduced to a variety of field techniques used in ecological research through occasional classroom lectures and intensive field activities. You start with an overview of sampling methodologies common to the discipline and progress to hands-on and remote sampling techniques for plants, insects, amphibians, reptiles, birds and mammals. You will become familiar with Virginia's flora and fauna, gain experience in sampling and identifying representative plants, invertebrates and vertebrates, and obtain experience in making observations and characterizing ecological interactions related to population, community, and behavioral ecology. Also, you will maintain a field journal and complete a research proposal following adapted guidelines of Mason's OSCAR program. Come to Front Royal ready to work hard and to spend long days in the field. Offered by Biology. Limited to three attempts.

Recommended Prerequisite: BIOL 308 or BIOL 300 (or equivalent) or INTS 401

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 374: *Biogeography: Space, Time, and Life.* 3 credits.
A survey of the relationship between the distribution of plants and animals on the earth surface and the physical geography and environmental characteristics. Offered by Biology. Limited to three attempts. Equivalent to GGS 321.

Recommended Prerequisite: One of the following: BIOL 300, GGS 122, GGS 102, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 377: *Applied Ecology.* 3 credits.
Introduction to ecosystem concepts and their applications to natural and managed ecosystems. Offered by Biology. Limited to three attempts. Equivalent to EVPP 377.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 378: *Applied Ecology Laboratory.* 1 credit.
Application of ecosystem concepts in natural and managed ecosystems. Offered by Biology. Limited to three attempts.

Recommended Corequisite: BIOL 377 or EVPP 377.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 379: *RS: Ecological Sustainability.* 4 credits.
Introduces the concepts and applications of several important topics relating to ecological sustainability. Focuses on the role of soils in maintaining and managing environmental quality. Teaches students how to understand and interpret scientific data presented in various types of literature covering ecological sustainability. Offered by Biology. Limited to three attempts. Equivalent to EVPP 378.

Mason Core: Capstone

Specialized Designation: Green Leaf Focused Course, Research/ Scholarship Intensive

Recommended Prerequisite: BIOL 308 or permission of instructor.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 382: *Introduction to Virology.* 3 credits.
An introduction to the fundamental nature of viruses, their classification, morphology, chemistry and their role in human disease. Offered by Biology. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (BIOL 305[C], L305 or 305[XS]) or (BIOL L246, 246[C] or 246[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 385: *Biotechnology and Genetic Engineering.* 3 credits.
Emphasizes theory and applications, including significance and societal implications of biotechnology applied to medicine, agriculture, and environment. Offered by Biology. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: BIOL 311[C], L311 or 311[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

BIOL 401: *Phage Discovery.* 3 credits.
Discovery-based undergraduate research course where students purify phage from soil, use a variety of microbiology techniques, annotate phage genomes and use bioinformatics analyses. Offered by Biology. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: ((BIOL 305[C], L305, 305[XS], 246[C] or 246[XS]) and (BIOL 306[C], L306 or 306[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 402: *Applied and Industrial Microbiology.* 3 credits.
Biology of microorganisms of ecological and industrial significance. Includes food production, spoilage and preservation, fermentation technology, waste disposal, water purification, biodeterioration, and decomposition. Offered by Biology. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: BIOL 305[C], L305, 305[XS], 246[C], L246 or 246[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 403: *Techniques in Applied and Industrial Microbiology.* 1 credit.
Lab exercises illustrate basic and applied methodologies, including isolation of commercially useful strains. Discusses production and purification of industrial products. Offered by Biology. Limited to three attempts.

Recommended Prerequisite: BIOL 213 or U213, BIOL 305 or L305, BIOL 306 or L306; CHEM 211/213, CHEM 212/214; BIOL 402 (concurrent enrollment is permitted) or permission of instructor.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 404: *Medical Microbiology.* 3 credits.
Basic principles of infectious diseases caused by bacteria and viruses. Discusses genetics and molecular mechanisms of pathogenicity. Offered by Biology. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (BIOL 305[C], L305 or 305[XS]) or (BIOL 246[C], L246 or 246[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 405: *Microbial Genetics.* 4 credits.
Study of structure and function of bacterial DNA, emphasizing mechanisms of gene transfer, expression and regulation. Introduces DNA repair, mutation, and life cycles of bacteriophage. Offered by Biology. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (BIOL 305[C], L305 or 305[XS]) and (BIOL 306[C], L306 or 306[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 407: *Microbial Diversity.* 4 credits.
Studies effect of microorganisms on ecological and medical phenomena. Stresses evolution of microbial species, biochemical cycling, and species interactions. Laboratory stresses use of cultural, biochemical, and phylogenetic methods to study microbial isolation, metabolism, and identification. Offered by Biology. Limited to three attempts.

Specialized Designation: Topic Varies

Registration Restrictions:
Required Prerequisites: (BIOL 305[C], L305 or 305[XS]) and (BIOL 306[C], L306 or 306[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 408: *Mushrooms, Molds and Society.* 3 credits.
Provides a modern, comprehensive knowledge of fungal biology including classification, phylogeny, structure, physiology/metabolism, growth and development, genetics, industrial applications including biotechnology, ecological roles including pathogenic interactions with plants, animals, and man. Offered by Biology. Limited to three attempts. Equivalent to EVPP 408.

Recommended Prerequisite: EVPP 108 and 109 and 112 and 113 or EVPP 210 or BIOL 213.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 409: *Medical Mycology.* 3 credits.
Provides the student with current knowledge of both the medical and microbiological aspects of fungal diseases in humans, including the etiologic agents, geographic distribution, epidemiology, transmission, determinants of pathogenicity, laboratory detection, and therapy associated with the major human mycoses. Offered by Biology. Limited to three attempts. Equivalent to EVPP 409.

Recommended Prerequisite: BIOL 213 or U213 with a grade of C or better.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 411: *Advanced General Genetics.* 3 credits.
Topics include quantitative genetics, extrachromosomal inheritance, and special techniques such as mutation screening, developmental genetics, cancer genetics, behavior genetics, evolutionary genetics, and ethics of genetic technology. Offered by Biology. Limited to three attempts.

Recommended Prerequisite: C or better in BIOL 311 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 412: *Phage Genomics.* 3 credits.
Bacteriophages, viruses that infect bacteria, are the most abundant organisms in the biosphere. This course explores the genomes of mycobacteriophages (bacteriophages that infect mycobacteria) using bioinformatics tools. In this course, two mycobacteriophage genomes will be annotated and compared to other sequenced mycobacteriophage genomes. Bioinformatics tools will be used to learn more about bacteriophage protein function, immunity and genome structure. Each student in the course will formulate a comparative genomics question and use learned bioinformatics techniques to answer that question, The results of these experiments will be conveyed in the form of a research paper and oral presentation. This class is designed to give students the opportunity to actively participate in the process of scholarship and research in addition to learning valuable genomic and bioinformatics skills. Offered by Biology. Limited to three attempts.

Recommended Prerequisite: BIOL 311 or equivalent or permission of instructor.

Schedule Type: Research

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 413: *Histotechniques.* 3 credits.
Introduces theory and methods for the preparation of tissue samples from animal or plant specimens for examination with light or electron microscopy. Offered by Biology. Limited to three attempts.

Recommended Prerequisite: BIOL 311 and permission of instructor. May not be combined with BIOL 572 for credit. For Biology majors only. Undergraduate courses in biology and chemistry or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 417: *Selected Topics in Molecular and Cellular Biology.* 1-4 credits.
Study of current topics in molecular and cellular biology. Notes: Topics vary. Offered by Biology. May be repeated within the term for a maximum 8 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: BIOL 311 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 418: *Current Topics in Microbiology.* 3 credits.
Study of current topics in microbiology. Notes: Topics vary. Offered by Biology. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: BIOL 305 or BIOL L305.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 420: *Vaccines.* 3 credits.
Immunology, virology, and microbiology of vaccines. Classical and new generation vaccine practices and strategies. Current and future vaccines. Offered by Biology. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (BIOL 305[C], 305[XS], 246[C], 246[XS], L305 or L246).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 421: *Genetics of Human Diseases.* 3 credits.
Emphasizes strategies used for identification of genes involved in human genetic diseases. Both monogenic and complex human genetic diseases, as well as principles of genetic screening and counseling, will be presented. Offered by Biology. Limited to three attempts.

Recommended Prerequisite: BIOL 311.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 422: *Stem Cell Biology and Regenerative Medicine.* 3 credits.
A broad overview of the biological principles governing stem cell populations. The functional roles stem cells play in regulating normal development and contributing to disease-state pathologies. An examination of the therapeutic potential of stem cells through "regenerative medicine." Offered by Biology. Limited to three attempts.

Recommended Prerequisite: BIOL 311.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 423: *Biology of Obesity and Weight Loss.* 3 credits.
This course covers the causes and consequences of obesity and weight loss, including the general epidemiology and pathology of co-morbid

conditions associated with obesity. The relative contributions of genetic and environmental factors influencing weight gain will be covered as well as recent trends in obesity research. Offered by Biology. Limited to three attempts.

Recommended Prerequisite: BIOL 213 or U213 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 425: *Human Physiology.* 3 credits.
Organ system approach to study of homeostasis, including cardiovascular, respiratory, renal, digestive, endocrine, and nervous system functions. Offered by Biology. Limited to three attempts.

Recommended Prerequisite: BIOL 213 or U213 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 426: *Mechanisms of Aging.* 3 credits.
A course where students will demonstrate knowledge of cellular and molecular mechanisms which drive the systematic changes that result in aging, and to understand the overall biological processes involved in complex biological systems. Offered by Biology. Limited to three attempts.

Recommended Prerequisite: BIOL 213 or U213 and BIOL 311 or L311 or equivalent; or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 427: *Disease Ecology and Conservation.* 3 credits.
Presents the trans-disciplinary discipline of conservation medicine, the study of relationships between organism and ecosystem health and environmental conditions. Topics include infectious and noninfectious diseases, pathogens, processes, and impacts on human, biotic, and ecosystem health, and how to address the consequences of diseases to populations and ecological communities. Notes: This course will co-meet with EVPP 527. Undergraduate students in this course will have separate (shorter) reading and writing assignments and will be graded according to a different rubric than the graduate students. Offered by Biology. Limited to three attempts. Equivalent to EVPP 427.

Recommended Prerequisite: 60 credits and BIOL 213 or BIOL/EVPP 305/306 and BIOL 308 OR EVPP 301, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 429: *Biological Foundations of Pharmacology.* 3 credits.
An introduction to the basics of pharmacology that focuses on the human systems of the body and how drugs modulate these systems in order to maintain homeostasis. Disease states will be incorporated in the study of the major drug classes to strengthen the students understanding regarding medication use. Offered by Biology. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (((BIOL 124[C] or 124[XS]) and (BIOL 125[C] or 125[XS])) or ((BIOL 430[C] or 430[XS]) and (BIOL 431[C] or 431[XS])) or (BIOL 483[C], 483[XS], CHEM 463[C] or 463[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 430: *Advanced Human Anatomy and Physiology I.* 4 credits.
Organ system approach to studying the structure and function of the human organism and maintenance of homeostasis. Detailed discussion of anatomical structures and their functions of the endocrine, nervous, muscular, skeletal, and integumentary systems following introduction to the cellular and tissue levels of organization. Topics also include selected pathology for each organ system; current therapeutic interventions are addressed. Notes: Biology 124 is not approved for Biology Majors. Offered by Biology. Limited to three attempts.

Recommended Prerequisite: 60 credits.

Registration Restrictions:
Required Prerequisites: BIOL 213[C] or 213[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 431: *Advanced Human Anatomy and Physiology II.* 4 credits.
Continued study of the structure and function of the human organism and maintenance of homeostasis. Detailed discussion of anatomical structures and their functions of the cardiovascular, lymphatic, respiratory, urinary, digestive and reproductive organ systems. Topics also include selected disorders for each organ system to illustrate disruption of homeostasis. Offered by Biology. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (BIOL 430[C] or 430[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 432: *Clinical Applications in Human Physiology.* 4 credits.
Select organ systems will be discussed relative to their physiology, pathology and pharmacology. Case study presentations will be an integral part of the class. Offered by Biology. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (((BIOL 124[C] or 124[XS]) and (BIOL 125[C] or 125[XS])) or ((BIOL 430[C] or 430[XS]) and BIOL 431[C])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 433: *Selected Topics in Plant Biology.* 1-4 credits.
Lecture or field course in botany. Topic varies with instructor's specialty. Offered by Biology. May be repeated within the degree for a maximum 8 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: BIOL 310 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 435: *Selected Topics in Biology.* 4 credits.
Topics vary with instructor's specialty. Offered by Biology. May be repeated within the degree for a maximum 8 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: Permission of instructor.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 437: *Orinthology.* 4 credits.
Study of evolution, systematics, physiology, ecology and behavior of birds, emphasizing field work. Offered by Biology. Limited to three attempts.

Recommended Prerequisite: BIOL 308 or equivalent or permission of instructor.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 438: *Mammalogy.* 4 credits.
Study of evolution, systematics, physiology, ecology and behavior of mammals,emphasizing field work. Offered by Biology. Limited to three attempts.

Recommended Prerequisite: BIOL 308 or equivalent or permission of instructor.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 439: *Herpetology.* 4 credits.
Study of evolution, systematics, physiology, ecology and behavior of reptiles, emphasizing field work. Offered by Biology. Limited to three attempts.

Recommended Prerequisite: BIOL 308 or equivalent or permission of instructor.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 440: *Field Biology.* 0-4 credits.
Directed field studies emphasizing ecology and behavior. Topics vary but include design of field manipulations, data collection and analysis, and introduction to organisms of study site. May include field trips. Notes: Students bear cost of required field trips. May be repeated with permission of Biology Program. Total limit of 4 credits. This course does not satisfy requirements of the BA degree or BS degree, which state that students must complete at least one (BA degree) or two (BS degree) upper division courses that include a laboratory. Offered by Biology. May be repeated within the degree for a maximum 4 credits. Equivalent to EVPP 440.

Recommended Prerequisite: BIOL 308 or BIOL 300 or permission of instructor.

Schedule Type: Fieldwork

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 442: *Urban Ecosystems and Processes.* 4 credits.
Overview and introduction of challenges and opportunities that urban environments present to the plants and animals inhabiting cities and the ways that those organisms and entire ecosystems respond. Ecosystem ecology for engineered ecosystems along with reviews om urban metabolism, energy budgets, water cycles, and soil ecology taught. Creating and restoring green infrastructures is discussed. Note: the course will involve students to design and conduct a small-scale green infrastructure experiment/project on the campus. Offered by Biology. Limited to three attempts. Equivalent to EVPP 442.

Recommended Prerequisite: CHEM 211 and CHEM 213 and MATH 113 or equivalent and BIOL 308 and PHYS 243 or permission of instructor.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 443: *Tropical Ecology.* 3 credits.
An introduction to the abiotic and biotic factors that define tropical habitats. The course emphasizes evolution, taxonomic diversity, and plant-animal interactions in terrestrial tropic forests. Offered by Biology. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (BIOL 308[C], 308[XS], 300[C] or 300[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 444: *Tropical Ecology Laboratory.* 1 credit.
An introduction to field-based scientific research. This course focuses on methods for testing hypotheses related to tropical plant and animal biology. Offered by Biology. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (BIOL 308[C], 308[XS], 300[C] or 300[XS]).
[C] Requires minimum grade of C.

XS Requires minimum grade of XS.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 446: *Ecological and Evolutionary Physiology.* 3 credits.
Physiological responses organisms use to survive and reproduce successfully in their ever-changing environments. Responses to temperature, salinity, low oxygen levels and diet will be covered from a phylogenetic and energetic perspective. Offered by Biology. Limited to three attempts.

Recommended Prerequisite: BIOL 308 or BIOL 300, and BIOL 326 or BIOL 430 and BIOL 431, or permission of instructor.

Registration Restrictions:
Enrollment is limited to students with a major in Biology.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 449: *Marine Ecology.* 3 credits.
Plants and animals of marine environments and physical and chemical conditions that affect their existence. Offered by Biology. Limited to three attempts. Equivalent to EVPP 449.

Recommended Prerequisite: BIOL 308 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 450: *Marine Conservation.* 3 credits.
Provides an overview of threats to the marine environment, and discusses the scientific, socioeconomic, and political issues behind marine conservation. covers categories of marine pollutants (chemical, biological, and physical contaminants) and their impacts on the marine ecosystem, as well as impacts on humans (health, social, and economic), threats to key marine species (e.g., coral, sharks, turtles, and marine mammals) and initiatives and laws developed to reduce these threats. Scientific and socioeconomic problems that hinder sustainable fisheries management and the science and policy behind the global warming debate are also discussed. The course also provides an overview of marine environmental law and policy issues related to marine conservation policy. Offered by Biology. Limited to three attempts. Equivalent to EVPP 421.

Recommended Prerequisite: BIOL 309 or equivalent, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 452: *Immunology.* 3 credits.
Topics include structure and function of immunoglobulins, role of cell-mediated immunity, protective role of immune system, and disease and injury related to malfunctions of immune system. Offered by Biology. Limited to three attempts.

Recommended Prerequisite: BIOL 311.

Registration Restrictions:
Required Prerequisites: (BIOL 213[C] or 213[XS]) and (BIOL 305[C], L305, 305[XS], 246[C] or 246[XS]).
C Requires minimum grade of C.
XS Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 453: *Immunology Laboratory.* 1 credit.
Techniques relevant to BIOL 452, including enzyme-linked immunoabsorbant assay, immunodiffusion, protein electrophoresis, and immune fixation. Offered by Biology. Limited to three attempts.

Recommended Prerequisite: BIOL 452 (concurrent enrollment is also permitted).

Registration Restrictions:
Required Prerequisites: (BIOL 306[C], 306[XS] or L306).
C Requires minimum grade of C.
XS Requires minimum grade of XS.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 454: *Marine Mammal Biology and Conservation.* 3 credits.
Covers the evolution, biology, ecology, and behavior of marine mammals from polar bears and sea otters to whales and dolphins. Marine mammal conservation and policy is also a major component of the course; several, lecture sessions are devoted to the issue of whaling, threats to marine mammal populations, and recent conservation issues such as marine mammals and noise pollution. The course also includes a number of guest lectures from a variety of international marine mammal experts. Offered by Biology. Limited to three attempts. Equivalent to EVPP 419.

Recommended Prerequisite: BIOL 309 or BIOL 449 or equivalent; or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 455: *Marine Mammal Biology and Conservation Field Course.* 1 credit.
Provides laboratory, seminar sessions and field work to accompany BIOL 454-001 - marine mammal biology and conservation. Field work includes several day-long boat trips. May take place in the US or abroad. The two week residential field course takes place in Scotland at the University (of London) Marine Biological Station, which is equipped with boats and laboratories. Offered by Biology. Limited to three attempts. Equivalent to EVPP 420.

Recommended Corequisite: EVPP 419 or 454

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 457: *Reproductive Strategies.* 3 credits.
Introduction to the research and evolutionary theory of sex and reproduction. Covers topics from the evolution of sex and gender to the evolution of complex reproductive strategies involving behaviors such as mate recognition, courtship displays, territoriality, polygamy, and offspring care. Lectures focus primarily on multi-cellular animals but also include discussions of unicellular prokaryotes and eukaryotes as well as plants. Offered by Biology. Limited to three attempts.

Recommended Prerequisite: BIOL 307 or 308 and 60 hours.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 459: *Fungi and Ecosystems.* 3 credits.
Considers impact of fungi on ecosystems in terms of biogeochemical cycling, primary and secondary production, and regulating community structure and populations of individual species through their activities as symbionts and parasites. Discusses role of fungi in ameliorating pollutants produced by anthropogenic activities. Offered by Biology. Limited to three attempts. Equivalent to BIOL 559, EVPP 551.

Recommended Prerequisite: BIOL 308 or BIOL 300 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 460: *Infectious Diseases Wildlife.* 3 credits.
During this course, diseases of wildlife will be examined with emphasis on causes and mechanisms, pathobiology, ecology and epidemiology and population significance. We will explore methods of diagnosis, control, prevention and outbreak investigation as they apply to management and conservation of wildlife populations. Also, diseases crossing species barriers will be examined. Offered by Biology. Limited to three attempts. Equivalent to EVPP 460.

Recommended Prerequisite: 60 credits and BIOL 308 or EVPP 301 or permission of the instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 465: *Histology.* 4 credits.
Microscopic structure of animal tissues and organs, with emphasis on vertebrates. Offered by Biology. Limited to three attempts.

Recommended Prerequisite: BIOL 308 or 300.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 468: *Vertebrate Natural History.* 4 credits.
Introduces vertebrates with emphasis on systematic, evolution, life history, behavior and ecology. Laboratory emphasis on identification, taxonomy, and natural history of local vertebrates. Offered by Biology. Limited to three attempts.

Recommended Prerequisite: BIOL 308 or permission of the instructor.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 470: *Dinosaur Biology.* 3 credits.
Introduction to the evolution, diversity, and biology of the dinosaurs and their descendants. Emphasis on how current biological knowledge is used to estimate and inter the morphology, physiology and ecology of these extinct animals. Offered by Biology. Limited to three attempts.

Recommended Prerequisite: BIOL 308 or BIOL 300 or permission of instructor.

Schedule Type: Lecture, Recitation

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 471: *Evolution.* 3 credits.
Process of evolution emphasizing role of genetics, properties of populations, and population differentiations. Offered by Biology. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (BIOL 308[C] or 308[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 472: *Introductory Animal Behavior.* 3 credits.
Study of mechanisms, functions, and evolution of behavior. Offered by Biology. Limited to three attempts.

Recommended Prerequisite: BIOL 308 or BIOL 300 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 473: *Introductory Laboratory in Animal Behavior.* 1 credit.
Field or laboratory study in animal behavior with emphasis on mechanisms, functions, and evolution of behavior. Stresses experimental design and analysis of data. Writing-intensive laboratory. Offered by Biology. Limited to three attempts.

Recommended Prerequisite: BIOL 472 (concurrent enrollment also permitted).

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 480: *The Diversity of Fishes.* 3 credits.
This course delves into the biology and ecology of fishes. Subjects of this class include fish anatomy, taxonomy, evolution, habitat adaptations, community dynamics, and ecosystem interactions. The course will also

touch on human impacts on fishes, and conservation. Offered by Biology. Limited to three attempts.

Recommended Prerequisite: BIOL 309, BIOL 300, and BIOL 350/ EVPP 350.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 482: *Introduction to Molecular Genetics.* 3 credits.
Basic concepts of structure and function of genetic material at molecular level. Offered by Biology. Limited to three attempts.

Recommended Prerequisite: BIOL 213 or U213, BIOL 311 or L311 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 483: *General Biochemistry.* 4 credits.
Structure and function of proteins, carbohydrates, and lipids. Enzymology, and metabolism and its control. Offered by Biology. Limited to three attempts. Equivalent to CHEM 463.

Registration Restrictions:
Required Prerequisites: (BIOL 213[C], U213[C] or 213[XS]) and (CHEM 313[C], L313[C] or 313[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 484: *Cell Signaling and Disease.* 3 credits.
Expands on the key concepts of eukaryotic cell biology including the cell cycle, the cytoskeleton, celluar transport, the membrane and protein trafficking and cellular signaling. Offered by Biology. Limited to three attempts.

Recommended Prerequisite: BIOL 483 or permission of instructor.

Registration Restrictions:
Required Prerequisites: (BIOL 311[C] or 311[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 485: *Cell Signaling Laboratory.* 2-3 credits.
Introduction research method application via techniques of cellular and molecular biology including: tissue culture, western blotting, PCR, microscopy, cellular transfection and transformation. Offered by Biology. Limited to three attempts. Equivalent to BIOL 585.

Recommended Corequisite: BIOL 484 or permission of instructor.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 486: *Molecular Biology and Biotechnology Laboratory.* 2 credits.
Introduction to theory, techniques, and practices used in modern molecular biotechnology laboratories. Offered by Biology. Limited to three attempts.

Recommended Prerequisite: BIOL 385 or BIOL 482.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 489: *Teaching Practicum.* 1-3 credits.
Student gains teaching experience in a lecture, laboratory or field environment under the supervision of a faculty member. Student responsibilities may include a lecturing component, but may also include lab preparation, design of course materials, tutoring and grading. Course may be repeated once. Offered by Biology. May be repeated within the degree for a maximum 3 credits.

Recommended Prerequisite: BIOL 213 or U213, 311 or L311, 60 credit hours and permission of instructor, course coordinator (where applicable) and Program Director.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 491: *Selected Topics in Biology Laboratory Techniques.* 1-2 credits.
Experimental studies using current methods in biology. Provides training for research in various aspects of biology. Topics will depend on the professor teaching the class. The course may be repeated only if the topic is different. Offered by Biology. May be repeated within the degree for a maximum 4 credits.

Specialized Designation: Research/Scholarship Intensive, Topic Varies

Registration Restrictions:
Required Prerequisites: ((BIOL 213[C], 213[XS] or U213) and (BIOL 311[C], 311[XS] or L311) and (BIOL 305[C], L305, 305[XS], 246[XS] or 246[C]) and (BIOL 306[C], 306[XS] or L306) and ((CHEM 211[C] or 211[XS]) and (CHEM 213[C] or 213[XS])) and ((CHEM 212[C] or 212[XS]) and (CHEM 214[C] or 214[XS]))).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 492: *Senior Seminar.* 1 credit.
Weekly seminar course dealing with recent advances in biology. Topics selected from recent publications in the field. May be repeated for credit. Offered by Biology. May be repeated within the degree for a maximum 2 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: BIOL 311 and 90 credit hours, or permission of instructor.

Registration Restrictions:

Enrollment is limited to students with a major in Biology.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 493: *Honors Research in Biology.* 1-2 credits.
Laboratory of field investigation under guidance of faculty member. Notes: Total limit for BIOL 493, 495 and 497 is 6 credits toward the 44 credit hours required for the Biology BS degree and only 3 credits toward the 32 hours required for the BA degree. Combined 493, 495 and 497 may not exceed 4 credit hours in any one semester. Offered by Biology. May be repeated within the degree for a maximum 2 credits.

Recommended Prerequisite: Admission to the Biology Honors Program, permission of instructor and Biology Program Director.

Registration Restrictions:
Enrollment is limited to students with a major in Biology.

Enrollment limited to students in the College of Science college.

Schedule Type: Research

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 494: *Honors Seminar in Biology.* 1 credit.
Weekly seminar course dealing with recent advances in biology. Notes: Topics selected from recent publications in field. Offered by Biology. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Acceptance into Biology honors program and permission of instructor.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 495: *Directed Studies in Biology.* 1-2 credits.
Study of a topic not otherwise available to student. May involve reading assignments, tutorials, lectures, papers, presentations, or field study, determined in consultation with instructor. May be taken for 1 to 2 credits and repeated once for a total of 2 credits. Total limit for combination of 495 and 497 is 6 credits toward 44 credits for BS and 3 credits toward 32 credits for BA. This course does not satisfy requirements of the BA degree or BS degree. Offered by Biology. May be repeated within the degree for a maximum 2 credits.

Recommended Prerequisite: Permission of instructor and Biology Program Director.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 497: *Special Problems in Biology.* 1-3 credits.
Lab or field project leading to written report of research. Research and paper completed under instructor's guidance. Notes: Total limit for 495 and 497 combined is 6 credits toward the 44 credits required for BS and 3 credits toward 32 credits for BA. Combined BIOL 493, 495, 497 may not exceed 4 credit hours in any one semester. This course does not satisfy requirements of the BA degree or BS degree, which state that students must complete at least one (BA degree) or two (BS degree) upper division courses that include a laboratory. Offered by Biology. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: 60 credits and permission of instructor and chair.

Schedule Type: Research

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 498: *Research Seminar.* 2 credits.
Seminar discussing current scientific literature and literature related to research project undertaken by student as part of the research semester. Note: Must be enrolled in Biology Research Semester. Registration must be approved by a faculty sponsor and by the Biology Program Director and is limited to students who are enrolled concurrently in BIOL 499. For students in the Biology Honors Program, this course may be used to substitute for one credit of BIOL 494: Honors Seminar in Biology. Offered by Biology. Limited to three attempts.

Specialized Designation: Mason Impact.

Recommended Prerequisite: BIOL 213 or U213, BIOL 214 or 312 or equivalent introductory statistics course, BIOL 311 or L311, CHEM 211/213-212/214; Completion of Biology core recommended.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

BIOL 499: *RS: Research in Biology.* 6-9 credits.
Laboratory or field investigation under faculty guidance. Students will earn 6-9 credits toward the BA or BS degrees in Biology. Note: Must be enrolled in Biology Research Semester. Registration requires successful application and approval by Biology Program and faculty sponsor. Student receiving 9 credits for 499 will not be allowed to use BIOL 440, BIOL495 and/or 497 neither toward the 32 BIOL hours needed for the BA degree, nor toward the 44 BIOL hours needed for the BS degree. This course will satisfy one upper division laboratory requirement for both the BA and BS degrees in Biology. Offered by Biology. Limited to three attempts.

Specialized Designation: Research/Scholarship Intensive

Recommended Prerequisite: BIOL 213 or U213, BIOL 214 or 312 or equivalent introductory statistics course, BIOL 311 or L311, CHEM 211/213-212/214; Completion of Biology core recommended.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

500 Level Courses

BIOL 501: *Microbial Diversity: An Organismal Approach.* 3 credits.
In-depth study of nonpathogenic microbial world, emphasizing detection, enumeration, and classification of microorganisms; their physiological and evolutionary relationships; and biotechnological applications. Offered by School of Systems Biology. May not be repeated for credit.

Recommended Prerequisite: An undergraduate course in microbiology or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOL 502: *Adaptation in Biosystems.* 3 credits.
Biological communication networks adapt and maintain robust function in the face of external stress, challenges or assaults. In order to survive, the cell, and the organism, must create meaning from a complex array of external and internal signals, and make decisions as to how it should respond. This class encompasses a novel integrative life science perspective, namely adaptation, or maladaptation, in the face of constant change. Offered by School of Systems Biology. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOL 506: *Selected Topics in Microbiology.* 1-4 credits.
Topic depends on instructor's specialty. Notes: May be repeated only with permission of department chair. Offered by School of Systems Biology. May be repeated within the degree for a maximum 8 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: BIOL 305 or L305 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOL 507: *Selected Topics in Ecology.* 0-4 credits.
Topic depends on instructor's specialty. Notes: May be repeated only with permission of department chair. Offered by School of Systems Biology. May be repeated within the degree for a maximum 8 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: Course in Ecology and permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOL 508: *Selected Topics in Animal Biology.* 1-4 credits.
Topic depends on instructor's specialty. Offered by School of Systems Biology. May be repeated within the term for a maximum 9 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: BIOL 303 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOL 509: *DNA Analysis of Biological Evidence.* 3 credits.
Historical development of DNA profiling methods, current DNA typing techniques and the ongoing development of new forensic DNA typing methods. Emphasis will be placed on various analytical techniques used in the analysis of forensic evidence. Offered by School of Systems Biology. May not be repeated for credit.

Recommended Prerequisite: BIOL 311 or permission of instructor

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOL 510: *Forensic DNA Analysis Laboratory.* 1 credit.
Provides hands-on experience with the methodologies of forensic DNA analysis. Offered by School of Systems Biology. May not be repeated for credit.

Recommended Prerequisite: BIOL 311

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory

Grading:
This course is graded on the Graduate Regular scale.

BIOL 515: *Developmental Neurobiology.* 3 credits.
Introduction to developmental neurobiology with overview of embryological development of the nervous system. Topics include neural induction, patterning/cell fate specification, and neural circuit assembly together with modern molecular methods for exploring neural development. Offered by School of Systems Biology. May not be repeated for credit.

Recommended Prerequisite: Completion of 60 hours, including PSYC 372 or BIOL 213 or BIOL U213 and BIOL 310.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOL 516: *Mammalian Neurobiology.* 3 credits.
Functional anatomy of mammal brains emphasizing regional and systems neuroanatomy of humans. Correlates with material from clinical neurology, where possible. Laboratory component includes brain dissections and clinical correlations. Offered by School of Systems Biology. May not be repeated for credit. Equivalent to PSYC 531.

Recommended Prerequisite: BIOL 515.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOL 518: *Conservation Biology.* 3 credits.
Introduction to science used to identify species in need of conservation and techniques to manage and protect organisms. Offered by School of Systems Biology. May not be repeated for credit.

Recommended Prerequisite: BIOL 307 and BIOL 311 or equivalent.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOL 527: *Disease Ecology and Conservation.* 3 credits.
Presents the trans-disciplinary discipline of conservation medicine, the study of relationships between organism and ecosystem health and environmental conditions. Topics include infectious and noninfectious diseases, pathogens, processes, and impacts on human, biotic, and ecosystem health, and how to address the consequences of diseases to populations and ecological communities. Notes: This course will co-meet with undergraduate-level students. Undergraduate students in this course will have separate (shorter) reading and writing assignments and will be graded according to a different rubric than the graduate students. Offered by School of Systems Biology. May not be repeated for credit. Equivalent to EVPP 527.

Recommended Prerequisite: Knowledge base covered in BIOL 213 or BIOL/EVPP 305/306 and BIOL 308 OR EVPP 301, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOL 532: *Animal Behavior.* 3 credits.
Ecological aspects of animal behavior. Offered by School of Systems Biology. May not be repeated for credit.

Recommended Prerequisite: BIOL 324 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:

This course is graded on the Graduate Regular scale.

BIOL 533: *Selected Topics in Plant Biology.* 1-4 credits.
Topic depends on instructor's specialty. Notes: May be repeated only with permission of department chair. Offered by School of Systems Biology. May be repeated within the degree for a maximum 8 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: Course in plant biology or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

BIOL 537: *Ornithology.* 4 credits.
Study of evolution, systematics, physiology, ecology, and behavior of birds, emphasizing field work. Offered by School of Systems Biology. May not be repeated for credit.

Recommended Prerequisite: Course in Ecology, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOL 538: *Mammalogy.* 4 credits.
Study of evolution, systematics, physiology, ecology, and behavior of mammals, emphasizing field work. Offered by School of Systems Biology. May not be repeated for credit. Equivalent to EVPP 538.

Recommended Prerequisite: Course in ecology or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOL 539: *Herpetology.* 4 credits.
Study of evolution, systematics, physiology, ecology, and behavior of amphibians and reptiles, emphasizing field work. Offered by School of Systems Biology. May not be repeated for credit.

Recommended Prerequisite: Course in ecology or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOL 543: *Tropical Ecosystems.* 4 credits.
Terrestrial, aquatic, and marine ecosystems in tropics, emphasizing plant communities, plant-animal interactions, and role of humans in the tropics. Notes: Field trip to tropics required as part of laboratory. Offered by School of Systems Biology. May not be repeated for credit. Equivalent to EVPP 543.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOL 550: *Waterscape Ecology and Management.* 3 credits.
Field and laboratory approaches to freshwater ecology with emphasis on study design, sampling methods, laboratory and data analysis, and report writing. Offered by School of Systems Biology. May not be repeated for credit. Equivalent to EVPP 550.

Recommended Prerequisite: General Chemistry and a course in ecology.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOL 553: *Advanced Topics in Immunology.* 3 credits.
Comprehensive study of immunologic mechanisms as they pertain to immunologic diseases and transplantation. Offered by School of Systems Biology. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: BIOL 452 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOL 555: *Lab in Waterscape Ecology.* 1 credit.
Offered by School of Systems Biology. May not be repeated for credit. Equivalent to EVPP 555.

Recommended Prerequisite: BIOL 550 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory

Grading:
This course is graded on the Graduate Regular scale.

BIOL 556: *Advanced Topics in Microbial Physiology and Metabolism.* 3 credits.
Comprehensive study of microorganisms including growth, nutrition, transport, autotrophic and heterotrophic metabolism, regulation, and differentiation. Offered by School of Systems Biology. May not be repeated for credit.

Specialized Designation: Topic Varies

Recommended Prerequisite: BIOL 305 or L305 and 306 or L306 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOL 559: *Fungi and Ecosystems.* 3 credits.
Considers impact of fungi on ecosystems in terms of their effects on biogeochemical cycling, primary and secondary production, and regulating community structure and populations of individual species through their activities as symbionts and parasites. Discusses role of fungi in ameliorating pollutants produced by anthropogenic activities. Offered by School of Systems Biology. May not be repeated for credit. Equivalent to BIOL 459.

Recommended Prerequisite: BIOL 304 and/or a course in microbiology or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOL 560: *Infectious Diseases of Wildlife.* 3 credits.
During this course, diseases of wildlife will be examined with emphasis on causes and mechanisms, pathobiology, ecology and epidemiology and population significance. We will explore methods of diagnosis, control, prevention and outbreak investigation as they apply to management and conservation of wildlife populations. Also, diseases crossing species barriers will be examined. Offered by School of Systems Biology. May not be repeated for credit. Equivalent to EVPP 560.

Recommended Prerequisite: Courses on evolution, ecology, zoology and conservation biology or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOL 561: *Comparative Animal Physiology.* 3 credits.
Detailed study of selected physiological systems of invertebrates and vertebrates, emphasizing current research. Offered by School of Systems Biology. May not be repeated for credit.

Recommended Prerequisite: BIOL 326 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOL 562: *Personalized Medicine.* 3 credits.
Covers basic principles of molecular medicine, including the definition and the need for individualized diagnostics and therapeutics. Students will study the application of proteomics, genomics and bioinformatics as they relate to individualized therapy, and review the major advances in these fields which have relevance to molecular medicine of the future. Offered by School of Systems Biology. May not be repeated for credit.

Recommended Prerequisite: Advanced undergraduate coursework in Genetics and Molecular Cell Biology.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduation Deadline Extended, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOL 563: *Virology.* 3 credits.
Fundamental concepts of nature of viruses, virus classification, cultivation, and biochemistry. Emphasizes bacteriophage and animal viruses. Offered by School of Systems Biology. May not be repeated for credit.

Recommended Prerequisite: BIOL 482 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOL 564: *Techniques in Virology.* 2 credits.
Basic techniques of animal virus propagation, isolation, and quantitation. Offered by School of Systems Biology. May not be repeated for credit.

Recommended Prerequisite: BIOL 563 (concurrent enrollment is also permitted) or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOL 566: *Cancer Genomics.* 3 credits.
Review of modern concepts in cancer biology including taxonomy of human tumors, common cancer syndromes, and genome instability. Genetic and molecular studies of tumor cell proliferation, migration, invasion, and death. Offered by School of Systems Biology. May not be repeated for credit.

Recommended Prerequisite: A course in genetics or biochemistry.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOL 568: *Advanced Topics in Molecular Genetics.* 3 credits.
Comprehensive study of regulatory mechanisms controlling gene expression in viruses, prokaryotes, and eukaryotes, emphasizing current research. Offered by School of Systems Biology. May be repeated within the degree for a maximum 6 credits. Equivalent to BIOL 668.

Specialized Designation: Topic Varies

Recommended Prerequisite: BIOL 482 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOL 572: *Human Genetics.* 3 credits.
Inheritance of humans emphasizing current problems, including genetic control of metabolic diseases, effects of radiation and chemical agents in environment, and directed genetic change. Offered by School of Systems Biology. May not be repeated for credit.

Recommended Prerequisite: BIOL 311 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOL 573: *Developmental Genetics.* 3 credits.
Genetic approaches to problem of eukaryotic development, emphasizing current research on regulation of gene enzyme systems. Offered by School of Systems Biology. May not be repeated for credit.

Recommended Prerequisite: BIOL 311 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOL 574: *Population Genetics.* 3 credits.
Genetic structure and dynamics of populations, both real and ideal. Offered by School of Systems Biology. May not be repeated for credit.

Recommended Prerequisite: BIOL 308 and 311, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOL 575: *Selected Topics in Genetics.* 1-4 credits.
Different topics in different years, including molecular, developmental, physiological, and classical genetics, emphasizing current problems and research. Notes: May be repeated once with permission of department chair. Offered by School of Systems Biology. May be repeated within the term for a maximum 8 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: BIOL 311, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOL 577: *Biogeochemistry: A Global Perspective.* 3 credits.
Structure and function of ecosystems, their interactions as components of landscapes, and contributions to global environment. Emphasizes biogeochemical cycles of natural, disturbed, and managed ecosystems, and their integration at landscape and global level as related to current ecological problems such as transfer of nonpoint source pollutants, atmospheric deposition, stratospheric ozone depletion, and global change. Offered by School of Systems Biology. May not be repeated for credit.

Recommended Prerequisite: BIOL 307, CHEM 211, 212 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOL 578: *Mutation, DNA Repair, and Environmental Contamination.* 3 credits.
Overview of relationship between environmental contamination and genetic damage. Covers types of contamination that result in mutations, and molecular mechanisms of DNA damage and repair. Offered by School of Systems Biology. May not be repeated for credit.

Recommended Prerequisite: BIOL 307 and 311.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOL 579: *Molecular Evolution and Conservation Genetics.* 3 credits.
Evolution of genes and gene families at molecular level, including gene duplication and divergence, positive and negative selection, genetic drift, and molecular clocks. Also includes selected applications in conservation

genetics, such as molecular phylogenetics and estimates of population size. Offered by School of Systems Biology. May not be repeated for credit.

Recommended Prerequisite: BIOL 311.

Recommended Corequisite: BIOL 471, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOL 580: *Computer Applications for the Life Sciences.* 3 credits.
Studies computer use in biological sciences. Combines lectures, supervised exercises on mainframe and microcomputers. Students present seminars on advanced application and complete project using computers to fulfill a major assignment associated with another course or employment. Offered by School of Systems Biology. May not be repeated for credit.

Recommended Prerequisite: 12 hours of biology and one year of college mathematics, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOL 581: *Estuarine and Coastal Ecology.* 3 credits.
Emphasizes marine biology of estuarine and coastal habitats of Chesapeake Bay region, and factors affecting distribution and abundance of organisms. Offered by School of Systems Biology. May not be repeated for credit. Equivalent to EVPP 581.

Recommended Prerequisite: Course in ecology and permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOL 582: *Estuarine and Coastal Ecology Laboratory.* 1 credit.
Continues EVPP 546/BIOL 546 as the laboratory section focusing on the approach and methods of estuarine research, including analysis and communication of results. Offered by School of Systems Biology. May not be repeated for credit. Equivalent to EVPP 582.

Recommended Corequisite: BIOL 581 or EVPP 581.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory

Grading:
This course is graded on the Graduate Regular scale.

BIOL 583: *General Biochemistry.* 4 credits.
Structure and function of proteins, carbohydrates and lipids, enzymology, and metabolism and its controls. Emphasizes chemistry of nitrogen compounds. Offered by School of Systems Biology. May not be repeated for credit. Equivalent to BIOL 483.

Recommended Prerequisite: BIOL 213 or BIOL U213, CHEM 313 or CHEM L313, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOL 585: *Eukaryotic Cell Biology Laboratory.* 1-2 credits.
Selected topics of laboratory procedures used in the study of eukaryotic cells. Notes: May be repeated one time with permission of program director. Offered by School of Systems Biology. May not be repeated for credit. Equivalent to BIOL 485.

Recommended Prerequisite: BIOL 484 or BIOL 682 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory

Grading:
This course is graded on the Graduate Regular scale.

BIOL 589: *Teaching Practicum.* 1 credit.
Experience teaching biology in laboratory or in field under supervision of faculty member. Notes: Undergraduate assists instructor. Offered by School of Systems Biology. May not be repeated for credit.

Recommended Prerequisite: Permission of instructor, chair, and course coordinator.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Regular scale.

BIOL 591: *Special Topics.* 1-6 credits.
Offered by School of Systems Biology. May be repeated within the degree.

Specialized Designation: Topic Varies

Recommended Prerequisite: Permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

600 Level Courses

BIOL 607: *Fundamentals of Ecology.* 3 credits.
Overview of concepts in physiological, population, community, and ecosystem ecology. Restricted to graduate students with little or no background in ecology. Offered by School of Systems Biology. May not be repeated for credit. Equivalent to EVPP 607.

Recommended Prerequisite: Permission of department.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOL 608: *Topics in Biology.* 1-4 credits.
In-service course to strengthen and update teacher's knowledge of biology. Topics include organismal biology, cell biology, ecology, microbiology, or genetics. Notes: Not available for credit toward MS in biology, or PhD in environmental science and public policy. May be repeated for credit with permission of department chair. Offered by School of Systems Biology. May be repeated within the degree for a maximum 12 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: Employment or anticipated employment as a science teacher.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOL 610: *Bioremediation: Theory and Applications.* 3 credits.
Provides basis for understanding proper application of bioremedial technologies to treatment for hazardous wastes. Includes evaluation of data to determine successful treatment. Offered by School of Systems Biology. May not be repeated for credit. Equivalent to EVPP 610.

Recommended Prerequisite: Course in microbiology and either organic chemistry or microbial physiology or equivalent or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOL 611: *Techniques in Environmental Microbiology.* 2 credits.
Laboratory exercises illustrate techniques to demonstrate microbial degradation, detection of microbes, isolation, and evaluation of physiological and genetic characteristics. Notes: Open first to those enrolled in BIOL 610. Offered by School of Systems Biology. May not be repeated for credit.

Recommended Prerequisite: A laboratory course in microbiology or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory

Grading:
This course is graded on the Graduate Regular scale.

BIOL 643: *Microbial Ecology.* 4 credits.
Study of relationships between microorganisms and their natural environment, and methodology for observing their natural environment and biochemical activities in that environment. Offered by School of Systems Biology. May not be repeated for credit. Equivalent to EVPP 643.

Recommended Prerequisite: Course in microbiology or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOL 644: *Wetland Ecology and Management.* 4 credits.
Offered by School of Systems Biology. May not be repeated for credit.

Recommended Prerequisite: CHEM 211, 212, BIOL 307, PHYS 106 and 107 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOL 645: *Freshwater Ecology.* 3 credits.
Offered by School of Systems Biology. May not be repeated for credit.

Recommended Prerequisite: EVPP 550 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOL 648: *Population Ecology.* 3 credits.
Survey of ecological models and theory. Topics include population growth and regulation; competition; predator-prey, herbivore-plant, and parasite-host interactions; mutualism; and metapopulation ecology. Offered by School of Systems Biology. May not be repeated for credit. Equivalent to EVPP 648.

Recommended Prerequisite: Course in ecology or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOL 649: *Biological Resource Management.* 3 credits.
Applies modern ecological theories and methods to biological resource management in developing and developed countries. Explores problems in achieving optimum productivity of specific resources and application of systems analysis. Offered by School of Systems Biology. May not be repeated for credit.

Recommended Prerequisite: Course in ecology, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOL 650: *Environment Analysis and Modeling.* 4 credits.
Offered by School of Systems Biology. May not be repeated for credit. Equivalent to EVPP 650.

Recommended Prerequisite: 8 hours of ecology or permission of instructor.

Registration Restrictions:

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOL 665: *Environmental Hazards to Human Health.* 3 credits.
Health effects of chemical contaminants of air, water, and food resulting from industrialized society. Includes identifying, evaluating, and controlling hazards. Offered by School of Systems Biology. May not be repeated for credit.

Recommended Prerequisite: Courses in animal physiology and organic chemistry, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOL 666: *Human Genetics Concepts for Health Care.* 3 credits.
Principles of genetically determined diseases with emphasis on clinical aspects of these diseases, genetic counseling, and laboratory methods used in human genetics. Extended studies students preparing to enter medical or dental school are welcome. Notes: Course in cell or molecular biology. Not available to students who have taken BIOL 572. Offered by School of Systems Biology. May not be repeated for credit.

Recommended Prerequisite: BS degree or enrollment in accelerated MS program. Course in cell or molecular biology.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOL 667: *Signal Transduction in Cancer.* 3 credits.
Principles of signal transduction in cancer with an emphasis on their biological and clinical implications. The course will explore the role of different signaling pathways in modulating inter and intra-cellular communication, tumor development, and therapeutic interventions. Offered by School of Systems Biology. May not be repeated for credit.

Recommended Prerequisite: At least one Cell or Molecular Biology undergraduate course, or BIOL 566 Cancer Biology, or BIOL 682 Advanced Eukaryotic Cell Biology.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOL 668: *Advanced Techniques in Molecular Biology.* 4 credits.
Experimental studies using current methods for purification and characterization of biologically important compounds. Provides training for research in molecular biology. Offered by School of Systems Biology. May not be repeated for credit.

Recommended Prerequisite: BIOL 568 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOL 669: *Pathogenic Microbiology.* 3 credits.
Molecular mechanisms of bacterial pathogenicity and immune response in infectious diseases. Offered by School of Systems Biology. May not be repeated for credit.

Recommended Prerequisite: BIOL 682 or BIOL 744 with grade of B or higher.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOL 675: *Aerosol Biology.* 4 credits.
Provides students with familiarity with the state of the art aerosol equipment and techniques used in laboratory-based research pertaining to biological warfare or terrorism threats. Emphasis will be placed on biosafety procedures, techniques, and equipment used in conducting

experiments with infectious organisms in a contained environment. Offered by School of Systems Biology. May not be repeated for credit.

Recommended Prerequisite: Undergraduate courses in physics, math, and microbiology, and permission of the Director of the Center for Biodefense.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOL 678: *Cell-Based Assays.* 2 credits.
Focus on 1) basics of eukaryotic cell culture; 2) various cell based assay techniques; 3) Real-Time PCR based functional analysis of the signaling pathways. Students will maintain their cell cultures for the duration of the experiments, perform at least one functional assay and analyze the resultant data. Students are expected to learn the properties and limitations of each cell based assay and should be able to explain their results regardless of the outcome. Each student will be responsible for submitting a written report summarizing the design of their experiments and its results. Each report will include the following sections: Introduction, Methods, Results and Discussion, and a special Troubleshooting section. Notes: A lab fee of $300 will be charged per student for lab supplies. Offered by School of Systems Biology. May not be repeated for credit.

Recommended Prerequisite: Permission of Instructor. 400-level coursework in cell or molecular biology.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment limited to students in the SC-MS-BCB, SC-MS-BIOL or SC-NDG-UNDE programs.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory

Grading:
This course is graded on the Graduate Regular scale.

BIOL 680: *Experimental Design and Analysis for the Life Sciences.* 4 credits.
Advanced course in applying probability and statistics to research in life sciences. Examples drawn from environmental, medical, physiological, genetic, and chemical biology. Offered by School of Systems Biology. May not be repeated for credit.

Recommended Prerequisite: Course in biostatistics or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOL 682: *Advanced Eukaryotic Cell Biology.* 3 credits.
Structure and function of biomembranes, cytoskeleton, and transport systems. Also discusses protein trafficking, cell cycle, and cell adhesion molecules. Offered by School of Systems Biology. May not be repeated for credit.

Recommended Prerequisite: BIOL 483, CHEM 313, CHEM 314, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Bioinformatics Comp Biology, Biology, Biosciences or Personalized Medicine.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOL 685: *Emerging Infectious Diseases.* 3 credits.
Students will gain an understanding of the pathogenesis of emerging and/or re-emerging infectious diseases in terms of immune response and systemic alterations. Factors contributing to emergence and virulence for each pathogen will be emphasized. Epidemiology, disease progression, treatment strategies and/or control measures of identified emerging infectious diseases will be discussed. Offered by School of Systems Biology. May not be repeated for credit.

Recommended Prerequisite: BIOL 213 or U213 and 311 or L311, 482 or equivalent; or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOL 689: *Interdisciplinary Tools in the Biosciences.* 3 credits.
Class provides experiential learning of the basic tools necessary for a scientist career development. The tools covered in this class enable conducting biosciences research, namely, identifying unmet needs in science, performing scientific and patent literature search, designing experiments, understanding and applying state of the art –omics technology, performing statistical analysis of data and mathematical modeling, interpreting study results, recognizing and eliminating sources of bias, building knowledge from data, and communicating results of scientific research to peers and to general public. Students will be guided on how to recognize emerging trends in science, and be given the tools to creatively explore these trends, so that their own research will be timely and competitive. Offered by School of Systems Biology. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOL 690: *Introduction to Graduate Studies in Biology.* 1-2 credits.
Required of all new MS students in biology. Offered by School of Systems Biology. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOL 691: *Current Topics in Biology.* 1-4 credits.
Study of current topics in biology as determined by instructor. Topics vary and center on emerging areas of investigation in the biological sciences. Offered by School of Systems Biology. May be repeated within the term for a maximum 8 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOL 692: *Seminar in Biology.* 1 credit.
Topics vary. Offered by School of Systems Biology. May be repeated within the degree for a maximum 2 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

BIOL 693: *Directed Studies in Biology.* 1-8 credits.
Study of topic not otherwise available in graduate program. May involve any combination of reading assignments, tutorials, lectures, papers, presentations, or laboratory or field study, determined in consultation with instructor. Notes: May not be used to fulfill explicit undergraduate prerequisites for graduate work. Offered by School of Systems Biology. May be repeated within the degree for a maximum 8 credits.

Recommended Prerequisite: Permission of instructor and graduate committee.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Research

Grading:
This course is graded on the Graduate Special scale.

BIOL 695: *Seminar in Molecular, Microbial, and Cellular Biology.* 1 credit.
Review and discussion of recent literature in specialized area. Includes student presentations. Offered by School of Systems Biology. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

700 Level Courses

BIOL 715: *Microbial Physiology.* 3 credits.
Comprehensive study of functioning of microbial cells, with emphasis on pathogens. Stresses growth, transport, cell-to-cell signaling, biofilm formation, antibiotic resistance, and secondary metabolites. Offered by School of Systems Biology. May not be repeated for credit.

Recommended Prerequisite: An undergraduate lecture/lab course in microbiology, and a course in biochemistry.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOL 718: *Techniques in Microbial Pathogenesis.* 3 credits.
Laboratory-based class in which students perform current techniques in microbial pathogenesis. Offered by School of Systems Biology. May not be repeated for credit.

Recommended Prerequisite: Admission to the PhD biosciences program, the MS biology program, or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory

Grading:
This course is graded on the Graduate Regular scale.

BIOL 720: *Microbial Metabolism.* 3 credits.
Discussions of catabolic and anabolic pathways of bacterial pathogens and regulation and integration of these pathways. Offered by School of Systems Biology. May not be repeated for credit.

Recommended Prerequisite: An undergraduate lecture/lab course in microbiology and a course in biochemistry.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOL 745: *Environmental Toxicology.* 3 credits.
Study of nature, distribution, and interaction of toxic chemicals released into the environment. Emphasizes effects on nonhuman biota, detection and fate of chemicals, and implications for government regulation. Offered by School of Systems Biology. May not be repeated for credit. Equivalent to EVPP 745.

Recommended Prerequisite: Courses in ecology and physiology, or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOL 793: *Research in Biology.* 1-3 credits.
Library, laboratory, or field investigation under supervisor's guidance. Offered by School of Systems Biology. May be repeated within the degree for a maximum 3 credits.

Recommended Prerequisite: 8 hours of graduate hours in BIOL and permission of instructor and chair.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Research

Grading:
This course is graded on the Graduate Special scale.

BIOL 798: *Master's Research Project.* 1-3 credits.
Experimental or theoretical research project chosen and completed under guidance of graduate faculty member. Comprehensive report acceptable to student's advisory committee is required. Notes: Students who take BIOL 793 may not receive more than 6 credits total for both BIOL 793 and 798. Offered by School of Systems Biology. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Permission of instructor and chair.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Thesis

Grading:
This course is graded on the Satisfactory/No Credit scale.

BIOL 799: *Thesis.* 1-6 credits.
Thesis research under direction of supervisor. Notes: Students who take BIOL 793 may not receive more than 6 credits total for both BIOL 793 and 799. Offered by School of Systems Biology. May be repeated within the degree.

Recommended Prerequisite: 8 graduate hours in BIOL and permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Thesis

Grading:
This course is graded on the Satisfactory/No Credit scale.

Biomedical Sciences (BMED)

500 Level Courses

BMED 550: *Special Topics in Biomedicine.* 2 credits.
This course presents various topics in biomedicine in a lecture/seminar format. Students build on the ABS Certificate curriculum to enhance their understanding of biomedical issues and better prepare for careers in the health professions. Offered by College of Science. May not be repeated for credit.

Specialized Designation: Topic Varies

Recommended Prerequisite: Successful completion of first semester of the ABS Certificate curriculum (Biochemistry, Biostatistics, Histology).

Recommended Corequisite: Spring ABS Certificate courses (Human Anatomy, Human Physiology).

Registration Restrictions:
Enrollment limited to students in the SC-CERG-ABS program.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

600 Level Courses

BMED 601: *Biochemistry and Molecular Biology.* 4 credits.
Principles of biochemistry and cell signaling and current concepts regarding physiological processes at the cellular and molecular levels. Offered by College of Science. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Advanced Biomedical Sciences.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BMED 602: *Biomedical Statistics.* 3 credits.
Basic principles of biostatistics and epidemiology in theoretical and practical context including: exploring and displaying data appropriately, exploring relationships between two variables, issues of gathering sample data, and understanding randomness and probability. Offered by College of Science. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Advanced Biomedical Sciences.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BMED 603: *Cell Biology and Microscopic Anatomy.* 3 credits.
Examines basic histological techniques, ultrastructure of the cell, basic tissue types and histology of specific organ systems. Structure-functional and clinical correlations are described. Offered by College of Science. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Advanced Biomedical Sciences.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BMED 604: *Fundamentals of Human Physiology.* 5 credits.
Essential concepts of physiology and mechanisms of body function are presented at various levels of organization, ranging from cellular and molecular to tissue and organ system levels. Emphasis is placed on understanding the integrated regulation of various body processes among the major systems. Offered by College of Science. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Advanced Biomedical Sciences.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BMED 605: *Introduction to Human Anatomy.* 3 credits.
Principles of anatomy as well as the pertinent anatomy associated with the thorax, abdomen, and pelvic cavities. Offered by College of Science. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Advanced Biomedical Sciences.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BMED 610: *Principles of Systems Biology.* 2 credits.
Students will build on their knowledge of cellular and molecular biology, genetics, and physiology to understand how these components combine to give rise to complex systems function found in biology. Offered by College of Science. May not be repeated for credit.

Recommended Prerequisite: Admission to Biomedical Sciences master's degree.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BMED 611: *Molecular Genetics.* 2 credits.
Students will build on their knowledge of molecular biology and genetics to understand how these components' functions are altered during the inception and course of human disease. Offered by College of Science. May not be repeated for credit.

Recommended Prerequisite: Admission to Biomedical Sciences master's degree.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BMED 612: *Principles of Gross Anatomy.* 1 credit.
Principles of anatomy as well as the pertinent anatomy associated with the thorax, abdomen, and pelvic cavities. Offered by College of Science. May not be repeated for credit.

Recommended Prerequisite: Admission to Biomedical Science's master's program

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BMED 613: *Pathophysiology.* 3 credits.
Students build on knowledge of physiologic principles and apply the information to pathologic conditions. A higher understanding of the molecular and genetic basis of pathology will be developed as the mechanisms of disease are studied. Offered by College of Science. May not be repeated for credit.

Recommended Prerequisite: Admission to Biomedical Sciences master's program

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BMED 614: *Introduction to Neuroscience.* 3 credits.
Achieve specific knowledge of the developmental and evolutionary aspects of the nervous system, to introduce systems neurobiology through study of the visual system and motor system pathways. Offered by College of Science. May not be repeated for credit.

Recommended Prerequisite: Admission to Biomedical Science's master's program

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BMED 651: *Physician and Society.* 1 credit.
Seminar series explores the cultural, social, economic and ethical factors that affect the practice of medicine in the 21st century. Offered by College of Science. May be repeated within the degree for a maximum 2 credits.

Registration Restrictions:

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Advanced Biomedical Sciences.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Satisfactory/No Credit scale.

BMED 652: *Biomedical Career Pathways.* 1 credit.
Series of workshops, presentations and field trips. Students will learn study and interview skills to become better prepared to complete AMCAS and secondary applications to medical schools. Offered by College of Science. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Advanced Biomedical Sciences or Biomedical Sciences.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

BMED 653: *Forum and Research.* 3 credits.
Bi-weekly seminar-style presentations and reading assignments, followed by short student reports, followed by a small group discussions on topics of current interest. Students will prepare a detailed research paper on a topic related to one of the forum topics. Offered by College of Science. May not be repeated for credit.

Recommended Prerequisite: Admission to Biomedical Sciences master's degree.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

Biosciences (BIOS)

700 Level Courses

BIOS 701: *Systems Biology.* 3 credits.
Introduces biochemical systems to investigate complex, multicomponent, dynamic functions of cellular systems. Readings include articles from current literature in molecular biosciences. Application of molecular techniques within biosciences is now universal, and the underlying question remains "What is the structure of a cell, and how does it function?" Offered by School of Systems Biology. May not be repeated for credit. Equivalent to BINF 701.

Recommended Prerequisite: General Biochemistry.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOS 702: *Research Methods.* 3 credits.
Trains students in research methodologies, techniques, and data analysis in life sciences. Divided into three modules that introduce separate but equally significant components of any research project: parameters required to outline and synthesize a problem, techniques of measurement and analysis used by life scientists, and approaches for data analysis and interpretations. Offered by School of Systems Biology. May not be repeated for credit.

Recommended Prerequisite: Admission to the PhD program in Biosciences

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOS 703: *Laboratory Rotation.* 3 credits.
Intensive introduction to research laboratory in biosciences. Students read background material pertinent to problem under study, learn and practice research methods of laboratory, and formulate short final project that may be proposal or actual project, demonstrating some mastery of techniques and approaches employed. Notes: Should be repeated three times (except by permission of concentration director). Offered by School of Systems Biology. May be repeated within the term for a maximum 6 credits.

Recommended Prerequisite: Admission to the PhD program in Biosciences.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory

Grading:
This course is graded on the Graduate Special scale.

BIOS 704: *Topics in Biosciences.* 1 credit.
Combines invited seminars from internal and external faculty with graduate student seminars. Seminar presentation required for advancement to candidacy, generally given in last semester before candidacy. Includes discussion section led by course coordinator. Notes: Required of all students during each semester prior to advancement to candidacy. Should be repeated three times (except by permission of concentration director). Offered by School of Systems Biology. May be repeated within the term for a maximum 3 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: Admission to the PhD program in Biosciences.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

BIOS 710: *Current Topics in Bioscience.* 1-3 credits.
Studies current topic in biosciences. Notes: Topics vary. May be repeated for credit with permission of concentration director. Offered by School of Systems Biology. May be repeated within the term for a maximum 6 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: Admission to the PhD program in biosciences or to the MS program in biology.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOS 715: *Molecular Ecology.* 3 credits.
Introduces students to basic concepts of molecular biology, genetics, molecular evolution, bioinformatics, NextGen Sequencing and Technology. Students should have prior background in genetics and evolution. Offered by School of Systems Biology. May not be repeated for credit. Equivalent to EVPP 515.

Recommended Prerequisite: Undergraduate course in Genetics and Chemistry or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOS 716: *Methods in Evolutionary Biology.* 4 credits.
Intended for students who plan to do research in Molecular Ecology, Molecular Evolution, Conservation Genetics, Genomics or Biocomplexity. The lecture reviews basic concepts while the lab provides students the opportunity to experience the detailed protocols necessary for research in molecular biology. The course integrates theory, protocols, analhysis and biolnformatics. Offered by School of Systems Biology. May not be repeated for credit.

Recommended Prerequisite: BIOS 715 or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOS 719: *Extremophiles.* 5 credits.
Offered by School of Systems Biology. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOS 740: *Laboratory Methods in Functional Genomics and Biotechnology.* 3 credits.
Current laboratory techniques in molecular biology and genomics, including nucleic acid isolation, gene cloning and sequencing, gel blot analysis, PCR, in vitro mutagenesis, and theory and practice of DNA microarray analysis of gene expression. Topics may vary from year to year depending on advances in field. Offered by School of Systems Biology. May not be repeated for credit.

Recommended Prerequisite: Graduate standing and undergraduate courses in genetics and molecular biology.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOS 741: *Genomics.* 3 credits.
Genetic structure and function at whole genome level. Includes some sequence analysis, comparative genomics, classical genetics, and developmental genetics, as well as analysis of synteny groups, isochores, gene families, genetic complexity, C value paradox, directed discovery of gene functions, and animal models of human disease. Readings from recent texts and primary research literature. Students expected to give one or two oral presentations of primary research papers, as well

as complete midterm and final exams. Offered by School of Systems Biology. May not be repeated for credit.

Recommended Prerequisite: At least one undergraduate course in genetics and molecular biology, or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOS 742: *Biotechnology.* 3 credits.
Theory and applications of biotechnology. Includes promoter design, gene fusions, protein targeting, techniques of protein purification, construction of transgenic organisms, cloning of animals and plants, ethical and legal issues. This is a relatively new area of study that is rapidly changing; course strives to keep students abreast of current literature. Offered by School of Systems Biology. May not be repeated for credit.

Recommended Prerequisite: Undergraduate coursework in genetics and molecular biology.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOS 743: *Genomics, Proteomics, and Bioinformatics.* 3 credits.
Fundamental methods for analyzing genomic and proteomic data, including nucleic acid and protein sequences, pair-wise and multiple alignment, database search methods, clustering and presentation of data, prediction modeling, and survey of available software and freeware tools. Offered by School of Systems Biology. May not be repeated for credit.

Recommended Prerequisite: Admission to PhD program in biosciences or to MS program in biology.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOS 744: *Molecular Genetics.* 3 credits.
Develops understanding of principles of modern molecular genetics and methods of investigation of genomes of pro- and eukaryotes, including types of genetic manipulations conducted in research laboratories today. Offered by School of Systems Biology. May not be repeated for credit.

Recommended Prerequisite: Undergraduate coursework including BIOL 311; CHEM 313, 314, 315, and 318; equivalents; or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOS 760: *Seminar in Molecular Systematics.* 1-3 credits.
Presentations and discussion by students and faculty of research papers and projects. Offered by School of Systems Biology. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOS 761: *Dispersal Patterns of Biological Agents.* 3 credits.
Introduces military and terrorist methods of dispersal patterns. Covers physics of aerosols, engineering and mechanics of building ventilation systems, and mechanical dissemination including handheld, automatic, vehicle, and truck-mounted systems. Also covers viability of specific agents involved. Offered by School of Systems Biology. May not be repeated for credit.

Recommended Prerequisite: Admission to PhD Biosciences program or MS/Biology program, and permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOS 762: *Phylogenetic Analysis.* 4 credits.
A consideration of molecular systematics techniques in biology, especially cladistics and phenetics methods. Species concepts, biological nomenclature, and classifications will also be discussed. Laboratory will emphasize phylogenetic methods using online sources of comparative data. Offered by School of Systems Biology. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:

This course is graded on the Graduate Regular scale.

BIOS 765: *Molecular Systematics.* 4 credits.
Comparative evolutionary techniques applied to molecular data. Use of molecular techniques, molecular databases, and analytical techniques will be covered. Offered by School of Systems Biology. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOS 767: *Molecular Evolution.* 3 credits.
A review of the diversity and organization of genomes and evolutionary processes that operate at the molecular level. Emphasis will be placed on processes of molecular evolution and techniques used to analyze these processes. Offered by School of Systems Biology. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BIOS 782: *Interdisciplinary Issues in Bioethics: Law and Policy.* 3 credits.
Offered by School of Systems Biology. May not be repeated for credit.

Recommended Prerequisite: BIOS 780 and 781.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

800 Level Courses

BIOS 898: *Directed Studies in Biosciences.* 1-12 credits.
Studies of specialized topics in biosciences. Specific arrangements for designing scope and area of study to be determined in consultation with instructor. May involve literature searches and review, workshops, or tutorials. Offered by School of Systems Biology. May be repeated within the degree for a maximum 24 credits.

Recommended Prerequisite: Permission of Research Advisor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Research

Grading:
This course is graded on the Graduate Special scale.

BIOS 899: *Directed Research in Biosciences.* 1-12 credits.
Research on a pertinent topic in biosciences. Scope and subject of research to be determined by instructor. Offered by School of Systems Biology. May be repeated within the degree for a maximum 24 credits.

Recommended Prerequisite: Permission of Research Advisor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Research

Grading:
This course is graded on the Graduate Special scale.

900 Level Courses

BIOS 998: *Doctoral Dissertation Proposal.* 1-6 credits.
Research and writing of research proposal for doctoral dissertation. Offered by School of Systems Biology. May be repeated within the degree.

Recommended Prerequisite: Permission of research advisor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

BIOS 999: *Doctoral Dissertation Research.* 1-12 credits.
Research in concentration pertinent to students' program of study. Notes: Maximum of 24 credits can be applied toward degree. Offered by School of Systems Biology. May be repeated within the degree.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy.

Enrollment is limited to Graduate level students.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

Business (BUS)

100 Level Courses

BUS 100: *Business and Society.* 3 credits.
Provides students with a foundation for understanding the role of business in society by exploring the nature and history of business enterprise, the social context of business, and the interaction of individuals with business by selecting current events in business and analyzing the content as well as the impact of the reported activities. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Mason Core: Social/Behavioral Sciences

Recommended Prerequisite: Degree status.

Registration Restrictions:

Students with the terminated from BU major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BUS 103: *Develop Professional Skills I: Foundational Elements.* 3 credits.
Students will investigate and develop their professional skill set. Topics include introduction to the business school and business world, what it means to be professional, how to consume the business press, and how to research business issues. Develop professional writing and presentation skills, explore career options and the job search process, and develop personal educational and professional development plans. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Specialized Designation: Mason Impact.

Registration Restrictions:
Non-Degree level students may **not** enroll.

Students with the terminated from BU major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

200 Level Courses

BUS 200: *Global Environment of Business.* 3 credits.
As world becomes increasingly connected, business serves as core institution that mediates relations between individuals across national boundaries. Provides overview of global environment of business through study of political economy, international institutions and international trade theories, and global conflicts and cooperation around issues (natural resources, labor, human rights, distribution of income, and the environment). Addresses implications of topics for business. Designated a Green Leaf Course. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Mason Core: Global Understanding, Encore: Sustainability

Specialized Designation: Green Leaf Related Course

Registration Restrictions:
Non-Degree level students may **not** enroll.

Students with the terminated from BU major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BUS 210: *Business Analytics I.* 3 credits.
Course introduces business analytics and why businesses use analytics to create and sustain competitive advantage. Topics include data types, summarization and graphical display of data, application of basic probability rules, and probability distributions. Introduces fundamentals of spreadsheets and their use in business applications. Learn how to apply appropriate analytical tools to gain useful insights from real-life datasets. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Registration Restrictions:
Non-Degree level students may **not** enroll.

Students with the terminated from BU major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BUS 292: *Internship for Academic Credit.* 3 credits.
This is general elective course is designed to give students the opportunity to gain practical and professional experience in conjunction with their academic development. The internship must be completed within the same academic semester to receive course credit. Offered by School of Business. Limited to two attempts.

Recommended Prerequisite: 24 credit hours

Registration Restrictions:
Required Prerequisite: BUS 103[B-].
[B-] Requires minimum grade of B-.

Non-Degree level students may **not** enroll.

Students with the terminated from BU major attribute may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

300 Level Courses

BUS 303: *Develop Professional Skills II: Advanced Elements.* 3 credits.
In this course, students will continue to develop their professional skill set. Topics covered include understanding the modern work environment, business ethics and professional responsibilities, and professional judgment. Students will also continue to hone their professional writing and presentation skills, prepare for the job search process, and develop personal job search and professional development plans. Notes: School of Business students will not be permitted to make more than three attempts to achieve a C or higher in BUS 303. The third attempt requires School of Business academic advisor approval. Those who do not successfully complete this course within three attempts will be terminated from their major and will not be eligible to receive a degree from the School of Business. For more information about this, see the "Termination from the Major" section under Academic Policies. Offered by School of Business. Limited to two attempts.

Specialized Designation: Mason Impact.

Registration Restrictions:
Required Prerequisites: (BUS 103[C], U103 or 103[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the terminated from BU major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BUS 310: *Business Analytics II.* 3 credits.
Introduces modeling relationships contained in data and linear models to make predictions in business. Topics include estimation, hypotheses testing, statistical inference, analysis of variance and linear regression techniques. Fundamentals of linear programming to solve optimization problems in business. Apply analytical tools to gain insights from real-life datasets. Hands-on experience and application of the methods to data sets using spreadsheet software. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: BUS 210[C], U210, 210T or 210[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Non-Degree level students may **not** enroll.

Students with the terminated from BU major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BUS 315: *Introduction to the Government Contracting Industry.* 3 credits.
The course provides students with a foundational knowledge of the government contracting (GovCon) industry. By explaining key concepts of the field, students will be able to understand how to leverage their knowledge immediately, upon hire in a GovCon-related opportunity by understanding the link between GovCon concepts and non-GovCon business concepts. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (MGMT 303[C] or 303[XS]) and (BULE 303[C] or 303[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from BU major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

BUS 491: *Special Topics in Business.* 1-6 credits.
Advanced study of special topics in business Offered by School of Business. Limited to two attempts.

Specialized Designation: Topic Varies

Registration Restrictions:
Students with a class of Freshman or Sophomore may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the terminated from BU major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

BUS 492: *Internship in Business.* 3 credits.
Opportunity to gain practical, professional experience in conjunction with academic development. An internship is an important part of academic and career preparation. May be used as elective credit, but may not be repeated. Notes: No more than 6 credits of School of Business internship coursework (BUS 492 or ACCT 492) can be applied towards a student's 120 (BU) degree applicable credits. Students must receive departmental approval in order to register for this course; please contact the School of Business Office of Career Services for internal eligibility requirements. Offered by School of Business. May be repeated within the degree for a maximum 6 credits. Equivalent to ACCT 492, FNAN 492, MGMT 492, MIS 492, MKTG 492, OM 492, OSCM 492.

Recommended Prerequisite: 75 credit hours

Registration Restrictions:
Required Prerequisites: ((MIS 301[B-] or 303[B-]) and (OM 301[B-] or 303[B-])) or (ACCT 301[B-] or 330[B-]) or (MKTG 301[C], 303[C] or 303[XS]).
[B-] Requires minimum grade of B-.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman or Sophomore may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the terminated from BU major attribute may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

BUS 498: *Capstone Course: Advanced Business Models.* 3 credits.
Advanced integrated exploration of business models and industry dynamics that uses case analyses to assess competition, organizational strategy, and firm performance. Students examine strategic change in organizations from multiple perspectives, integrating knowledge from core course work into several papers and major presentation. Students receive coaching from area business leaders as they complete their presentations. Students must earn a C or higher in order to meet the Business Core and Foundations degree requirements. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Mason Core: Capstone

Registration Restrictions:
Required Prerequisites: (ACCT 301[C], 301[XS], 303[C], 303[XS], 330[C], 330[XS], L301, L303 or L330) and (BULE 302[C], 303[C], 303[XS], L302 or L303) and (BUS 303[C], 303[XS], L303, SOM 301[C] or L301) and (FNAN 301[C], 301[XS], 303[C], 303[XS], L301 or L303) and (MGMT 301[C], 301[XS], 303[C], 303[XS], L301 or L303) and (MIS 301[C], 303[C], 303[XS], L301 or L303) and (MKTG 301[C], 303[C], 303[XS], L301 or L303) and (OM 301[C], 301[XS], 303[C], 303[XS], OSCM 303[C], 303[XS], OM L301, DESC 301[C], L301 or OM L303) and (BUS 310[C], 310[XS], L310, OM 210[C], 210[XS], DESC 210[C], U210 or OM U210).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Senior Plus or Senior.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take BUSA crses, Ineligible to take FNAN crses, Ineligible to take MGMT crses, Ineligible to take MIS crses,

Ineligible to take MKTG crses, Ineligible to take OSCM crses, terminated from BU major or terminated from ISOM major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

700 Level Courses

BUS 701: *Professional Practicum.* 3 credits.
This course is designed to teach the practice of teaching, research, and philosophy of science. Classroom teaching, business research and other professional responsibilities common to business academics will be covered. This course will also introduce students to tools for the philosophical analysis of science. Students will learn about issues in observation, experiment, and reasoning, questions about the aims of science, scientific change, and the relations between science and values. This course should be taken in the first year of the program. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students in a Doctor of Philosophy degree.

Enrollment limited to students in the School of Business college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BUS 702: *Writing for Business PhD Students.* 3 credits.
This course emphasizes a "learning by doing" approach to writing. It is run as a writing practicum with a focus on the procedural aspects of writing. Students will engage the writing process intensively and deliberately, both in and outside class. Students will read and evaluate different writings in business, providing evaluation and critique of them in the process of honing and refining their own writing skills. Students will develop strategies for writing regularly, for managing anxiety about writing, and developing critical, but constructive strategies of self-evaluation. Students will gain practice in different types of writing including research reports, scholarly journal articles, and research proposals. Students will read examples of the range of writings by business scholars, identifying persuasive argument, how to advance a claim and the productive use of evidence. This course should be taken in the second year of the program. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students in a Doctor of Philosophy degree.

Enrollment limited to students in the School of Business college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BUS 703: *Research Project.* 3 credits.
Student must complete a two-semester long research project on an approved topic under the guidance of a faculty advisor, and write a research paper that will be presented as a departmental seminar and be submitted to an academic journal. This course must be completed no later than the end of the fourth semester in the PhD program. 6 credits combined from taking this course twice will apply to the PhD degree. Offered by School of Business. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Enrollment limited to students in a Doctor of Philosophy degree.

Enrollment limited to students in the School of Business college.

Schedule Type: Research

Grading:
This course is graded on the Satisfactory/No Credit scale.

800 Level Courses

BUS 801: *Field Research in Business.* 3 credits.
Student must complete a one-semester long independent study with their faculty advisor where they take the lead on a field research project. This course is more advanced than BUS 798: Research Project as the design of this course is such that the student is the project lead. This course will be ideally completed in the third year. The rationale behind this course is that the student takes the lead on gaining access to the problem to be solved. This could involve gaining access to collect primary data from a business or organization, acquiring historical data, or developing an analytical model. The goal is for the student to understand the research problem as it situated in practice. The deliverable for this course is not a finished paper. Deliverables could include, but are not limited to: progress in securing data access, development of analytical models, demonstration of data organization, culling valuable business contacts, and making applied presentations to business and academic Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students in a Doctor of Philosophy degree.

Enrollment limited to students in the School of Business college.

Schedule Type: Research

Grading:
This course is graded on the Graduate Regular scale.

900 Level Courses

BUS 998: *Doctoral Dissertation Proposal.* 1-6 credits.
Work on research proposal that forms basis for doctoral dissertation. Note: Students must complete a minimum of 3 credits of BUS 998. Offered by School of Business. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

BUS 999: *Doctoral Dissertation Research.* 1-18 credits.
Research on approved dissertation topic under direction of dissertation committee. Notes: Students must complete a minimum of 3 credits of BUS 999. Offered by School of Business. May be repeated within the degree for a maximum 18 credits.

Registration Restrictions:

Enrollment is limited to Graduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

Business and Legal Studies (BULE)

300 Level Courses

BULE 303: *Legal Environment of Business.* 3 credits.
Survey of the legal environment of business, emphasizing legal concepts and legal reasoning to prepare students to recognize legal problems and formulate appropriate responses. Topics include the federal and state court systems, constitutional and administrative law, business torts and crimes, contracts and business ethics. Lecture, discussion, cases. Notes: School of Business students will not be permitted to make more than three attempts to achieve a C or higher in BULE 303. The third attempt requires School of Business academic advisor approval. Those who do not successfully complete this course within three attempts will be terminated from their major and will not be eligible to receive a degree from the School of Business. For more information about this, see the "Termination from the Major" section under Academic Policies.Students cannot receive credit for both BULE 302 and BULE 303. Offered by School of Business. Limited to two attempts.

Recommended Prerequisite: Degree status; sophomore standing

Registration Restrictions:
Students with a class of Freshman may **not** enroll.

Non-Degree or Washington Consortium level students may **not** enroll.

Students with the terminated from BU major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

BULE 402: *Commercial Law.* 3 credits.
Survey of commercial law emphasizing the Uniform Commercial Code. Lecture, discussion, cases. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: BULE 302[C], L302, 303[C], L303 or 303[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman or Sophomore may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the terminated from BU major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Business Management (BMGT)

600 Level Courses

BMGT 603: *Economics for Successful Firm Management.* 3 credits.
Provides fundamental understanding of applying microeconomics concepts to managerial decision making. Explores principles of microeconomic theory, including market supply and demand, production and cost functions, industry structure, and product and resource pricing. Due to the presentation and application of course material, this course can only be taken by students enrolled in the Master of Science in Management Program. Offered by School of Business. May not be repeated for credit.

Recommended Prerequisite: Admission to BMGT program.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BMGT 612: *Performance Evaluation Through Cost Management.* 3 credits.
Examines impact of cost and cost allocation on performance and evaluation. Due to the presentation and application of course material, this course can only be taken by students enrolled in the Master of Science in Management Program. Offered by School of Business. May not be repeated for credit.

Recommended Prerequisite: Admission to BMGT program.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BMGT 613: *Financial Reporting and Firm Analysis.* 3 credits.
Foundation course focusing on economics and analysis of business transactions and financial reporting issues. Topics include introduction to accounting framework in financial reporting; analysis of financial statements, economic events and impact on financial reports, and impact of accounting methods on financial reports. Due to presentation and application of course material, course only open to students enrolled in the Master of Science in Management program. Offered by School of Business. May not be repeated for credit. Equivalent to GBUS 613.

Recommended Prerequisite: Admission to BMGT program.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BMGT 623: *Marketing and Firm Performance.* 3 credits.
Develops market-based knowledge and skills for effective marketing decision making, strategy design, implementation, and evaluation in variety of institutional and competitive situations. Addresses importance of companies being market-driven and customer-focused. Emphasis on case studies, team work, and projects. Due to the presentation and application of course material, this course is only open to students enrolled in the Master of Science in Management Program. Offered by School of Business. May not be repeated for credit.

Recommended Prerequisite: Admission to BMGT program.

Registration Restrictions:
Enrollment limited to students with a class of Graduate or Senior Plus.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BMGT 633: *Statistical Analysis for Management.* 3 credits.
Use statistical methods as analytical tools for understanding and solving business problems and supporting business decision making. Includes descriptive statistics, sampling, inferencing and regression. Extensive use of applied business scenarios to illustrate concepts and computer software for data analysis. Due to presentation and application of course material, this course can only be taken by students in the Master of Science in Management Program. Offered by School of Business. May not be repeated for credit.

Recommended Prerequisite: Admission to BMGT program.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BMGT 638: *Managing Business Operations in a Global Environment.* 3 credits.
Focuses on design, planning, and control activities to produce and deliver goods/services in organizations. Introduces operations management decisions; operations strategy, process analysis and design, capacity planning, supply chain management, total quality management, and project management. Uses quantitative modeling, case studies, and computer software to analyze/solve problems. Due to the presentation and application of course material, course only open to Master of Science in Management students. Offered by School of Business. May not be repeated for credit.

Recommended Prerequisite: Admission to BMGT program.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BMGT 643: *Financial Management in a Global Environment.* 3 credits.
Introduces theory and practice of finance within corporations. Topics include intertemporal choice, valuation, capital budgeting and structure, working capital management, and risk and return analysis. Due to the presentation and application of course material, this course can only be taken by students enrolled in the Master of Science in Management Program. Offered by School of Business. May not be repeated for credit. Equivalent to GBUS 643.

Recommended Prerequisite: Admission to BMGT program.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BMGT 653: *Fundamentals of Behavior in Organizations.* 3 credits.
Emphasizes development of conceptual tools for understanding and analyzing individual and group behavior in organizations and organizational processes. Considerable focus on developing relevant skills for working in groups and teams. Lectures, discussions, case analyses, and class exercises. Due to the presentation and application of course material, this course can only be taken by students enrolled in the Master of Science in Management program. Offered by School of Business. May not be repeated for credit.

Recommended Prerequisite: Admission to BMGT program.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BMGT 662: *Management of Information Technology.* 3 credits.
Strategic, economic and managerial aspects of managing organization's IT assets are covered. Business value of IT is understood and assessed

in context of its impact on organization's structure and strategy. Includes discussion on major issues pertaining management of IT infrastructure. Due to presentation and application of course material, course is only open to students enrolled in the Master of Science in Management Program. Offered by School of Business. May not be repeated for credit.

Recommended Prerequisite: Admission to BMGT program.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Enrollment is limited to Graduate or Undergraduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

BMGT 678: *Business Strategy and Firm Leadership.* 3 credits.
Capstone focusing on strategy development at business unit and corporate level. Cases, readings, and project format familiarize students with strategic management function and help develop analytical, organizational, and managerial skills to analyze complex business situations. Opportunities to integrate knowledge gained in prior course work. Due to presentation and application of course material, course only open to students enrolled in the Master of Science in Management program. Offered by School of Business. May not be repeated for credit.

Recommended Prerequisite: Admission to BMGT program.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Enrollment is limited to Graduate or Undergraduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

BMGT 692: *Professional Development Experience.* 1-3 credits.
Professional experience in conjunction with academic development. Hands-on experience is an important part of academic and career preparation and may be completed by an internship, consulting project, independent study or additional global experience. Must involve an average of 15 hours per week and be approved by program director. Offered by School of Business. May be repeated within the term for a maximum 3 credits.

Recommended Prerequisite: completion of 18 credit hours in BMGT program.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Enrollment is limited to students with a major in Management.

Enrollment is limited to Graduate or Undergraduate level students.

Enrollment limited to students in a Master of Science degree.

Schedule Type: Internship

Grading:
This course is graded on the Graduate Special scale.

BMGT 695: *Global Business Perspectives.* 3 credits.
Includes a weeklong international student study tour lead by a full-time School of Business professor. Students interact with business and government leaders, participate in seminars, and visit sites of local or multinational companies. Focus on developing an increased understanding of global markets, competition, business strategy, and business opportunities in addition to the social and cultural dimensions of global business. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Enrollment is limited to students with a major in Management.

Enrollment is limited to Graduate or Undergraduate level students.

Enrollment limited to students in a Master of Science degree.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

Business Management of Secure Information Systems (MSIS)

Chemistry (CHEM)

100 Level Courses

CHEM 101: *Introduction to Modern Chemistry.* 3 credits.
Physical and chemical discoveries and properties of matter presented along with their application and impact on way of life. Topics include atomic and molecular structure, nuclear chemistry, and chemistry in Earth and atmosphere. Note: does not fulfill the requirement for a laboratory course in chemistry. Not for chemistry majors. No credit given for both CHEM 101 and CHEM 103 or for both CHEM 101 and CHEM 211-212. No previous knowledge of chemistry required. Offered by Chemistry. Limited to three attempts.

Mason Core: Natural Science Overview

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CHEM 102: *Chemistry for Changing Times.* 3 credits.
Modern course to explore and discover chemistry in the 21st century with an emphasis on current societal concerns. Examines carbon-containing compounds such as polymers, biomolecules, drugs, and fuels, which play a central role in medicine, manufacturing, green energy, and forensic science. Topics include examples from organic chemistry, conformational analysis, stereochemistry, genetics, and protein-protein interactions.

(CHEM 102 does not require concomitant registration in a 104 lab section.) Notes: Not open to students majoring in Chemistry, not intended for science majors. Offered by Chemistry. Limited to three attempts.

Mason Core: Natural Science Overview

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CHEM 103: *Chemical Science in a Modern Society.* 4 credits.
Terminal course in chemistry for nonscience and nursing majors. Principles and application of chemistry. Notes: CHEM 103 and CHEM 101 are taught simultaneously in the same room. CHEM 101 is for those students who are not required to complete the lab component of CHEM 103. Not open to students majoring in chemistry. Credit will not be given for both this course and CHEM 211, 212. Topics are those described for CHEM 101 and 102 but with lab to enhance scientific experience. Offered by Chemistry. Limited to three attempts.

Mason Core: Natural Science with Lab

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CHEM 104: *Chemistry for Changing Times.* 4 credits.
Modern course in to explore and discover chemistry in the 21st century with an emphasis on current societal concerns. Examines carbon-containing compounds such as, polymers, biomolecules, drugs, and fuels, which play a central role in medicine, manufacturing, green energy, and forensic science. Topics include examples from organic chemistry, conformational analysis, stereochemistry, genetics, and protein-protein interactions. (CHEM 104 requires concomitant registration in a 104 lab section.) Notes: Not open to students majoring in Chemistry, not intended for science majors or credit for 211 and 213. Offered by Chemistry. Limited to three attempts.

Mason Core: Natural Science with Lab

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CHEM 105: *Introductory Chemistry Laboratory I.* 1 credit.
Introductory laboratory course to demonstrate principles and application of chemistry. Notes: Not open to students majoring in chemistry. Credit will not be given for both this course and CHEM 211, 212. Students will enroll in CHEM 105 by Individualized Section and attend one of the CHEM 103 lab sections. Offered by Chemistry. Limited to three attempts.

Recommended Prerequisite: CHEM 101.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

CHEM 106: *Introductory Chemistry Laboratory II.* 1 credit.
1-credit laboratory course for non-science majors. Laboratory experience to demonstrate principles and application of chemistry. Notes: Not open to students majoring in chemistry. Credit will not be given for both this course and CHEM 211, 212. Students will enroll in CHEM 106 by Individualized Section and attend one of the CHEM 104 lab sections. Offered by Chemistry. Limited to three attempts.

Recommended Prerequisite: CHEM 102.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

CHEM 155: *Introduction to Environmental Chemistry I.* 4 credits.
Basic chemical principles of Earth's water, air, and soil systems; presented in the context of understanding environmental issues. Includes Saturday morning field trips to sites of past and present environmental contamination, alternating with Saturday morning laboratory activities. Notes: Credit will not be given for this course and CHEM 103, 104. Offered by Chemistry. Limited to three attempts.

Mason Core: Natural Science with Lab, Encore: Sustainability

Specialized Designation: Green Leaf Related Course

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CHEM 156: *Introduction to Environmental Chemistry II.* 4 credits.
Basic chemical principles of Earth's water, air, and soil systems; presented in the context of understanding environmental issues. Includes Saturday morning field trips to sites of past and present environmental contamination, alternating with Saturday morning laboratory activities. Notes: Credit will not be given for this course and CHEM 103, 104. Offered by Chemistry. Limited to three attempts.

Mason Core: Natural Science with Lab, Encore: Sustainability

Specialized Designation: Green Leaf Related Course

Recommended Prerequisite: CHEM 155 or permission of instructor.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

200 Level Courses

CHEM 211: *General Chemistry I.* 3 credits.
Fundamental principles of atomic and molecular structure; chemical bonding; basic concepts of chemical reactions and thermochemistry; properties of gases, liquids, and solids. Notes: Credit will not be given for this course and CHEM 103, 104. Students majoring in science, engineering, or mathematics should choose this course sequence. CHEM 211 is a prerequisite to CHEM 212. Offered by Chemistry. Limited to three attempts.

Mason Core: Natural Science with Lab

Registration Restrictions:
Required Prerequisites: CHEM 213^{*C}, U213*, 213T* or 213^{XS}.
* May be taken concurrently.
^{C} Requires minimum grade of C.
^{XS} Requires minimum grade of XS.

Schedule Type: Lecture

Grading:

This course is graded on the Undergraduate Regular scale.

CHEM 212: *General Chemistry II.* 3 credits.
Fundamentals of colligative properties, reaction rates and equilibrium. Topics Include kinetics, properties of solutions, ionic equilibrium, chemical thermodynamics, electrochemistry, and nuclear chemistry. Notes: Credit will not be given for this course and CHEM 103, 104. Students majoring in science, engineering, or mathematics should choose this course sequence. Offered by Chemistry. Limited to three attempts. Equivalent to CHEM 202.

Mason Core: Natural Science with Lab

Registration Restrictions:
Required Prerequisites: (CHEM 211[C], 211T, U211 or 211[XS]) and (CHEM 213[C], 213T, U213 or 213[XS]) and (CHEM 214[*C], 214T[*], U214[*] or 214[XS]).
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CHEM 213: *General Chemistry Laboratory I.* 1 credit.
General Chemistry laboratory course for students majoring in science, engineering, or mathematics. Laboratory experience will demonstrate general chemistry principles and applications. Notes: Students majoring in science, engineering, or mathematics should choose this course sequence. Credit will not be given for this course and CHEM 103. Offered by Chemistry. Limited to three attempts.

Mason Core: Natural Science with Lab

Registration Restrictions:
Required Prerequisites: CHEM 211[*C], U211[*], 211T[*] or 211[XS].
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

CHEM 214: *General Chemistry Laboratory II.* 1 credit.
General Chemistry laboratory course for students majoring in science, engineering, or mathematics. Laboratory experience will demonstrate general chemistry principles and applications. Notes: Credit will not be given for this course and CHEM 103, CHEM 104. Students majoring in science, engineering, or mathematics should choose this course sequence. Offered by Chemistry. Limited to three attempts. Equivalent to CHEM 204.

Mason Core: Natural Science with Lab

Registration Restrictions:
Required Prerequisites: (CHEM 212[*C], U212[*], 212T[*] or 212[XS]) and (CHEM 211[C], 211T, U211 or 211[XS]) and (CHEM 213[C], 213T, U213 or 213[XS]).
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

CHEM 271: *General Chemistry for Engineers Lecture.* 3 credits.
Fundamental principles of chemical structure and reactivity including atomic and molecular structure; chemical bonding; structures of ionic, covalent, and metallic lattices; oxidation reduction; electrochemistry and chemistry of metals; and introduction to organic chemistry and polymers. Notes: Enrollment restricted to students intending to major in engineering. Students who need two semesters of chemistry should enroll in CHEM 211/CHEM 213 and CHEM 212/CHEM 214. Credit will not be given for this course and CHEM 211/CHEM 213. Offered by Chemistry. May not be repeated for credit. Corequisite CHEM 272. Offered by Chemistry. Limited to two attempts.

Mason Core: Natural Science with Lab, Natural Science Overview

Registration Restrictions:
Required Prerequisites: CHEM 272[*C] or 272[XS].
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CHEM 272: *General Chemistry for Engineers Lab.* 1 credit.
Lab course to accompany CHEM 271 Lecture. General Chemistry laboratory course for students majoring in engineering. Laboratory experience will demonstrate general chemistry principles and applications. Corequisite CHEM 271. Offered by Chemistry. Limited to two attempts.

Mason Core: Natural Science with Lab

Registration Restrictions:
Required Prerequisites: CHEM 271[*C] or 271[XS].
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

300 Level Courses

CHEM 310: *Survey of Organic Chemistry.* 3 credits.
A one-semester survey of the chemistry of organic compounds with emphasis on structure, properties, stereochemistry, nomenclature, synthesis, and reactions of the major functional group families. Applications and compounds of importance to biology and biochemistry stressed. Credit will not be given for this course and CHEM 313; credit will not be given for this course and CHEM 314. Offered by Chemistry. Limited to three attempts.

Registration Restrictions:

Required Prerequisites: (CHEM 271[C] or 271[XS]) and (CHEM 272[C] or 272[XS]) or ((CHEM 211[C] or 211[XS]) and (CHEM 213[C] or 213[XS]) and (CHEM 212[C] or 212[XS]) and (CHEM 214[C] or 214[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CHEM 313: *Organic Chemistry I.* 3 credits.
Theoretical, synthetic, industrial, and biological aspects of the chemistry of carbon compounds. Offered by Chemistry. Limited to three attempts.

Recommended Corequisite: CHEM 315.

Registration Restrictions:
Required Prerequisites: ((CHEM 212[C], U212 or 212[XS]) and (CHEM 211[C] or 211[XS]) and (CHEM 213[C] or 213[XS]) and (CHEM 214[C] or 214[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CHEM 314: *Organic Chemistry II.* 3 credits.
Theoretical, synthetic, industrial, and biological aspects of the chemistry of carbon compounds. Offered by Chemistry. Limited to three attempts.

Recommended Corequisite: CHEM 318.

Registration Restrictions:
Required Prerequisites: ((CHEM 313[C], L313 or 313[XS]) and (CHEM 211[C] or 211[XS]) and (CHEM 212[C] or 212[XS]) and (CHEM 213[C] or 213[XS]) and (CHEM 214[C] or 214[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CHEM 315: *Organic Chemistry Lab I.* 2 credits.
Lab techniques and reactions arranged to accompany CHEM 313. Notes: One-hour recitation. Offered by Chemistry. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: ((CHEM 313[*C], 313[XS] or L313[*]) and (CHEM 211[C] or 211[XS]) and (CHEM 213[C] or 213[XS]) and (CHEM 212[C] or 212[XS]) and (CHEM 214[C] or 214[XS])).
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

CHEM 318: *Organic Chemistry Lab II.* 2 credits.
Continuation of CHEM 315, arranged to accompany CHEM 314. Notes: One-hour recitation. Offered by Chemistry. Limited to two attempts.

Recommended Corequisite: CHEM 314

Registration Restrictions:
Required Prerequisites: ((CHEM 211[C], 211[XS] or U211) and (CHEM 213[C], 213[XS] or U213) and (CHEM 212[C], 212[XS] or U212) and (CHEM 214[C], 214[XS] or U214) and (CHEM 313[C], 313[XS] or L313) and (CHEM 314[*C], 314[XS] or L314) and (CHEM 315[C], 315[XS] or L315)).
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

CHEM 321: *Quantitative Chemical Analysis.* 4 credits.
Principles of chemical analysis emphasizing ionic equilibria. Lab consists of gravimetric, volumetric, and instrumental methods illustrating principal types of quantitative determinations. Offered by Chemistry. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (CHEM 212[C] or 212[XS]) and (MATH 113[C] or 113[XS]) and (CHEM 211[C] or 211[XS]) and (MATH 114[*C] or 114[XS]).
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CHEM 322: *Quantitative Chemical Analysis Lecture.* 3 credits.
Lecture portion of CHEM 321. Offered by Chemistry. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: ((CHEM 211[C] or 211[XS]) and (CHEM 212[C] or 212[XS]) and (CHEM 213[C] or 213[XS]) and (CHEM 214[C] or 214[XS]) and (MATH 113[C] or 113[XS]) and (MATH 114[C] or 114[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CHEM 323: *Quantitative Chemical Analysis Laboratory.* 1 credit.
Laboratory component of CHEM 321. Offered by Chemistry. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (CHEM 322[C] or 322[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

CHEM 331: *Physical Chemistry I.* 3 credits.
Yearlong survey covering topics including thermodynamics, equilibria, kinetics, solution properties, elementary quantum theory, electrochemistry, atomic and molecular structure, and nuclear chemistry. Offered by Chemistry. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (CHEM 212[C] or 212[XS]) and (CHEM 211[C] or 211[XS]) and (CHEM 213[C] or 213[XS]) and (CHEM 214[C] or 214[XS]) and (MATH 114[C], 114[XS], 116[C] or 116[XS]) and (PHYS 243[*C], 243[XS], 160[*C] or 160[XS]).
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CHEM 332: *Physical Chemistry II.* 3 credits.
Yearlong survey covering topics including thermodynamics, equilibria, kinetics, solution properties, elementary quantum theory, electrochemistry, atomic and molecular structure, and nuclear chemistry. Offered by Chemistry. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: ((MATH 114[C] or 114[XS]) and (CHEM 331[C] or 331[XS])) and (PHYS 243[C], 243[XS], 160[C] or 160[XS]) and (PHYS 244[*C], 244[XS], 260[XS] or 260[*C]).
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CHEM 336: *Physical Chemistry Lab I.* 2 credits.
Quantitative experimental study of physicochemical principles. CHEM 336 and 337 constitute an introduction to the practice and theory of experimental physical chemistry. Notes: One-hour recitation. Offered by Chemistry. Limited to two attempts.

Specialized Designation: Writing Intensive in Major

Registration Restrictions:
Required Prerequisites: ((CHEM 212[C] or 212[XS]) and (CHEM 321[C] or 321[XS]) and (CHEM 331[*C] or 331[XS]) and (PHYS 243[*C], 243[XS], 160[*C] or 160[XS]) and (MATH 114[C], 114[XS], 116[C] or 116[XS])).
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

CHEM 337: *Physical Chemistry Lab II.* 2 credits.
Continuation of CHEM 336. Notes: One-hour recitation. Offered by Chemistry. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: ((CHEM 331[C], 331[XS] or L331) and (CHEM 332[*C], 332[XS] or L332[*]) and (CHEM 336[C], 336[XS] or L336)).
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

CHEM 355: *Undergraduate Research.* 1-3 credits.
Original research project. May involve lab study, computer modeling and analysis, or other original research as appropriate. Research formulated and completed under instructor's guidance. Culminates in a written and oral final report. May be repeated for a total of 6 credits. Offered by Chemistry. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Required Prerequisites: (CHEM 313[C] or 313[XS]) and (CHEM 315[C] or 315[XS]) and (MATH 113[C] or 113[XS]) and (PHYS 243[C] or 243[XS]) and (PHYS 244[C] or 244[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Junior, Sophomore, Senior Plus or Senior.

Enrollment is limited to students with a major, minor, or concentration in Chemistry.

Schedule Type: Research

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

CHEM 413: *Synthetic and Mechanistic Organic Chemistry.* 3 credits.
General review of synthetic pathways and applications to new topics, emphasizing fused ring aromatics, heterocyclics, natural products, and biologically active compounds. Includes relationship of applied organic chemistry to consumer products, including drugs and agricultural chemicals. Offered by Chemistry. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: ((CHEM 314[C], L314 or 314[XS]) and (CHEM 318[C], L318 or 318[XS]) and (CHEM 331[C] or 331[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CHEM 422: *Instrumental Methods of Chemical Analysis.* 3 credits.
Introduces theories of analysis by instrumental methods. Basic electronics applied to chemical measurements. Topics include introduction to theory of spectroscopy including ultraviolet, visible, and infrared, and electrochemical methods of analysis; theory of Fourier transform techniques such as FT-IR and FT-NMR; and theory of advanced pulse techniques. Offered by Chemistry. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (CHEM 321[C] or 321[XS]) and (CHEM 332[C] or 332[XS]) and (CHEM 337[C] or 337[XS]).
[C] Requires minimum grade of C.

XS Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CHEM 423: *Instrumental Methods of Chemical Analysis Laboratory.* 2 credits.
Laboratory-based introduction to quantitative analysis of organic and inorganic substances by using modern analytical instrumentation. Laboratory highlights practice of atomic and molecular spectroscopy, spectrophotometry, chromatography, voltammetry, and potentiometry in relation to chemical experimentation. Offered by Chemistry. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (CHEM 422C or 422XS).
C Requires minimum grade of C.
XS Requires minimum grade of XS.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

CHEM 424: *Principles of Chemical Separation.* 3 credits.
Theories and models of separation with applications to analyses of a wide range of chemical, biological, and environmental samples. Topics include high-resolution gas and high-performance liquid chromatography. Emphasizes theory of reverse phase, normal phase, ion exchange, size exclusion, and affinity based separations. Also presents instrumentation such as detectors, pumps, columns, and data acquisition. Offered by Chemistry. Limited to three attempts.

Recommended Prerequisite: CHEM 332 or CHEM 422 or Permission of instructor

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CHEM 425: *Electroanalytical Chemistry.* 3 credits.
Review of basic electrochemistry. Emphasizes analysis and research for applications of modern electrochemical techniques such as chronoamperometry; cyclic, stripping, and AC voltammetry; pulse polarography; coulometry; electrochemical sensors; and instrumentation. Offered by Chemistry. Limited to three attempts.

Recommended Prerequisite: CHEM 332 or CHEM 422 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CHEM 427: *Aquatic Environmental Chemistry.* 3 credits.
Thermodynamic and kinetic processes regulating the chemistry of surface and groundwater in natural and polluted environments with particular emphasis in explaining the aqueous concentrations of chemical species and controlling geochemical factors in the hydrosphere. Structure, sources and transformations of organic matter in the aquatic environment and interactions with aqueous solutes will be covered as related to contemporary issues in water quality. Offered by Chemistry. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (CHEM 321C or 321XS).
C Requires minimum grade of C.
XS Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CHEM 438: *Atmospheric Chemistry.* 3 credits.
The fundamental chemical processes of the Earth's atmosphere including chemical cycles, thermodynamics, reaction kinetics, photochemistry, radiative balance, ozone chemistry and environmental issues, including air pollution, acid rain and global change. Offered by Chemistry. Limited to three attempts. Equivalent to CLIM 438.

Registration Restrictions:
Required Prerequisites: (CHEM 332C or 332XS).
C Requires minimum grade of C.
XS Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CHEM 439: *RS: Atmospheric Chemistry II: Air Analysis Techniques.* 3 credits.
The theory, design and implementation of air sampling and analysis techniques for investigating GMU and regional air quality. Offered by Chemistry. Limited to three attempts.

Specialized Designation: Research/Scholarship Intensive

Recommended Prerequisite: CHEM 438 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CHEM 441: *Properties and Bonding of Inorganic Compounds.* 3 credits.
Interpretation of physical and chemical properties of inorganic compounds in terms of currently used bonding concepts. Topics include molecular symmetry and applications of symmetry, structure and bonding in ionic solids; reactions and characterizations of solids; electronic and magnetic properties and applications of solids. Offered by Chemistry. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (CHEM 332C or 332XS) and (CHEM 337C or 337XS).
C Requires minimum grade of C.
XS Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CHEM 445: *Inorganic Preparations and Techniques.* 2 credits.
Application of techniques of inorganic chemistry to preparation, purification, and spectroscopic characterization of selected substances. Offered by Chemistry. Limited to three attempts.

Specialized Designation: Mason Impact.

Registration Restrictions:
Required Prerequisites: (CHEM 441[C] or 441[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

CHEM 446: *Bioinorganic Chemistry.* 3 credits.
Application of inorganic coordination chemistry and physical methods in study of structure and function of metal ion sites in biomolecules. Properties of transition metal ions, ligand field theory. Topics include iron cytochromes, zinc and copper enzymes, cobalamins, iron sulfur proteins, oxygen transport, iron storage, electron transfer, inorganic model compounds, metals in medicine, and toxicity of inorganic species. Offered by Chemistry. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: ((CHEM 463[C], 463[XS], BIOL 483[C] or 483[XS]) and (CHEM 331[C] or 331[XS]) and (CHEM 336[C] or 336[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CHEM 451: *Special Projects in Chemistry.* 1-3 credits.
Introduction to chemical research or development. Includes literature search, conferences, and lab. Notes: Written and oral technical reports required. Offered by Chemistry. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: ((CHEM 314[C] or 314[XS]) and (CHEM 318[C] or 318[XS]) and (CHEM 321[C] or 321[XS]) and (CHEM 331[C] or 331[XS]) and (CHEM 336[C] or 336[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Senior Plus or Senior.

Enrollment is limited to students with a major, minor, or concentration in Chemistry.

Schedule Type: Research

Grading:
This course is graded on the Undergraduate Regular scale.

CHEM 452: *Special Projects in Chemistry.* 1-3 credits.
Introduction to chemical research or development. Includes literature search, conferences, and lab. Notes: Written and oral technical reports required. Offered by Chemistry. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (CHEM 451[C] or 451[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Senior Plus or Senior.

Enrollment is limited to students with a major, minor, or concentration in Chemistry.

Schedule Type: Research

Grading:
This course is graded on the Undergraduate Regular scale.

CHEM 455: *Honors Research in Chemistry.* 3 credits.
Introduction to research on current problem in chemical sciences under supervision of faculty advisor. Includes literature search, laboratory or theoretical work, conferences with faculty advisor, attendance at regularly scheduled seminars, and oral and written presentations. Notes: Credit will not be given for both these courses and CHEM 451, 452. Offered by Chemistry. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (CHEM 313[C] or 313[XS]) and (CHEM 314[C] or 314[XS]) and (CHEM 315[C] or 315[XS]) and (CHEM 318[C] or 318[XS]) and (CHEM 331[C] or 331[XS]) and (CHEM 336[C] or 336[XS]) and (CHEM 490[*C] or 490[XS]).
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Senior Plus or Senior.

Enrollment is limited to students with a major in Chemistry.

Enrollment limited to students with the Honors Coll Schlrshp Confirmd, Honors College. or Honors in the Major. attributes.

Schedule Type: Research

Grading:
This course is graded on the Undergraduate Regular scale.

CHEM 456: *Honors Research in Chemistry.* 3 credits.
Introduction to research on current problem in chemical sciences under supervision of faculty advisor. Includes literature search, laboratory or theoretical work, conferences with faculty advisor, attendance at regularly scheduled seminars, and oral and written presentations. Notes: Credit will not be given for both these courses and CHEM 451, 452. Offered by Chemistry. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: CHEM 455[C] and (CHEM 490[*C] or 490[XS]).
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Senior Plus or Senior.

Enrollment is limited to students with a major in Chemistry.

Enrollment limited to students with the Honors Coll Schlrshp Confirmd, Honors College. or Honors in the Major. attributes.

Schedule Type: Research

Grading:
This course is graded on the Undergraduate Regular scale.

CHEM 458: *Chemical Oceanography.* 3 credits.
The world's oceans, including a variety of closed basins and estuaries, comprise a complex and dynamic system of chemical processes that interact with biological, geological, physical, and atmospheric processes to play a significant role in defining the earth's fragile environment. This course will present an overview of the origin, occurrence, and distribution of the chemical components in sea water and an introduction to the basic principles of the chemical processes taking place in the marine environment. Designated a Green Leaf Course. Offered by Chemistry. Limited to three attempts. Equivalent to GEOL 458.

Specialized Designation: Green Leaf Related Course

Registration Restrictions:
Required Prerequisites: ((CHEM 211[C] or 211[XS]) and (CHEM 212[C] or 212[XS]) and (CHEM 321[C], 321[XS], GEOL 309[C] or 309[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CHEM 463: *General Biochemistry I.* 4 credits.
Brief introduction to biochemistry, followed by in-depth look at amino acids and proteins, 3-D structure, folding and dynamics, their specialized function, and primary metabolism. Emphasizes enzymes and their chemical mechanisms, and metabolism. Offered by Chemistry. Limited to three attempts. Equivalent to BIOL 483.

Registration Restrictions:
Required Prerequisites: (CHEM 313[C], 313[XS] or L313) and (BIOL 213[C] or 213[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CHEM 464: *General Biochemistry II.* 3 credits.
Continuation of general biochemistry, focusing on secondary metabolism, cell signaling, and processes of replication, transcription, and translation. Emphasizes important biochemistry research topics; much material drawn from current biochemical literature. Offered by Chemistry. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (CHEM 463[C] or 463[XS]) or ((BIOL 483[C] or 483[XS]) and (CHEM 314[C], 314[XS] or L314)).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CHEM 465: *Biochemistry Lab.* 2 credits.
Introduction to modern biochemical experimental methods of studying chemical and physical properties of biological molecules. Includes separation, identification, and characterization of biomolecules. Offered by Chemistry. Limited to three attempts.

Specialized Designation: Writing Intensive in Major

Recommended Prerequisite: Grade of C or better in CHEM 315 and CHEM 463.

Recommended Corequisite: CHEM 463.

Registration Restrictions:
Required Prerequisites: (CHEM 463[*C], 463[XS], BIOL 483[C] or 483[XS]) and (CHEM 315[C], 315[XS] or L315).
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

CHEM 467: *The Chemistry of Enzyme-Catalyzed Reactions.* 3 credits.
Examples of enzyme mechanisms demonstrate how chemical principles are employed by living organisms. Specific enzyme mechanisms used to illustrate principles from organic, inorganic, and physical chemistry. Discusses techniques to monitor enzyme reactions. Offered by Chemistry. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: ((CHEM 463[C] or 463[XS]) and (CHEM 464[C] or 464[XS]) and (CHEM 314[C] or 314[XS]) and (CHEM 331[C] or 331[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CHEM 468: *Bioorganic Chemistry.* 3 credits.
Basic understanding of chemical nature of biomolecules and biomacromolecules. Introduces biomolecules such as amino acids, proteins, carbohydrates, and lipids. Lectures focus on biophysical properties and synthesis, using practical examples and visual aids. Offered by Chemistry. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: ((CHEM 463[C], 463[XS], BIOL 483[C] or 483[XS]) and (CHEM 314[C] or 314[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CHEM 470: *Laboratory Instructional Methods for Chemistry.* 3 credits.
Lecture and laboratory experience teaching chemistry in laboratory. Students work closely with faculty members and are responsible for all aspects of teaching undergraduate laboratory techniques. Students also learn techniques for acquisition and storage of chemicals and laboratory apparatus, safety, disposal of chemical waste, and literature of chemical education. Offered by Chemistry. Limited to three attempts.

Recommended Prerequisite: CHEM 314.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

CHEM 471: *Solid State Chemistry.* 3 credits.
Focuses on the design and synthesis, structure and bonding of solid state compounds, physical properties and characterization of solids. Topics of current interest will also be included. Offered by Chemistry. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (CHEM 441[C] or 441[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CHEM 472: *Modern Polymer Chemistry.* 3 credits.
Synthetic and analytical chemistry of synthetic macromolecules. Topics include polymer solutions, molecular weight determination, spectroscopy, thermal analysis, x-ray crystallinity, polymerization types, and commercial and electroactive polymers. Offered by Chemistry. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: ((CHEM 313[C] or 313[XS]) and (CHEM 314[C] or 314[XS]) and (CHEM 321[C] or 321[XS]) and (CHEM 331[C] or 331[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CHEM 480: *Fundamentals of Nanoscience and Nanomaterials.* 3 credits.
This course will i) start with physical chemistry and surface science to elucidate the fundamental concepts and unique properties of solid materials emerging at the nanoscale; ii) introduce both "top-down" and "bottom-up" approaches to the fabrication of nanostructures and nanomaterials; iii) discuss advanced tools for characterizing the physical and chemical properties of nanomaterials; iv) review recent developments of nanomaterials for applications in catalysis, electronics, optoelectronics, energy, and nanomedicine; and v) discuss the environmental, health and safety (EHS) issues of nanomaterials for understanding the societal impact of nanotechnology. Offered by Chemistry. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: ((CHEM 331[C] or 331[XS]) and (CHEM 332[C] or 332[XS]) and (MATH 113[C] or 113[XS]) and (MATH 114[C] or 114[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CHEM 490: *Undergraduate Seminar.* 1 credit.
Selected topics from recent chemical theory and applications, generally consisting of research presentations by invited faculty from other institutions. Attendance is required at 80% of the seminars and students must write up a one-page summary of each talk attended. This course will also be used to teach students how to give effective presentations. May be repeated for a total of 2 credits. Offered by Chemistry. May be repeated within the degree for a maximum 2 credits.

Registration Restrictions:
Required Prerequisites: (CHEM 331[C], 331[XS], 336[C] or 336[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Senior Plus or Senior.

Enrollment is limited to students with a major, minor, or concentration in Chemistry.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

500 Level Courses

CHEM 500: *Selected Topics in Modern Chemistry.* 3 credits.
Topics of interest in analytical, biological, environmental, geological, geochemical, inorganic, organic, and physical chemistry. Notes: Credit not allowed toward major in chemistry. Credit not allowed toward minor in chemistry. Offered by Chemistry. May not be repeated for credit.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CHEM 513: *Synthetic and Mechanistic Organic Chemistry.* 3 credits.
General review of synthetic pathways and applications to new topics, emphasizing fused ring aromatics, heterocyclics, natural products, and biologically active compounds. Includes relationship of applied organic chemistry to consumer products, including drugs and agricultural chemicals. Organic core course. Offered by Chemistry. May not be repeated for credit.

Recommended Prerequisite: Grade of C or better in CHEM 314, CHEM 318 and CHEM 331.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:

This course is graded on the Graduate Regular scale.

CHEM 529: *Instrumental Techniques of Analysis.* 2 credits.
Principles and operation of modern instrumentation, emphasizing applications to analysis of chemical, biological, and environmental samples. Methods include combined capillary column gas chromatography and mass spectrometry, high-performance liquid chromatography, optical methods, surface analysis methods, magnetic resonance spectroscopy, atomic emission and absorption spectrometry, and electroanalytical methods. With approval of research committee, students choose methods studied. Offered by Chemistry. May be repeated within the term.

Recommended Prerequisite: CHEM 321 and 422 or 521 or permission of department.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Regular scale.

CHEM 531: *Elements of Physical Chemistry.* 3 credits.
The course offers an intensive overview of the concepts, techniques, and models of physical chemistry as they apply to many branches of chemistry and allied sciences. The emphasis is for the students to develop practical skill in applying the concepts of thermodynamics, kinetics, and quantum mechanics to chemical systems at both the macroscopic and the atomic/molecular level. This course will use spreadsheet models to investigate chemical and physical systems. Offered by Chemistry. May not be repeated for credit.

Recommended Prerequisite: CHEM 211, 212; CHEM 313, 314; PHYS 243, 245 (college physics), MATH 113, or Permission of Instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CHEM 560: *Environmental Biotechnology.* 3 credits.
Biotechnology plays a central role in many environmental fields, such as wastewater treatment, bioremediation, pathogen control, and biofuel production. The objective of the course is to provide environmental scientists with advanced chemical and biochemical concepts necessary for understanding environmental processes and control systems. The course integrates chemical, biological, and biochemical principles for building a quantitative framework applicable to various environmental biotechnologies. The course begins with a revision of the fundamentals of microbiology, biochemistry, and molecular biology. Quantitative concepts of biochemical and microbial kinetics, metabolic pathways, and bioenergetics are then covered, with special emphasis on environmental processes. These principles are applied to different environmental biotechnologies, including water and wastewater treatment, bioremediation, environmental genomics, biofuel production, and biosensors. Offered by Chemistry. May not be repeated for credit.

Recommended Prerequisite: CHEM 446 Bioinorganic Chemistry, BIOL 213 Cell Structure & Function, or equivalent courses

Registration Restrictions:
Required Prerequisites: (CHEM 211[C] or 211[XS]) and (CHEM 213[C] or 213[XS]) and (CHEM 212[C] or 212[XS]) and (CHEM 214[C] or 214[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CHEM 563: *General Biochemistry I.* 4 credits.
Brief introduction to biochemistry, followed by an in-depth look at amino acids and proteins, 3-D structure, folding and dynamics, their specialized function and primary metabolism. Emphasizes enzymes and their chemical mechanisms and metabolism. Students will be assigned papers from the primary literature and be required to answer questions from these papers on exams. Offered by Chemistry. May not be repeated for credit.

Recommended Prerequisite: CHEM 313, BIOL 213.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CHEM 564: *General Biochemistry II.* 3 credits.
Previous course in biology recommended but not required. Important biological compounds, including proteins, carbohydrates, lipids, and nucleic acids, and their interrelations. Offered by Chemistry. May not be repeated for credit.

Recommended Prerequisite: CHEM 563 or equivalent.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CHEM 567: *The Chemistry of Enzyme-Catalyzed Reactions.* 3 credits.
Examples of enzyme mechanisms demonstrate how chemical principles are employed by living organisms. Specific enzyme mechanisms used to illustrate principles from organic, inorganic, and physical chemistry. Discusses techniques to monitor enzyme reactions. Offered by Chemistry. May not be repeated for credit.

Recommended Prerequisite: CHEM 313 and 463 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CHEM 568: *Bioorganic Chemistry.* 3 credits.
Basic understanding of chemical nature of biomolecules and biomacromolecules. Introduces biomolecules such as amino acids, proteins, carbohydrates, and lipids. Lectures focus on biophysical properties and synthesis, using practical examples and visual aids. Offered by Chemistry. May not be repeated for credit.

Recommended Prerequisite: CHEM 314 and 463, or equivalent, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CHEM 579: *Special Topics.* 1-6 credits.
Current topics in chemistry, depending on instructor's specialty. Notes: May be repeated with different topics, with department approval. Offered by Chemistry. May be repeated within the term.

Specialized Designation: Topic Varies

Recommended Prerequisite: CHEM 313 and 314, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

600 Level Courses

CHEM 613: *Modern Polymer Chemistry.* 3 credits.
Synthetic and analytical chemistry of synthetic macromolecules. Topics include polymer solutions, molecular weight determination, spectroscopy, thermal analysis, x-ray crystallinity, polymerization types, and commercial and electroactive polymers. Organic core course. Offered by Chemistry. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CHEM 614: *Physical Organic Chemistry.* 3 credits.
Principles underlying molecular structure, reactivity, and reaction mechanisms. Topics include valence-bond and molecular-orbital theory, electronic interpretation of organic reactions, stereochemistry, conformational analysis, kinetics and thermodynamics of organic reactions, and photochemistry. Organic core course. Offered by Chemistry. May not be repeated for credit.

Recommended Prerequisite: CHEM 314 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CHEM 620: *Modern Instrumentation.* 3 credits.
Methods of sensing and measurement of radiation, particles, pressure, concentrations of specific elements and compounds. Topics include basic operational amplifier circuits for analog signals, digitizing devices and computerized data collection, noise and noise-reduction methods, and specialized instrumentation systems for various areas of chemistry and physics. Offered by Chemistry. May not be repeated for credit.

Recommended Prerequisite: CHEM 332 or CHEM 422 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CHEM 624: *Principles of Chemical Separation.* 3 credits.
Theories and models of separation with applications to analyses of a wide range of chemical, biological, and environmental samples. Topics include high-resolution gas and high-performance liquid chromatography. Emphasizes theory of reverse phase, normal phase, ion exchange, size exclusion, and affinity based separations. Also presents instrumentation such as detectors, pumps, and columns, and data acquisition. Offered by Chemistry. May not be repeated for credit.

Recommended Prerequisite: CHEM 332 or CHEM 422 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CHEM 625: *Electroanalytical Chemistry.* 3 credits.
Review of basic electrochemistry. Emphasizes analysis and research for applications of modern electrochemical techniques such as chronoamperometry; cyclic, stripping, and AC voltammetry; pulse polarography; coulometry; electrochemical sensors; and instrumentation. Offered by Chemistry. May not be repeated for credit.

Recommended Prerequisite: CHEM 332 or CHEM 422 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CHEM 627: *Aquatic Environmental Chemistry.* 3 credits.
Thermodynamic and kinetic processes regulating the chemistry of surface and groundwater in natural and polluted environments with particular emphasis in explaining the aqueous concentrations of chemical species and controlling geochemical factors in the hydrosphere. Structure, sources and transformations of organic matter in the aquatic environment and interactions with aqueous solutes will be covered as related to contemporary issues in water quality. Students will be assigned papers from the primary literature and be required to answer questions from these papers on exams. Offered by Chemistry. May not be repeated for credit.

Recommended Prerequisite: CHEM 321 or GEOL 302 or equivalent courses or permission of the instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CHEM 633: *Chemical Thermodynamics and Kinetics.* 3 credits.
Advanced study covering application of kinetics to the elucidation of reaction mechanisms and application of statistical thermodynamics to theory of elementary reaction rates. Physical core course. Offered by Chemistry. May not be repeated for credit. Equivalent to CSI 711.

Recommended Prerequisite: CHEM 331 and 332.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CHEM 641: *Solid State Chemistry.* 3 credits.
Focuses on the design and synthesis, structure and bonding of solid state compounds; physical properties and characterization of solids. Topics of current interest will also be included. Offered by Chemistry. May not be repeated for credit.

Recommended Prerequisite: CHEM 441 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CHEM 646: *Bioinorganic Chemistry.* 3 credits.
Applies inorganic coordination chemistry and physical methods to understand structure and function of metal ion sites in biomolecules. Biochemical roles of metal centers in oxygen transport, metalloenzymes, and electron transfer. Topics include iron cytochromes, zinc and copper enzymes, cobalamins, iron sulfur proteins, inorganic model compounds, and metals in medicine. Inorganic core course. Offered by Chemistry. May not be repeated for credit.

Recommended Prerequisite: CHEM 441, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CHEM 651: *Environmental Chemistry of Organic Substances.* 3 credits.
Study of principles governing multimedia distribution and fate of organic chemicals in environment. Overview of origin and occurrence of major classes of natural and anthropogenic organic chemicals in environment. Environmental core course. Offered by Chemistry. May not be repeated for credit.

Recommended Prerequisite: One semester of Physical Chemistry, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CHEM 660: *Protein Biochemistry.* 3 credits.
Proteins play critical roles in most biological processes. Therefore, to understand these processes, it is necessary to understand proteins. This course will introduce students to proteins, their biosynthesis/biodegradation and their biophysical and biochemical properties. Biochemistry core course. Offered by Chemistry. May not be repeated for credit.

Recommended Prerequisite: CHEM 463 or equivalent or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CHEM 661: *Antibiotic Chemistry and Resistance.* 3 credits.
Introduces the various classes of antibiotics. Focus on the chemistry of antibiotics and how they inhibit bacterial growth and/or cause death and the response of bacteria to these compounds. Offered by Chemistry. May not be repeated for credit.

Recommended Prerequisite: CHEM 463 or equivalent or permission of instructor

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CHEM 662: *Modern Methods of Drug Discovery.* 3 credits.
Introduction to the process of drug discovery. Covers modern methods and strategies of target identification, lead identification, and lead optimization. Biochemistry core course. Offered by Chemistry. May not be repeated for credit.

Recommended Prerequisite: CHEM 463 (or equivalent) or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CHEM 665: *Protein-Protein Interactions: Methods and Applications.* 3 credits.
Introduction to the fundamental principles of protein-protein interactions, including experimental design considerations and methods for quantification of these interactions. Offered by Chemistry. May not be repeated for credit.

Recommended Prerequisite: CHEM 463 (or equivalent), or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CHEM 670: *Teaching Practicum.* 2 credits.
Prelaboratory lecture and laboratory teaching in chemistry. Students work closely with faculty and are responsible for all aspects of teaching undergraduate laboratory techniques. Offered by Chemistry. May not be repeated for credit.

Recommended Prerequisite: Enrollment in the graduate program and permission of Chair.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Graduate Special scale.

CHEM 680: *Fundamentals of Nanoscience and Nanomaterials.* 3 credits.
This course will i) start with physical chemistry and surface science to elucidate the fundamental concepts and unique properties of solid materials emerging at the nanoscale; ii) introduce both "top-down" and "bottom-up" approaches to the fabrication of nanostructures and nanomaterials; iii) discuss advanced tools for characterizing the physical and chemical properties of nanomaterials; iv) review recent developments of nanomaterials for applications in catalysis, electronics, optoelectronics, energy, and nanomedicine; and v) discuss the environmental, health and safety (EHS) issues of nanomaterials for understanding the societal impact of nanotechnology. Offered by Chemistry. May not be repeated for credit.

Recommended Prerequisite: A grade of C or better in CHEM 331 and 332, MATH 113 and 114

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

700 Level Courses

CHEM 728: *Introduction to Solid Surfaces.* 3 credits.
Introduces properties of solid surfaces. Topics include gas absorption isotherms, surface area measurement techniques, real and clean surfaces, physisorption and chemisorption, methods of gas adsorption and desorption, measurement of heats of adsorption, desorption kinetics, electron spectroscopies and surface sensitivities, instrumentation; and principles of vacuum technology. Offered by Chemistry. May not be repeated for credit. Equivalent to CSI 712.

Recommended Prerequisite: CHEM 422 or equivalent.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CHEM 735: *Astrophysical Chemistry of Planetary Bodies.* 3 credits.
In depth review of the chemistry of planets, comets and other bodies in the Solar System. Emphasis will be placed on the laboratory techniques and measurements made in order to understand and predict astronomical observations. Offered by Chemistry. May not be repeated for credit.

Recommended Prerequisite: CHEM 331, or ASTR 403, or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CHEM 736: *Computational Quantum Mechanics.* 3 credits.
Study of fundamental concepts of quantum mechanics from computational point of view, review of systems with spherically symmetric potentials, electron-atom solutions to Schrodinger's equation, electron spin in many electron systems, atomic structure calculations, algebra of many electron calculations, Hartree-Fock, self-consistent field method, molecular structure calculations, scattering theory computations, and solid-state computations. Offered by Chemistry. May not be repeated for credit. Equivalent to CSI 783, PHYS 736.

Recommended Prerequisite: PHYS 502, 510, or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CHEM 767: *Industrial Biochemistry.* 3 credits.
An introduction to industrial biochemistry. Includes a mechanistic examination of the biosynthesis of several industrially important secondary metabolites, the industrial scale process of obtaining commercially valuable biochemical products, and the regulations that oversee the industrial biochemical process. Offered by Chemistry. May not be repeated for credit.

Recommended Prerequisite: CHEM 463 or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CHEM 790: *Graduate Seminar.* 1 credit.
Selected topics from recent chemical theory and applications, generally consisting of research presentations by invited faculty from other institutions. Attendance is required at 80% of the seminars and students must write up a 1 page summary of each talk attended. Course also used to teach students effective presentation methods. Notes: Requires, in last semester, seminar presentation on student's research or another topic acceptable to department. Three credits of CHEM 790 required for MS degree; an additional 3 credits required after admission to PhD program. Offered by Chemistry. May be repeated within the degree for a maximum 3 credits.

Recommended Prerequisite: Admission to a graduate program in Chemistry and Biochemistry, or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CHEM 796: *Directed Reading and Research.* 1-6 credits.
Reading and research on a specific topic in chemistry or biochemistry under direction of a faculty member. Offered by Chemistry. May be repeated within the degree for a maximum 12 credits.

Recommended Prerequisite: Admission to a graduate program in Chemistry and Biochemistry or affiliated programs.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Research

Grading:
This course is graded on the Graduate Regular scale.

CHEM 798: *Research Project.* 3-6 credits.
Experimental or theoretical research project chosen and completed under guidance of graduate faculty member. Notes: Requires comprehensive report acceptable to advisory committee, and final oral exam on report. Offered by Chemistry. May be repeated within the degree for a maximum 6 credits.

Recommended Corequisite: Permission of department; 6 credits of CHEM 798 or 799 (credit will not be given for both).

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Thesis

Grading:
This course is graded on the Satisfactory/No Credit scale.

CHEM 799: *Master's Thesis.* 1-6 credits.
Laboratory thesis research and writing under direction of supervisor. Notes: Minimum of 3 credits for first two enrollment periods. Offered by Chemistry. May be repeated within the degree.

Recommended Corequisite: Permission of the department.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Thesis

Grading:
This course is graded on the Satisfactory/No Credit scale.

800 Level Courses

CHEM 814: *Advanced Bioorganic Chemistry.* 3 credits.
Introduces the chemical nature of biomolecules, with a focus on their organic properties. Focuses on the chemical principals that underlie the diverse structures, properties and reactions of biomolecules. Core course in the Chemistry and Biochemistry doctoral program. Offered by Chemistry. May not be repeated for credit.

Recommended Prerequisite: CHEM 313, 314, and 463 or equivalent; or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CHEM 817: *Organic Structural Spectroscopy.* 3 credits.
Spectroscopic determination of organic molecular structure using 1H, 13H, 19F, and 31P nuclear magnetic resonance, infrared, ultraviolet, visible, and Raman spectroscopy, and mass spectrometry. Offered by Chemistry. May not be repeated for credit.

Recommended Prerequisite: CHEM 314 or equivalent.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:

This course is graded on the Graduate Regular scale.

CHEM 821: *Theory of Analytical Processes.* 3 credits.
Theory and application of contemporary analytical processes and methods used in chemistry research. Emphasis on analytical signals and accompanying noise, sample preparation techniques, and quality assurance in measurements. Core course in the Chemistry and Biochemistry doctoral program. Offered by Chemistry. May not be repeated for credit.

Recommended Prerequisite: Admission to Chemistry and Biochemistry doctoral program.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CHEM 833: *Physical Chemistry and Biochemistry.* 3 credits.
The theory and practical use of thermodynamics, kinetics, spectroscopy and quantum chemistry in chemical and biochemical research. Core course in the Chemistry and Biochemistry doctoral program. Offered by Chemistry. May not be repeated for credit.

Recommended Prerequisite: CHEM 331 or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CHEM 891: *Doctoral Scientific Critique, Writing and Presentation.* 3 credits.
Development of skills associated with scientific communication and research such as oral presentation of scientific material, analysis of scientific research and preparation of scientific proposals. In preparing scientific proposals, students will learn how to identify scientific questions of interest and how to plan a course of experiments to address these questions. Core course in the Chemistry and Biochemistry doctoral program. Offered by Chemistry. May not be repeated for credit.

Recommended Prerequisite: Permission of academic advisor, research advisor and/or research committee

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CHEM 896: *Doctoral Directed Reading and Research.* 1-6 credits.
Reading and research on a specific topic in Chemistry or Biochemistry under direction of a faculty member. Offered by Chemistry. May be repeated within the degree for a maximum 15 credits.

Recommended Prerequisite: Admission to the PhD in Chemistry and Biochemistry or affiliated programs.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Research

Grading:
This course is graded on the Graduate Regular scale.

900 Level Courses

CHEM 998: *Doctoral Dissertation Proposal.* 1-12 credits.
Development of a research proposal under the guidance of the research advisor and graduate committee. The resulting proposal, once approved by the student's research advisor and committee, forms the basis of the student's doctoral dissertation. May be repeated for credit, but no more than 24 combined credits from CHEM 998 and CHEM 999 may be applied toward satisfying doctoral degree requirements, with no more than 12 credits of CHEM 998. Offered by Chemistry. May be repeated within the degree.

Recommended Prerequisite: Permission of research advisor and/or graduate committee.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

CHEM 999: *Doctoral Dissertation Research.* 1-12 credits.
Research in the concentration pertinent to student's program of study under the direction of their research advisor and committee. Students may enroll for credits in this course once their research proposal has been approved. May be repeated for credit, but no more than 24 combined credits from CHEM 998 and CHEM 999 may be applied toward satisfying doctoral degree requirements, with no more than 12 credits of CHEM 998. Offered by Chemistry. May be repeated within the degree.

Recommended Prerequisite: Admission to candidacy in Chemistry and Biochemistry Doctoral Program.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy.

Enrollment is limited to Graduate level students.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

Chinese (CHIN)

100 Level Courses

CHIN 101: *Elementary Chinese.* 3 credits.
Introduction to Mandarin, including basic grammar, oral expression, listening comprehension, reading, and writing. Notes: Students may not receive credit for CHIN 101 and CHIN 109 or 110. Offered by Modern & Classical Languages. Limited to three attempts. Equivalent to CHIN 109, CHIN 110.

Schedule Type: Lecture

Grading:

This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Chinese

CHIN 102: *Elementary Chinese.* 3 credits.
Continuation of CHIN 101. Notes: Students may not receive credit for CHIN 102 and CHIN 109 or 110. Offered by Modern & Classical Languages. Limited to three attempts. Equivalent to CHIN 109, CHIN 110.

Recommended Prerequisite: CHIN 101.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Chinese

CHIN 110: *Elementary Chinese.* 6 credits.
Introduces elements of grammar, vocabulary, oral skills, listening comprehension, and reading. Notes: Lab work required. Students may not receive credit for CHIN 110 and CHIN 101, 102, or 109. Offered by Modern & Classical Languages. Limited to three attempts. Equivalent to CHIN 101, CHIN 102, CHIN 109.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Chinese

200 Level Courses

CHIN 201: *Intermediate Chinese I.* 3 credits.
Further development of skills acquired in CHIN 101 and 102, including grammar, oral expression, listening comprehension, reading, and writing. Notes: CHIN 201 and 202 must be taken in sequence. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: CHIN 101 and 102, or CHIN 110.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Chinese

CHIN 202: *Intermediate Chinese II.* 3 credits.
Continuation of CHIN 201. CHIN 201 and 202 must be taken in sequence. Notes: Students may not receive credit for CHIN 202 and CHIN 209. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: CHIN 201.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Fulfills Frgn Lng requirment, Taught in Chinese

300 Level Courses

CHIN 300: *Reading Skills Development.* 3 credits.
Develops reading proficiency, emphasizing vocabulary and grammar of standard written Chinese. Introduces discourse structure, sociolinguistic and cultural knowledge, and strategies for reading Chinese at an advanced level. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: CHIN 202, appropriate placement score, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Chinese

CHIN 301: *Advanced Grammar and Syntax.* 3 credits.
In-depth review of Chinese grammar and syntax. Provides extensive practice in controlled and free writing, emphasizing fundamental difficulties and points of interference between English and Chinese. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: CHIN 202 or equivalent, appropriate placement score, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Chinese

CHIN 305: *Chinese for the Business World.* 3 credits.
Introduces terminology and structure of business Chinese. Emphasizes acquiring vocabulary and developing facility in Chinese business articles and correspondence. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: CHIN 202 or equivalent; appropriate placement score; or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Chinese

CHIN 310: *Survey of Chinese Literature.* 3 credits.
Introduces outlines of Chinese literature to the 19th century, presented through literary sources arranged in roughly chronological order. Readings include poetry; fiction; personal essays; documents of philosophy, history, and religion; and transcribed oral records. Notes: Knowledge of Chinese helpful but not required. May be repeated when topic is different with approval of department. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 6 credits.

Mason Core: Literature

Recommended Prerequisite: ENGL 101/ENGH 101, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CHIN 311: *Modern Chinese Literature in Translation.* 3 credits.
Introduction of outlines of modern Chinese literature from early 20th century to post-Mao era, presented through literary sources arranged in roughly chronological order. Readings include poetry, fiction, personal essays. Notes: Knowledge of Chinese helpful but not required. May be repeated when topic is different with approval of department. Offered by Modern & Classical Languages. May be repeated within the term for a maximum 6 credits.

Mason Core: Literature

Recommended Prerequisite: ENGL 101/ENGH 101 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CHIN 318: *Introduction to Classical Chinese.* 3 credits.
Introduces basic structures and vocabulary of Classical Chinese, which still has a significant influence on the formal written prose of modern newspapers and documents. Offered by Modern & Classical Languages. Limited to three attempts.

Mason Core: Capstone

Specialized Designation: Non-Western Culture

Recommended Prerequisite: CHIN 202, appropriate placement score, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Chinese

CHIN 320: *Contemporary Chinese Film.* 3 credits.
Explores China from 1949 to present through cinematic and literary representations. Discussions focus on representations of cultural, social, and political changes in the movies. Also introduces critical readings that address issues of gender and youth, family, ethnicity, modernity and the nation, as well as visuality and memory. Notes: Knowledge of Chinese language helpful but not required. Offered by Modern & Classical Languages. Limited to three attempts.

Specialized Designation: Non-Western Culture

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CHIN 325: *Major Chinese Writers.* 3 credits.
Studies works of major Chinese writers. Writers studied may vary. Notes: Knowledge of Chinese helpful but not required. May be repeated when topic is different with approval of department. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 6 credits.

Mason Core: Literature

Specialized Designation: Non-Western Culture

Recommended Prerequisite: ENGL 101/ENGH 101, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CHIN 328: *Asian American Women Writers.* 3 credits.
Introduction to selected works by female writers of Chinese, Filipino, Indian, Japanese, and Korean descent. Analyzes themes, form, style, language, and structure of a variety of works, mainly novels and short stories. Assesses role and significance of writings as part of ethnic American and women's literature by exploring questions of identity formation and disintegration, and how they are rooted in gender, social status, ethnicity, community, geography, and generational conflict. Notes: Knowledge of Asian languages not required. Offered by Modern & Classical Languages. Limited to three attempts.

Mason Core: Literature

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CHIN 355: *Readings in Chinese Poetry and Poetics.* 3 credits.
Close readings and discussions of primary texts covering major periods in Chinese poetry to 1949. Analyzes variety of themes, forms, and styles. Notes: May be repeated when readings are different with permission of department. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 6 credits.

Mason Core: Capstone

Recommended Prerequisite: CHIN 300 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Chinese

CHIN 365: *Readings in Chinese Fiction after Mao.* 3 credits.
Close readings and discussions of primary texts after the Cultural Revolution. Analyzes themes, subjects, language, and styles. Notes: May be repeated when readings are different with permission of department. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: CHIN 300 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Chinese

400 Level Courses

CHIN 470: *Special Topics in Chinese Studies.* 3 credits.
Covers topics on Chinese language, literature, or culture organized by theme, genre approach, or era. Notes: May be repeated when topic is different with permission of department. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies, Non-Western Culture

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CHIN 475: *Chinese Popular Culture.* 3 credits.
Combines language learning with an introduction to the complex and vibrant popular culture of contemporary China: music, food, games, gender and family issues, commercial culture, and digital media. Authentic texts will include popular music and poems, films, TV shows, and social media posts. Offered by Modern & Classical Languages. Limited to three attempts.

Mason Core: Capstone

Recommended Prerequisite: Three years of college Chinese or equivalent.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Chinese

CHIN 480: *Fourth-Year Chinese I.* 3 credits.
Advanced work in major grammatical and lexical topics of Chinese. Applies theoretical principles to guided written and oral exercises. Offered by Modern & Classical Languages. Limited to three attempts.

Specialized Designation: Writing Intensive in Major

Recommended Prerequisite: CHIN 300 and 301; appropriate placement score, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Chinese

CHIN 481: *Fourth-Year Chinese II.* 3 credits.
Advanced work in major grammatical and lexical topics of Chinese. Applies theoretical principles to guided written and oral exercises. Offered by Modern & Classical Languages. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Chinese

CHIN 485: *China on Stage: Introduction to Chinese Theatrical Dramas in the 20th Century.* 3 credits.
Literature-based Chinese language course open to students who want to learn about Chinese drama and further develop their Chinese language proficiency at advanced levels. Students read, discuss and perform seven classic twentieth-century Chinese plays in order to understand modern and contemporary Chinese society and the lives of ordinary Chinese people. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: Two CHIN 300-level courses and one CHIN 400-level course

Recommended Corequisite: CHIN 400-level courses

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Chinese

CHIN 490: *Internship in Chinese Studies.* 1-9 credits.
Work with schools, social service programs, government agencies, interest groups, museums, or corporations locally and in Chinese-speaking regions. With a faculty supervisor, students develop an internship contract, which requires the approval of the director. For each credit, student works on site at least 45 hours. Notes: Contact the department one semester prior to enrollment. Offered by Modern & Classical Languages. May be repeated within the term for a maximum 9 credits.

Recommended Prerequisite: CHIN 202 or equivalent.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Chinese

Civil and Infrastructure Engineering (CEIE)

100 Level Courses

CEIE 100: *Environmental Engineering around the World.* 3 credits.
Society's relationship with the environment is: (1) fundamental to its success; (2) complex, involving economics, finance, law, culture, religion, politics, education, science, technology, and engineering; (3) widespread, often with impacts not just locally but regionally, nationally or globally; and (4) constantly changing with potentially enormous short-term and long-term benefits and costs that may be in conflict. This relationship can drive a society to thrive or decline. Humans today have unprecedented ability to affect the environment both locally and globally, and to be affected by it. Technology and engineering are key drivers in society's efforts to manage our environment. This course will examine the history of various societies' interactions—including our own—with the environment; explore our ability to affect the environment—in small and enormous ways—through modern science, technology and engineering; and foster debate on today's critical environmental issues. Offered by Civil, Environ & Infrastr Engr. Limited to two attempts.

Mason Core: Global Understanding, Encore: Sustainability

Specialized Designation: Green Leaf Related Course

Registration Restrictions:
Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CEIE 101: *Introduction to Civil Engineering.* 2 credits.
This course introduces the profession of civil engineering, with specific emphasis on modern challenges and solutions that are internal and external to the domain of civil engineering. Topics include broad coverage on technology-driven solutions to traditional engineering problems such as geodesy and georeferencing; global positioning systems; remote sensing; infrastructure security; civil engineering; big data; structural health monitoring; and cyber-physical systems. Using the principles taught in the course, for the term project students will develop solutions to meet the United Nations Sustainable Development Goals to Transform the World. Offered by Civil, Environ & Infrastr Engr. Limited to two attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

200 Level Courses

CEIE 203: *Geomatics and Engineering Graphics.* 3 credits.
Introduces topographic surveying and engineering drawing for civil engineering applications. Topics include surveying, GPS, GIS, digital terrain modeling, design of horizontal and vertical curve geometry for road applications, engineering drawing concepts, and drawing with CAD-based software. Fieldwork required on selected topics. Offered by Civil, Environ & Infrastr Engr. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: CEIE 117[C], 117[XS], CDS 130[C], 130[XS], ENGR 125T, CS 112[C] or 112[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CEIE 210: *Statics.* 3 credits.
Covers force vectors and operations in 2D and 3D; equilibrium of a particle; moment of a force vector; equilibrium of a rigid body; truss analysis; center of gravity, centroid and moment of inertia; shear force and bending moment diagrams; dry friction; virtual work. Offered by Civil, Environ & Infrastr Engr. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (PHYS 160[C] or 160[XS]) and (MATH 114[C], 114[XS], 116[C] or 116[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CEIE 240: *Hydraulics.* 3 credits.
Principles of fluids in equilibrium and motion. Topics include hydrostatic pressure; continuity, Bernoulli, and momentum equations; viscosity flow problems; pressure pipe flow and turbomachinery; measuring instruments; and applications to closed conduits and open channels. Offered by Civil, Environ & Infrastr Engr. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (PHYS 160[C] or 160[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

300 Level Courses

CEIE 301: *Engineering and Economic Models in Civil Engineering.* 3 credits.
Applies planning, analysis, control, and engineering economic models to life cycle of physical infrastructure. Introduces infrastructure design process and application of quantitative and probabilistic models. Presents applications of model building for engineering economics; decision making; forecasting; resource scheduling and allocation; estimating; work measurement and materials; and quality and process control in water, transportation, environmental, energy, and telecommunications infrastructure systems and the built environment. Offered by Civil, Environ & Infrastr Engr. Limited to two attempts.

Specialized Designation: Writing Intensive in Major

Registration Restrictions:
Required Prerequisites: (STAT 344[C], 344[XS], L344, 260[C] or 260[XS]) and (ENGL 302[C], ENGH 302[C], 302[XS], ENGL L302, ENGH L302, HNRS 353[C], 360[C] or 360[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CEIE 310: *Mechanics of Materials.* 3 credits.
Concepts of stress, strain, elasticity, and plasticity. Stress and strain transformation, including the use of Mohr's circle. Pure torsion. Theory of pure bending and members under transverse loading, including normal and shear stress analysis. Theory of elastic buckling. Distribution of internal forces in statically determinate systems and deflection of beams. Offered by Civil, Environ & Infrastr Engr. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (ENGR 210[C], CEIE 210[C] or 210[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CEIE 311: *Structural Analysis.* 3 credits.
Basic concepts and assumptions of structural analysis, including statical and geometric redundancy. Analysis, by integration of deformation

of simple structural members. Virtual work method for the analysis of deformations of simple structural systems such as articulate beams, trusses, frames, and arches. Method of forces to analyze statically indeterminate systems, method of displacements to analyze geometrically indeterminate systems, and symmetry and antisymmetry in structural analysis. Uses computer programs for structural analysis. Offered by Civil, Environ & Infrastr Engr. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (ENGR 310[C], L310, CEIE 310[C], L310 or 310[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major in Civil and Infrastructure Engr.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture, Recitation

Grading:
This course is graded on the Undergraduate Regular scale.

CEIE 331: *Soil Mechanics.* 3 credits.
Covers soil classification, soil properties and engineering characteristics of soils. Includes seepage effects, effective stresses, soil strength and deformation characteristics. Also, the determination of immediate and consolidation settlement, lateral earth pressures and bearing capacities. Introduces foundation design fundamentals. Offered by Civil, Environ & Infrastr Engr. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (ENGR 210[C], CEIE 210[C] or 210[XS]) and (CEIE 230[C], 240[C] or 240[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major in Civil and Infrastructure Engr.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CEIE 340: *Water Resource Engineering.* 3 credits.
Introduces principles and practice of water resources engineering. Topics include hydrology, governing principles, design and evaluation methods, common models, and typical applications in water resource engineering. Laboratory and field work required on selected topics. Offered by Civil, Environ & Infrastr Engr. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (CEIE 230[C], U230, 240[C], 240[XS] or U240).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major in Civil and Infrastructure Engr.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CEIE 355: *Environmental Engineering and Science.* 3 credits.
Introduces students to the concepts of water pollution, air pollution, noise, and solid waste generation and management. Relationships between human population growth and pollution are introduced. Contemporary environmental engineering topics such as sustainability and global climate change are presented. Offered by Civil, Environ & Infrastr Engr. Limited to two attempts.

Specialized Designation: Green Leaf Related Course

Registration Restrictions:
Required Prerequisites: (CHEM 211[C], U211, 211[XS], 251[C], U251, 271[C] or 271[XS]) and (CEIE 230[C], U230, 240[C], U240 or 240[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CEIE 360: *Introduction to Transportation Engineering.* 3 credits.
Introduces transportation systems and the factors that influence their planning, design, and operation. Topics include fundamentals of urban travel, travel demand forecasting, and traffic flow; principles of highway design; highway capacity and level of services; introduction to traffic control; traffic signal control systems; intersection design; speed zoning and control; and introduction to Intelligent Transportation Systems and travel demand management. Requires laboratory, field work on selected topics. Offered by Civil, Environ & Infrastr Engr. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (CEIE 290[C], U290, 203[C], 203[XS] or U203) and (ENGR 210[C], U210, CEIE 210[C], 210[XS] or U210).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major in Civil and Infrastructure Engr.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CEIE 370: *Construction Systems.* 3 credits.
Overview of the modern construction industry and principles and practices of construction management. Topics include project planning, construction administration, the contract environment, equipment operations, cost estimation and scheduling, and legal theories. Current industry trends are emphasized as are the uses of modern scheduling and cost-estimating software and online databases. Offered by Civil, Environ & Infrastr Engr. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: CEIE 290[C], 203[C], 203[XS] or U290.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major in Civil and Infrastructure Engr.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CEIE 395: *Mentored Research in Civil and Environmental Engineering.* 1-3 credits.
Introduces the scientific research process through hands-on experience: students are matched with faculty mentors who are actively involved in civil engineering-related research. Requires no less than 60 hours per semester working with mentors. Notes: Three credits of CEIE 395 may substitute for a maximum of 3 credits of CEIE 4xx technical elective credits with department permission. Offered by Civil, Environ & Infrastr Engr. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: At least 60 credit hours applicable to the Civil and Infrastructure Engineering program.

Registration Restrictions:
Enrollment is limited to students with a major in Civil and Infrastructure Engr.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

CEIE 400: *Civil Engineering Planning and Management.* 3 credits.
Quantitative and qualitative analysis in planning, design, construction, and management of engineering systems and facilities. Introduces policies, programs, and regulations that influence land development, history-enabling legislation, governing and regulating bodies, control of site plan development, and approval process. Examines structure, function, and purpose of urban design systems and how they can be achieved. Discusses physical relationships among development, land use, transportation, energy, communications, and water systems. Studies public- and private-sector urban development industry. Other topics include innovation, competition, new technology, and environmental issues. Requires design projects. Offered by Civil, Environ & Infrastr Engr. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (CEIE 340[C], 340[XS] or L340) and (CEIE 360[C], 360[XS] or L360).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CEIE 401: *Sustainable Land Development.* 3 credits.
Introduces students to sustainable land development topics including low impact development, site resource conservation, ultra-low water design, deconstruction and materials reuse, healthy building design, green house gas reduction, zero and low energy design, and other topics related to sustainable practices in facilities and infrastructure design and construction. Offered by Civil, Environ & Infrastr Engr. Limited to two attempts.

Specialized Designation: Green Leaf Focused Course

Registration Restrictions:
Required Prerequisites: (CEIE 355[C], 355[XS] or L355) and (CEIE 340[C] or 340[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CEIE 402: *Highway Design and Construction.* 3 credits.
Provides a survey of the tools, techniques, and methods used by the various civil engineering disciplines to design and construct highways. Combines lectures, individual readings, and hands-on exposure to the tools and processes used in design and construction of highways. All facets of a project are covered including planning, project management, survey and mapping, preliminary design, geotechnical, pavements, environmental, hydraulics, bridge design, PS&E design, materials, and construction. Notes: Course meets off-campus at the Federal Highway Administration Eastern Federal Lands Highway Division in Sterling, VA. Offered by Civil, Environ & Infrastr Engr. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (CEIE 310[C] or 310[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Senior Plus or Senior.

Enrollment is limited to students with a major in Civil and Infrastructure Engr.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CEIE 403: *Experimental Methods in Civil Engineering.* 3 credits.
Surveys common testing and laboratory experimental methods that civil engineers encounter in their professional practice and in research settings. Students fabricate specimens of civil engineering materials and conduct experiments in the following laboratories at the Federal Highway Administration's Turner-Fairbank Highway Research Center: Concrete and Steel Materials, Structures, Hydraulics, Geotechnical, and Asphalt. Notes: Course meets off-campus at the Federal Highway Administration's Turner-Fairbank Highway Research Center in McLean, VA. Offered by Civil, Environ & Infrastr Engr. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (CEIE 310[C] or 310[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Senior Plus or Senior.

Enrollment is limited to students with a major in Civil and Infrastructure Engr.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CEIE 409: *Professional Practice and Management in Engineering.* 1 credit.
This course instills professional ethics and management principles, and prepares students for leadership roles in practice. Topics include code of ethics related to the public, clients, contractors, suppliers, employers, agreements, contracts, competitive bidding, the engineering profession, conflict of interest, legal responsibilities and case law; case studies in professional ethics; professional licensure; engineering vs. engineering management; personal development: managing cultural norms, time management, career and grad school, continuing education; public policy considerations in engineering practice; practical considerations in project management; effective communications with employers, employees, contractors, and clients; marketing, competitive bidding and project selection; conflict resolution; and managing small business. Students are prepared to appear for the Fundamentals of Engineering exam, and their preparation is assessed. Offered by Civil, Environ & Infrastr Engr. Limited to two attempts.

Registration Restrictions:
Enrollment limited to students with a class of Junior, Senior Plus or Senior.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture, Recitation

Grading:
This course is graded on the Undergraduate Regular scale.

CEIE 412: *Structural Steel Design.* 3 credits.
Covers analysis and design of structural steel members including tension members, compression members, bolted and welded connections, columns, beams, and beam-columns. Offered by Civil, Environ & Infrastr Engr. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (CEIE 311[C], L311 or 311[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CEIE 413: *Reinforced Concrete Design.* 3 credits.
Covers analysis and design of reinforced concrete members including beams, columns, slabs and footings; sizing of structural members for flexure and shear; determining serviceability limits; detailing reinforcing steel bars. Offered by Civil, Environ & Infrastr Engr. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (CEIE 311[C], L311 or 311[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CEIE 414: *Structural Modeling for Engineers.* 3 credits.
This course provides an introduction to the computer modeling tools that underpin modern structural engineering practice: finite element analysis. Emphasis a combination of theory and practical experience with modeling software. Modeling concepts and the assumptions that engineers must make while building finite element models will be discussed. Topics include applications from structural analysis, structural design, and dynamic vibration analysis. Offered by Civil, Environ & Infrastr Engr. Limited to two attempts.

Recommended Prerequisite: CEIE 311.

Registration Restrictions:
Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CEIE 432: *Foundation Design.* 3 credits.
Introduction to various principles and practices of geotechnical engineering including estimation of soil properties using in-situ tests, laboratory tests, and correlations. Course includes study of earth pressure theories as applied to the design of retaining walls, anchored bulkheads, and excavation bracing. Additional topics Include retaining wall stability, bearing capacity and settlement of shallow foundations on sands and clays and design considerations and capacity analysis of deep foundations. Offered by Civil, Environ & Infrastr Engr. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (CEIE 305[C], 331[C], 331[XS] or L331).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CEIE 435: *Engineering Geology.* 3 credits.
Introduction to formation and occurrence of earth materials: rock and soil; weathering processes, geomorphology, structural geology, interpreting topographic and geologic maps; field investigation fundamentals, field engineering properties of soil and rock; standards and terminology; rock mass engineering classification systems; subsurface water control; rock as a construction material; special case studies in foundations, such as sinkholes, waste impoundments, dam failures, earth spillway performance. Offered by Civil, Environ & Infrastr Engr. Limited to two attempts.

Registration Restrictions:

Required Prerequisites: (CEIE 305[C], 331[C], 331[XS] or L331).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CEIE 440: *Water Supply and Distribution.* 3 credits.
Analysis and design of public water supplies. Topics include: water supply evaluation; water quality; demand projections; hydraulic analysis of water distribution systems including line sizing, fire protection, pumps, valves, and storage; surge analysis; water modeling; concepts in management, business, and public policy of public water supplies; and federal, state, and local government laws and regulations related to public water systems. Offered by Civil, Environ & Infrastr Engr. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (CEIE 340[C], 340[XS] or U340).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CEIE 442: *Open Channel Flow.* 3 credits.
Analysis and design of open channels. Topics include principles of open channel flow including conservation of mass, momentum and energy; flow regimes including uniform, gradually varied, rapidly varied, and unsteady flows; sediment transport; channel design; and modeling and computer applications in open channel analysis and design. Offered by Civil, Environ & Infrastr Engr. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (CEIE 340[C], L340 or 340[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CEIE 444: *Water Resources Planning and Design.* 3 credits.
Concerned with effective use of water as a manageable natural resource. It assesses the impacts by various water resources development activities with economic, socio-cultural and environmental considerations. Methods for conducting tradeoff analyses among the engineered, human, and environmental aspects of projects are developed and applied in a term project. Offered by Civil, Environ & Infrastr Engr. Limited to two attempts.

Recommended Prerequisite: C or better in CEIE 340.

Registration Restrictions:

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CEIE 450: *Environmental Engineering Systems.* 3 credits.
Introduces the concepts and applications of systems analysis in environmental engineering. Tools and methodologies of systems analysis are applied to improve the understanding and resolution of complex environmental engineering problems related to air, soil, water quality and pollution. Scientific, engineering, political, social, legal, regulatory, medical, economic, and financial impacts of environmental engineering decisions are considered. Offered by Civil, Environ & Infrastr Engr. Limited to two attempts.

Specialized Designation: Green Leaf Related Course

Registration Restrictions:
Required Prerequisites: (CEIE 355[C], L355 or 355[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CEIE 453: *Water and Wastewater Treatment Processes.* 3 credits.
Reviews unit treatment processes used in the treatment of water and wastewater systems. Topics include water quality, regulatory requirements, physical unit processes, chemical treatment processes and an introduction to biological treatment processes as applied to a range of community sizes. Offered by Civil, Environ & Infrastr Engr. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (CEIE 355[C], 355[XS] or L355).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CEIE 454: *Sustainable Water Resources Infrastructure in Developing Countries.* 3 credits.
This course addresses the principles of infrastructure engineering and planning in developing countries, with a focus on sustainable technologies for rural and small-scale water supply and wastewater treatment. Students will design simple, reliable water supply and sanitation systems for developing countries with limited human and material resources and with regard to local customs and socio-cultural public health and economic factors. Offered by Civil, Environ & Infrastr Engr. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (CEIE 355[C] or 355[XS]).
[C] Requires minimum grade of C.

XS Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CEIE 457: *Remote Sensing in Civil Engineering.* 3 credits.
This course provides an introduction to the fundamentals of remote sensing. It will focus on how remote sensing data are acquired, displayed, restored, enhanced, and analyzed. The course will be taught with an emphasis on remote sensing techniques as a tool for engineering practices, such as regional planning, site investigation, terrain mapping, urban infrastructure development, water resources engineering, and flood monitoring. Offered by Civil, Environ & Infrastr Engr. Limited to two attempts.

Recommended Prerequisite: C or better in CEIE 355.

Registration Restrictions:
Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CEIE 461: *Traffic Engineering.* 3 credits.
Elements of traffic engineering analysis; system components of traffic operations: driver, vehicle, and roadway; traffic flow design elements including volume, density, and speed; intersection design elements including traffic control device warrants, signal timing, delay, capacity, and accident countermeasures; and terminal design elements including inflow, outflow, and circulation. Offered by Civil, Environ & Infrastr Engr. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (CEIE 360[C], 360[XS] or L360).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CEIE 462: *Urban Transportation Planning.* 3 credits.
Technical and qualitative aspects of urban transportation planning process. Topics include urban travel characteristics and data collection methods; urban transportation modeling system, including land use, trip generation, trip distribution, mode choice, and trip assignment models; site traffic impact studies; environmental impacts; project and plan evaluation; and technology options for urban transport. Offered by Civil, Environ & Infrastr Engr. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (CEIE 360[C], 360[XS] or L360).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CEIE 471: *Construction Administration.* 3 credits.
Examines the principals of project planning and administration using modern specification and project delivery methods. The role of the project manager as facilitator, constructability advisor, and on-site administrator is emphasized. Project risk transference, market conditions, and legal requirements are explored in the construction contract environment. Other topics include green specifications, design-build delivery, job order contracting, turnkey construction, and public-private partnerships. Appropriate for students, engineering and design professionals, project managers, contract administrators, and owners interested in the planning and administration needs of construction. Offered by Civil, Environ & Infrastr Engr. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (CEIE 370[C], 370[XS] or L370).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CEIE 472: *Building Information Modeling.* 3 credits.
Virtual design and construction techniques are covered using modern 3D Building Information Modeling (BIM) software. Historical and technological basis for virtual building and infrastructure design are presented. Design and construction coordination are emphasized using clash detection, conflict management, constructability analysis, specification mapping, and asset management. Industry supported model component databases are used with commercial software design environments for hands-on simulated design and construction projects. Offered by Civil, Environ & Infrastr Engr. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (CEIE 370[C], 370[XS] or L370).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CEIE 474: *Construction Computer Application and Informatics.* 3 credits.
This course covers various topics in construction enterprise information systems, data-driven decision support, relational databases, data manipulation, data visualization, application of data mining and machine learning techniques. The R software is used in this course. Offered by Civil, Environ & Infrastr Engr. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (CEIE 370[C], 370[XS], CDS 130[C], 130[XS], CS 112[C], 112[XS], IT 104[C], 104[XS] or ENGR 125T) and (STAT 344[C], 344[XS], 260[C] or 260[XS]).
[C] Requires minimum grade of C.

XS Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CEIE 476: *Construction Cost Estimating.* 3 credits.
Overview of cost estimating and financial management in the modern construction industry. Techniques and software applications for construction take-offs, bidding, bonding, insurance, equipment ownership, material and labor costing. Additional topics include: cost recovery planning; budgeting, forecasting, acquisition, cast flow management, managerial accounting concepts, and taxes. Offered by Civil, Environ & Infrastr Engr. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (CEIE 301C or 301XS).
C Requires minimum grade of C.
XS Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CEIE 477: *Construction Safety and Risk Management.* 3 credits.
This course will give students an overall understanding of construction safety concepts, techniques and tools, and impact of safety performance. The focus will be in the capital projects industry. Offered by Civil, Environ & Infrastr Engr. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (STAT 344C, 344XS, 260C or 260XS).
C Requires minimum grade of C.
XS Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CEIE 478: *Construction Planning and Scheduling.* 3 credits.
This course will help students establish basic and advanced construction management skills with a focus on planning and scheduling of construction projects. Different procedures for construction control and developing a practical methodology appropriate for civil, environmental, and infrastructure engineering applications will be explored. An introduction to industry terminology, basic and advanced scheduling procedures, building work breakdown structures, activity identification, sequencing and logical ties, different levels schedule development using the critical path method, understanding schedule restrictions, schedule calculations, schedule resource management, and maintaining schedule updates will be covered. An emphasis will be placed on using computer-based scheduling software. Offered by Civil, Environ & Infrastr Engr. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (CEIE 370C or 370XS).
C Requires minimum grade of C.
XS Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CEIE 490: *Civil Engineering Senior Design Project I.* 1-3 credits.
This course is the first course in a two-course sequence in the Civil Engineering Program. Students will be working on civil engineering projects, integrate their acquired fundamental engineering knowledge and incorporate input from practitioner engineers from industry. Students form multidisciplinary design teams, select real-world civil engineering projects, develop preliminary design solutions, and prepare a draft technical report. Students will learn necessary computer-aided design software and become familiar with engineering codes and standards. Offered by Civil, Environ & Infrastr Engr. Limited to two attempts.

Mason Core: Capstone, Synthesis

Recommended Prerequisite: Three 4xx level technical electives.

Registration Restrictions:
Required Prerequisites: (CEIE 301C, 301XS or L301) and (CEIE 311C, 311XS or L311) and (CEIE 340C, 340XS or L340) and (CEIE 355C, 355XS or L355) and (CEIE 360C or 360XS) and (CEIE 305C, L305, 331C, 331XS or L331) and (CEIE 370C or 370XS).
C Requires minimum grade of C.
XS Requires minimum grade of XS.

Enrollment limited to students with a class of Senior Plus or Senior.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

CEIE 491: *Civil Engineering Senior Design Project II.* 3 credits.
This course is the second course in a two-course sequence in the Civil Engineering Program. Students will build on the work they completed in CEIE 490. Teams will finalize design solutions, study constructability, evaluate cost, and consider the social, environmental, and sustainable impacts of their designs. Each student will demonstrate an understanding of the engineering design with an iterative, creative, decision-making process in which the basic sciences, mathematics, and engineering sciences are applied to convert resources into solutions. Student design must identify opportunities, develop requirements, perform analysis and synthesis, generate multiple solutions, evaluate solutions against requirements, considering risks, and make trade- offs, for the purpose of obtaining a high-quality solution under the given circumstances. An oral presentation, technical report, and technical drawing documenting the students' solution is required at the completion of the project. Offered by Civil, Environ & Infrastr Engr. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (CEIE 490C or 490XS).
C Requires minimum grade of C.
XS Requires minimum grade of XS.

Enrollment limited to students with a class of Senior Plus or Senior.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

CEIE 497: *Applied Engineering Abroad.* 3 credits.
Introduces students to applications of engineering processes outside USA. The students will gain hands-on project management, critical thinking, intercultural and career skills by exploring engineering aspects such as auto assembly, airliner manufacturing, metropolitan infrastructure, and bridge designs. By visiting technology museums, students will learn to appreciate the rich history of the country's technology and manufacturing. Offered by Civil, Environ & Infrastr Engr. Limited to two attempts. Equivalent to SYST 497.

Mason Core: Global Understanding

Registration Restrictions:
Enrollment limited to students with a class of Junior, Senior Plus or Senior.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

CEIE 498: *Independent Study in Civil Engineering.* 1-3 credits.
Directed self-study of special topics of current interest. Notes: May be repeated if topics substantially differ. Offered by Civil, Environ & Infrastr Engr. May be repeated within the term.

Recommended Prerequisite: Permission of the Department Chair.

Registration Restrictions:
Enrollment limited to students with a class of Junior or Senior.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

CEIE 499: *Special Topics in Civil Engineering.* 1-3 credits.
Varies with nature of topic. Topics of special interest to undergraduates. Notes: May be repeated if topics substantially differ. Offered by Civil, Environ & Infrastr Engr. May be repeated within the term.

Specialized Designation: Topic Varies

Registration Restrictions:
Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

500 Level Courses

CEIE 501: *Sustainable Development.* 3 credits.
Introduction to sustainability concepts and terminology including the development and use of sustainability indices. Exploration of sustainability tools and frameworks such as the Leadership in Energy and Environmental Design (LEED) Green Building Rating System, American Institute of Architects Sustainable Design Resources Guide, and the Natural Step (TNS) Framework. Methods for evaluation of sustainable sites, water/energy efficiency, sustainable materials and resources, and indoor air quality are presented. Designated a Green Leaf Course. Offered by Civil, Environ & Infrastr Engr. May not be repeated for credit.

Specialized Designation: Green Leaf Focused Course

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CEIE 510: *Geographic Information Systems in Engineering.* 3 credits.
Introduces geographic information systems (GIS) and their application in environmental, transportation, land-use planning, and other engineering-related decision situations. Introduces methods and technologies for spatial data acquisition, specification, storage, manipulation, query, thematic analysis, presentation, and application in the design process. Introduces relationships, integration of GIS with computer-aided design and global positioning system. Hands-on projects. Offered by Civil, Environ & Infrastr Engr. May not be repeated for credit.

Recommended Prerequisite: Knowledge of computer programming and databases or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CEIE 512: *Structural Steel Design.* 3 credits.
Covers analysis and design of structural steel members including tension members, compression members, bolted and welded connections, columns, beams, and beam-columns. Offered by Civil, Environ & Infrastr Engr. May not be repeated for credit.

Recommended Prerequisite: CEIE 311

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CEIE 513: *Reinforced Concrete Design.* 3 credits.
Covers analysis and design of reinforced concrete members including beams, columns, slabs and footings; sizing of structural members for flexure and shear; determining serviceability limits; detailing reinforcing steel bars. Offered by Civil, Environ & Infrastr Engr. May not be repeated for credit.

Recommended Prerequisite: CEIE 311.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CEIE 524: *Introduction to Bridge Engineering.* 3 credits.
A balanced theoretical and practical insight into the art and science of bridge engineering. Various methodologies of bridge design and evaluation are investigated, including constructability reviews. Bridges of steel, reinforced concrete, and pre-stressed concrete materials are included. Short-span composites; major innovation and low cost solutions targeted at aging infrastructure. Offered by Civil, Environ & Infrastr Engr. May not be repeated for credit.

Recommended Prerequisite: Graduate Standing in CEIE; CEIE 512 or CEIE 513 or equivalent.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CEIE 525: *Structural Evaluation and Rehabilitation.* 3 credits.
Structural condition survey and evaluation for strength and serviceability of existing structures including foundation elements; older building practices and materials; criteria for rehabilitation; retrofit techniques for change in function, loading, and seismic forces. Historic preservation issues. Repair, remediation, and structural strengthening methods and current trends. Carbon fiber external P.T. Material selection criteria, including mechanical and environmental factors. Cost/value feasibility analysis; estimating remedial construction costs; engineering oversight of rehabilitation work. Offered by Civil, Environ & Infrastr Engr. May not be repeated for credit.

Recommended Prerequisite: Graduate Standing in CEIE.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CEIE 526: *Structural Steel Design II.* 3 credits.
Behavior, strength, and design of vertical steel structures using the LRFD approach; plate girders, composite beams, welded built-up columns, bolted and welded connections, beam-columns, and torsion; introduction to plastic analysis and its application to members and vertical structures; erection procedure and methods field inspection issues; unique properties of high strength steels. Offered by Civil, Environ & Infrastr Engr. May not be repeated for credit.

Recommended Prerequisite: Graduate Standing in CEIE; CEIE 512 or equivalent.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CEIE 527: *Pre-stressed Concrete.* 3 credits.
Strength, behavior, analysis, and design of pre-stressed concrete members, vertical building structures, and bridges, with emphasis on pre-tensioned, precast construction, and post-tensioned construction;

basics of segmental concrete bridges, cable-stayed bridges, and spliced-girder concrete bridges; continuous span theory; protection of pre- & post-tensioned systems; secondary effects. Composite Portland cement with cast-in-place topping; precast as a stay-in-place system; connection detailing; durability issues; advantages in a marine environment. Offered by Civil, Environ & Infrastr Engr. May not be repeated for credit.

Recommended Prerequisite: Graduate Standing in CEIE; CEIE 513 or equivalent.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CEIE 531: *Earth Retaining Structures and Slope Stability.* 3 credits.
Earth pressure theory and limit equilibrium theory used in the design of temporary and permanent earth retaining structures; limit equilibrium slope stability; retaining wall design and associated construction issues of gravity walls, conventional concrete retaining walls, mechanically stabilized walls, braced and tiedback excavation support systems, and soil nailing walls; guidelines for the selection of retention method for permanent and temporary conditions. Offered by Civil, Environ & Infrastr Engr. May not be repeated for credit.

Recommended Prerequisite: Graduate Standing in CEIE;

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CEIE 532: *Foundation Design.* 3 credits.
Introduction to various principles and practice of geotechnical engineering including estimation of soil properties using in-situ tests, laboratory tests, and correlations. Course includes the study of earth pressure theories as applied to the design of retaining walls, anchored bulkheads, and excavation bracing. Additional topics include retaining wall stability, bearing capacity and settlement of shallow foundations on sands and clays and design considerations for deep foundations. Offered by Civil, Environ & Infrastr Engr. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CEIE 535: *Engineering Geology.* 3 credits.
Introduction to formation and occurrence of earth materials -rock and soil; weathering processes, geomorphology, structural geology, interpreting topographic and geologic maps; field investigation fundamentals, field engineering properties of soil and rock; standards and terminology; rock mass engineering classification systems; subsurface water control; rock as a construction material; special case studies in foundations, such as sinkholes, waste impoundments , dam failures, earth spillway performance. Offered by Civil, Environ & Infrastr Engr. May not be repeated for credit.

Recommended Prerequisite: Graduate Standing in CEIE.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CEIE 540: *Water Supply and Distribution.* 3 credits.
Analysis and design of public water supplies. Topics include supply evaluation; water quality and quantity requirements; treatment requirements and methods; hydraulic analysis of water distribution systems including line sizing, fire protection, pumps, valves, and storage; sustainability; security; concepts in management, business, and public policy of public water systems; and federal, state, and local government laws and regulations related to public water systems. Requires laboratory, field work on selected topics. Designated a Green Leaf Course. Offered by Civil, Environ & Infrastr Engr. May not be repeated for credit.

Specialized Designation: Green Leaf Focused Course

Recommended Prerequisite: Course in hydraulics or fluid mechanics

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CEIE 542: *Open Channel Flow.* 3 credits.
Analysis and design of open channels. Topics include principles of open channel flow including conservation of mass, momentum and energy; flow regimes including uniform, gradually varied, rapidly varied, and unsteady flows; sediment transport; channel design; modeling and computer applications in open channel analysis and design. Offered by Civil, Environ & Infrastr Engr. May not be repeated for credit.

Recommended Prerequisite: A course in hydraulics or fluid mechanics.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CEIE 550: *Environmental Engineering Systems.* 3 credits.
Introduces the concepts and applications of systems analysis in environmental engineering. Tools and methodologies of systems analysis are applied to improve the understanding and resolution of complex environmental engineering problems related to air, soil, and water quality and pollution. Scientific, engineering, political, social, legal, regulatory, medical, economic, and financial impacts of environmental engineering decisions are considered. Offered by Civil, Environ & Infrastr Engr. May not be repeated for credit.

Recommended Prerequisite: CEIE 355.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CEIE 553: *Water and Wastewater Treatment Processes.* 3 credits.
Studies unit treatment processes used in the treatment of water and wastewater systems. Topics include water quality, regulatory requirements, physical unit processes, chemical treatment processes and an introduction to biological treatment processes as applied to a range of community sizes. Offered by Civil, Environ & Infrastr Engr. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CEIE 556: *Environmental Law.* 3 credits.
Introductory course in the study of environmental laws as they pertain to urban systems infrastructure management. Reviews the National Environmental Policy Act, Clean Air Act, Clean Water Act, Safe Drinking Water Act, Resource Conservation and Recovery Act, Comprehensive Environmental Response, Compensation, and Liability Act, and other environmentally related legislation. Also reviews laws for allocation of surface and groundwater supplies, and reviews environmental law databases. Offered by Civil, Environ & Infrastr Engr. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduation Deadline Extended, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CEIE 557: *Remote Monitoring Techniques for Civil Engineering Applications.* 3 credits.
This course covers the basic physics and applications of remote sensing, remote sensing systems (satellite, airborne, and ground-based), and atmospheric radiative transfer. The course focuses on remote sensing techniques as a tool for engineering practices and presents an exhaustive plethora of remote sensing applications for problem solving in civil, environmental, and infrastructure engineering. Examples include (but are not limited to) regional planning and site investigation, terrain mapping and urban infrastructure development, water resources engineering, transportation network analysis, landslide analysis, flood monitoring, and

bridge inspection. Offered by Civil, Environ & Infrastr Engr. May not be repeated for credit.

Recommended Prerequisite: Graduate standing in CEIE.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CEIE 560: *Public Transportation Systems.* 3 credits.
Analyzes public transportation systems in terms of their role in urban transportation. Topics include history of public transportation in the United States, quantitative performance attributes of different modes, analytical techniques for planning and operation, and management and administrative concepts. Offered by Civil, Environ & Infrastr Engr. May not be repeated for credit.

Recommended Prerequisite: CEIE 360.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CEIE 561: *Traffic Engineering.* 3 credits.
Covers elements of traffic engineering analysis; system components of traffic operations: driver, vehicle, and roadway; traffic flow design elements including volume, density, and speed; intersection design elements including traffic control device warrants, signal timing, delay, capacity, and accident countermeasures; and terminal design elements including inflow, outflow, and circulation. Offered by Civil, Environ & Infrastr Engr. May not be repeated for credit.

Recommended Prerequisite: CEIE 365.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CEIE 562: *Urban Transportation Planning.* 3 credits.
Covers technical and qualitative aspects of urban transportation planning process. Topics include urban travel characteristics and data collection methods; urban transportation modeling system, including land use, trip generation and distribution, mode choice, and trip assignment models; site traffic impact studies; environmental impacts; project and plan evaluation; and technology options for urban transport. Offered by Civil, Environ & Infrastr Engr. May not be repeated for credit.

Recommended Prerequisite: CEIE 360.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CEIE 571: *Construction Administration.* 3 credits.
Examines the principals of project planning and administration using modern specification and project delivery techniques. The role of the project manager as facilitator, constructability advisor, and on-site administrator is emphasized. Project risk transference, market conditions, and legal requirements are explored in the construction contract environment. Other topics include green specifications, design-build delivery, job order contracting, turnkey construction, and public-private partnerships. Appropriate for students, engineering and design professionals, project managers, contract administrators, and owners interested in the planning and administration needs of construction. Offered by Civil, Environ & Infrastr Engr. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CEIE 572: *Building Information Modeling.* 3 credits.
Virtual design and construction techniques are covered using modern 3D Building Information Modeling (BIM) software. Historical and

technological basis for virtual building and infrastructure design are presented. Design and construction coordination are emphasized using clash detection, conflict management, constructability analysis, specification mapping, and asset management. Industry-supported model component databases are used with commercial software design environments for hands-on simulated design and construction projects. Offered by Civil, Environ & Infrastr Engr. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CEIE 573: *Legal Aspects of the Construction Process.* 3 credits.
Examines the legal principles associated with the construction process. Introduces legal and project delivery concepts and review of the rights and responsibilities of construction project participants. Topics include the application of differing site conditions clauses, delay claims, termination rights, remedies for breach of contract, and dispute resolution techniques. Also includes review of industry legal issues, such as principles of risk management, LEED liability, and design-build contracts. Offered by Civil, Environ & Infrastr Engr. May not be repeated for credit.

Recommended Prerequisite: Graduate Standing in CEIE.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CEIE 574: *Construction Computer Application and Informatics.* 3 credits.
Computer-aided information management in construction, including construction decision-support systems, data-driven decision support, relational databases, data manipulation, data visualization, and application of data mining techniques. Offered by Civil, Environ & Infrastr Engr. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CEIE 575: *Design for Constructability.* 3 credits.
Systems design of structures to consider foundations, structures and constructability; foundation alternatives; structural design to simplify erection; prefabrication, modulation of structures; material handling on a construction site; crane selection and placement; temporary works. Offered by Civil, Environ & Infrastr Engr. May not be repeated for credit.

Recommended Prerequisite: Graduate Standing in CEIE.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CEIE 576: *Construction Cost Estimating.* 3 credits.
Overview of cost estimating and financial management in the modern construction industry. Techniques and software applications for construction take-offs, bidding, bonding, insurance, equipment ownership, material and labor costing. Additional topics include: cost recovery planning; budgeting, forecasting, acquisition, cast flow management, managerial accounting concepts, and taxes. Offered by Civil, Environ & Infrastr Engr. May not be repeated for credit.

Recommended Prerequisite: Graduate Standing in CEIE.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CEIE 578: *Construction Planning and Scheduling.* 3 credits.
This course will help students establish basic and advanced construction management skills with a focus on planning and scheduling of construction projects. Different procedures for construction control and developing a practical methodology appropriate for civil, environmental, and infrastructure engineering applications will be explored. An

introduction to industry terminology, basic and advanced scheduling procedures, building work breakdown structures, activity identification, sequencing and logical ties, different levels schedule development using the critical path method, understanding schedule restrictions, schedule calculations, schedule resource management, and maintaining schedule updates will be covered. An emphasis will be placed on using computer-based scheduling software. Offered by Civil, Environ & Infrastr Engr. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

600 Level Courses

CEIE 601: *Infrastructure Modeling.* 3 credits.
Concepts of modeling for infrastructure engineering systems. Covers deterministic and stochastic modeling, multi-objective decision-making, and solution algorithms for civil infrastructure problems. Offered by Civil, Environ & Infrastr Engr. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CEIE 603: *Research Methods in Civil Engineering.* 3 credits.
Familiarizes students with the process of rigorous research in civil engineering by providing a strong background in research methods, such as critical thinking, experimental design (idea, concept, design, development), writing a scientific article, and interpretation of results (uncertainty quantification, assumptions, etc.). Introduces common quantitative methods in civil engineering research such as descriptive and inferential statistics, data assimilation, and hypothesis testing. Encourages critical thinking and collaboration among students from different civil engineering disciplines. Offered by Civil, Environ & Infrastr Engr. May not be repeated for credit.

Recommended Prerequisite: Graduate standing in CEIE.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CEIE 605: *Risk and Uncertainty in Civil Engineering.* 3 credits.
Probability and statistics topics for analysis of infrastructure systems. Includes Bayesian decision theory, decision trees, Monte Carlo analysis, stochastic models, simulation, and economic analysis of infrastructure projects and systems. Offered by Civil, Environ & Infrastr Engr. May not be repeated for credit.

Recommended Prerequisite: STAT 344.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CEIE 607: *Public Infrastructure Management and Finance.* 3 credits.
Current and projected outlook for managing and financing public works infrastructure including, transportation, public utilities, water and waste water facilities, energy, and public buildings; Infrastructure management including the impact of built infrastructure on the environment, tracking and improving infrastructure performance, government regulations, emerging technologies, social concerns, and the impacts of disasters; Infrastructure finance including public and private sources of capital, special financing districts, bond markets, federal and state grants, public-private partnerships, and design-build project delivery. Offered by Civil, Environ & Infrastr Engr. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CEIE 611: *Structural Analysis II.* 3 credits.
Application of the stiffness method in planar trusses, beams, planar frames, curved beams, and three-dimensional structures; Introduction to non-linear structural analysis with emphasis on geometric non-linearity. Offered by Civil, Environ & Infrastr Engr. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CEIE 612: *Mechanics of Materials II.* 3 credits.
Covers the foundations of structural modeling and theories of elasticity. Topics include: multidimensional theories of stress and strain, governing equations of elasticity, numerical solution techniques, material failure criteria, basics of nonlinear analysis. Offered by Civil, Environ & Infrastr Engr. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CEIE 613: *Structural Dynamics.* 3 credits.
This course covers the fundamental principles necessary to analyze the responses of structures subjected to dynamic loads such as blast, earthquake, rotating machinery, etc. Idealized linear structural models subjected to free vibrations, harmonic vibrations, and impulsive loadings are presented. Practical applications of structural dynamics for solving simplified problems in blast and earthquake engineering are included. Offered by Civil, Environ & Infrastr Engr. May not be repeated for credit.

Recommended Prerequisite: Differential Equations.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CEIE 619: *Special Topics in Structural Engineering.* 0-3 credits.
Advanced topics in recently developed areas of structural engineering. May be repeated for credit when topics vary. Offered by Civil, Environ & Infrastr Engr. May be repeated within the term.

Specialized Designation: Topic Varies

Recommended Prerequisite: Graduate standing in CEIE or permission of the instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CEIE 620: *Intelligent Systems in Civil Engineering.* 3 credits.
Covers autonomous systems in civil engineering across CEIE sub-disciplines. Topics include: sensing & instrumentation, data analytics, and machine learning applications. Laboratory exercises with sensing and data acquisition systems, as well as a student-driven class project. Offered by Civil, Environ & Infrastr Engr. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CEIE 623: *Reinforced Concrete Design II.* 3 credits.
Covers the behavior, analysis and design of two-way reinforced concrete slabs; design of long columns including slenderness effects; structural design of isolated footings, combined footings and pile caps; design of deep beams using the strut-and-tie models; introduction bearing, retaining and shear wall designs. Offered by Civil, Environ & Infrastr Engr. May not be repeated for credit.

Recommended Prerequisite: Reinforced Concrete Design.

Registration Restrictions:

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CEIE 634: *Geoenvironmental Design.* 3 credits.
This course covers the fundamental principles regarding waste geotechnics, including the design of landfill liners/covers, fate of pollutant transport in groundwater, transport processes, modeling techniques for flow and transport, waste settlement, and groundwater remediation technologies such as biodegradation of waste. The class requires students to study journal papers as supplemental material to the lectures. Offered by Civil, Environ & Infrastr Engr. May not be repeated for credit.

Recommended Prerequisite: Graduate Standing in CEIE.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CEIE 635: *Advanced Soil Mechanics.* 3 credits.
Consolidation of soil: primary and secondary; and rate. Soil strength in the framework of Critical State Soil Mechanics: normally consolidated, lightly and heavily overconsolidated, drained and undrained, elastic and plastic deformation. Offered by Civil, Environ & Infrastr Engr. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CEIE 636: *Sources of Geotechnical Data.* 3 credits.
Resources for conducting desk top studies; tools for field investigations; subsurface investigations (options and selection of techniques); laboratory testing of soil and rock; accepted testing procedures; typical values; empirical relationships between properties and testing techniques; risk and uncertainty; use of lab testing, insitu strength testing, and empirical methods in design; identifying slickensides. Offered by Civil, Environ & Infrastr Engr. May not be repeated for credit.

Recommended Prerequisite: Graduate Standing in CEIE.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CEIE 637: *Tunneling and Ground Improvement.* 3 credits.
Fundamentals of underground construction, design considerations, risk management, and various tunneling techniques including tunnels, caverns, and cut and cover construction. Densification-based and reinforcement-based ground improvement techniques and the basics of designing various systems of each. Specific techniques anticipated to be covered include surcharging, grouting, densification, and rigid inclusions. Offered by Civil, Environ & Infrastr Engr. May not be repeated for credit.

Recommended Prerequisite: Graduate Standing in CEIE.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CEIE 638: *Advanced Foundation Design.* 3 credits.
Design of shallow and deep foundations for civil engineering structures, including time rate of consolidation settlement, stress distribution, elastic settlement, and bearing capacity. Driven piles and drilled shafts subjected to axial and lateral loading, both single and group action. Offered by Civil, Environ & Infrastr Engr. May not be repeated for credit.

Recommended Prerequisite: Graduate Standing in CEIE.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CEIE 639: *Special Topics in Geotechnical Engineering.* 1-3 credits.
Advanced topics in recently developed areas of geotechnical engineering. May be repeated for credit when topics vary. Offered by Civil, Environ & Infrastr Engr. May be repeated within the term.

Specialized Designation: Topic Varies

Recommended Prerequisite: Graduate standing in CEIE or permission of the instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CEIE 641: *Water Resources Engineering I: Principles and Practice.* 3 credits.
Introduction to the principles of hydrology and hydraulics and their application to the planning, design and management of modern water resources. Offered by Civil, Environ & Infrastr Engr. May not be repeated for credit.

Recommended Prerequisite: Graduate standing in CEIE; CEIE 340 or equivalent.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CEIE 642: *Flood Hazards Engineering.* 3 credits.
Introduction to the principles of flood hazards engineering. Theory and practice of the application of hydrology and hydraulics to flood hazards delineation. Theory and practice of the application of geospatial analyses to support flood hazards modeling. Application of computational methods to support planning, design and management of flood hazards. Offered by Civil, Environ & Infrastr Engr. May not be repeated for credit.

Recommended Prerequisite: Graduate standing in CEIE and CEIE 340 and CEIE 340 or equivalent.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CEIE 643: *Coastal Flood Hazards.* 3 credits.
Introduction to the theory and practice of coastal flooding and hazards engineering. Topics include the theory of hurricane storm surges, tides, coastal hydrodynamics, waves and coastal processes. Use of the Surface Water Modeling System (SMS) and the Advanced Circulation Model (ADCIRC) for coastal flooding analysis. Introduction to High Performance Computing (HPC) modeling of hurricane storm surge. Introduction to Geographic Information Systems (GIS) applications to support coastal flood modeling and hazard analysis. Applications of coastal engineering to support coastal flood mapping and hazard prevention. Offered by Civil, Environ & Infrastr Engr. May not be repeated for credit.

Recommended Prerequisite: Graduate Standing in CEIE.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CEIE 644: *Groundwater Systems Modeling.* 3 credits.
Introduces groundwater hydrology and modeling, including quantity and quality aspects. Topics include characterization of subsurface regime; well hydraulics; consideration of two-dimensional steady and unsteady-state flows; exploration of modeling approaches; simulation and optimization modeling; contaminant transport; parameter estimation;

and design of systems to control groundwater quantity and quality. Offered by Civil, Environ & Infrastr Engr. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CEIE 649: *Special Topics in Water Resources Engineering.* 0-3 credits.
Advanced topics in recently developed areas of water resources engineering. May be repeated for credit when topics vary. Offered by Civil, Environ & Infrastr Engr. May be repeated within the term.

Specialized Designation: Topic Varies

Recommended Prerequisite: Graduate standing in CEIE or permission of the instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CEIE 657: *Environmental Engineering Microbiology.* 3 credits.
Addresses the fundamental aspects of microbial physiology and ecology and their application to environmental engineering processes. Specific topics include cell structure and function, energetics, metabolism, enzyme and growth kinetics, microbial/environmental interactions (e.g. interactions with organic pollutants), biogeochemical cycles, and an introduction to engineering applications including bioremediation, wastewater treatment, biosensors and microbial fuel cells. Offered by Civil, Environ & Infrastr Engr. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CEIE 658: *Water Quality.* 3 credits.
This course addresses the physical, chemical and biological principles that define water quality. Mathematical and chemical models are formulated and employed to predict fate and transport of contaminants in both surface and groundwater. Laboratory and field-work are required. Offered by Civil, Environ & Infrastr Engr. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CEIE 659: *Hazardous Waste.* 3 credits.
Physical, chemical and biological properties of hazardous waste; abiotic and biotic transformation of hazardous wastes and their fate in the environment; design of remediation schemes including incineration, landfill, bioremediation and other physical and chemical stabilization processes; principles of risk assessment to select and optimize hazardous waste treatment; methods and strategies for hazardous waste reduction. Offered by Civil, Environ & Infrastr Engr. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CEIE 662: *Travel Demand Modeling.* 3 credits.
Covers elements of Travel Demand Modeling at considerable detail. Design and execution of travel surveys; analysis of survey data; economic and demographic data and analysis; development of classification, regression and discrete choice models for four-step and activity based travel demand models; spatial analysis of data; matrix methods; validation and calibration of models; traffic and transit assignment

methods and their application; select-link anal sis. Hands-on modeling assignments. Offered by Civil, Environ & Infrastr Engr. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CEIE 663: *Intelligent Transportation Systems.* 3 credits.
Advanced transportation system operations and safety through the use of wireless and wireline communications; integrated transportation systems; in-vehicle technologies; industry standards; and systems architecture. Provides skills to apply advanced technologies to transportation systems to improve operational and safety performance. Provides nontraditional tools to address issues of congestion and improved safety performance. Offered by Civil, Environ & Infrastr Engr. May not be repeated for credit.

Recommended Prerequisite: CEIE 561 or 562.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CEIE 664: *Transportation Engineering and the Environment.* 3 credits.
Introduction to transportation and air quality; Clean Air Act; greenhouse gases, climate change, and modeling for greenhouse gases; travel activity; The NEPA process for transportation projects; road transportation and noise; noise abatement. Offered by Civil, Environ & Infrastr Engr. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CEIE 665: *Travel Survey Methods and Data Analysis.* 3 credits.
Covers the concept and practice of travel survey methods; national household travel survey; Census transportation survey and products; travel diary based, roadside, mail-in and web-based and GPS-based travel surveys; longitudinal vs. cross-sectional surveys; stated-preference survey; interactive and adaptive survey method; transit survey methods; special generator surveys; sampling approach and representativeness analysis; econometric data analysis; panel data; self-selection issues; other data mining methods; data security, privacy, IRB process, and ethics. Offered by Civil, Environ & Infrastr Engr. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CEIE 667: *Multi-modal Transportation Systems.* 3 credits.
Topical coverage of freight and logistics; non-motorized transportation considerations; and public transit planning. Freight topics include demand and supply modeling concepts; freight flow data sources; and truck size and weight policies. Bicycle and pedestrian planning considering traveler response to facility and policy improvements and identifying common resources for addressing non-motorized project concerns. Public transportation planning coverage including mass transit technology typologies, corridor planning and operations concepts, and finance and public policy issues, including environmental justice. Offered by Civil, Environ & Infrastr Engr. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CEIE 668: *Transportation Economics.* 3 credits.
Application of micro- and macro-economic theories to transportation system analysis; interaction between transportation system, land use, and regional economics; mobility, accessibility, and system reliability; market equilibrium; pricing, willingness to pay, and welfare analysis; cost benefit analysis; project finance. Offered by Civil, Environ & Infrastr Engr. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CEIE 669: *Special Topics in Transportation Engineering.* 0-3 credits.
Advanced topics in recently developed areas of transportation engineering. May be repeated for credit when topics vary. Offered by Civil, Environ & Infrastr Engr. May be repeated within the term.

Specialized Designation: Topic Varies

Recommended Prerequisite: Graduate standing in CEIE or permission of the instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CEIE 677: *Construction Simulation.* 3 credits.
Overview of production management in construction. Techniques for modeling construction operations, design of efficient processes, measurement and improvement of productivity. Computer simulation techniques for modeling and analysis. Offered by Civil, Environ & Infrastr Engr. May not be repeated for credit.

Recommended Prerequisite: Graduate Standing in CEIE.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CEIE 678: *Infrastructure Asset Management.* 3 credits.
Provides the principles of infrastructure asset management, including performance management, risk management, financial planning, state-of-the-practice in implementing asset management systems for infrastructure owners, and challenges in development and implementation of asset management practices for public and private sector infrastructure owners. Introduces emerging technology applications in asset management to prepare the next generation of professionals for the marketplace of the future. Investigates how existing infrastructure assets are preserved, repaired and renewed, by shifting focus from creating new and additional capacity to maximizing the functionality of existing assets. Engineering, financial and investment planning, and management consulting principles are combined in a strategic and systematic process that focuses on effective operation, maintenance, upgrade, and expansion of physical assets through a whole-life approach. Offered by Civil, Environ & Infrastr Engr. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CEIE 679: *Special Topics in Construction Management.* 3 credits.
Advanced topics in recently developed areas of construction management. May be repeated for credit when topics vary. Offered by Civil, Environ & Infrastr Engr. May be repeated within the term.

Specialized Designation: Topic Varies

Recommended Prerequisite: Graduate standing in CEIE or permission of the instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CEIE 683: *Water and Wastewater Systems Security.* 3 credits.
Examines overall security of water and wastewater systems. Covers theory and methods to define water and wastewater infrastructure as physical and organizational systems. Explores concepts of infrastructure systems security; identifies actors, interactions in organizational infrastructure, and threats to water and wastewater infrastructure; describes behavior of physical and organizational infrastructures under stress; examines history of threats or attacks against water and

wastewater systems; and explores evolution of design, operations, and maintenance paradigms in response to changes in threats. Covers proactive responses to security threats through vulnerability assessments, and models of organizational and physical infrastructure system. Offered by Civil, Environ & Infrastr Engr. May not be repeated for credit.

Recommended Prerequisite: BS in Civil Engineering or CEIE 440 and CEIE 455.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CEIE 686: *Transportation System Security and Safety.* 3 credits.
Focuses on critical transportation systems infrastructure and operations, and technologies for predicting and managing damage and disruptions caused by potential threats, including natural and technological disasters and terrorist threats. Includes asset management, methodologies for assessing vulnerabilities, potential impact of damage and disruption, applying state-of-the-art technologies and R&D processes for harnessing best analysis methods, and technologies for hardening transportation infrastructure systems. Includes sensing and surveillance using satellite and aerial remote sensing imagery, application of GIS and spatial information technologies, information and communication, intelligent transportation systems, hardening systems, and making intelligent choices for implementing technology advances to transportation security and safety. Offered by Civil, Environ & Infrastr Engr. May not be repeated for credit.

Recommended Prerequisite: BS in Engineering, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CEIE 690: *Topics in Civil Engineering.* 3 credits.
Topics not covered in the regular civil engineering offerings. Notes: Course content may vary each semester. Course may be repeated with change in topic. Offered by Civil, Environ & Infrastr Engr. May be repeated within the term.

Specialized Designation: Green Leaf Related Course, Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

700 Level Courses

CEIE 742: *Water Resources Engineering II: Water Resource Systems.* 3 credits.
Introduces concepts, applications, and tools of systems analysis for water resources planning, management, and design. Problems including river basin planning, real-time hydrosystem operations, water quality management, capacity expansion, urban drainage network design, and sanitary sewer design used to illustrate applications of systems analysis. Tools include optimization and simulation modeling and knowledge-based systems. Offered by Civil, Environ & Infrastr Engr. May not be repeated for credit.

Recommended Prerequisite: Graduate Standing in CEIE; CEIE641 or equivalent.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CEIE 762: *Network Models for Transportation Planning.* 3 credits.
Covers network models for transportation systems analysis - theory, mathematical structure, and applications of equilibrium, iterative, incremental, dynamic and stochastic equilibrium models. Also covers data structures and heuristic methods for computer implementation of various algorithms such as shortest path and direction search algorithms; specialty network topics such as tracking and prohibition of turn movements, k-shortest path algorithms and select-link analysis. Offered by Civil, Environ & Infrastr Engr. May not be repeated for credit.

Recommended Prerequisite: CEIE 562 or 660; CEIE 601.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CEIE 763: *Discrete Choice Analysis in Transportation.* 3 credits.
Utility theory and individual choice behavior; Binary choice model; Multinomial choice model; Characteristics of Probit and Logit models; Aggregate forecasting techniques; Travel survey and sampling; Test and choice of model structure; Correlation and nested Logit Model, Advanced models and estimation techniques; Travel, route choice and car ownership models. Offered by Civil, Environ & Infrastr Engr. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CEIE 764: *Transportation Network Algorithms.* 3 credits.
This course focuses on network optimization algorithms for transportation and logistics systems. The application of these techniques to the determination of optimal routes and tours for various transportation and logistics applications is stressed. In addition to introducing a wide variety of network-related problems and existing techniques for solving a number of these problems, an important goal of the course is to help the class participants develop skills in creating and evaluating new algorithms and heuristics. Offered by Civil, Environ & Infrastr Engr. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CEIE 767: *Traffic Engineering Modeling and Analysis.* 3 credits.
Covers fundamentals of traffic flow theory; shock-wave analysis; queuing theory; macroscopic traffic flow models on freeway and arterials; fundamentals of traffic simulation; car following models; network analysis based on traffic simulation models; and developing skills to select most appropriate model for given scenarios. Offered by Civil, Environ & Infrastr Engr. May not be repeated for credit.

Recommended Prerequisite: CEIE 561.

Recommended Corequisite: CEIE 601.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CEIE 795: *Civil and Infrastructure Engineering Seminar.* 0 credits.
Invited speakers, faculty, and CEIE graduate students lecture on current topics and research. Fulfills seminar requirement for MS in civil and infrastructure engineering. Notes: Students must enroll in CEIE 795 each semester (fall and spring) for the duration of their MS studies. Offered by Civil, Environ & Infrastr Engr. May be repeated within the degree.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Seminar

Grading:
This course is graded on the Satisfactory/No Credit scale.

CEIE 796: *Directed Reading.* 1-3 credits.
Reading on specific topic under direction of faculty member. Notes: May be repeated with change in topic. Offered by Civil, Environ & Infrastr Engr. May be repeated within the degree.

Recommended Prerequisite: Graduate standing and permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Regular scale.

CEIE 798: *Research Project in Civil Engineering.* 3 credits.
Analyzes and investigates contemporary problem in civil, environmental, and infrastructure engineering. Requires prior approval by faculty member who supervises student's work. Notes: Written report also required. Offered by Civil, Environ & Infrastr Engr. May not be repeated for credit.

Recommended Corequisite: CEIE 795.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Thesis

Grading:
This course is graded on the Graduate Regular scale.

CEIE 799: *Master's Thesis.* 1-6 credits.
Research project chosen and completed under guidance of graduate faculty member that results in technical report acceptable to three-faculty-member committee, and an oral defense. Offered by Civil, Environ & Infrastr Engr. May be repeated within the degree.

Recommended Prerequisite: 18 credits of graduate-level course work and permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Thesis

Grading:
This course is graded on the Satisfactory/No Credit scale.

800 Level Courses

CEIE 800: *Civil, Environmental, and Infrastructure Engineering Colloquium.* 1 credit.
Seminar series required of Civil and Infrastructure PhD students. Features variety of speakers from universities, government, and private sectors. Topics include civil engineering technologies, research advancements, and policies. Doctoral students take 2 credits of CEIE 800 and make a presentation of their dissertation research at the seminar. No more than 1 credit per semester may be taken. Students eligible to register upon successful completion of qualifying exams. Offered by Civil, Environ & Infrastr Engr. May be repeated within the degree for a maximum 2 credits.

Registration Restrictions:
Enrollment limited to students in the VS-PHD-CEIE program.

Enrollment is limited to Graduate level students.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CEIE 890: *Special Topics in Urban Transportation.* 3 credits.
Includes traffic safety analysis, simulation in transportation, intelligent transportation systems, advanced public transportation systems, congestion and travel demand management, geographic information systems and information technology, and innovative refinancing and public-private partnerships. Offered by Civil, Environ & Infrastr Engr. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: CEIE 560 and 660 or equivalent; or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CEIE 892: *Special Topics in Environmental and Water Resource Systems Engineering.* 3 credits.
Possible topics include studies in waste minimization; pollution prevention; hazardous waste management; wastewater management; air pollution control; solid waste management; environmental decision making; sustainability; water resource and environmental economics; wetlands management, design and construction; groundwater contamination modeling; stochastic hydrology; river basin planning and management; and water quality modeling. Offered by Civil, Environ & Infrastr Engr. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Green Leaf Focused Course, Topic Varies

Recommended Prerequisite: CEIE 601

Registration Restrictions:
Enrollment is limited to Graduate level students.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CEIE 894: *Design and Inventive Engineering.* 3 credits.
Topics include Fundamentals: successful intelligence and creative intelligence, creative class, the Medici Effect, the Renaissance Man and Da Vinci's Seven Principles, engineering creativity; Design Engineering: system designing and architecting, designing as search, evolutionary designing, constraint search, constructive induction, Axiomatic and Inferential Design Theories; Inventive Engineering: Brainstorming, Synectics, Morphological Analysis, TRIZ, Visual Thinking, Inventive Design in Practice; Project Presentations. Notes: This is transdisciplinary course focused on creativity in engineering and science. Open to all graduate students in the Volgenau School of IT and Engineering; graduate students from other schools are encouraged to register with the instructor's permission. Offered by Civil, Environ & Infrastr Engr. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CEIE 896: *Civil Engineering Research Topics.* 3 credits.
Reading on specific topic under direction of faculty member. May be repeated with change in topic. Offered by Civil, Environ & Infrastr Engr. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: Admission into CEIE PhD program, or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Regular scale.

900 Level Courses

CEIE 990: *Civil and Infrastructure Dissertation Topic Presentation.* 1 credit.
Opportunity for PhD students to present research proposal for critique. Covers presentation of research topic for PhD in Civil and Infrastructure Engineering. Students complete dissertation research proposal. May be repeated with change in topic, but degree credit is given only once. Offered by Civil, Environ & Infrastr Engr. May not be repeated for credit. Equivalent to STAT 990.

Recommended Prerequisite: Graduate Standing; completion of all course work required for PhD in Civil and Infrastructure Engineering or permission of instructor.

Registration Restrictions:
Enrollment limited to students in the VS-PHD-CEIE program.

Enrollment is limited to Graduate level students.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Research

Grading:
This course is graded on the Satisfactory/No Credit scale.

CEIE 998: *Doctoral Dissertation Proposal.* 1-12 credits.
Work on research proposal that forms basis for doctoral dissertation. May be repeated for credit. Notes: No more than 24 credits of CEIE 998 and 999 may be applied to doctoral degree requirements. Offered by Civil, Environ & Infrastr Engr. May be repeated within the degree.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

CEIE 999: *Doctoral Dissertation.* 1-12 credits.
Formal record of commitment to doctoral dissertation research under direction of faculty member in civil engineering and infrastructure engineering. May be repeated in the degree, but no more than 24 combined credits of CEIE 998 and CEIE 999 may be applied to the doctoral degree requirements. Offered by Civil, Environ & Infrastr Engr. May be repeated within the degree.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy.

Enrollment is limited to Graduate level students.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

Classics (CLAS)

200 Level Courses

CLAS 240: *Greek and Latin Elements in English.* 3 credits.
Studies formation of English vocabulary derived from Greek and Latin prefixes, stems, and suffixes to increase word power in English (vocabulary, style). Special emphasis on bioscientific, medical, and legal terminology. Intended for native and non-native speakers of English. Literary texts illustrate word analyses, vocabulary uses. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: ENGL 101/ENGH 101, or equivalent or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CLAS 250: *Classical Mythology.* 3 credits.
Illustrates role of classical myths in classical and modern literature and art. Notes: Coursework in English. Offered by Modern & Classical Languages. Limited to three attempts.

Mason Core: Literature

Recommended Prerequisite: ENGL 101/ENGH 101, equivalent, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CLAS 260: *The Legacy of Greece and Rome.* 3 credits.
Introduces history, culture, and literature of Greece and Rome through close readings of central passages from classical literature dealing with some of the most important aspects of human existence. Illustrates importance of classical antiquity for the Western tradition. Notes: Coursework in English. Offered by Modern & Classical Languages. Limited to three attempts.

Mason Core: Literature

Recommended Prerequisite: ENGL 101/ENGH 101 or equivalent or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

300 Level Courses

CLAS 330: *Roman Law and Society.* 3 credits.
Introduces the Roman legal system, from the Law of the Twelve Tables to Justinian's Digest. Explores the fundamental concepts of Roman Law and its importance for Roman society and the legal history of the West. Offered by Modern & Classical Languages. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CLAS 340: *Greek and Roman Epic.* 3 credits.
Examines development of classical epic as genre, from beginnings with Homer to transformations in the works of later Greek and Roman authors. Notes: Coursework in English. Offered by Modern & Classical Languages. Limited to three attempts.

Mason Core: Literature

Recommended Prerequisite: ENGL 101/ENGH 101 or equivalent or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CLAS 350: *Greek and Roman Tragedy.* 3 credits.
Follows development of tragedy from its origins to the works of Aeschylus, Sophocles, and Euripides, and its reappearance in the Roman world in the tragedies of Seneca. Considers influence of Greek tragedy on later cultures. Notes: Coursework in English. Offered by Modern & Classical Languages. Limited to three attempts.

Mason Core: Literature

Recommended Prerequisite: ENGL 101/ENGH 101 or equivalent or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CLAS 360: *Greek and Roman Comedy.* 3 credits.
Studies forms, contexts, and developments of comedy as a dramatic form in Greco-Roman world. Traces development of New Comedy in Hellenistic age and translation and adaptation of New Comedy by Roman dramatists Plautus and Terence. Notes: Coursework in English. Offered by Modern & Classical Languages. Limited to three attempts.

Mason Core: Literature

Recommended Prerequisite: ENGL 101/ENGH 101 or equivalent or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CLAS 380: *Greek and Roman Novels.* 3 credits.
Examines novels written in antiquity, and influences on postclassical and modern literature. Emphasizes works of Longus, Heliodorus, Petronius, and Apuleius. Notes: Coursework in English. Offered by Modern & Classical Languages. Limited to three attempts.

Mason Core: Literature

Recommended Prerequisite: ENGL 101/ENGH 101 or equivalent or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CLAS 390: *Topics in Classical Literature and Culture.* 3 credits.
Studies forms, contexts, and developments of distinctive literary genre or cultural phenomenon in the Greco-Roman world. Notes: May be repeated for credit when topic is different. Offered by Modern & Classical Languages. May be repeated within the degree.

Specialized Designation: Topic Varies

Recommended Prerequisite: ENGL 101/ENGH 101 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Climate Dynamics (CLIM)

100 Level Courses

CLIM 101: *Global Warming: Weather, Climate, and Society.* 3 credits.
Survey of the scientific and societal issues associated with weather and climate variability and change. Examines physical phenomena observed in the Earth's weather and climate, providing sufficient scientific and technical background to enable students to critically examine arguments being discussed by policymakers and the public at large. Also reviews the current debate on climate change from a scientific point of view with a focus on those aspects that have the largest potential impact on global society. Offered by Atmospheric/Oceanic/Earth Sci. Limited to three attempts.

Mason Core: Natural Science Overview, Encore: Sustainability

Specialized Designation: Green Leaf Related Course

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CLIM 102: *Introduction to Global Climate Change Science.* 4 credits.
The scientific basis of computer models that simulate past and present climate and predict future climate change; How complex models are built, tested, and interpreted to better understand physical, chemical, and biological processes; how uncertainty is managed. Students conduct laboratory experiments through an online interface and apply results to policy and planning. Designated a Green Leaf Course. Notes: Computer models are used in the lab. Offered by Atmospheric/Oceanic/Earth Sci. Limited to three attempts.

Mason Core: Natural Science with Lab, Encore: Sustainability

Specialized Designation: Green Leaf Related Course

Recommended Prerequisite: Basic math skills (Geometry, Algebra).

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CLIM 111: *Introduction to the Fundamentals of Atmospheric Science.* 3 credits.
An overview of the Earth's atmosphere, its history, and the physical and chemical processes that determine its characteristics. The focus is on key concepts from thermodynamics, radiation, chemistry, and dynamics that are essential for understanding the state, variability, and long term evolution of the atmosphere, especially in the context of comparisons with other planetary atmospheres. Offered by Atmospheric/Oceanic/Earth Sci. Limited to three attempts. Equivalent to PHYS 111.

Mason Core: Natural Science with Lab, Natural Science Overview, Encore: Sustainability

Specialized Designation: Green Leaf Related Course

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CLIM 112: *Introduction to the Fundamentals of Atmospheric Science Lab.* 1 credit.
Laboratory course associated with PHYS 111/CLIM 111. Study of the Earth's atmosphere based on concepts taken from thermodynamics, radiation transport, chemistry, and dynamics. Offered by Atmospheric/Oceanic/Earth Sci. Limited to three attempts. Equivalent to PHYS 112.

Mason Core: Natural Science with Lab, Encore: Sustainability

Specialized Designation: Green Leaf Related Course

Registration Restrictions:
Required Prerequisites: (PHYS 111[*C], CLIM 111[*C], PHYS 111[XS] or CLIM 111[XS]).
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

300 Level Courses

CLIM 301: *Weather Analysis and Prediction.* 4 credits.
Large-scale behavior of mid-latitude weather systems. Includes coupling of synoptic motion to mesoscale processes that lead to significant weather events. Introduces the observational network, numerical weather models, and prediction. Laboratory portion gives practical experience in weather analysis, prediction, and technology currently used for visualization and analysis. Offered by Atmospheric/Oceanic/Earth Sci. Limited to three attempts.

Recommended Prerequisite: MATH 113 or equivalent; one of CLIM/PHYS 111/112 or EOS 121 or GGS 121.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CLIM 312: *Physical Climatology.* 3 credits.
Quantitative description of nature and theory of the climate system, dynamics of atmosphere-ocean-land surface, internal interactions and response to external forcing, description of the climate record and simple climate models. Offered by Atmospheric/Oceanic/Earth Sci. Limited to three attempts. Equivalent to GGS 312.

Recommended Prerequisite: CLIM/PHYS 111/112 OR GGS 121; and PHYS 243,244, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CLIM 314: *Severe and Extreme Weather.* 3 credits.
Behavior of weather events ranging from small scale (e.g., thunderstorms and tornadoes) to mesoscale (e.g., fronts and hurricanes). Introduces the dynamical and physical processes, atmospheric boundary layer processes, and coupling between different spatial scales that create and shape severe and localized weather events. Designated a Green Leaf Course. Offered by Atmospheric/Oceanic/Earth Sci. Limited to three attempts. Equivalent to GGS 314.

Specialized Designation: Green Leaf Related Course

Recommended Prerequisite: MATH 113 or equivalent; CLIM/PHYS 111/112 or EOS 121 or GGS 121.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CLIM 319: *Air Pollution.* 3 credits.
Description of major types of air pollution and introduction to how their characteristics are influenced by interaction with the atmosphere. Topics include sources and distribution of pollution from local to global scales, effects of radiation and wind on pollution, modeling of plume dispersion, and pollution effects on climate. Designated a Green Leaf Course. Offered by Atmospheric/Oceanic/Earth Sci. Limited to three attempts.

Specialized Designation: Green Leaf Related Course

Recommended Prerequisite: CLIM 111 or GGS 121.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CLIM 390: *Topics in Climate Research.* 1-4 credits.
Selected topics not covered in fixed content courses. May be included for credit by AOES majors in the 45 credits of courses required for BS degree. Offered by Atmospheric/Oceanic/Earth Sci. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: 15 credits of AOES courses within concentration.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

CLIM 401: *Midlatitude Synoptic Meteorology.* 3 credits.
This course teaches students how to apply dynamical concepts and methods in weather analysis and map interpretation. We first introduce the essential dynamical tools for synoptic meteorology, the quasigeostrophic theory, isentropic analysis and potential vorticity framework. Using these tools, we examine the midlatitude weather systems and phenomena, including extratropical cyclone, front, cold-air damming and winter storm. The concept of baroclinic instability is also introduced. Finally, basic procedure of numerical weather prediction and human forecasting processes are discussed. Offered by Atmospheric/Oceanic/Earth Sci. Limited to three attempts.

Recommended Prerequisite: CLIM 301

Recommended Corequisite: CLIM 411

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CLIM 408: *Senior Research.* 3 credits.
Independent research under guidance of faculty member on a research project in numerical, experimental, observational, or theoretical atmospheric or climate-related research. A written report on the project is required. Notes: May be repeated with department permission. Offered by Atmospheric/Oceanic/Earth Sci. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Writing Intensive in Major

Recommended Prerequisite: 15 credits of AOES courses within major.

Schedule Type: Research

Grading:
This course is graded on the Undergraduate Regular scale.

CLIM 409: *Research Internship.* 3 credits.
On-the-job experience for AOES majors in industry or government laboratories, including summer research programs. Students work in observational, experimental, or theoretical research, and prepare a written report at the end of the internship. Notes: May be repeated with department permission. Offered by Atmospheric/Oceanic/Earth Sci. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: 75 credits. 15 credits of courses in major and permission of department.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

CLIM 411: *Atmospheric Dynamics.* 3 credits.
Observational bases and fundamentals of fluid dynamic principle for understanding atmospheric motions across multiple spatial and temporal scales; covers basic conservation laws of mass, momentum, and energy; concepts of circulation and vorticity; balanced atmospheric flows, e.g. geostrophic wind and shear, thermal wind; quasi-geostrophic and isentropic potential vorticity analysis for mid-latitude cyclones and fronts. Offered by Atmospheric/Oceanic/Earth Sci. Limited to three attempts.

Recommended Prerequisite: CLIM 111 and MATH 213, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CLIM 412: *Physical Oceanography.* 3 credits.
Reviews global patterns of temperature, salinity, currents and waves in the world's oceans and how these patterns influence marine biota, climate, and human activity. Introduces key concepts which explain physical features of the ocean ranging from microscopic turbulence to global circulation. Designated a Green Leaf Course. Offered by Atmospheric/Oceanic/Earth Sci. Limited to three attempts. Equivalent to GEOL 412.

Specialized Designation: Green Leaf Related Course

Recommended Prerequisite: MATH 113 or 115 and PHYS 160 or 253; or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CLIM 429: *Atmospheric Thermodynamics.* 3 credits.
Thermodynamics of the atmosphere, properties of dry and moist air, air parcel as a thermodynamic system, atmospheric stability and convection, cloud formation and stability indices. Offered by Atmospheric/Oceanic/Earth Sci. Limited to three attempts.

Recommended Prerequisite: CLIM 111, MATH 114 and PHYS 260; or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CLIM 438: *Atmospheric Chemistry.* 3 credits.
Reviews fundamental chemical processes of the Earth's atmosphere including chemical cycles, thermodynamics, reaction kinetics, photochemistry, radiative balance, ozone chemistry and environmental issues, including air pollution, acid rain and global change. Includes some review of extraterrestrial atmospheric chemistry. Offered by Atmospheric/Oceanic/Earth Sci. Limited to three attempts. Equivalent to CHEM 438.

Recommended Prerequisite: CHEM 331 and 332 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CLIM 440: *Climate Dynamics.* 3 credits.
Structure, dynamics and thermodynamics of atmospheric and oceanic circulations that maintain the climate. Role of the large scale transport

of energy, moisture and angular momentum. Relationships of large scale circulation to weather and weather extremes, and implications for past and future climates. Offered by Atmospheric/Oceanic/Earth Sci. Limited to three attempts.

Recommended Prerequisite: MATH 213, MATH 214, and CLIM 411.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CLIM 456: *Introduction to Atmospheric Radiation.* 3 credits.
Provides fundamentals, physical understanding and quantitative analysis of radiative transfer in the atmosphere, discusses radiation processes-reflection, refraction, absorption, transmission, emission, and scattering and introduces tools for atmospheric radiative transfer. Provide students the basics for more advanced topics such as remote sensing or satellite meteorology. Offered by Atmospheric/Oceanic/Earth Sci. Limited to three attempts. Equivalent to GGS 456.

Recommended Prerequisite: CLIM 111, MATH 114, and PHYS 260 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CLIM 470: *Numerical Weather Prediction.* 3 credits.
Concepts and techniques of numerical prediction of weather, including the numerical models used and the rationale for large suites of meteorological forecasts. Sources of errors in the forecast: errors in the initial conditions and in the numerical weather prediction models. Interpretation of model output. Offered by Atmospheric/Oceanic/Earth Sci. Limited to three attempts.

Recommended Prerequisite: MATH 213, MATH 214, and CLIM 411.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

500 Level Courses

CLIM 511: *Atmospheric Dynamics.* 3 credits.
Observational bases and fundamentals of fluid dynamic principles for understanding atmospheric motions across multiple spatial and temporal scales; covers basic conservation laws of mass, momentum, and energy; concepts of circulation and vorticity; balanced atmospheric flows, e.g. geostrophic wind and shear, thermal wind; quasi-geostrophic and isentropic potential vorticity analysis for mid-latitude cyclones and fronts. Offered by Atmospheric/Oceanic/Earth Sci. May not be repeated for credit.

Recommended Prerequisite: MATH 213 or equivalent.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CLIM 512: *Physical Oceanography.* 3 credits.
Course describes the global patterns of temperature, salinity, currents and waves in the world's oceans, and how these patterns influence marine biota, climate, and human activity. Course introduces key concepts which explain physical feature of the ocean ranging from microscopic turbulence to global circulation. Offered by Atmospheric/Oceanic/Earth Sci. May not be repeated for credit.

Recommended Prerequisite: MATH 113 or MATH 115; PHYS 160 or PHYS 243; or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

600 Level Courses

CLIM 601: *Midlatitude Synoptic Meteorology.* 3 credits.
This course teaches students how to apply dynamical concepts and methods in weather analysis and map interpretation. We first introduce the essential dynamical tools for synoptic meteorology, the quasigeostrophic theory, isentropic analysis and potential vorticity framework. Using these tools, we examine the midlatitude weather systems and phenomena, including extratropical cyclone, front, cold-air damming and winter storm. The concept of baroclinic instability is also introduced. Finally, basic procedure of numerical weather prediction and human forecasting processes are discussed. Offered by Atmospheric/Oceanic/Earth Sci. May not be repeated for credit.

Recommended Corequisite: CLIM 511

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CLIM 610: *Introduction to the Physical Climate System.* 3 credits.
Provides modern understanding of ocean, atmosphere, and land based on fundamental physical laws. Describes current climate and physical processes by which climate is maintained. Covers theoretical models of general circulation of atmosphere, including time mean and transient behavior. Describes basics of ocean circulation and interactions between ocean and atmosphere. Reviews past climate change, stratosphere and its interactions with troposphere, and role of land processes in modulating climate. Offered by Atmospheric/Oceanic/Earth Sci. May not be repeated for credit.

Recommended Prerequisite: BS or MS in mathematics or a physical science, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CLIM 614: *Land-Climate Interactions.* 3 credits.
Interdisciplinary course providing detailed description of surface energy and water balance over land and radiative and turbulent transfer. Introduces numerical techniques for modeling land surface and applications in weather, climate, and hydrologic forecasting and simulation. Includes hands-on experience with land surface models in computer laboratory, including sensitivity experiments to reinforce theoretical concepts. Exposure to contemporary research through reading and reviewing seminal journal papers. Offered by Atmospheric/Oceanic/Earth Sci. May not be repeated for credit.

Recommended Prerequisite: BS or MS in mathematics or physical science, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CLIM 631: *Urban Climate.* 3 credits.
Provides a coherent system to describe, study, and understand the essentials of urban (micro) climates. Explores the physical principals governing the creation of distinct urban climates. Explains ways the built environment interacts with the atmosphere over scales that extend from walls and roofs up to whole cities. Also considers the effects of weather and climate on the city. Offered by Atmospheric/Oceanic/Earth Sci. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CLIM 670: *Earth System Modeling.* 3 credits.
An Earth system model is composed of models simulating the evolution of the atmosphere, ocean, cryosphere, biosphere, and other components. Course introduces the component models, their interactions, and how they are used to predict the behavior of weather and climate on time scales that range from hours to centuries. Students will learn technical and scientific skills necessary to run an Earth system model and evaluate its output. Offered by Atmospheric/Oceanic/Earth Sci. May not be repeated for credit.

Recommended Prerequisite: Computer programming experience

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CLIM 680: *Climate Data.* 3 credits.
How to process, analyze, and interpret environmental data for climate and related disciplines. Familiarizes students with software commonly used in atmospheric research and with techniques for working with large quantities of data. Examines mathematical tools for characterizing global physical data sets which vary in time and space, and applies the tools to observations and numerical model output. Offered by Atmospheric/Oceanic/Earth Sci. May not be repeated for credit.

Recommended Prerequisite: MATH 115 or an equivalent course and familiarity with a computer language.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CLIM 690: *Scientific Basis of Climate Change.* 3 credits.
A rigorous treatment of global warming, especially with regard to anthropogenic causes, based on the IPCC 4th Assessment Report "The Physical Science Basis". Topics include 1) Overview of observed climate, 2) Variability of climate, 3) Modeling of climate response to greenhouse gas forcing, 4) Greenhouse gases, chemistry, and aerosols, and 5) Projections of climate change and its societal impact. Offered by Atmospheric/Oceanic/Earth Sci. May not be repeated for credit.

Recommended Prerequisite: BS or MS in a natural science or engineering, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

700 Level Courses

CLIM 700: *Climate Comprehensive Exam.* 1 credit.
Preparation for and completion of written comprehensive exam, on a climate-related subject, within AOES department. The exam is part of the degree requirements in lieu of writing a master's thesis. Instructor should be the chair of the examination committee. The exam committee will specify exam content. Offered by Atmospheric/Oceanic/Earth Sci. May be repeated within the degree for a maximum 2 credits.

Recommended Prerequisite: At least 15 graduate credits, approved project proposal, and permission of major advisor or chair of the examination committee.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Satisfactory/No Credit scale.

CLIM 711: *Introduction to Atmospheric Dynamics.* 3 credits.
Covers basic conservation laws of mass, momentum, and energy and scaling analysis of equation of motion and thermodynamic equation. Discusses balanced flows in atmosphere, such as geostrophic wind and its vertical shear, and thermal wind relationship. Also explores circulation and vorticity; role of atmospheric boundary layer in mass, momentum, and energy transfer; synoptic scale motions; and role of gravity and Rossby waves in controlling general circulation of atmosphere. Offered by Atmospheric/Oceanic/Earth Sci. May not be repeated for credit.

Recommended Prerequisite: BS or MS in mathematics or a physical science, or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CLIM 712: *Physical and Dynamical Oceanography.* 3 credits.
Introduces climatology and dynamics of oceans. Covers nature of seawater, heat, and salt budgets; general circulation of the ocean, including the Gulf Stream and thermohaline circulations; dynamics of wind-driven ocean circulation; and processes influencing biological and chemical behavior. Offered by Atmospheric/Oceanic/Earth Sci. May not be repeated for credit.

Recommended Prerequisite: CSI 751 or CLIM 710, or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CLIM 713: *Atmosphere-Ocean Interactions.* 3 credits.
Provides comprehensive observational and mechanistic understanding of El Nino and Southern Oscillation (ENSO) phenomena. Topics include observations and theories of seasonal and interannual changes in ocean circulation and temperature and interactions with atmosphere; equations of motion and theories of wind-driven circulation; mixed layer observations and theories; midlatitude and equatorial ocean waves; interannual variability and atmosphere-ocean coupling; and tropical oceanography and meteorology. Offered by Atmospheric/Oceanic/Earth Sci. May not be repeated for credit.

Recommended Prerequisite: CLIM 712 or 711 or equivalent, or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CLIM 715: *Numerical Methods for Climate Modeling.* 3 credits.
Foundation and theory of computational methods for atmosphere and ocean modeling, with special emphasis on finite-difference and spectral methods. Topics include accuracy, consistency, convergence and stability; time stepping schemes; nonlinear computational stability; energy and enstrophy conserving schemes for momentum equations; staggered and curvilinear grids; alternate vertical coordinate systems; implicit and split-explicit barotropic mode solution; pressure gradient errors and vorticity constraints; spectral methods for atmospheric models; and treatment of model physics. Offered by Atmospheric/Oceanic/Earth Sci. May not be repeated for credit.

Recommended Prerequisite: CLIM 712 or 711 or equivalent, or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CLIM 750: *Geophysical Fluid Dynamics.* 3 credits.
Introduces geophysical fluid dynamics, the study of rotating stratified flows. Covers hydrostatics; equations of motion, gravity wave dynamics, and stratified flow; effects of rotation, midlatitude dynamics, Rossby number and quasigeostrophic expansion; beta plane approximation; and equatorial Kelvin and Rossby waves. Offered by Atmospheric/Oceanic/Earth Sci. May not be repeated for credit.

Recommended Prerequisite: CLIM 711, or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CLIM 751: *Predictability and Prediction of Weather and Climate.* 3 credits.
Covers predictability and seamless prediction of weather and climate for timescales ranging from days to decades. Studies limitations to predictability due to chaos, and possible sources of predictability due to slowly varying surface boundary conditions produced by interactions among atmospheres, ocean and land system. Discusses predictability of droughts and floods, monsoons, ENSO, decadal variations and climate change. Offered by Atmospheric/Oceanic/Earth Sci. May not be repeated for credit.

Registration Restrictions:
Required Prerequisite: CLIM 711[B-].
[B-] Requires minimum grade of B-.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CLIM 752: *Ocean General Circulation.* 3 credits.
Description and theory of large-scale ocean circulation and how it affects climate. Focus is on ubiquitous flow structures such as gyres, equatorial currents, and meridional overturning cells. Examines how the circulation follows from wind and thermohaline forcing, as well as physical principles. The influence of the circulation on heat transport and climate variability is also discussed. Conceptual guideposts include barotropic gyres, Ekman cells, potential vorticity, western intensification, the interplay of gravity and the Earth's rotation, advective-diffusive balance, multiple flow states, and Rossby waves. Offered by Atmospheric/Oceanic/Earth Sci. May not be repeated for credit.

Recommended Prerequisite: CLIM 712 or 711 or equivalent, or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CLIM 753: *General Circulation of the Atmosphere.* 3 credits.
Overview and several theoretical perspectives of atmospheric transport of energy, moisture, and angular momentum, and how these processes fundamentally affect the climate on various time scales. Offered by Atmospheric/Oceanic/Earth Sci. May not be repeated for credit.

Recommended Prerequisite: CLIM 710 and CLIM 711.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CLIM 754: *Elements of the Tropical Climate System.* 3 credits.
Observations and dynamics of key processes of tropical weather and climate. Topics include: structure of the tropical atmosphere and ocean, convection, dynamics of tropical waves in the atmosphere and ocean, tropical intraseasonal variability, tropical the global monsoons, cyclones, and stratospheric quasi-biennial oscillation. Offered by Atmospheric/Oceanic/Earth Sci. May not be repeated for credit.

Recommended Prerequisite: CLIM 711.

Recommended Corequisite: CLIM 710.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CLIM 759: *Topics in Climate Dynamics.* 3 credits.
Covers selected topics in climate dynamics not covered in fixed-content courses. Notes: May be repeated for credit when offered with different content. Offered by Atmospheric/Oceanic/Earth Sci. May be repeated within the term for a maximum 9 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: Permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CLIM 761: *Advanced Atmospheric Predictability and Prediction.* 3 credits.
Covers the theory and practice of predicting atmospheric circulation from daily weather to subseasonal weather regimes to seasonal climate. Discusses atmospheric data assimilation, the dynamics of rapidly amplifying modes, the role of large- scale instability and weather regime dynamics, and the role of boundary conditions. Students will design and carry out ensemble forecasts using a range of numerical models. Offered by Atmospheric/Oceanic/Earth Sci. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (CLIM 711[B-] or 711[XS]) and (CLIM 751[B-] or 751[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CLIM 762: *Statistical Methods in Climate Research.* 3 credits.
Introduction to a core set of statistical methods that have proven useful to modern climate and predictability research. Topics include detecting and attributing climate change, describing climate variability with empirical orthogonal functions, statistical forecasting with regression and time series models, and identifying coupled patterns of variability with canonical correlation analysis. Offered by Atmospheric/Oceanic/Earth Sci. May not be repeated for credit.

Recommended Prerequisite: Undergraduate level linear algebra and STAT 344 (or equivalent), or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CLIM 763: *Advanced Statistical Methods in Climate Research.* 3 credits.
Introduction to multivariate statistical techniques commonly used in climate science, with special emphasis on estimation in large dimensional spaces. Topics include: multivariate regression, canonical correlation analysis, predictable component analysis, field significance tests, data assimilation (especially the ensemble Kalman Filter), discriminant analysis, and multivariate detection and attribution of climate change. Offered by Atmospheric/Oceanic/Earth Sci. May not be repeated for credit.

Recommended Prerequisite: CLIM 762 or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CLIM 796: *Directed Reading and Research.* 1-6 credits.
Reading and research on a specific topic in climate dynamics under the direction of a faculty member. Offered by Atmospheric/Oceanic/Earth Sci. May be repeated within the term for a maximum 6 credits.

Recommended Prerequisite: Admission into the climate dynamics doctoral program and permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Research

Grading:
This course is graded on the Graduate Regular scale.

CLIM 798: *Master's Climate Research Project.* 1-6 credits.
Research or literature-review project in climate science or related topic chosen and completed under the guidance of a faculty member. Proposal required before enrollment. Technical report acceptable to student's project committee required for completion. Offered by Atmospheric/Oceanic/Earth Sci. May be repeated within the degree for a maximum 12 credits.

Recommended Prerequisite: At least 15 graduate credits, approved project proposal, and permission of major advisor or chair of the examination committee.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Thesis

Grading:
This course is graded on the Satisfactory/No Credit scale.

CLIM 799: *Master's Thesis in Climate.* 1-6 credits.
Research project in climate science or related topic chosen and completed under the supervision of a faculty member. Resulting thesis acceptable to student's committee and potentially publishable is required for completion. Offered by Atmospheric/Oceanic/Earth Sci. May be repeated within the degree for a maximum 18 credits.

Recommended Prerequisite: Degree candidacy, thesis proposal approved by thesis committee, and permission of major advisor or instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Thesis

Grading:
This course is graded on the Satisfactory/No Credit scale.

900 Level Courses

CLIM 991: *Climate Dynamics Seminar.* 1 credit.
Presentations in climate dynamics field by Mason faculty and invited speakers. Notes: A maximum of 3 credits may be applied toward the climate dynamics PhD. Offered by Atmospheric/Oceanic/Earth Sci. May be repeated within the degree.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CLIM 996: *Doctoral Reading and Research.* 1-6 credits.
Reading and research on a specific topic in climate dynamics under the direction of a faculty member. Offered by Atmospheric/Oceanic/Earth Sci. May be repeated within the term for a maximum 6 credits.

Recommended Prerequisite: Admission into the climate dynamics doctoral program and permission of instructor.

Registration Restrictions:

Enrollment is limited to Graduate level students.

Schedule Type: Research

Grading:
This course is graded on the Graduate Special scale.

CLIM 997: *Doctoral Qualification.* 3 credits.
Students develop a project that demonstrates their potential to do scientific research. Each student either proposes a research project, or submits an original manuscript that is suitable for a peer-reviewed scientific journal in the subject area of Climate Dynamics. Grading is based on an oral presentation and written work. Offered by Atmospheric/Oceanic/Earth Sci. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Permission of Instructor

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Regular scale.

CLIM 998: *Doctoral Dissertation Proposal.* 1-12 credits.
Covers development of research proposal under guidance of dissertation director and doctoral committee. Proposal forms basis for climate dynamics doctoral dissertation. Notes: Course may be repeated, but no more than 12 credits of CLIM 998 may be applied to doctoral degree requirements. Offered by Atmospheric/Oceanic/Earth Sci. May be repeated within the degree.

Recommended Prerequisite: Doctoral standing and permission of advisor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Enrollment limited to students in the College of Science college.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

CLIM 999: *Doctoral Dissertation.* 1-12 credits.
Doctoral dissertation research under direction of dissertation director. Notes: May be repeated, but no more than 24 credits total in CLIM 998 and 999 may be applied to doctoral degree requirements. Offered by Atmospheric/Oceanic/Earth Sci. May be repeated within the degree.

Recommended Prerequisite: Admission to doctoral candidacy and permission of advisor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy.

Enrollment is limited to Graduate level students.

Enrollment limited to students in the College of Science college.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

College of Science (COS)

100 Level Courses

COS 120: *Introduction to Research.* 1-3 credits.
Introduction to research, involving work on a research project. May involve lab study, computer modeling and analysis, mathematics, or other original research as appropriate. Research formulated and completed under instructor's guidance. Culminates in a written or oral final report. Offered by College of Science. May be repeated within the degree for a maximum 6 credits.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

300 Level Courses

COS 300: *Professional Preparation for STEM Disciplines.* 3 credits.
Prepares any undergraduate major that is interested in enhancing their competences in science writing, technical communication and social media skills. Students will be prepared to become more competitive in the next generation workforce. Covers these topics: drafting and revising papers, dissecting scientific journal articles, communicating science to non-scientists, creating a podcast, writing grant proposals, and preparing CVs, resume and "elevator pitches." By the end of the course, the student will not only be familiar but more confident in effectively disseminating information in their own field of interest. Offered by College of Science. Limited to three attempts.

Specialized Designation: Mason Impact.

Recommended Prerequisite: ENGH 302 or its equivalent and COMM 100 or COMM 101 or their equivalents. Students should be at the sophomore level or above.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COS 301: *Great Ideas in Science.* 3 credits.
Nontechnical introduction to ideas that have shaped the growth of science, from the building of Stonehenge to modern theories of the Big Bang. The idea behind each major advance is treated in its historical context, with special attention to its importance in mankind's understanding of the nature of the universe. Intended for nonscience majors; uses little mathematics. COS 301 is the new course number for PROV 301: Great Ideas in Science. Offered by College of Science. Limited to three attempts.

Mason Core: Natural Science Overview

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COS 310: *Introduction to Science Policy.* 3 credits.
This course is an introduction to how science is used to inform governmental policy decisions and how policy impacts U.S. science. The course is intended for any STEM student with an interest in understanding or contributing to decision making at the federal and state

level or joining the government to draft policies and legislation directly. Government policies affect all parts of society, including the scientific research enterprise. Reciprocally, science can be used to inform policy in myriad ways at different levels of government. Scientists' lack of familiarity with policy, and policymakers' lack of familiarity with science contributes to the longstanding gap between the production of scientific research and its perceived utility by decision-makers. This course will bridge this gap and provide new skills for scientists to contribute to this new field. Offered by College of Science. Limited to three attempts.

Mason Core: Synthesis

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

COS 400: *Problem Solving and Leadership in STEAM.* 3 credits.
In this course, participants will experience a hands-on approach to incorporating problem solving principles into the STEAM (Science, Technology, Engineering, Arts and Mathematics) disciplines and consider implications for innovations in research, development, and entrepreneurship. This course consists of face to face meetings, follow up webinars, a collaborative project, and the opportunity for internship. Notes: This course may culminate with international travel; locations will vary by semester. Offered by College of Science. Limited to three attempts.

Specialized Designation: Entrepreneurship

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COS 401: *RS: Discipline Based Education Research.* 2-3 credits.
Students will conduct an original Discipline-Based Education Research (DBER) project with their faculty mentor and STEM Accelerator faculty mentor. Offered by College of Science. Limited to three attempts.

Specialized Designation: Research/Scholarship Intensive

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

COS 402: *Special Topics in Science.* 1-4 credits.
Explore an array of exciting topics in science; the course's topic will vary by section offered. Offered by College of Science. May be repeated within the term for a maximum 8 credits.

Specialized Designation: Topic Varies

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

500 Level Courses

COS 500: *Professional Preparation for STEM Disciplines.* 3 credits.
Prepares graduate students that are interested in enhancing their competences in science writing, technical communication and social media skills. Students will be prepared to become more competitive in the next generation workforce. Covers these topics: drafting and revising papers, dissecting scientific journal articles, communicating science to non-scientists, creating a podcast, writing grant proposals, and preparing CVs, resume and "elevator pitches." By the end of the course, the student will not only be familiar but more confident in effectively disseminating information in their own field of interest. Offered by College of Science. May not be repeated for credit.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

COS 510: *Introduction to Science Policy.* 3 credits.
This course is an introduction to how science is used to inform governmental policy decisions and how policy impacts U.S. science. The course is intended for any STEM student with an interest in understanding or contributing to decision making at the federal and state level or joining the government to draft policies and legislation directly. Government policies affect all parts of society, including the scientific research enterprise. Reciprocally, science can be used to inform policy in myriad ways at different levels of government. Scientists' lack of familiarity with policy, and policymakers' lack of familiarity with science contributes to the longstanding gap between the production of scientific research and its perceived utility by decision-makers. This course will bridge this gap and provide new skills for scientists to contribute to this new field. Offered by College of Science. Limited to three attempts.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

600 Level Courses

COS 600: *Multidisciplinary Problem Solving and Leadership.* 3 credits.
In this course, participants will experience a hands-on approach to incorporating problem solving principles into the STEAM (Science, Technology, Engineering, Arts and Mathematics) disciplines and consider implications for innovations in research, development, and entrepreneurship. This course consists of face to face meetings, follow up webinars, a collaborative project, and the opportunity for internship. Notes: This course may culminate with international travel; locations will vary by semester. Offered by College of Science. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

COS 602: *Special Topics in Science.* 1-4 credits.
Explore an array of exciting topics in science; the course's topic will vary by section offered. Offered by College of Science. May be repeated within the term for a maximum 8 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

College of Visual and Performing Arts (CVPA)

100 Level Courses

CVPA 101: *Arts Pass.* 2 credits.
Introduction to appreciation of the arts through lectures and demonstrations in visual art, music, dance, and theater. Emphasizes aesthetic principles in modern society. Students attend performances and exhibitions and develop analytical skills through written journal and discussion. Offered by Coll Visual & Performing Arts. May be repeated within the degree for a maximum 4 credits.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CVPA 102: *Experiencing the Arts.* 3 credits.
Reserved for high school students enrolled in CVPA. Introduces collaborative and interdisciplinary arts experiences in visual art, music, dance, theater, film, and media through daily intensive immersion in the arts for two and a half weeks. Offered by Coll Visual & Performing Arts. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CVPA 105: *Special Topics in the Arts.* 1-3 credits.
Exploration of topical studies on the arts. Notes: Subject matter varies. May be repeated when taken under different topics. Offered by Coll Visual & Performing Arts. May be repeated within the term for a maximum 12 credits.

Specialized Designation: Topic Varies

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

300 Level Courses

CVPA 308: *Cross-Cultural Arts Appreciation.* 3 credits.
Provides cumulative arts experience by tying subject matter to major cultural production of Center for the Arts. Notes: Subject matter varies. May be repeated when taken under different topics. Offered by Coll Visual & Performing Arts. May be repeated within the term for a maximum 12 credits.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CVPA 399: *Special Topics in the Arts.* 1-6 credits.
In-depth presentation and exploration of topical studies on the arts. Notes: Subject matter varies. May be repeated when taken under different topics. Offered by Coll Visual & Performing Arts. May be repeated within the term for a maximum 24 credits.

Specialized Designation: Topic Varies

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

CVPA 430: *Topics in Arts and Wellness.* 1-3 credits.
In-depth presentation and exploration of topical studies in arts and wellness or related areas such as injury prevention, performance enhancement, and health and wellness training. Notes: Topic depends on instructor. May be repeated if taken under different topics. Offered by Coll Visual & Performing Arts. May be repeated within the degree for a maximum 9 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: 90 hours or permission of instructor, concurrent enrollment is permitted.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CVPA 489: *Field Experience in the Arts.* 3-6 credits.
Apprenticeship, internship, or project with organization or individual in the arts. Must be prearranged with division director before enrollment. Offered by Coll Visual & Performing Arts. May be repeated within the term for a maximum 6 credits.

Recommended Prerequisite: Junior standing and completion of six credits in CVPA courses in the area of residency, CVPA 305, or permission of instructor.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

CVPA 499: *Research/Performance/Topics in the Arts.* 3-6 credits.
Advanced research, performance, or exploration of topical studies in arts. Offered by Coll Visual & Performing Arts. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: Permission of department chair.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

500 Level Courses

CVPA 530: *Topics in Arts and Wellness.* 1-3 credits.
In-depth presentation and exploration of topical studies in arts and wellness and/or related areas (e.g., injury prevention, performance enhancement, health and wellness training to educators and arts professionals). Topic depends on instructor. Notes: May be repeated if taken under different topics. Offered by Coll Visual & Performing Arts. May be repeated within the degree for a maximum 9 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: 90 hours or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CVPA 592: *Special Topics in Interdisciplinary Arts Studies.* 1-3 credits.
Topics in interdisciplinary arts. Offered by Coll Visual & Performing Arts. May be repeated within the term for a maximum 12 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: Undergraduate degree or equivalent, or Permission of Instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CVPA 599: *Independent Study.* 1-6 credits.
Independent reading, performance, or research on specific project under direction of selected faculty member. May include attendance in parallel undergraduate course. Offered by Coll Visual & Performing Arts. May not be repeated for credit.

Recommended Prerequisite: Undergraduate degree or equivalent, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Regular scale.

600 Level Courses

CVPA 600: *CVPA Graduate ProSeminar.* 0 credits.
Introduces students into graduate studies in the arts; the course reviews graduate practices and policies. Students are required to take this within their first year of graduate study in CVPA. Offered by Coll Visual & Performing Arts. May not be repeated for credit.

Recommended Prerequisite: Acceptance into a CVPA Graduate Program.

Registration Restrictions:
Enrollment limited to students with a class of Graduate.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Satisfactory/No Credit scale.

700 Level Courses

CVPA 700: *Academic Writing in the Arts.* 1 credit.
Prepares graduate students for the rigors of academic writing in the arts at the advanced level and supports students' acculturation in the academic writing skills and practices of their discourse communities. Offered by Coll Visual & Performing Arts. May be repeated within the degree for a maximum 3 credits.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Satisfactory/No Credit scale.

CVPA 701: *Thesis and Project Writing.* 1 credit.
Students will develop an expertise within the specific rhetorical context of the thesis/project genre, understand the specialized features of the final project or thesis, and apply the strategies they have learned in their disciplines to their capstone event. Offered by Coll Visual & Performing Arts. May be repeated within the degree for a maximum 3 credits.

Recommended Prerequisite: Completion of 21 graduate credits in a CVPA graduate degree.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:

This course is graded on the Satisfactory/No Credit scale.

Communication (COMM)

100 Level Courses

COMM 100: *Public Speaking.* 3 credits.
Presents principles to develop effective presentations for public and professional settings while integrating appropriate technologies. Emphasizes analyzing audience; composing meaningful, coherent messages; conducting responsible research; developing effective arguments; and improving delivery skills to strengthen confidence and credibility. Offered by Communication. Limited to three attempts.

Mason Core: Oral Communication

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 101: *Fundamentals of Communication.* 3 credits.
Presents principles to develop appropriate and effective communication strategies in one-to-one and small group communication settings. Emphasizes analyzing and assessing communication skills to create and sustain effective communication in personal and professional relationships. Offered by Communication. Limited to three attempts.

Mason Core: Oral Communication

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 140: *Forensics Seminar I.* 0-4 credits.
Intensive work in creative forensics events, including rhetorical criticism and informative, persuasive, extemporaneous, after-dinner, and impromptu speaking. Offered by Communication. May be repeated within the degree for a maximum 5 credits.

Recommended Prerequisite: Audition required.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 141: *Forensics Seminar II.* 0-4 credits.
Intensive work in recreative forensic events, including dramatic duo, program interpretation, poetry interpretation, dramatic interpretation, and prose interpretation. Offered by Communication. May be repeated within the degree for a maximum 5 credits.

Recommended Prerequisite: Audition required.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 142: *Debate Seminar I.* 0-4 credits.
Work in affirmative research, case construction, and oral presentation; directed toward affirmative analysis of intercollegiate debate proposition. Offered by Communication. May be repeated within the degree for a maximum 5 credits.

Recommended Prerequisite: Audition required.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 143: *Debate Seminar II.* 0-4 credits.
Work in negative research, case attacks, and oral presentation directed toward negative analysis of intercollegiate debate proposition. Offered by Communication. May be repeated within the degree for a maximum 5 credits.

Recommended Prerequisite: Audition required.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 145: *Newspaper Workshop I.* 0-1 credits.
Practical experience in writing, editing, or business aspects of newspaper production at Broadside or other papers. Coordinated by newspaper faculty advisor. Offered by Communication. May be repeated within the term for a maximum 3 credits.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 148: *Radio Workshop I.* 0-1 credits.
Students receive individual guidance while learning to be on-air show hosts at student internet radio station WGMU. New technologies such as computer automation systems and advanced production software are integrated throughout the curriculum to prepare students to engage in the most current applications for commercial and internet radio and podcasting. Offered by Communication. May be repeated within the degree for a maximum 3 credits.

Recommended Prerequisite: One 100 level COMM course, or permission of instructor.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 157: *Digital Media Workshop.* 0-1 credits.
Offers students a hands-on introduction to digital tools of creative expression, involving the use of specific software and hardware, including operating systems, media editing programs, authoring applications, and software utilities. Notes: Students who have already completed or are in COMM 208 are not eligible to take this course. Offered by Communication. May be repeated within the degree for a maximum 3 credits.

Recommended Prerequisite: COMM 100 or 101 and declared major or minor in communication, undeclared major, or permission of undergraduate program director.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

200 Level Courses

COMM 200: *Communication Theory.* 3 credits.
Introduces the field of communication, including perspectives on theory and research, topical areas within the discipline, basic research methodologies, and a survey of theories in those areas. Covers basic procedures for theory-building, research, and writing about communication. Offered by Communication. Limited to three attempts.

Specialized Designation: Mason Impact.

Recommended Prerequisite: COMM 100 or COMM 101 or permission of undergraduate program director.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 201: *Small Group Communication.* 3 credits.
Principles of communicating effectively in small group situations. Emphasizes problem-solving group communication. Practice in working cooperatively with others to complete projects using systematic approach to problem solving. Offered by Communication. Limited to three attempts.

Recommended Prerequisite: COMM 101, or equivalent course.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 202: *Media and Society.* 3 credits.
Examines the relationship between media and society through the study of the development of various media systems in the United States, including print media, radio, television, film, the recording industry, and new communication technologies. Introduces media effects and basic theories. Offered by Communication. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 203: *Introduction to Journalism.* 3 credits.
American journalism including history and First Amendment components; role of professional journalist; print, broadcast, and computer assisted news operations; economics of publishing; and effect of new technologies. Serves as starting point for those interested in journalism careers and as orientation for those interested in learning more about news business operations. Offered by Communication. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 204: *Introduction to Public Relations.* 3 credits.
Introduces the evolving field of public relations and the role it plays in global business, politics and social interactions. Focuses on creation of integrated digital communication and social media engagement. This is a required course for the Communication Department Public Relations concentration and a prerequisite for several upper-level public relations courses. Offered by Communication. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 208: *Introduction to Media Production.* 3 credits.
Provides a general introduction to media production with emphasis on the basics of multimedia tools for camera, audio, lighting, and editing, focusing on non-fiction, journalism, or public relations/advocacy presentations. Offered by Communication. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 210: *Voice and Articulation.* 3 credits.
Principles of voice production, with practice in effective vocal use of American English. Emphasizes student participation. Offered by Communication. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 230: *Case Studies in Persuasion.* 3 credits.
Examines common persuasive message strategies and approaches. Covers basic principles of persuasive process. Case studies include advertisements, speeches, and persuasive activities from all segments of society. Offered by Communication. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 249: *Communication Field Experience.* 1-2 credits.
Field training and experience related to one of the five communication department concentrations through faculty-approved activity support. Offered by Communication. May be repeated within the term for a maximum 4 credits.

Recommended Prerequisite: 45 credits total.

Schedule Type: Activity-Based

Grading:
This course is graded on the Satisfactory/No Credit scale.

COMM 255: *Introduction to Media Literacy.* 3 credits.
Principles and practices of media literacy. Emphasizes critical viewing, listening, and reading media skills; and media effects on consumer. Offered by Communication. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 260: *Basic Debate Theory and Practice.* 3 credits.
Theory and practice of formal debate, including approaches to analytical reasoning, research, delivery, and conceptual basis for debate. Does not require tournament participation. Offered by Communication. Limited to three attempts.

Schedule Type: Lecture, Recitation

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 261: *Theories of Argumentation.* 3 credits.
Analyzes argument within communicative settings. Emphasizes deductive and inductive forms of reasoning, fallacies in reasoning, tests of evidence, and models for such analyses. Offered by Communication. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

300 Level Courses

COMM 300: *Rhetorical Theory and Criticism.* 3 credits.
Theories and principles of public communication, emphasizing methods of persuasion, critical analysis, speaker-listener alignments in public setting, and measurements of effective public communication. Offered by Communication. Limited to three attempts.

Specialized Designation: Writing Intensive in Major

Registration Restrictions:
Required Prerequisites: COMM 200[C], U200 or 200[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 301: *Relational Communication Theory.* 3 credits.
Theories and principles of interpersonal communication emphasizing models of communication, verbal and nonverbal message systems, and analysis of communicative relationships. Offered by Communication. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 302: *Media Theory.* 3 credits.
Provides a comprehensive review of mass communication and media theory, focusing on media effects and the complex relationships between media producers, messages, technologies, and users/audiences. Examines role of media in news, politics, and popular culture. Offered by Communication. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 303: *Writing across the Media.* 3 credits.
Foundation course focusing on writing for the mass media: Internet, public relations, newspapers, broadcast (television and radio) and advertising with a strong emphasis on adherence to Associated Press Style. Notes: Prerequisite for all communication media writing courses. Lab work required. Offered by Communication. Limited to three attempts.

Recommended Prerequisite: 30 credits.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 304: *Foundations of Health Communication.* 3 credits.
Explores health communication research practice: the role of communication in health care delivery, health promotion and disease prevention, risk communication, and personal as well as psychological well-being. Examines interpersonal, organizational, team, family, and intercultural relationships. Offered by Communication. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 305: *Foundations of Intercultural Communication.* 3 credits.
Analyzes communication variables as they relate to intercultural encounters. Emphasizes culture's influence on communication process, particularly influence of verbal and nonverbal communication on how message is interpreted. Notes: Communication majors are encouraged to complete COMM 200 prior to enrolling in this course. Offered by Communication. Limited to three attempts.

Mason Core: Global Understanding

Recommended Prerequisite: 3 credits of 100 or 200-level COMM courses or 60 credits.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 306: *Issues in Intercultural Communication.* 3 credits.
Applies basic principles of intercultural communication to analyze specific situations involving communication and cultural differences. Notes: Continuation of COMM 305. Offered by Communication. Limited to three attempts.

Recommended Prerequisite: COMM 305, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 307: *Field Study in Communication.* 3 credits.
Structured communication learning experience: one to three weeks of travel in a foreign environment involving another country or relevant U.S. co-cultures. Students must complete appropriate readings, laboratory assignments, and personal learning paper to process communication concepts and experiences. Notes: May be repeated for credit when field study is substantially different with permission of the undergraduate director. Offered by Communication. May be repeated within the degree.

Recommended Prerequisite: Permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 308: *Writing for Public Relations.* 3 credits.
Focuses on public relations writing including news releases, client memos, broadcasting, speeches, brochures, journals, and advertisements. Includes writing styles, formats, organization, and writing research. Offered by Communication. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: COMM 204[C] or 204[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 310: *Performance for Communication Arts.* 3 credits.
Principles and theories of performance for communication arts. Practice in spoken performance of prose, poetry, and drama. Offered by Communication. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 320: *Business and Professional Communication.* 3 credits.
Study of basic theories and skills of communication in professional contexts, including interviewing, relationship maintenance, small group teams, and public presentations. Emphasizes developing practical and critical thinking skills. Offered by Communication. Limited to three attempts.

Recommended Prerequisite: COMM 100, 101, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 326: *Rhetoric of Social Movements and Political Controversy.* 3 credits.
Social and political forces of contemporary era from communication perspective, emphasizing political leadership, pressures for social and political change, and transformations in communicative environment. Offered by Communication. Limited to three attempts.

Mason Core: Synthesis

Recommended Prerequisite: COMM 300.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 327: *Political Communication.* 3 credits.
Studies how political communication shapes development of "political reality." Examines interactions between media and politics with respect to the ways communication functions in political settings. Offered by Communication. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 330: *Principles of Public Relations.* 3 credits.
Surveys nature, history, scope, and practice of public relations in business, trade associations, nonprofit organizations, and educational and government institutions. Covers principles, practice of public relations, including media relations, issues management, and public service announcements; marketing and research; planning and publicity for special events; house publications; and institutional advertising. Offered by Communication. Limited to three attempts.

Recommended Prerequisite: 3 hours of COMM credit and 60 hours, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 331: *Public Relations Campaigns.* 3 credits.
Develops the conceptual knowledge and practical skills students need to thrive in challenging public relations situations, such as crisis management, research for clients, communication with clients, and campaigns. Students complete the course with a portfolio of research, writing, and visual materials they have created through client work. Offered by Communication. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: COMM 204[C], 204[XS], 330[C], U204 or L330.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 332: *Nonverbal Communication.* 3 credits.
Theory, principles, and methods to analyze nonverbal communication. Emphasizes physical behavior, facial expression, personal space and territoriality, physical appearance, vocal cues, and environment. Offered by Communication. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 334: *Family and Health Communication.* 3 credits.
Examines how family communication contributes to physical, psychological, and social wellness. Explores how family communication affects our experience with health transitions (e.g., coping with cancer; becoming a caregiver; losing a loved one), contributes to health outcomes (e.g., stress and anxiety; disordered eating behavior; schizophrenia; drug abuse), and is central to health promotion behavior (e.g., understanding health history and genetics). Offered by Communication. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 335: *Organizational Communication.* 3 credits.
Theory, practice, and methods to analyze communication in organizations. Emphasizes process and structure, interaction formats,

mechanisms for modification, and career paths in organizational communication. Offered by Communication. Limited to three attempts.

Recommended Prerequisite: COMM 100, 101, or 301, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 340: *Forensics Seminar III.* 0-4 credits.
Intensive work in various types of creative forensics events, including rhetorical criticism and informative, persuasive, extemporaneous, after-dinner, and impromptu speaking. Offered by Communication. May be repeated within the degree for a maximum 5 credits.

Recommended Prerequisite: Completion of 60 hours, or 4 hours of COMM 140. Audition required.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 341: *Forensics Seminar IV.* 0-4 credits.
Intensive work in various types of recreative forensics events, including dramatic duo, program interpretation, poetry interpretation, dramatic interpretation, and prose interpretation. Offered by Communication. May be repeated within the degree for a maximum 5 credits.

Recommended Prerequisite: Completion of 60 hours, or 4 hours of COMM 141. Audition required.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 342: *Debate Seminar III.* 0-4 credits.
Work in affirmative research, case construction, and oral presentation directed toward affirmative analysis of intercollegiate debate proposition. Offered by Communication. May be repeated within the degree for a maximum 5 credits.

Recommended Prerequisite: Completion of 60 hours, or 4 hours of COMM 142. Audition required.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 343: *Debate Seminar IV.* 0-4 credits.
Work in negative research, case attacks, and oral presentation directed toward negative analysis of intercollegiate debate proposition. Offered by Communication. May be repeated within the degree for a maximum 5 credits.

Recommended Prerequisite: Completion of 60 hours, or 4 hours of COMM 142. Audition required.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 345: *Newspaper Workshop II.* 0-1 credits.
Practical experience in writing and editing for student newspaper or other papers. Offered by Communication. May be repeated within the term for a maximum 3 credits.

Recommended Prerequisite: 3 credits of COMM 145, 351, or permission of instructor.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 346: *Yearbook Workshop.* 1 credit.
Practical experience in promotion, marketing, and sales of video yearbook, or practical experience working on Senior Expressions, a print supplement to the video yearbook. Offered by Communication. May be repeated within the term for a maximum 3 credits.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 347: *Cable TV Programming and Marketing.* 0-1 credits.
Practical experience in television programming, promotion, and marketing of a campus television cable network operation. Offered by Communication. May be repeated within the degree for a maximum 3 credits.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 348: *Radio Workshop II.* 0-1 credits.
Intensive practical application of previously acquired on-air show hosting skills at student internet radio station WGMU. Skill development in commercial production and writing included. New technologies such as social media, computer automation systems and advanced production software are integrated throughout the curriculum to prepare students to engage in the most current applications for commercial and internet radio and podcasting. Offered by Communication. May be repeated within the term for a maximum 3 credits.

Recommended Prerequisite: COMM 148, or permission of instructor.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 350: *Mass Communication and Public Policy.* 3 credits.
Investigates how matters of public importance are communicated via various mass communication channels. Emphasizes regulations to minimize influence of mass media on public decision-making, and media manipulation by pressure groups, politicians, and media gatekeepers. Offered by Communication. Limited to three attempts.

Recommended Prerequisite: COMM 202, 255, or 302, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 351: *News Writing and Reporting.* 3 credits.
Experience in actual news gathering. Students write and report for print and online outlets. Numerous in-class and out-of-class writing assignments train students in unique styles of print and online journalism. Offered by Communication. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: COMM 303[C], L303 or 303[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 352: *News Editing.* 3 credits.
Copy preparation, headline writing, news judging, and layout for various news formats. Introduces working on news copy desks. Offered by Communication. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: COMM 303[C], L303 or 303[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 353: *Broadcast Journalism.* 3 credits.
Investigates unique writing style of electronic media journalists. Emphasizes concise, conversational, and timely news writing. Techniques of mixing words of report with sights, sounds of news story. Offered by Communication. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: COMM 303[C], L303 or 303[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 354: *Radio Production and Podcasting.* 3 credits.
Students will learn and critically analyze the components of radio and podcast production including: interviewing, story development, script writing, interview techniques, remote and digital audio recording, editing of sound, mixing, and final production for broadcast. The course includes a lecture component and lab time where the instructor will consult with students on their practice and production assignments including short (30 seconds) and longer formats (around 4 minutes). Podcasts will be posted to a website and/or SoundCloud. Offered by Communication. Limited to three attempts.

Recommended Prerequisite: COMM 302 or permission of instructor

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 356: *Video: Performance and Writing.* 3 credits.
Writing for video, performance skills for on-air work, interviewing. Offered by Communication. Limited to three attempts.

Recommended Prerequisite: 45 credits.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 358: *Multi-Camera Studio Production.* 3 credits.
Provides an in-depth exploration of the creative, technical, logistical, and aesthetic requirements of production in a multiple camera environment. The fundamental skills learned in this class will serve as a foundation for narrative, event, live sports, talk show, broadcast journalism, and magazine-styled television and webcast programming. Offered by Communication. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: COMM 355[C], FAVS 255[C], 255[XS], COMM 208[C], 208[XS], L355, FAVS U255 or COMM U208.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 359: *Media Management.* 3 credits.
Principles, practices of media management from general techniques to operation of individual departments within a media organization. Offered by Communication. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 360: *Digital Postproduction.* 3 credits.
Offers instruction on delivering high-quality image and video products for digital media. Students will be introduced to an array of video-audio editing and digital image software for integrating video, audio, photo and graphic postproduction. Student projects focus on journalism, public relations, and advocacy contexts. Offered by Communication. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: COMM 355[C], FAVS 255[C], 255[XS], COMM 208[C], 208[XS], L355, FAVS U255 or COMM U208.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 361: *Online Journalism.* 3 credits.
Focuses on online journalism, research, reporting, web page and weblog creation, and writing for Internet. Offered by Communication. Limited to three attempts.

Registration Restrictions:

Required Prerequisites: COMM 303[C], L303, 303[XS], 351[C], 351[XS], L351, 352[C], 352[XS] or L352.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 362: *Argument and Public Policy.* 3 credits.
Develops argumentative skills while examining contemporary public policy. Applies methods of argumentative analysis to design, implementation of public policy. Students learn by constructing, examining, and using public argument. Offered by Communication. Limited to three attempts.

Mason Core: Synthesis

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 363: *Media Career Seminar.* 1 credit.
Practicum for students with production experience; students produce a final resume in area of expertise. Offered by Communication. Limited to three attempts.

Recommended Prerequisite: Two courses completed in area of media production focus.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 364: *Videography.* 3 credits.
Provides a comprehensive overview of the principles and practices of visual storytelling, encompassing short documentaries, campaigns, commercial work, news and other non-fiction narratives. Mobile, DSLR and fixed-lens cameras will be used to explore all facets of visual production that tell human stories, with emphasis on character, conflict, drama, and surprise. Offered by Communication. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: COMM 355[C], FAVS 255[C], 255[XS], COMM 208[C], 208[XS], L355, FAVS U255 or COMM U208.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 365: *Gender, Race, and Class in the Media.* 3 credits.
Introduces concepts of power, influence of mass media. Allows students to see themselves as products, producers of media influence, and gives sense of the roles in the media or lack thereof, of groups based on their gender, race and/or class. Offered by Communication. Limited to three attempts.

Recommended Prerequisite: COMM 302 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 366: *Visual Communication.* 3 credits.
Teaches visual communication theories and applies them to creation of videos, web pages, multimedia production, Computer Based Training (CBT) and other technologies. Covers limits of visual communication in terms of perception, economics, and technology. Partial distance course includes viewing video modules and using electronically mediated discussion. Offered by Communication. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: COMM 208[C], 208[XS], FAVS 255[C], 255[XS], COMM U208 or FAVS U255.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 367: *Children and Media.* 3 credits.
Provides an overview of the relationships between children and mass media. Focus of the course is on the effects of media consumption on children's social and psychological well-being. Students will learn major child development theories, review history, economics and regulation of children's programming, and explore children's use of and responses to various media. Offered by Communication. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 369: *Multimedia Storytelling.* 3 credits.
Applies concepts of advanced visual storytelling within today's fluid media landscape. Students report and tell compelling stories across multiple platforms using simple, portable equipment and software essential to reporters working in the contemporary converged newsroom. Highlights a multimedia approach to journalism to include broadcast, mobile reporting skills and backpack journalism techniques. Offered by Communication. Limited to three attempts.

Recommended Prerequisite: COMM 353

Registration Restrictions:
Required Prerequisites: COMM 351[C], 351[XS], L351, 352[C], 352[XS] or 352.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 370: *Feature Writing.* 3 credits.
Introduces aspiring journalists to research techniques and critical writing skills needed to produce publishable magazine or newspaper feature stories. Offered by Communication. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: COMM 303[C], L303 or 303[XS].
[C] Requires minimum grade of C.

XS Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 371: *Sports Writing and Reporting.* 3 credits.
Experience in actual sports-related news gathering and reporting. Covers writing and reporting on sports-related subjects for print and online media. Numerous in-class and out-of-class writing assignments train students in the unique style of covering sports events, reporting breaking news, and writing feature stories. Offered by Communication. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: COMM 303C, L303 or 303XS.
C Requires minimum grade of C.
XS Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 372: *Sports and the Media.* 3 credits.
Examines the role of mass media in constructing images of athletes, sport, and sports culture. Critical attention is given to broadcast, print, and film of sport media. Assesses sociological and cultural issues that shape sport media and culture. Offered by Communication. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 373: *Business and Economic Journalism.* 3 credits.
Writing and reporting about business and the economy with focus on understanding financial news and reporting about companies, trade, and markets for print, broadcast, and online media. Students practice through in-class and out-of-class writing assignments. Offered by Communication. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: COMM 303C, L303 or 303XS.
C Requires minimum grade of C.
XS Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 374: *Political Journalism.* 3 credits.
Writing and reporting about politics, elections and campaigns, and the legislative and executive branches of government for print, broadcast, and online media. Students practice the style and substance of covering political news through in-class and out-of-class writing assignments. A unique collaboration with C-SPAN including video conference opportunities with political and media personalities. Offered by Communication. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: COMM 303C, L303 or 303XS.
C Requires minimum grade of C.
XS Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 375: *Digital Advertising and Promotions.* 3 credits.
History, regulation, and technological changes in advertising, as well as media buying, developing advertising campaigns, and the strengths and weaknesses of digital and traditional media channels used in advertising. Offered by Communication. Limited to three attempts.

Recommended Prerequisite: COMM 302 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 380: *Media Criticism.* 3 credits.
Examines practical criticism of a wide variety of media texts including television programs, newspapers, articles, films, photographs, and advertisements. Introduces principles of major contemporary modes of analysis for systematically interpreting visual and verbal forms of communication. Offered by Communication. Limited to three attempts.

Recommended Prerequisite: Completion of 60 hours or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 384: *Public Relations and Social Media.* 3 credits.
Explores the role of social media in contemporary public relations. Students engage in social media research and analysis, examine best practices for successful campaigns, seek to understand conditions for viral media, implement a personal branding strategy, create strategic engagement plans, and design campaigns. Offered by Communication. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 385: *Special Topics in Interpersonal and Organizational Communication.* 3 credits.
Topics vary. Counts toward Organizational and Interpersonal Communication concentration in the Communication Department. Notes: May be repeated for credit when topic is different. Offered by Communication. May be repeated within the degree.

Specialized Designation: Topic Varies

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 386: *Special Topics in Political Communication.* 3 credits.
Topics vary. Counts toward Political Communication concentration in the Communication Department. Notes: May be repeated for credit when

topic is different. Offered by Communication. May be repeated within the degree.

Specialized Designation: Topic Varies

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 387: *Special Topics in Journalism.* 3 credits.
Topics vary. Counts toward Journalism concentration in the Communication Department. Notes: May be repeated for credit when topic is different. Offered by Communication. May be repeated within the degree.

Specialized Designation: Topic Varies

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 388: *Special Topics in Public Relations.* 3 credits.
Topics vary. Counts toward Public Relations concentration in the Communication Department. Notes: May be repeated for credit when topic is different. Offered by Communication. May be repeated within the degree.

Specialized Designation: Topic Varies

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 389: *Public Relations for Associations and Nonprofits.* 3 credits.
Principles of editing and journalism applied to publications, public relations, and advertising needs within corporate environment. Job requirements of editorial positions in public relations, publications, and information as defined by trade associations, nonprofit organizations, and large corporations. Offered by Communication. Limited to three attempts.

Recommended Prerequisite: 60 credits, or 3 credits of lower-division COMM courses.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 390: *Issues in Public Relations.* 3 credits.
Focuses on current issues in corporate, government, and nonprofit public relations. Offered by Communication. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: COMM 204[C], 204[XS], 330[C], U204 or L330.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 392: *Public Relations Study Abroad.* 3 credits.
Concentrated survey course in public relations for business, trade associations, nonprofit organizations, and governmental institutions from the perspective of a location abroad. Emphasis placed on the global and intercultural aspects of public relations. Offered by Communication. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 395: *Special Topics in Health Communication.* 3 credits.
Topics vary. Notes: May be repeated for credit when topic is different. Offered by Communication. May be repeated within the degree.

Specialized Designation: Topic Varies

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 396: *Special Topics in Mass Communication.* 3 credits.
Topics vary. Counts toward Media Production and Criticism Concentration in the Communication Department. Notes: May be repeated for credit when topic is different. Offered by Communication. May be repeated within the degree.

Specialized Designation: Topic Varies

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 397: *Special Topics in Production.* 1-3 credits.
Provides hands-on media production experience. Topics vary. Notes: May be repeated for credit when topic is different. Offered by Communication. May be repeated within the term.

Specialized Designation: Topic Varies

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 398: *Research Practicum in Communication.* 1-3 credits.
Work individually with a faculty member on a faculty research project. Requires readings in research methods and topic area and a final project. Notes: Students must submit an application for COMM 398 at least one week prior to the beginning of the semester. Offered by Communication. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: 60 credits including at least 9 hours of COMM credit toward the major; minimum GPA of 2.5 overall and 3.0 in the major; approval of department.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 399: *Special Topics in Communication.* 1-3 credits.
Topics vary; some require laboratories. Notes: May be repeated for credit when topic is different. Offered by Communication. May be repeated within the term.

Specialized Designation: Green Leaf Related Course, Topic Varies

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

COMM 400: *Research Methods in Communication.* 3 credits.
Explores applications for primary research methodologies used in communication. Research project with focus on survey, critical ethnographic, or experimental methodologies. Notes: Students may not receive credit for both COMM 400 and COMM 490. Offered by Communication. Limited to three attempts. Equivalent to COMM 490.

Specialized Designation: Mason Impact.

Recommended Prerequisite: COMM 300 with a minimum grade of 2.00 (C).

Registration Restrictions:
Required Prerequisites: COMM 200[C], U200 or 200[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 401: *Interpersonal Communication in the Workplace.* 3 credits.
Comprehensive study of theories and research associated with dynamics of interpersonal relationships in the workplace. Emphasizes individual motivation, interpersonal needs, communication styles, leadership, problem solving, decision making, diversity, interpersonal conflict, individual adaptation to organizational change, and influence of technology on workplace relationships. Offered by Communication. Limited to three attempts.

Recommended Prerequisite: COMM 301, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 411: *Public Relations in Practice.* 3 credits.
Helps communication majors apply their public relations education. Covers three general areas: public relations theory and applications, writing and editing, and networking/story placement. Includes public relations strategy and tactics, interviewing and analysis, writing and message delivery. Offered by Communication. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: COMM 331[C], L331 or 331[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 412: *Politics and the Mass Media.* 3 credits.
Covers responsibilities; freedoms of mass media in a democracy; and media influence on citizens' opinions, elections, and decisions of public officials. Offered by Communication. Limited to three attempts. Equivalent to GOVT 412.

Recommended Prerequisite: GOVT 103 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 430: *Persuasion.* 3 credits.
Theories of persuasive communication including traditional and contemporary attitudinal change; relationship among speaker, message, and audience; and relationship between attitudinal and behavioral change. Offered by Communication. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 431: *New Media and Democracy.* 3 credits.
Examines how an evolving media environment, including new information sources and new opportunities to produce content, changes how people understand their place in American society. Engages with questions of where and how people learn about, discuss, and engage with issues of public importance, such as political policy concerning science, health, technology, and society. Offered by Communication. Limited to three attempts.

Recommended Prerequisite: 60 credits or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 433: *Environmental Communication.* 3 credits.
Rhetoric and persuasion about environmental issues in contemporary society. Investigation of case studies in corporate, institutional, and movement attempts to mobilize and cope with ecological concerns. Critical assessment of public communication is emphasized. Offered by Communication. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 434: *Interviewing.* 3 credits.
Theory, principles, and practical skills essential to interview process. Emphasizes information gathering, journalistic, persuasive, employment, and performance-appraisal interviews. Offered by Communication. Limited to three attempts.

Recommended Prerequisite: 60 hours or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 435: *Digital Communication.* 3 credits.
Offers practical application, skill development, and theoretical and critical assessment of mediated communication, including digital networking and social media. Discusses and engages with digital communication in terms of culture and language, functional and dysfunctional communication, social interaction, critical perspectives and ideology, copyright, freedom, ethics and responsibility, and images of the future. Offered by Communication. Limited to three attempts.

Recommended Prerequisite: 60 credits.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 440: *Ceremonial Speech Writing and Performance.* 3 credits.
Provides students with the opportunities to develop speaking skills for a variety of contexts from eulogies to commencement speeches. Offered by Communication. Limited to three attempts.

Recommended Prerequisite: 75+ hours or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 450: *Internship in Communication.* 0-6 credits.
On-the-job training in communication through approved field work study programs. Internships arranged and supervised by Department of Communication through internship coordinator. Related class work in resume preparation and job interviewing. Notes: See department for the application process. Offered by Communication. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: 60 credits, major or minor in communication, journalism, or sport communication; 15 credits in COMM for majors, 12 credits for non-COMM majors, and permission of department.

Registration Restrictions:
Enrollment limited to students with a class of Junior, Senior Plus or Senior.

Enrollment is limited to students with a major, minor, or concentration in Communication, Health Communication, Journalism, Political Communication or Sport Communication.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Special scale.

COMM 451: *Facilitating Communication Education.* 3 credits.
Theory and practice in facilitating learning of communication principles and skills. Students work as instructional aides in lower-division classes under direct supervision of faculty member. Activities may include online learning support, social media updates, media production, facilitating small-group activities and individually critiquing oral performances. Offered by Communication. Limited to three attempts.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 452: *Media Production Practicum.* 1-3 credits.
Theory and practice in creation, distribution, and response to media productions. Students complete minimum 150 hours of work as assistants to engineers, producers, directors, and organizers of media production facilities on campus, under supervision of a sponsoring faculty member. Notes: Only 3 credits may be applied to the communication major. Offered by Communication. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: COMM 208, 303, or 348.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 454: *Free Speech and Ethics.* 3 credits.
Major issues surrounding roles of speech, press, and electronic media in society. Includes history of free speech and press issues in society, government role in regulating marketplace of ideas, and responsibility of individual in free society. Offered by Communication. Limited to three attempts.

Mason Core: Synthesis

Recommended Prerequisite: 60 credit hours or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 455: *History of Journalism.* 3 credits.
Development of print journalism, emphasizing interaction of technology, audience, and government intervention. Topics include birth of press, development of modern newspaper, and American development including Revolutionary and Civil wars, rise of independent press, and yellow journalism. Offered by Communication. Limited to three attempts.

Recommended Prerequisite: 3 hours of COMM or HIST.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 456: *Comparative Mass Media.* 3 credits.
Survey of major foreign mass media systems as they compare with American system. Focuses on broad dimensions of international mass media and describes issues facing global journalism and media systems. Provides substantive framework to critically evaluate various national media systems. Offered by Communication. Limited to three attempts.

Mason Core: Global Understanding

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 465: *Topics in Communication and Gender.* 3 credits.
Topics may include gender and culture, women as rhetors, male and female communication, and communication and gender roles. Examines specific interests, ideally in seminar setting. Notes: May be repeated for credit when topic is different with permission of department. Offered by Communication. May be repeated within the term.

Specialized Designation: Topic Varies

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 475: *Journalism Law.* 3 credits.
Examines law as it relates to working journalist. Topics include libel, invasion of privacy, free press and fair trial, First Amendment, broadcast regulation, access to media, advertising, and effect of new technologies on these issues. Uses case approach to study leading court decisions in mass media law. Offered by Communication. Limited to three attempts.

Recommended Prerequisite: 60 credits or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 479: *Digital Media and Web Design Capstone.* 3 credits.
Student team-based experience grounded in the work of the preceding courses in the digital media and web design minor. Each individual student will produce a portfolio of digital media and web-design related products and features that demonstrate core competencies in coding, design, content, and accessibility. Students will work in cross-disciplinary teams to carry out a client-based web design project, the process and outcomes of which will also be represented in the individual portfolio. Offered by Communication. Limited to two attempts. Equivalent to AVT 479, ENGH 479, IT 479.

Recommended Prerequisite: Before enrolling in the Capstone seminar, students need to have completed all required courses for the Digital Media and Web Design Minor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 480: *College to Career: Strategies for Transition.* 1 credit.
Designed to assist soon-to-be graduates in the employment transition process. Fundamental to the course are effective communication skills, creative research, and the desire to actively and aggressively seek meaningful employment. Offered by Communication. Limited to three attempts.

Recommended Prerequisite: 60+ credits or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 487: *Washington Media Institute.* 3 credits.
Special topics offered through the Washington Media Institute. Students must be enrolled in the communication department's professional experience in communication minor. Notes: May not be applied to the communication major or minor. Offered by Communication. May be repeated within the degree for a maximum 15 credits.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 490: *Honors Research Methods in Communication.* 3 credits.
Honors version of COMM 400. Notes: Students may not receive credit for both COMM 400 and 490. Offered by Communication. Limited to three attempts. Equivalent to COMM 400.

Specialized Designation: Mason Impact.

Recommended Prerequisite: Acceptance to pursue honors in the major; COMM 300.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 491: *RS: Honors Research Project in Communication.* 3 credits.
Completion of independent honors research project under the guidance of the student's faculty sponsor. Offered by Communication. May be repeated within the term.

Specialized Designation: Research/Scholarship Intensive

Recommended Prerequisite: Completion of COMM 490 with minimum grade of 3.0 and approval of honors project prospectus.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 498: *RS: Research Projects in Communication.* 3 credits.
Students plan, execute, and present an empirical research project exploring communication issues of their own choosing. Offered by Communication. Limited to three attempts.

Specialized Designation: Research/Scholarship Intensive

Recommended Prerequisite: COMM 200, COMM 400.

Registration Restrictions:
Enrollment is limited to students with a major in Communication.

Enrollment limited to students in a Bachelor of Arts degree.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

COMM 499: *Independent Study in Communication.* 1-3 credits.
Study of a selected area in communication. Independent study application must be processed before start of semester in which work is to take place. Notes: May be repeated for credit with permission of director of undergraduate program. Communication courses at the 500 level open to post-baccalaureate students or advanced undergraduates with permission of department. Offered by Communication. May be repeated within the term.

Recommended Prerequisite: 75 credits and permission of department.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

500 Level Courses

COMM 590: *Seminar in Communication.* 3 credits.
Intensive study of specific topics; content varies. Notes: May be repeated for credit when topic is different. Offered by Communication. May be repeated within the term.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

600 Level Courses

COMM 600: *Introduction to Graduate Studies.* 3 credits.
Offers a broad introduction to the field of communication in terms of communication-based theories and research. Offered by Communication. May not be repeated for credit.

Recommended Prerequisite: Admission to graduate program in communication or permission of graduate program director.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Enrollment is limited to students with a major in Communication.

Enrollment is limited to Graduate or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

COMM 602: *Theories and Research of Mass Communication.* 3 credits.
Explores theories that have guided development of mass media. Emphasizes major scientific and humanistic approaches to mass media effects. Offered by Communication. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

COMM 604: *Communication Research Practicum.* 3 credits.
Helps communication master's students determine focus for program of study, thesis, and projects. Includes readings in applied communication research and exercises in topic selection, analysis. Offered by Communication. May not be repeated for credit.

Recommended Prerequisite: COMM 634 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

COMM 605: *Intercultural Communication.* 3 credits.
Analyzes communication variables related to communication across cultures. Topics include nonverbal communication, time conceptualizations, perceptions and attitudes, values, social organization patterns, cultural norms, language, ethics, conflict across cultures, and research in intercultural communication. Offered by Communication. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

COMM 615: *Political Communication.* 3 credits.
Analyzes how political communication messages and strategies shape the development of perceptions and behavior in US presidential elections. Examines the interactions between media content and political action in election campaigns. Offered by Communication. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

COMM 620: *Health Communication.* 3 credits.
Examines interpersonal communicative processes associated with health in consumer-provider, family, and health communication campaign contexts. Focus on understanding cultural differences in perceptions of/

communication about health and disease. Offered by Communication. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

COMM 630: *Theories of Public Relations.* 3 credits.
Provides a survey of public relations theories and major ethical issues. Examines ways theories relate to organizations, mass and international communication research, rhetoric, persuasion, and social movements. Offered by Communication. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

COMM 632: *Persuasion Theory.* 3 credits.
Introduces students to the processes and effects of persuasive communication. Covers key theories of persuasion, behavior change, information processing, message effects, as well as important frameworks that guide the practice of persuasion in applied settings. Particular attention is paid to message features that generate predictable effects and how such effects may vary across different communicative situations. Offered by Communication. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

COMM 634: *Theories of Interpersonal Communication.* 3 credits.
Analyzes contemporary theories, concepts, and approaches to improving interpersonal communication. Examines interpersonal communication research. Offered by Communication. May not be repeated for credit.

Recommended Prerequisite: COMM 301 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

COMM 635: *Organizational Communication.* 3 credits.
Analyzes communication systems, processes in public and private organizations. Topics include conflict management, group decision making, interviewing, technical presentations, and using various channels for improving internal and external communication. Offered by Communication. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

COMM 636: *Communication Consulting.* 3 credits.
Investigates theories providing foundation for communication consulting. Provides theoretical information and mechanisms for application necessary to modify communicative behavior within organizations. Offered by Communication. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

COMM 637: *Risk Communication.* 3 credits.
Research on sharing information about physical hazards such as toxic waste, radiation, disease, injury, biohazards. Topics include communication concerning workplace safety, environmental problems, risk assessments, and scientific uncertainties. Offered by Communication. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

COMM 639: *Science Communication.* 3 credits.
Reviews research on best practices in science communication for scientists and communication professionals. Explores theory on conceptualizing science communication as disseminating knowledge, promoting informed decision making, involving citizens in scientific research (i.e., citizen science), promoting legislative and individual actions, or creating entertainment. Students practice communicating complex science and designing contexts for public engagement with scientific research. Offered by Communication. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

COMM 640: *Controversies in Science Communication.* 3 credits.
Examines the communication implications related to selected current topics of scientific controversy. Offered by Communication. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

COMM 641: *Advanced Communication Skills for STEM.* 3 credits.
Examines the specific oral, written, and mediated communication competencies needed by STEM professionals in modern society. Offered by Communication. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

COMM 642: *Science and the Public.* 3 credits.
Examines the relationship between science and society, with a particular emphasis on the role of communication in shaping public opinion on issues related to science and technology. Offered by Communication. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

COMM 644: *Analysis and Criticism of Science Journalism.* 3 credits.
Examines media coverage of technically complex topics in science, social science, environment, health and medicine, and technology. Explores the influence of institutional media practices on news about science and technology. Offered by Communication. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

COMM 650: *Research Methodologies in Communication.* 3 credits.
Introduces various research methods used by communication professionals. Focus on achieving understanding and knowledge of social scientific research, qualitative and quantitative, and critical analysis through use and application. Offered by Communication. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Enrollment is limited to students with a major in Communication.

Enrollment limited to students in the LA-MA-COM, LA-MAIS-ISIN or LA-PHD-COM programs.

Enrollment is limited to Graduate or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Graduate Regular scale.

COMM 653: *Graduate Seminar in Instructional Communication.* 3 credits.
Investigates theoretical and practical implications of instructional communication. Exposes graduate students to communication principles and practices of teaching college courses at upper and lower divisions. Offered by Communication. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

COMM 660: *Climate Change and Sustainability Communication Campaigns.* 3 credits.
Offers practical application, skill development, and theoretical basis of communication campaigns developed in response to global warming and other threats to sustainability. Focuses on purposive campaigns to promote changes in individual behavior and public policy. Offered by Communication. May not be repeated for credit.

Specialized Designation: Green Leaf Focused Course

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

COMM 670: *Social Marketing.* 3 credits.
Offers conceptual overview of social marketing: marketing methods designed to influence people to behave in ways that benefit society. Develops skills necessary to conduct a social marketing initiative and provides an opportunity for practical application of those skills. Offered by Communication. May not be repeated for credit.

Specialized Designation: Green Leaf Related Course

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

COMM 690: *Special Topics in Communication.* 3 credits.
Explores contemporary issues in communication theory, research, and practice. Notes: Topics vary. May be repeated when topic is different. Offered by Communication. May be repeated within the term for a maximum 15 credits.

Specialized Designation: Green Leaf Related Course, Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

COMM 694: *Communication Internship.* 3 credits.
Students work in approved, professional-level communication position, meeting regularly with internship supervisor from department. Requires paper, journal, minimum 60 hours work for each credit of enrollment. Students usually enroll in internships at end of program of study. Offered by Communication. May not be repeated for credit.

Recommended Prerequisite: 18 graduate credits and permission of department.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Graduate Special scale.

COMM 696: *Directed Readings and Research.* 1-3 credits.
Reading and research on specific topic under direction of faculty member. Written report required; oral or written exam may be required. Offered by Communication. May be repeated within the term for a maximum 6 credits.

Recommended Prerequisite: Permission of department.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Special scale.

700 Level Courses

COMM 700: *Building Social Science Theory.* 3 credits.
Explores the process of developing and testing social science theories. Emphasizes the components and mechanisms of theory - such as variables and causality - in a manner intended to inform rigorous social science inquiry using quantitative or qualitative methods. Offered by Communication. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Satisfactory/No Credit scale.

COMM 701: *Communication Science Research Practicum.* 3 credits.
Coordinates students into a research team to propose, test and report the findings of a two or three variable hypothesis. Conduct a research project that will make a publishable contribution to the communication science literature. May not be repeated for credit. Offered by Communication. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (COMM 650[B-] or 650[XS]) and (COMM 700[B-] or 700[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Satisfactory/No Credit scale.

COMM 705: *Intercultural Health and Risk Communication.* 3 credits.
Examines intercultural health and risk communication interventions; including health communication campaigns, public relations and advertising for health organizations, and how the media and Internet present health information. Offered by Communication. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

COMM 706: *Strategic Communication.* 3 credits.
Examines commonalities of strategic communication campaigns across fields (e.g., military, diplomacy, health, politics, marketing, public relations) in order to understand strategic communication, compare fields, and emphasize strategic and evaluative research across fields. Offered by Communication. May not be repeated for credit.

Recommended Prerequisite: COMM 630 or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

COMM 716: *International Public Relations.* 3 credits.
Provides a survey of international public relations with an emphasis in three areas: applied knowledge for actual international practice, relevant theory, and ethical issues. Offered by Communication. May not be repeated for credit.

Recommended Prerequisite: COMM 706 or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

COMM 720: *Consumer-Provider Health Communication.* 3 credits.
Explores relational health communication research and practice. Examines the role of interpersonal communication in health care delivery, health promotion, disease prevention, risk communication, and promoting personal and psychosocial well-being. Offered by Communication. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

COMM 721: *E-Health Communication.* 3 credits.
Explores the use of computer-mediated communication technologies in health care and health promotion, including examination of technology in health information dissemination, health education, health communication interventions, and the management of health care delivery. Offered by Communication. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

COMM 725: *Qualitative Methods.* 3 credits.
Examines qualitative research in communication. Emphasis is placed on techniques of naturalistic inquiry such as observation, interviewing, focus group methods, and ethnography, as well as tools for analyzing and reporting qualitative data. Offered by Communication. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

COMM 735: *Crisis Communication.* 3 credits.
Examines crisis communication contexts with a particular emphasis on the role of communication in a variety of crises and how the media and Internet present crisis information to the public. Offered by Communication. May not be repeated for credit.

Recommended Prerequisite: Permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

COMM 750: *Research Methods II.* 3 credits.
Extends basic research knowledge and skills learned in COMM 650 Research Methods I. Students will be taught to analyze and synthesize literature, develop theoretical linkages, and construct measurement scales. Offered by Communication. May not be repeated for credit.

Recommended Prerequisite: COMM 650.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

COMM 775: *Media Content Analysis.* 3 credits.
Introduces content analysis, a research technique for making replicable and valid inferences about text in sources such as news articles, advertisements, and television programs. Students design and conduct research using content analysis techniques. Offered by Communication. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

COMM 798: *Communication Studies Project.* 3 credits.
Final research seminar for all MA in communication students. Students discuss practical and theoretical issues related to project or thesis. Includes readings related to underlying theoretical, methodological, and ethical issues facing contemporary communication researchers and practitioners. MA students must take 798 in the semester of graduation or w/ permission of the MA Director. No more than 3 credits can be applied to the degree. Offered by Communication. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: COMM 600 and COMM 650.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Thesis

Grading:
This course is graded on the Satisfactory/No Credit scale.

COMM 799: *Master's Thesis.* 1-6 credits.
Original research endeavor related to student's concentration in communication under supervision of faculty committee. Offered by Communication. May be repeated within the degree.

Recommended Prerequisite: 24 graduate credits and approval of thesis proposal by faculty committee.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Thesis

Grading:
This course is graded on the Satisfactory/No Credit scale.

800 Level Courses

COMM 820: *Health Communication Campaigns.* 3 credits.
Explores use of communication campaigns to promote health and reduce health risks; examines how health communication campaigns are designed, implemented, and evaluated; and describes the role of communication research throughout the campaign process. Offered by Communication. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

COMM 890: *Special Topics in Communication.* 3 credits.
Selected topics reflecting specialized areas in communication. Notes: Topics vary. May be repeated for credit when topic is different. Offered by Communication. May be repeated within the degree.

Specialized Designation: Topic Varies

Recommended Prerequisite: PhD rank or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

COMM 896: *Independent Study.* 1-3 credits.
Independent reading on a topic agreed on by student and faculty member. Notes: Content varies. Offered by Communication. May be repeated within the term for a maximum 9 credits.

Recommended Prerequisite: PhD rank or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Regular scale.

COMM 899: *Comprehensive Exams.* 1-3 credits.
This course is for COMM PhD students who are in the comprehensive exams phase and within two courses of completing their total coursework. Offered by Communication. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Schedule Type: Independent Study

Grading:
This course is graded on the Satisfactory/No Credit scale.

900 Level Courses

COMM 998: *Doctoral Dissertation Proposal.* 1-15 credits.
Development of a research proposal that constitutes the basis for a doctoral dissertation. Offered by Communication. May be repeated within the degree.

Recommended Prerequisite: Approval of program director.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

COMM 999: *Doctoral Dissertation Research.* 1-15 credits.
Research on an approved dissertation topic under the direction of dissertation committee. Notes: A minimum of 18 credits of COMM 998 and 999 combined must be applied to doctoral degree requirements. Offered by Communication. May be repeated within the degree.

Recommended Prerequisite: COMM 998.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy.

Enrollment is limited to Graduate level students.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

Computational and Data Sciences (CDS)

100 Level Courses

CDS 101: *Introduction to Computational and Data Sciences.* 3 credits.
Introduction to the use of computers in scientific discovery through simulations and data analysis. Covers historical development and current trends in the field. Offered by Computational & Data Sciences. Limited to three attempts.

Mason Core: Natural Science with Lab, Natural Science Overview

Recommended Prerequisite: Appropriate score on the math placement test.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CDS 102: *Introduction to Computational and Data Sciences Lab.* 1 credit.
Experiments in computational and data sciences explore the connections between on-going advances in the natural sciences and the rapid advances in computing and data handling. Lab exercises demonstrate the use of computers in analyzing data, in modeling science problems, and in creating numerical simulations across the science disciplines. Offered by Computational & Data Sciences. Limited to three attempts.

Mason Core: Natural Science with Lab

Recommended Prerequisite: CDS 101. Concurrent enrollment is permitted.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

CDS 130: *Computing for Scientists.* 3 credits.
Covers use of computers to solve practical scientific problems. Topics include creating effective scientific presentations, analysis of experimental data, online literature, data/information ethics, scientific modeling, and communication/collaboration tools. Designed to equip students with the knowledge and confidence they need to use future hardware and software systems both as students and throughout their scientific careers. Offered by Computational & Data Sciences. Limited to three attempts.

Mason Core: Info Tech & Computing

Recommended Prerequisite: Passing score on the math placement test for MATH 113.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CDS 151: *Data Ethics in an Information Society.* 1 credit.
Examination of ethical issues related to access and use of information and data in the Internet age, for the general student, with special emphasis on ethical issues that apply to the proper use and interpretation of scientific and technical information. Offered by Computational & Data Sciences. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

200 Level Courses

CDS 201: *Introduction to Computational Social Science.* 3 credits.
Undergraduate-level introduction to computational concepts, principles, and modeling approaches in social sciences, emphasizing simulations and elements of complexity theory as they apply to social phenomena. Survey includes systems dynamics, cellular automata, and agent-based models. Offered by Computational & Data Sciences. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CDS 205: *Introduction to Agent-based Modeling and Simulation.* 3 credits.
Undergraduate-level introduction to Agent-based Modeling. Provides a background onto why agent-based models and hands-on examination of agent-based models in the social sciences by examining and experimenting with a variety of social simulation projects. Offered by Computational & Data Sciences. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CDS 230: *Modeling and Simulation I.* 3 credits.
This course expands upon the foundation provided by CDS 130. Fundamental computational modeling techniques are used in a variety of science and engineering disciplines. Continued development of algorithmic thinking skills will be done using different computational environments. Offered by Computational & Data Sciences. Limited to three attempts.

Recommended Prerequisite: CDS 130 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CDS 251: *Introduction to Scientific Programming.* 3 credits.
Focuses on elements of programming using the Fortran language and selected elements of the C language with emphasis on the aspects used in the computational and data sciences. Conducted through a combination of lecture and interactive computer laboratory. Offered by Computational & Data Sciences. Limited to three attempts.

Recommended Prerequisite: CDS 130.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CDS 290: *Topics in Computational and Data Sciences.* 1-4 credits.
Selected topics in Computational and Data Sciences. May be accepted for credit by CDS majors and CDS minors. Offered by Computational & Data Sciences. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CDS 292: *Introduction to Social Network Analysis.* 3 credits.
A broad introduction to network methods and applications that examine systems based on relations, structures, connectivity, location, interactions, and other network properties. This class includes, but is not limited to, social networks. Example applications covered will include: infrastructure networks, politics, diseases, and organizations, along with a variety of other phenomena. Offered by Computational & Data Sciences. Limited to three attempts.

Mason Core: Quantitative Reasoning

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

300 Level Courses

CDS 301: *Scientific Information and Data Visualization.* 3 credits.
The techniques and software used to visualize scientific simulations, complex information, and data visualization for knowledge discovery. Includes examples and exercises to help students develop their understanding of the role visualization plays in computational science and provides a foundation for applications in their careers. Offered by Computational & Data Sciences. Limited to three attempts.

Recommended Prerequisite: CDS 101 or CDS 130 or equivalent, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CDS 302: *Scientific Data and Databases.* 3 credits.
Data and databases used by scientists. Includes basics about database organization, queries, and distributed data systems. Student exercises will include queries of existing systems, along with basic design of simple database systems. Offered by Computational & Data Sciences. Limited to three attempts.

Specialized Designation: Writing Intensive in Major

Recommended Prerequisite: CDS 101 or CDS 130 or equivalent, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CDS 303: *Scientific Data Mining.* 3 credits.
Data mining techniques from statistics, machine learning, and visualization to scientific knowledge discovery. Students will be given a set of case studies and projects to test their understanding of this field and provide a foundation for future applications in their careers. Offered by Computational & Data Sciences. Limited to three attempts.

Recommended Prerequisite: CDS 101 or CDS 130 or equivalent, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

CDS 403: *Machine Learning Applications in Science.* 3 credits.
Covers practical applications in STEM areas of decision trees, rule-based classification, support vector machines, Bayesian networks, ensemble methods, and Neural Networks. Emphasis resides on the process of applying machine learning effectively to a variety of problems. Offered by Computational & Data Sciences. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (CDS 230[C] or 230[XS]) and (MATH 203[C] or 203[XS]) and (CDS 303[C] or 303[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CDS 410: *Numerical Analysis II.* 3 credits.
Numerical differentiation and integration, initial-value and boundary-value problems for ordinary differential equations, methods of solution of partial differential equations, iterative methods of solution of nonlinear systems, and approximation theory. Offered by Computational & Data Sciences. Limited to three attempts. Equivalent to MATH 447.

Recommended Prerequisite: MATH 214 and MATH 446, proficiency in at least one computer programming language and computer operating system; or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CDS 411: *Modeling and Simulation II.* 3 credits.
Covers the application of modeling and simulation methods to various scientific applications, including fluid dynamics, solid mechanics, materials science, molecular mechanics, and astrophysics. Provides an introduction to modeling and simulation software, as well as high-performance computing. Offered by Computational & Data Sciences. Limited to three attempts.

Recommended Prerequisite: MATH 446, PHYS 262 or PHYS 245, and a 200- or higher-level computational methods course, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CDS 421: *Computational Data Science.* 3 credits.
Covers the governing framework of data science for storing and processing big data in a distributed computer environment using simple programming models. Includes a comprehensive selection of tools from Hadoop, MapReduce, HDFS, Spark, Flink, Hive, HBase, MongoDB, Cassandra, Kafka. Students are expected to complete several computer projects using these cyber packages. Offered by Computational & Data Sciences. Limited to three attempts.

Recommended Prerequisite: CDS 251 or equivalent computer programming language, and knowledge of computer operating system, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CDS 461: *Molecular Dynamics and Monte Carlo Simulations.* 3 credits.
Covers particle methods to solve variety of physical systems. Emphasizes study of structure and thermodynamics of condensed systems in liquid and solid phases while implementing numerically the Molecular Dynamics and Monte Carlo methods. Applications and projects include a variety of atomistic and molecular simulations based on pairwise interatomic interactions. Offered by Computational & Data Sciences. Limited to three attempts.

Recommended Prerequisite: Competency in programming at CDS 251 level, college physics, and MATH 214 or MA TH 216, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CDS 468: *Image Operators and Processing.* 3 credits.
An introductory examination of image mathematics, computational protocols, and applications. Topics include image operator notation, channel operators, informational operators, intensity operators, geometric operators, image transformations, frequency filtering, and image basis set expansions. This course will build the students' computational skill set as applied to visual data and create a library of image analysis scripts. Offered by Computational & Data Sciences. Limited to two attempts.

Recommended Prerequisite: CDS 230 or equivalent.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CDS 486: *Topics in Computational and Data Sciences.* 3 credits.
Covers selected topics in computational and data sciences not covered in fixed content courses. Offered by Computational & Data Sciences. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CDS 487: *Electronic Structure Computations.* 3 credits.
Covers computational aspects of materials science, such as first-principles methods of electronic structure calculations of periodic solids, clusters, and molecules, as well as the use of empirical potentials. Examples will be drawn from metals, insulators, and semiconductors. Students will construct simple codes and be guided in the use of the more sophisticated available computational packages. Offered by Computational & Data Sciences. Limited to three attempts.

Recommended Prerequisite: PHYS 308 or PHYS 402.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CDS 490: *Directed Study and Research.* 1-3 credits.
Students work under the guidance of a faculty member on an independent study or directed research project in the computational and data sciences. May be repeated in combination with CDS 491 for a total of 6 credits between the two classes. Offered by Computational & Data Sciences. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Students must be CDS majors or minors in their junior or senior year and have permission of the instructor.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

CDS 491: *Internship.* 1-3 credits.
On-the-job experience for CDS majors and minors working in industry and government laboratories, including summer programs. Supervision and approval of this course must be arranged with department before registering. May be repeated in combination with CDS 490 for a total of 6 credits between the two classes. Offered by Computational & Data Sciences. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Students must be CDS majors or minors in their junior or senior year and have permission of the instructor.

Schedule Type: Internship

Grading:
This course is graded on the Satisfactory/No Credit scale.

CDS 492: *Capstone in Data Science.* 3 credits.
This course is intended to provide a capstone experience for undergraduate students by synthesizing knowledge and experience that they acquired in earlier coursework to address a complex Data Science problem. This course requires analytical, collaborative, and communication skills. Offered by Computational & Data Sciences. Limited to three attempts.

Mason Core: Capstone

Recommended Prerequisite: CDS 230 and (CDS 301 or CDS 302) or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

500 Level Courses

CDS 501: *Scientific Information and Data Visualization.* 3 credits.
Techniques and software used to visualize scientific simulations, complex information, and data visualization for knowledge discovery. Includes examples and exercises to help students develop their understanding of the role visualization plays in computational science and provides a foundation for applications in their careers. Offered by Computational & Data Sciences. May not be repeated for credit.

Recommended Prerequisite: CDS 130 or CDS 101; or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CDS 502: *Introduction to Scientific Data and Databases.* 3 credits.
Data and databases used by scientists. Includes basics about database organization, queries, and distributed data systems. Student exercises will include queries of existing systems, along with basic design of database systems. Examples from different disciplines will be given. Offered by Computational & Data Sciences. May not be repeated for credit.

Recommended Prerequisite: CDS 130 or CDS 101; or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

Computational Science and Informatics (CSI)

500 Level Courses

CSI 500: *Computational Science Tools.* 3 credits.
Introduces computer skills and packages commonly used in quantitative scientific research. Notes: CSI 601 and CSI 602, including additional material, have merged to create CSI 500. Offered by Computational & Data Sciences. May not be repeated for credit.

Recommended Prerequisite: 1 year of college calculus, knowledge of matrix algebra, and computer programming.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CSI 501: *Introduction to Scientific Programming.* 3 credits.
Introduces and reviews programming in C and FORTRAN with emphasis on the aspects used in the computational and data sciences. Conducted through a combination of both lecture and interactive computer laboratory. Offered by Computational & Data Sciences. May not be repeated for credit.

Recommended Prerequisite: Permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CSI 590: *Quantitative Foundations for Computational Sciences.* 3 credits.
Accelerated review of mathematical tools for scientific applications and analysis. Topics include vectors and matrices; differential and difference equations; linear systems; Fourier, Laplace, and Z-transforms; and probability theory. Notes: Not applicable to 48-credit course total for CSI PhD. Offered by Computational & Data Sciences. Limited to two attempts. Equivalent to SYST 500.

Recommended Prerequisite: MATH 213 and 214.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CSI 597: *Topics in Science and Engineering Simulation.* 3 credits.
Covers selected topics in Science and Engineering simulation, not covered in fixed content computational sciences and informatics courses. Offered by Computational & Data Sciences. May not be repeated for credit.

Specialized Designation: Topic Varies

Recommended Prerequisite: Permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

600 Level Courses

CSI 600: *Quantitative Foundations for Computational Sciences.* 3 credits.
Accelerated review of mathematical tools for scientific applications and analysis. Topics include vectors and matrices; differential and difference equations; linear systems; Fourier, Laplace, and Z-transforms; and probability theory. Notes: Not applicable to 48-credit course total for CSI PhD. Offered by Computational & Data Sciences. May not be repeated for credit. Equivalent to SYST 500.

Recommended Prerequisite: MATH 213 and 214.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CSI 606: *Scientific Graphics and Visualization Tools.* 1 credit.
An introduction into the use of scientific visualization tools for data analysis. Use of specific packages will be taught. Packages will include PV-WAVE, S-Plus, XV, XMGR, and the pnm tools on a rotating basis. Offered by Computational & Data Sciences. May not be repeated for credit.

Recommended Prerequisite: Competency in Linux of permission of instructor.

Registration Restrictions:

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CSI 629: *Topics in Continuum Systems.* 3 credits.
Covers selected topics in the computational aspects of continuum systems not covered in fixed-content courses in dynamical systems. Possible topics are smooth-particle hydrodynamics, radiation hydrodynamics, algorithms for continuum systems, adaptive grids for continuum computations, spectral methods in computational fluid dynamics, algorithms for concurrent machines, formation of high energy particle jets in astrophysical applications, application to Earth atmospheric problems, and flow considerations in molten materials. Offered by Computational & Data Sciences. May not be repeated for credit.

Specialized Designation: Topic Varies

Recommended Prerequisite: Permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CSI 638: *The Policy Process for Scientists.* 2 credits.
Introduces relationship among government, science, scientists, and issues and processes that shape science policy. Emphasizes examples taken from space weather and meteorology. Offered by Computational & Data Sciences. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CSI 639: *Ethics in Scientific Research.* 3 credits.
Reviews purpose of scientific research and principles for evaluating ethical issues. Teaches skills for survival through training in moral reasoning and responsible conduct. Discusses ethical issues and applying critical-thinking skills to design, execution, and analysis of experiments. Issues include using animals, humans in research; ethical standards in computer community; research fraud; and currently accepted guidelines for data ownership, manuscript preparation, and conduct of those in authority. Offered by Computational & Data Sciences. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CSI 662: *Introduction to Space Weather.* 3 credits.
Introduction to space weather involving systems such as the sun, the heliosphere, and the Earth's magnetosphere and ionosphere. Covers the solar magnetic field, solar flares, coronal mass ejections, particle acceleration mechanisms, the solar wind, and the Earth's magnetic field, radiation belt, geomagnetic storms, and ionospheric disturbances. Offered by Computational & Data Sciences. May not be repeated for credit.

Recommended Prerequisite: PHYS 303, PHYS 305, PHYS 307, MATH 213, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CSI 670: *Economic Systems Design.* 3 credits.
Introduces analytical and engineering principles used to develop exchange systems. Covers behavioral aspects of auction systems; matching, assignment, and transportation problems; and information markets. Introduces methods for testbedding systems using experimental economics. Offered by Computational & Data Sciences. May not be repeated for credit.

Recommended Prerequisite: Course in linear and nonlinear optimization, and course in linear algebra, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CSI 672: *Statistical Inference.* 3 credits.
Fundamental principles of estimation and hypothesis testing. Topics include limiting distributions and stochastic convergence, sufficient statistics, exponential families, statistical decision theory and optimality for point estimation, Bayesian methods, maximum likelihood, asymptotic results, interval estimation, optimal tests of statistical hypotheses, and likelihood ratio tests. Offered by Computational & Data Sciences. May not be repeated for credit. Equivalent to STAT 652.

Registration Restrictions:
Required Prerequisites: ((STAT 544[B-] or 544[XS]) and (STAT 554[*B-] or 554[XS])).
[*] May be taken concurrently.
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CSI 674: *Bayesian Inference and Decision Theory.* 3 credits.
Introduces decision theory and relationship to Bayesian statistical inference. Teaches commonalities, differences between Bayesian and frequentist approaches to statistical inference, how to approach statistics problem, and how to combine data with informed expert judgment to derive useful and policy relevant conclusions. Teaches theory to develop understanding of when and how to apply Bayesian and frequentist methods; and practical procedures for inference, hypothesis testing, and developing statistical models for phenomena. Teaches fundamentals of Bayesian theory of inference, including probability as a representation for degrees of belief, likelihood principle, use of Bayes Rule to revise beliefs based on evidence, conjugate prior distributions for common statistical models, and methods for approximating the posterior distribution. Introduces graphical models for constructing complex probability and decision models from modular components. Offered by Computational & Data Sciences. May not be repeated for credit. Equivalent to OR 664, SYST 664.

Recommended Prerequisite: STAT 544, STAT 554, or equivalent.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CSI 676: *Regression Analysis.* 3 credits.
Simple and multiple linear regression, polynomial regression, general linear models, subset selection, step-wise regression, and model selection. Also covered are multicollinearity, diagnostics, and model building as well as the theory and practice of regression analysis. Offered by Computational & Data Sciences. May not be repeated for credit. Equivalent to STAT 656.

Registration Restrictions:
Required Prerequisites: ((STAT 544[*B-] or 544[XS]) and (STAT 554[B-] or 554[XS])).
[*] May be taken concurrently.
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CSI 678: *Times Series Analysis and Forecasting.* 3 credits.
Modeling stationary and nonstationary processes; autoregressive, moving average and mixed model processes; hidden periodicity models; properties of models; autocovariance and autocorrelation functions, and partial autocorrelation function; spectral density functions; identification of models; estimation of model parameters, and forecasting techniques. Offered by Computational & Data Sciences. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (STAT 544[B-] or 544[XS]) and (STAT 554[B-] or 554[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CSI 685: *Fundamentals of Materials Science.* 3 credits.
Covers fundamentals of materials science with emphasis on physical topics including crystal structure and symmetry, dislocation theory, theory of interfaces, multicomponent phase diagrams, theory of phase transformations, nano-materials, metallic glasses. Includes a term project, assignments from current literature, and application of

computation in materials science. Offered by Computational & Data Sciences. May not be repeated for credit. Equivalent to PHYS 615.

Recommended Prerequisite: Undergraduate degree in electrical or mechanical engineering, materials science, physics, chemistry or related disciplines; or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CSI 687: *Solid State Physics and Applications.* 3 credits.
Covers crystal structures, binding, lattice vibrations, free electron model, metals, semiconductors and semiconductor devices, superconductivity, and magnetism. Offered by Computational & Data Sciences. May not be repeated for credit. Equivalent to PHYS 512.

Recommended Prerequisite: PHYS 502 or equivalent.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CSI 690: *Numerical Methods.* 3 credits.
Covers computational techniques for solving science, engineering problems. Develops algorithms to treat typical problems in applications, emphasizing types of data encountered in practice. Covers theoretical development as well as implementation, efficiency, and accuracy issues in using algorithms and interpreting results. When applicable, uses computer graphical techniques to enhance interpretation. Offered by Computational & Data Sciences. May not be repeated for credit. Equivalent to MATH 685, OR 682.

Recommended Prerequisite: MATH 203 and 214 or equivalent, and some programming experience.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CSI 695: *Scientific Databases.* 3 credits.
Study of database support for scientific data management. Covers requirements and properties of scientific databases, data models for statistical and scientific databases, semantic and object-oriented modeling of application domains, statistical database query languages and query optimization, advanced logic query languages, and case studies such as the human genome project and Earth-orbiting satellites. Offered by Computational & Data Sciences. May not be repeated for credit.

Recommended Prerequisite: INFS 614 or equivalent, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

700 Level Courses

CSI 701: *Foundations of Computational Science.* 3 credits.
Covers mapping of mathematical models to computer software, including all aspects of developing scientific software such as architecture, data structures, advanced numerical algorithms, languages, documentation, optimization, validation, verification, and software reuse. Examples in bioinformatics, computational biology, computational physics, and global change demonstrate scientific advances enabled by computation. Class projects involve working in teams to develop software that implements mathematical models, using software to address important scientific questions, and conducting computational experiments with it. Offered by Computational & Data Sciences. May not be repeated for credit.

Recommended Prerequisite: Competency in UNIX and programming at CSI 501 level, and CSI 690; or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CSI 702: *High-Performance Computing.* 3 credits.
Hardware and software associated with high-performance scientific computing. Computer architectures, processor design, programming paradigms, parallel and vector algorithms. Emphasizes importance of software scalability in science problems. Offered by Computational & Data Sciences. May not be repeated for credit.

Recommended Prerequisite: Competency in Linux and programming at CSI 501 level or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CSI 703: *Scientific and Statistical Visualization.* 3 credits.
Covers visualization methods used to provide new insights and intuition concerning measurements of natural phenomena and scientific and mathematical models. Presents case studies from myriad disciplines. Topics include human perception and cognition, introduction to graphics laboratory, elements of graphing data, representation of space-time and vector variables, representation of 3-D and higher dimensional data, dynamic graphical methods, and virtual reality. Work on a visualization project required. Emphasizes software tools on Silicon Graphics workstation, but other workstations and software may be used. Offered by Computational & Data Sciences. May not be repeated for credit.

Recommended Prerequisite: STAT 554 or CS 551, or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CSI 709: *Topics in Computational Sciences and Informatics.* 3 credits.
Covers selected topics in computational sciences and informatics not covered in fixed-content computational sciences and informatics courses. Offered by Computational & Data Sciences. May be repeated within the term for a maximum 9 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: Admission to the PhD program and permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CSI 711: *Chemical Thermodynamics and Kinetics.* 3 credits.
Advanced study of thermodynamics and kinetics. Covers application of kinetics to elucidation of reaction mechanisms and application of statistical thermodynamics to theory of elementary reaction rates. Offered by Computational & Data Sciences. May not be repeated for credit. Equivalent to CHEM 633.

Recommended Prerequisite: CHEM 331 and 332.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CSI 712: *Introduction to Solid Surfaces.* 3 credits.
Includes gas absorption isotherms, surface-area measurement techniques, real and clean surfaces, physisorption and chemisorption, methods of gas absorption and desorption, measurement of heats of adsorption, desorption kinetics, electron spectroscopies and their surface sensitivities, instrumentation needed, and principles of vacuum technology. Offered by Computational & Data Sciences. May not be repeated for credit. Equivalent to CHEM 728.

Recommended Prerequisite: CHEM 422 or equivalent.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CSI 713: *Quantum Chemistry.* 3 credits.
Illustrates fundamental concepts of quantum mechanics with applications to chemical systems, including atomic and molecular electronic structure and properties, molecular symmetry, and intermolecular forces. Offered by Computational & Data Sciences. May not be repeated for credit.

Recommended Prerequisite: CHEM 332.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CSI 714: *Spectroscopy and Structure.* 3 credits.
Covers quantum mechanics of the interaction of atoms and molecules with electromagnetic radiation. Also covers modern spectroscopic methods as applied to the elucidation of molecular structure and dynamics. Offered by Computational & Data Sciences. May not be repeated for credit.

Recommended Prerequisite: CHEM 332.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CSI 719: *Topics in Computational Chemistry.* 3 credits.
Covers selected topics in computational chemistry not covered in fixed-content computational chemistry courses. Offered by Computational & Data Sciences. May be repeated within the degree for a maximum 12 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: Permission of Instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CSI 720: *Fluid Mechanics.* 3 credits.
Covers basic and advanced fluid mechanics and continuous hypothesis to define fluids. Introduces tensor analysis; Euclidean and Lagrangian representations of fluid flow; Laplace's equation; continuity equation; Navier-Stokes equations; Bernoulli's theorem and Crocco's form of the equations; steady and unsteady flows; potential, incompressible, and compressible flows; gravity and sound waves; gas dynamics; and viscous flows. Offered by Computational & Data Sciences. May not be repeated for credit.

Recommended Prerequisite: CSI 690 and CSI 780, or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CSI 721: *Computational Fluid Dynamics I.* 3 credits.
Covers fundamentals including spatial and temporal approximation techniques for partial differential equations, solution of large systems of equations, data structures, solvers of the Laplace/ full potential equation, and simple Euler solvers. Includes two major projects: Laplace solver and 2-D Euler solver on unstructured grids. Students expected to write their own codes. Offered by Computational & Data Sciences. May not be repeated for credit.

Recommended Prerequisite: Course in partial differential equations such as MATH 678 or equivalent; knowledge of linear algebra at level of MATH 603 or CSI 740/MATH 625; coding experience in FORTRAN or C; or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CSI 722: *Computational Fluid Dynamics II.* 3 credits.
Covers more advanced topics in computational fluid dynamics, including high-resolution schemes for hyperbolic PDEs, advanced Euler solvers, Navier-Stokes solvers, grid generation, adaptive mesh refinement, efficient use of supercomputing hardware, and future trends. Projects include topics in grid generation and adaptive refinement. Students expected to write their own codes. Offered by Computational & Data Sciences. May not be repeated for credit.

Recommended Prerequisite: CSI 721 or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CSI 723: *Fluid Mechanics II.* 3 credits.
Covers gas dynamics, shock waves, method of characteristics, boundary layer flows, instabilities, and turbulence modeling. Special topics include biological, non-Newtonian, and free surface flows; aeroelasticity; and magneto-hydrodynamics. Offered by Computational & Data Sciences. May not be repeated for credit.

Recommended Prerequisite: CSI 720 or Permission of Instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CSI 739: *Topics in Bioinformatics.* 3 credits.
Selected topics in bioinformatics not covered in fixed-content bioinformatics courses. Offered by Computational & Data Sciences. May not be repeated for credit.

Specialized Designation: Topic Varies

Recommended Prerequisite: Permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CSI 740: *Numerical Linear Algebra.* 3 credits.
Covers computational methods for matrix systems; theory and development of numerical algorithms for the solution of linear systems of equations, including direct and iterative methods; analysis of sensitivity of system to computer round off; and solution of least squares problems using orthogonal matrices. Also covers computation of eigenvalues and eigenvectors, singular value decomposition, and applications. Offered

by Computational & Data Sciences. May not be repeated for credit. Equivalent to MATH 625.

Recommended Prerequisite: MATH 203 and some programming experience.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CSI 742: *The Mathematics of the Finite Element Method.* 3 credits.
The finite element method is commonly used for developing numerical approximations to problems involving ordinary and partial differential equations. Course develops underlying mathematical foundation, examines specific types of finite elements, analyzes convergence rates and approximation properties, and uses method to solve important equations. Students develop their own codes and are expected to complete independent projects. Offered by Computational & Data Sciences. May not be repeated for credit.

Recommended Prerequisite: MATH 446 or 685, or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CSI 744: *Linear and Nonlinear Modeling in the Natural Sciences.* 3 credits.
Develops tools of mathematical modeling while carrying out numerical simulations. Considers examples from across the sciences. Topics include basic issues such as models, simplification, linearity, and nonlinearity; dimensionless parameters; dimensional analysis; models involving differential equations; examples from population growth and chemical kinetics; models involving partial differential equations; diffusion, transport, nonlinearity and shocks; probabilistic modeling; perturbation methods; extrapolation; and introduction to stability. Offered by Computational & Data Sciences. May not be repeated for credit.

Recommended Prerequisite: Permission of Instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CSI 747: *Nonlinear Optimization and Applications.* 3 credits.
Introduction to practical aspects of nonlinear optimization. Covers applications of optimization algorithms to solving problems in science and engineering. Applications include data analysis, materials science, nanotechnology, mechanics, optical design, shape design, and trajectory optimization. Offered by Computational & Data Sciences. May not be repeated for credit.

Recommended Prerequisite: MATH 213 and 216, or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CSI 749: *Topics in Computational Mathematics.* 3 credits.
Selected topics in computational mathematics not covered in fixed-content computational mathematics courses. Offered by Computational & Data Sciences. May not be repeated for credit.

Specialized Designation: Topic Varies

Recommended Prerequisite: Permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CSI 754: *Earth Science Data and Advanced Data Analysis.* 3 credits.
Covers accessing and applying Earth observations and remote-sensing data for Earth system science research and applications. Major topics are data formats, analysis and visualization tools, advanced data analysis methods, and data applications. Also covers combining innovative information technology techniques and Earth science data to set up online data centers for accessing data through the web. Offered by Computational & Data Sciences. May not be repeated for credit. Equivalent to GGS 754.

Recommended Prerequisite: GGS 579 or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CSI 758: *Visualization and Modeling of Complex Systems.* 3 credits.
Covers elements of modeling and analysis for scientific applications. Concentrates on sample projects and student-initiated projects to use visualization, image and graphical analysis as they apply to modeling of complex data sets and systems. Reviews methods of creating and generating analysis and visualization packages. Data sets from multiple sources will be used. Modeling and analysis accompanied by appropriate readings from current literature. Offered by Computational & Data Sciences. May not be repeated for credit.

Recommended Prerequisite: Permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CSI 763: *Statistical Methods in Space Sciences.* 3 credits.
Covers statistical and data analysis methods applicable to problems in space science, remote sensing, and astrophysics. Includes parametric and nonparametric hypothesis testing, parameter estimation, correlation analysis, time series analysis, spatial analysis, and image reconstruction. Emphasizes imperfect nature of actual data sets and hypothesis. Examples drawn from current space science research. Offered by Computational & Data Sciences. May not be repeated for credit.

Recommended Prerequisite: ASTR 530 or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CSI 764: *Computational Astrophysics.* 3 credits.
Covers statistical mechanics concepts important in astrophysics. Presents unified approach to particle acceleration and interaction theory based on analytical and numerical analysis of Boltzmann and Liouville equations. Discusses computational methods relevant to particle transport problems, with emphasis on Fokker-lanck and Monte Carlo solution techniques. Applications from space sciences include studies of cosmic ray acceleration, photon comptonization, particle transport in the near-Earth environment, energy transport in stellar atmospheres, and self-gravitating system dynamics. Offered by Computational & Data Sciences. May not be repeated for credit. Equivalent to ASTR 764.

Recommended Prerequisite: ASTR 530.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CSI 771: *Computational Statistics.* 3 credits.
Covers basic computationally intensive statistical methods and related methods, which would not be feasible without modern computational resources. Covers nonparametric density estimation including kernel methods, orthogonal series methods and multivariate methods, recursive methods, cross-validation, nonparametric regression, penalized smoothing splines, the jackknife and bootstrapping, computational aspects of exploratory methods including the grand tour, projection pursuit, alternating conditional expectations, and inverse regression methods. Offered by Computational & Data Sciences. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: CSI 672[B-] or 672[XS].
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CSI 772: *Statistical Learning.* 3 credits.
Focuses on statistical learning theory by introducing the statistical and optimization background essential for developing new efficient statistical learning algorithms. Also discusses applications of statistical learning algorithms to the solution of important problems in many areas of science. Offered by Computational & Data Sciences. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: STAT 652[B-], 652[XS], CSI 672[B-] or 672[XS].
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CSI 773: *Statistical Graphics and Data Exploration.* 3 credits.
Exploratory data analysis provides a reliable alternative to classical statistical techniques, which are designed to be the best possible when stringent assumptions apply. Topics include graphical techniques such as scatter plots, box plots, parallel coordinate plots, and other graphical devices; re-expression and transformation of data; influence and leverage; and dimensionality reduction methods such as projection pursuit. Offered by Computational & Data Sciences. May not be repeated for credit.

Recommended Prerequisite: A 300-level statistics course and a programming course, or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CSI 775: *Graphical Models for Inference and Decision Making.* 3 credits.
Theory and methods for inference and decision making in environments characterized by uncertain information. Covers graphical probability and decision models. Studies approaches to representing knowledge about uncertain phenomena, and planning and acting under uncertainty.

Topics include knowledge engineering, exact and approximate inference in graphical models, learning in graphical models, temporal reasoning, planning, and decision-making. Practical model-building experience provided. Students apply what they learn to a project of their own choosing. Offered by Computational & Data Sciences. May not be repeated for credit. Equivalent to OR 719.

Recommended Prerequisite: STAT 652 or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CSI 777: *Principles of Knowledge Mining.* 3 credits.
Principles and methods for synthesizing task-oriented knowledge from computer data and prior knowledge and presenting it in human-oriented forms such as symbolic descriptions, natural language-like representations, and graphical forms. Topics include fundamental concepts of knowledge mining; methods for target data generation and optimization; statistical and symbolic approaches; knowledge representation and visualization; and new developments such as inductive databases, knowledge generation languages, and knowledge scouts. Offered by Computational & Data Sciences. May not be repeated for credit.

Recommended Prerequisite: INFS 614 or equivalent, or Permission of Instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CSI 779: *Topics in Computational Statistics.* 3 credits.
Selected topics in computational statistics not covered in fixed-content computational statistics courses. Offered by Computational & Data Sciences. May be repeated within the term.

Specialized Designation: Topic Varies

Recommended Prerequisite: Permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CSI 780: *Principles of Modeling and Simulation in Science.* 3 credits.
Applies numerical methods to study of variety of physical systems, with emphasis on modeling and simulation. Develops numerical algorithms and simulation codes to gain understanding of mechanisms, processes in physical systems. Includes several projects drawn from such areas as atomic and molecular interactions, molecular dynamics, lattice dynamics, quantum systems, chaos, percolation, random walks, aggregation mechanisms of soft solids, nanomaterials, and nonlinear dynamics. Offered by Computational & Data Sciences. May not be repeated for credit.

Recommended Prerequisite: Competency in programming at CSI 501 level or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CSI 782: *Statistical Mechanics for Modeling and Simulation.* 3 credits.
Studies microcanonical, canonical, and grand canonical ensembles and fluctuations. Includes modeling of ideal, dilute, and diatomic gases, liquids, and crystals, and the Liouville equation. Introduces Brownian motion, kinetic theory, and transport processes. Includes Monte Carlo algorithms and numerical methods for simulation in classical statistical mechanics. Offered by Computational & Data Sciences. May not be repeated for credit.

Recommended Prerequisite: CSI 690, or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CSI 783: *Computational Quantum Mechanics.* 3 credits.
Studies fundamental concepts of quantum mechanics from computational point of view, review of systems with spherically symmetric potentials, many electron atom solutions to Schrodinger's equation, electron spin in many-electron systems, atomic structure calculations, algebra of many-electron calculations, Hartree-Fock self-consistent field method, molecular structure calculations, scattering theory computations, and solid-state computations. Offered by Computational & Data Sciences. May not be repeated for credit. Equivalent to CHEM 736, PHYS 736.

Recommended Prerequisite: PHYS 502 and PHYS 613/ CSI 780, or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CSI 786: *Molecular Dynamics Modeling.* 3 credits.
Introduces simulation methods in physical chemistry sciences. Covers computational approaches to modeling molecular and condensed matter systems, including interatomic and molecular potentials, Molecular Dynamics methods, time averages, ensemble distributions, numerical sampling, thermodynamic functions, response theory, transport coefficients, and dynamic structure. Offered by Computational & Data Sciences. May not be repeated for credit.

Recommended Prerequisite: CSI 690 or CSI 780 or equivalent, or CHEM 633/CSI 711, or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CSI 787: *Computational Materials Science.* 3 credits.
Covers selected topics in computational aspects of condensed matter, such as methods of electronic structure calculations, surface science, molecular clusters, lattice dynamics, nanomaterials, semiconductors, superconductivity, magnetism, Hubbard model, mesoscopic systems, and liquids. Offered by Computational & Data Sciences. May not be repeated for credit.

Recommended Prerequisite: PHYS 512/CSI 687 and PHYS 736/CSI 783, or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CSI 788: *Simulation of Large Scale Systems.* 3 credits.
Study of diverse, large-scale physical systems with emphasis on modeling and simulation. Students will undertake several projects which will draw from such areas as many-body dynamics, atmospheric structure and dynamics, high-temperature plasmas, stellar structure, hydro dynamical systems, galactic structure and interactions, and cosmology. Offered by Computational & Data Sciences. May not be repeated for credit.

Recommended Prerequisite: CSI 690 or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CSI 789: *Topics in Computational Physics.* 3 credits.
Selected topics in computational physics not covered in fixed-content computational physics courses. Offered by Computational & Data Sciences. May not be repeated for credit.

Specialized Designation: Topic Varies

Recommended Prerequisite: Permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CSI 796: *Directed Reading and Research.* 1-6 credits.
Reading and research on specific topic in computational sciences and informatics under direction of faculty member. May be repeated for a total of 6 credits. Offered by Computational & Data Sciences. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Research

Grading:
This course is graded on the Graduate Regular scale.

CSI 798: *Research Project.* 1-3 credits.
Research project chosen and completed under guidance of a graduate faculty member, resulting in acceptable technical report. The course is accepted for credit toward the Master in Computational Science (COMP) and is not accepted for the PhD in Computational Sciences and Informatics (CSI). Offered by Computational & Data Sciences. May be repeated within the degree for a maximum 3 credits.

Recommended Prerequisite: 12 graduate credits in the Master in Computational Science and permission of the graduate coordinator.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Thesis

Grading:
This course is graded on the Satisfactory/No Credit scale.

CSI 799: *Master's Thesis.* 1-6 credits.
Project chosen and completed under guidance of graduate faculty member, resulting in acceptable technical report (master's thesis) and oral defense. Offered by Computational & Data Sciences. May be repeated within the degree.

Recommended Prerequisite: Completion of twelve graduate credits and Permission of Instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Thesis

Grading:
This course is graded on the Satisfactory/No Credit scale.

800 Level Courses

CSI 854: *Hyperspectral Imaging Applications.* 3 credits.
Includes advanced hyperspectral concepts, multisystems tradeoffs, data collection and processing systems, imaging radar systems, laser systems, data fusion, calibration and data compression techniques, remote sensing and U.S. national policy. Applications include environmental, homeland security, medical, military, disaster mitigation, agricultural, and transportation topics. Offered by Computational & Data Sciences. May not be repeated for credit. Equivalent to GGS 840.

Recommended Prerequisite: Permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CSI 873: *Computational Learning and Discovery.* 3 credits.
Presents modern ideas, theories, and methods for computational learning and discovery, along with relevant applications including medical diagnosis, Earth science data analysis, and neuronal modeling. Includes background elucidation of fundamental concepts in computational learning, addressing discovery of equations, theory of causality, and comparison with biological and cognitive models. Students make presentations on topics of their research interest and work on projects involving state-of-the art systems. Offered by Computational & Data Sciences. May not be repeated for credit. Equivalent to CSI 763.

Recommended Prerequisite: CS 580 or equivalent or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CSI 876: *Measure and Linear Spaces.* 3 credits.
Covers measure theory and integration, convergence theorems, and the theory of linear spaces and functional analysis, including normed linear spaces, inner product spaces, Banach and Hilbert spaces, Sobelev spaces, and reproducing kernels. Topics include wavelets, applications to stochastic processes, and nonparametric functional inference. Offered by Computational & Data Sciences. May not be repeated for credit.

Recommended Prerequisite: IT 776 or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CSI 877: *Geometric Methods in Statistics.* 3 credits.
Develops foundations of geometric methods for statistics. Topics include n-dimension Euclidian geometry; projective geometry; differential geometry, including curves, surfaces, and n-dimensional differentiable manifolds; and computational geometry, including computation of convex hulls, tessellations of two-, three-, and n-dimensional spaces, and finite element grid generation. Examples include applications to scientific visualization. Offered by Computational & Data Sciences. May not be repeated for credit.

Recommended Prerequisite: STAT 690 or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CSI 885: *Atomistic Modeling of Materials.* 3 credits.
Advanced course focusing on utilization of atomistic modeling and computer simulation techniques to analyze structure of crystalline materials. Introduces modern methodology of largescale atomistic simulations and provides hands-on experience through numerous examples and homework assignments based on simulation packages. Provides background knowledge on theory of lattice defects (point defects, interfaces, dislocations) and thermal and mechanical properties of solid materials (plastic deformation, fracture). Offered by Computational & Data Sciences. May not be repeated for credit.

Recommended Prerequisite: CSI 685, 700, and 786, or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CSI 898: *Research Colloquium in Computational Sciences and Informatics.* 1 credit.
Presentations in specific research areas in computational sciences and informatics by faculty and staff members and professional visitors. Notes: A maximum 3 credits of CSI 898, 899, and 991 may be applied to PhD. Offered by Computational & Data Sciences. May be repeated within the term.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Satisfactory/No Credit scale.

CSI 899: *Colloquium in Computational and Data Sciences.* 1 credit.
Presentations in specific research areas in computational sciences and informatics by faculty and staff members and professional visitors. Notes: A maximum 3 credits of CSI 898, 899, and 991 may be applied to PhD. Offered by Computational & Data Sciences. May be repeated within the term.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Satisfactory/No Credit scale.

900 Level Courses

CSI 971: *Probability Theory.* 3 credits.
A rigorous measure-theoretic treatment of probability. Includes expectation, distributions, laws of large numbers and central limit theorems for independent random variables, characteristic function convergence, and Markov chains. Offered by Computational & Data Sciences. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (STAT 544[B-] or 544[XS]) and (MATH 315[C] or 315[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.
[C] Requires minimum grade of C.

Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CSI 972: *Mathematical Statistics I.* 3 credits.
Focuses on theory of estimation, exploring method of moments, least squares, maximum likelihood, and maximum entropy methods. Details methods of minimum variance unbiased estimation. Other topics include sufficiency and completeness of statistics, Fisher information, Cramer-Rao bounds, Bhattacharyya bounds, asymptotic consistency and distributions, statistical decision theory, minimax and Bayesian decision rules, and applications to engineering and scientific problems. Offered by Computational & Data Sciences. May not be repeated for credit. Equivalent to STAT 972.

Registration Restrictions:
Required Prerequisites: (CSI 672[B-], 672[XS], STAT 652[B-] or 652[XS]) and (CSI 876[B-], 876[XS], IT 876[B-], STAT 876[B-], 876[XS], IT 971[B-], STAT 971[B-] or 971[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CSI 973: *Mathematical Statistics II.* 3 credits.
Concentrates on theory of hypothesis testing. Topics include characterizing the decision process; simple versus simple hypothesis tests; Neyman Pearson Lemma; and uniformly most powerful, unbiasedness, invariance, randomized, and sequential tests. Applies testing principles to situations in normal distribution family and other families of distributions. Notes: Continuation of CSI 972. Offered by Computational & Data Sciences. May not be repeated for credit. Equivalent to STAT 973.

Registration Restrictions:
Required Prerequisite: CSI 972[B-].
[B-] Requires minimum grade of B-.

Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CSI 978: *Statistical Analysis of Signals.* 3 credits.
Advanced course in analysis of discrete- and continuous-time signals using methods of stochastic differential equation and time series. Presumes familiarity with methods of harmonic analysis and times series modeling. Topics include state-space modeling and eigenvalue processing, nonlinear modeling of signals, non-Gaussian stochastic process structure, detection and estimation of vector-valued signals, robust signal detection, and array processing and target tracking. Offered by Computational & Data Sciences. May not be repeated for credit.

Recommended Prerequisite: STAT 544 and 658, or equivalent.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CSI 979: *Advanced Topics in Computational Statistics.* 3 credits.
Covers selected topics in computational statistics not covered in fixed-content computational statistics courses. Offered by Computational & Data Sciences. May be repeated within the degree for a maximum 12 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: Permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CSI 986: *Advanced Topics in Large-Scale Physical Simulation.* 3 credits.
Covers simulation of physical systems not covered in fixed-content physical simulation courses. Offered by Computational & Data Sciences. May be repeated within the degree for a maximum 12 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: Permission of instructor.

Registration Restrictions:

Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CSI 991: *Seminar in Scientific Computing.* 1 credit.
Considers selected topics in specific area of computational sciences and informatics not covered in fixed-content courses or as extension of fixed-content courses. Format for presentation is seminar with student participation. Notes: Maximum 3 credits of CSI 898, 899, and 991 may be applied to PhD. Offered by Computational & Data Sciences. May be repeated within the term.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Satisfactory/No Credit scale.

CSI 996: *Doctoral Reading and Research.* 1-6 credits.
Reading and research on specific topic in computational sciences and informatics under direction of faculty member. May be repeated for a total of 6 credits. Offered by Computational & Data Sciences. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Admission to doctoral program, permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Research

Grading:
This course is graded on the Graduate Regular scale.

CSI 998: *Doctoral Dissertation Proposal.* 1-12 credits.
Covers development of research proposal under guidance of dissertation director and doctoral committee. Proposal forms basis for doctoral dissertation. Notes: No more than 12 credits of CSI 998 may be applied to doctoral degree. Offered by Computational & Data Sciences. May be repeated within the degree.

Recommended Prerequisite: Permission of advisor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

CSI 999: *Doctoral Dissertation.* 1-12 credits.
Involves doctoral dissertation research under direction of dissertation director. Notes: No more than 24 credits in CSI 998 and 999 may be applied to doctoral degree. Offered by Computational & Data Sciences. May be repeated within the degree.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy.

Enrollment is limited to Graduate level students.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

Computational Social Science (CSS)

600 Level Courses

CSS 600: *Introduction to Computational Social Science.* 3 credits.
Graduate-level introduction to computational concepts, principles, and modeling approaches in social sciences, emphasizing simulations and elements of complexity theory as they apply to social phenomena. Survey includes systems dynamics, cellular automata, and agent-based models. Offered by Computational & Data Sciences. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CSS 605: *Object-Oriented Modeling in Social Science.* 3 credits.
Presents and applies concepts and principles from object-based modeling paradigm. Emphasizes Unified Modeling Language (UML) to render structure and operation of complex social systems and processes. Offered by Computational & Data Sciences. May not be repeated for credit.

Recommended Prerequisite: CSS 600 or approval from instructor or program director. Concurrent enrollment is also permitted.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CSS 610: *Agent-based Modeling and Simulation.* 3 credits.
Provides hands-on examination of agent-based models in social sciences by examining and experimenting with variety of social-simulation projects conducted in modeling environments such as Swarm, Repast, Ascape, and MASON (Multi-Agent Simulator of Networks and Neighborhoods). Offered by Computational & Data Sciences. May not be repeated for credit.

Recommended Prerequisite: CSS 600 or permission of instructor. Concurrent enrollment is also permitted.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CSS 620: *Origins of Social Complexity.* 3 credits.
Examines when, where, and how social complexity emerged in human societies, emphasizing long-term analysis and comparative information processing in four civilizations of the ancient world: West Asia, East Asia, Andean Peru, and Mesoamerica. Offered by Computational & Data Sciences. May not be repeated for credit.

Recommended Prerequisite: CSS 600 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CSS 625: *Complexity Theory in the Social Sciences.* 3 credits.
Examines social phenomena including language, terrorism, the Internet, warfare, and wealth based on power laws and far-from equilibrium nonlinear dynamics. Emphasizes data analysis, and modeling and interpreting complexity-theoretic dynamics. Offered by Computational & Data Sciences. May not be repeated for credit.

Recommended Prerequisite: CSS 600. Concurrent enrollment is also permitted.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CSS 630: *Comparative Computational Social Science.* 3 credits.
Applies comparative method for analyzing different types of computational models in the social sciences. Strong crossdomain and interdisciplinary emphasis akin to comparative economic systems, government, or linguistics. Offered by Computational & Data Sciences. May not be repeated for credit.

Recommended Prerequisite: CSS 600 or permission of instructor. Concurrent enrollment is also permitted.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CSS 635: *Cognitive Foundations of Computational Social Science.* 3 credits.
Examines cognitive foundations and information processing in computational social agents and compares to human cognitive phenomena, including emotions, trust, and reciprocity. Emphasizes modeling project. Offered by Computational & Data Sciences. May not be repeated for credit.

Recommended Prerequisite: CSS 600 and CSS 610 or permission of instructor. Concurrent enrollment is also permitted.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CSS 640: *Human and Social Evolutionary Complexity.* 3 credits.
Examines long-term evolution of human and societal complexity from global and cross-cultural perspective with emphasis on computational aspects leading to today's globalization. Global history from the computational social science perspective. Offered by Computational & Data Sciences. May not be repeated for credit.

Recommended Prerequisite: CSS 600, 620, and permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:

This course is graded on the Graduate Regular scale.

CSS 643: *Land-Use Modeling Techniques and Applications.* 3 credits.
Survey of literature on spatially explicit empirical models of land-use change. Hands-on experience developing and running simple models. Techniques include statistical models, mathematical programming models, cellular automata, agent-based models, and integrated models. Offered by Computational & Data Sciences. May not be repeated for credit.

Recommended Prerequisite: CSS 600 (may be taken concurrently) or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CSS 645: *Spatial Agent-Based Models of Human-Environment Interactions.* 3 credits.
Discusses key challenges in spatial modeling of human-environment interactions. Reviews agent-based modeling applications in urban and rural interactions, agriculture, forestry, and other areas. Hand-on development of simple ABM models. Investigates linkages between GIS and ABM. Notes: CSS 600 may be taken concurrently. Offered by Computational & Data Sciences. May not be repeated for credit.

Recommended Prerequisite: GGS 631 or CSS 600 (may be taken concurrently) or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CSS 650: *Physics Methods for Analyzing Social Complexity.* 3 credits.
Surveys complexity theoretic tools including strange attractors, Ising models, correlation functions, ergodic theory, power spectra, meanfield theory, and renormalization group. Emphasizes application to social, economic, or political systems. Offered by Computational & Data Sciences. May not be repeated for credit.

Recommended Prerequisite: CSS 600 and permission of instructor. Concurrent enrollment is also permitted.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CSS 655: *Social Systems Dynamics.* 3 credits.
Introduces systems dynamics modeling of social systems governed by levels/rates or stocks/flows processes, with applications to global modeling, terrorism, urban dynamics, organizations, and social and international conflict. Offered by Computational & Data Sciences. May not be repeated for credit.

Recommended Prerequisite: CSS 600. Concurrent enrollment is also permitted.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CSS 665: *Complex Adaptive Systems in Public Policy.* 3 credits.
Students learn (i) basic concepts of complex adaptive systems (CAS) and how they can be applied to policy analysis, and (ii) how to use agent-based modeling as a tool for policy analysis. Address modeling issues on representing a system, agent decision making, validation, experiment design and analysis, as well as incorporating empirical data and methods to inform agent-based modeling. Offered by Computational & Data Sciences. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CSS 692: *Social Network Analysis.* 3 credits.
Methods and applications that examine complex social systems based on relations, structures, connectivity, matrix representations, location, roles, interactions, and other network properties. Applications to terrorism, cognition, organizations, and other social phenomena. Offered by Computational & Data Sciences. May not be repeated for credit.

Recommended Prerequisite: CSS 600. Concurrent enrollment is also permitted.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CSS 695: *Agent-based Computational Economics.* 3 credits.
Present lectures on neoclassical economic theory as we investigate how to use agent technology to move beyond neoclassical specifications. Survey the most well-known results in agent-based economics. Read and present papers that are at the research frontier. A semester long research project 1.Will be the focal point of weekly model development (coding), data analysis, and writing. Offered by Computational & Data Sciences. May not be repeated for credit.

Recommended Prerequisite: CSS 610. Undergraduate microeconomics.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

700 Level Courses

CSS 710: *Advanced Agent-based Modeling and Simulation.* 3 credits.
Cover topics related to large-scale agent models including how to 1) make use of available compute resources (CPU and memory) through threading and related code parallelization ideas and technologies; 2) sample data from large-scale models and calibrate/estimate such models, and 3) design experiments for models that are expensive to evaluate. Digress into other topics at the frontier of agent modeling. Offered by Computational & Data Sciences. May not be repeated for credit.

Recommended Prerequisite: CSS 610.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CSS 739: *Topics in Computational Social Science.* 3 credits.
Selected topics in computational social science not covered in fixed-content computational social science courses. Offered by Computational & Data Sciences. May be repeated within the degree for a maximum 9 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: Permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CSS 796: *Directed Reading and Research.* 3 credits.
Reading and research on specific topic in computational social science under direction of a faculty member. Offered by Computational & Data Sciences. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Research

Grading:
This course is graded on the Graduate Regular scale.

CSS 798: *Research Project.* 3 credits.
Project chosen and completed under guidance of graduate faculty member, resulting in acceptable technical report. Offered by Computational & Data Sciences. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: 12 graduate core requirement credits and permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Thesis

Grading:
This course is graded on the Graduate Special scale.

800 Level Courses

CSS 898: *Research Colloquium in Computational Social Science.* 1 credit.
Presentations in specific research areas in computational social science by Center for Social Complexity-associated faculty and professional visitors. Notes: Maximum 3 credits of CSS 898 and 899 may be applied toward PhD. Offered by Computational & Data Sciences. May be repeated within the degree for a maximum 3 credits.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:

This course is graded on the Satisfactory/No Credit scale.

CSS 899: *Colloquium in Computational Social Science.* 1 credit.
Presentations in variety of areas of computational social science by Center for Social Complexity-associated faculty and professional visitors. Notes: Maximum 3 credits of CSS 898 and 899 may be applied toward PhD. Offered by Computational & Data Sciences. May be repeated within the degree for a maximum 2 credits.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

900 Level Courses

CSS 909: *Advanced Topics in Computational Social Science.* 3 credits.
Covers selected topics in computational social science and socioinformatics not covered in fixed-content courses. Offered by Computational & Data Sciences. May be repeated within the degree for a maximum 9 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: Permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CSS 996: *Doctoral Reading and Research.* 1-12 credits.
Reading and research on specific topic in computational social science under direction of faculty member. Offered by Computational & Data Sciences. May be repeated within the degree for a maximum 12 credits.

Recommended Prerequisite: Admission to the doctoral program and permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Research

Grading:
This course is graded on the Graduate Regular scale.

CSS 998: *Doctoral Dissertation Proposal.* 1-12 credits.
Covers development of research proposal, which forms basis for doctoral dissertation, under guidance of dissertation director and doctoral committee. Notes: Candidates must complete a combined minimum of 12 credits of doctoral proposal (CSS 998) and doctoral dissertation research (CSS 999), of which at least three credits must be of CSS 999. A combined maximum of 24 credits of CSS 998 and CSS 999 may be applied to the degree. Offered by Computational & Data Sciences. May be repeated within the degree.

Recommended Prerequisite: Permission of advisor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

CSS 999: *Doctoral Dissertation.* 1-12 credits.
Doctoral dissertation research under direction of dissertation director. Notes: Candidates must complete a combined minimum of 12 credits of doctoral proposal (CSS 998) and doctoral dissertation research (CSS 999), of which at least three credits must be of CSS 999. A combined maximum of 24 credits of CSS 998 and CSS 999 may be applied to the degree. Offered by Computational & Data Sciences. May be repeated within the degree.

Recommended Prerequisite: Approval of dissertation proposal.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy.

Enrollment is limited to Graduate level students.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

Computer Game Design (GAME)

100 Level Courses

GAME 101: *Introduction to Game Design.* 3 credits.
Introductory overview of the game development process with an emphasis on game design. Through detailed study of historical and current games, students will learn the language and structure needed to develop their own game ideas. Students will learn the many aspects of a game development team and how each of these roles contributes to a game's overall design. Offered by Coll Visual & Performing Arts. Limited to three attempts.

Mason Core: Arts

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GAME 140: *Applied Coding for Game Designers.* 3 credits.
This entry-level course teaches students basic coding techniques used when implementing game logic. Through hands-on implementation of several simple text-based and 2D sprite-based games, this course prepares students for the coding challenges they will face in future GAME courses. Offered by Coll Visual & Performing Arts. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

200 Level Courses

GAME 210: *Basic Game Design.* 3 credits.
Introduction to computer game design and development including a brief history of the field and current industry practice and production. Current major game design software, hardware, and associated tools are explored

through simple game design projects. Offered by Coll Visual & Performing Arts. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GAME 230: *History of Computer Game Design.* 3 credits.
History of computer game design including games as a new medium for education, entertainment, and communications. Aspects of the business of computer game publishing, game criticism, storytelling, interactive fiction, violence, and virtual communities will be explored. Offered by Coll Visual & Performing Arts. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GAME 231: *Computer Animation for Games.* 3 credits.
2D and 3D modeling, character design, and animation projects are constructed using commercial and proprietary software and game design tool kits and engines. Simple texturing and models rigging for game animation will be discussed. Offered by Coll Visual & Performing Arts. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (GAME 210[C] or 210[XS]) and (GAME 230[C] or 230[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

GAME 232: *Online and Mobile Gaming.* 3 credits.
Class covers the history, practice, and design of online and mobile games. Class will discuss the current state of the smartphone applications and study the best practices to be successful in the applications market. Students will learn the development process for smartphone applications and develop original and innovative applications in a team-based environment. Offered by Coll Visual & Performing Arts. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (GAME 210[C] or 210[XS]) and (GAME 230[C] or 230[XS]) and (GAME 140[C], 140[XS], CS 112[C] or 112[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GAME 250: *Music for Film and Video.* 3 credits.
Selection, editing, processing, and integration of sounds and music (post-production) for film, video, and animation. Time, frequency, and amplitude domain digital post-production techniques will be studied. Offered by Coll Visual & Performing Arts. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

300 Level Courses

GAME 300: *Portfolio Preparation.* 1 credit.
Student creates and refines a web portfolio to utilize throughout the course of study in presenting projects to aid in internship application and professional development. Offered by Coll Visual & Performing Arts. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (GAME 310[C] or 310[XS]) and (GAME 398[C] or 398[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GAME 310: *Game Design Studio.* 3 credits.
Studio course that focuses on team-based game design. In collaboration with undergraduate students from VSITE's CS game design concentration, student teams design and develop complete computer-based and online serious and/or entertainment games. Offered by Coll Visual & Performing Arts. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (GAME 231[C] or 231[XS]) and (GAME 232[C] or 232[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

GAME 320: *Digital Painting for Games.* 3 credits.
Students develop observational, sketching, and rendering skills in the digital medium. Students practice digital painting from reference and imagination as they create convincing game surfaces and simple concept drawings. Offered by Coll Visual & Performing Arts. Limited to three attempts.

Recommended Prerequisite: GAME 231 AVT 323 or AVT 333.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GAME 330: *Computer Game Platform Analysis.* 3 credits.
Current and prototype consumer gaming platforms and consoles. Analysis will include conversion, transposition, and porting game media among most commercially produced platforms for analysis and comparisons. Offered by Coll Visual & Performing Arts. Limited to three attempts.

Recommended Prerequisite: CS 112

Registration Restrictions:
Required Prerequisites: (GAME 310[C] or 310[XS]) and (GAME 331[*C] or 331[XS]).

* May be taken concurrently.
C Requires minimum grade of C.
XS Requires minimum grade of XS.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

GAME 331: *Consumer Gaming Platform Analysis Lab.* 1 credit.
Current and prototype consumer gaming platforms and consoles. Analysis will include conversion, transposition, and porting game media among most commercially produced platforms for analysis and comparisons. Offered by Coll Visual & Performing Arts. Limited to three attempts.

Recommended Prerequisite: CS 112

Registration Restrictions:
Required Prerequisites: (GAME 310[C] or 310[XS]) and (GAME 330[*C] or 330[XS]).
* May be taken concurrently.
C Requires minimum grade of C.
XS Requires minimum grade of XS.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

GAME 332: *RS: Story Design for Computer Games.* 3 credits.
Use of narrative structure and new media for designing computer game scenarios and stories. Traditional narrative techniques (text stories, novels, films) will be examined, as well as translations of the traditional to interactive, non-linear modes of communications. Analysis of current computer game story design theories, philosophies, and techniques will be covered. Offered by Coll Visual & Performing Arts. Limited to three attempts.

Specialized Designation: Research/Scholarship Intensive, Writing Intensive in Major

Recommended Prerequisite: Completion of 30 credits within major or permission of the instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GAME 367: *Writing and Editing Music and Sound.* 3 credits.
Composition, editing, processing, and integration of voice, environmental sounds and music into non-linear computer game environments. Special emphasis will be placed on HD sound and music post-production and mixing (3 & 5 transducer point listening spaces), sequential composition and sample-splicing techniques, and the study of competing compression algorithms for sound and music. Offered by Coll Visual & Performing Arts. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: GAME 250[C] or 250[XS].
C Requires minimum grade of C.
XS Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GAME 398: *Advanced Game Design Animation.* 3 credits.
Advanced 2D and 3D animation projects for interactive game scenes and scenarios are built using commercial and proprietary software and game design tool kits. Advanced texturing, rigging, lighting, and perspective manipulation will be covered. Offered by Coll Visual & Performing Arts. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: GAME 231[C] or 231[XS].
C Requires minimum grade of C.
XS Requires minimum grade of XS.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

GAME 399: *Special Topics.* 1-4 credits.
In-depth presentation and exploration of topical studies in computer game design. Subject matter varies. Notes: May be repeated when topic is different. Offered by Coll Visual & Performing Arts. May be repeated within the term for a maximum 12 credits.

Specialized Designation: Topic Varies

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

GAME 400: *Game Design Practicum.* 3 credits.
Studio/lecture course focuses on the design strengths and weaknesses inherent in current entertainment and serious games. UI design, level design and map structure, scoring stratum, on-line support, game ecologies, gaming communities, and designing/writing documentation and specifications will be studied. Offered by Coll Visual & Performing Arts. Limited to three attempts.

Recommended Prerequisite: GAME 330, 367 or 398. Must be a Computer Game Design minor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GAME 410: *Advanced Game Design Studio.* 3 credits.
In collaboration with undergraduate students from VSITE's CS game design concentration, student teams design and develop complete computer-based and online serious and entertainment games. Offered by Coll Visual & Performing Arts. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (GAME 330[C] or 330[XS]) and (GAME 331[C] or 331[XS]).
C Requires minimum grade of C.
XS Requires minimum grade of XS.

Schedule Type: Studio

Grading:

This course is graded on the Undergraduate Regular scale.

GAME 431: *Advanced Game Animation I.* 3 credits.
Builds advanced 3D character animation skills. Students animate from reference using the principles of weight, follow through, and anticipation. Projects focus on creating interactive motions for characters using commercial software and game engines. Intermediate rigging will also be covered. Offered by Coll Visual & Performing Arts. Limited to three attempts.

Recommended Prerequisite: GAME 398.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GAME 489: *Pre-Internship Seminar.* 1 credit.
Student prepares for interview and application processes associated with securing an internship, finishing the course with a professional resume and portfolio ready for submission to potential employers. Offered by Coll Visual & Performing Arts. Limited to three attempts.

Recommended Prerequisite: GAME 300, Completion of 30 credits within major or permission of the instructor.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

GAME 490: *Senior Game Design Capstone.* 3 credits.
Student develops a case study of a publicly or commercially published computer game exploring the technical, economic, ethical, social and political ramifications on its intended target market. A public lecture of the case study is required. Notes: Students are required to complete 6 credits for the degree program. Offered by Coll Visual & Performing Arts. May be repeated within the degree for a maximum 9 credits.

Mason Core: Capstone, Synthesis

Recommended Prerequisite: Completion of 60 credits in major. Students must be granted permission by the program director to take the course.

Registration Restrictions:
Enrollment is limited to students with a major in Computer Game Design.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GAME 491: *Internship.* 3-4 credits.
Placement in an appropriate internship within a program approved by a federal, state or commercial game design/publishing agency or firm. Notes: 135 hours of internship on-site work must be completed for 3 credits.180 hours of internship on-site work must be complete for 4 credits. Offered by Coll Visual & Performing Arts. May be repeated within the degree for a maximum 9 credits.

Recommended Prerequisite: GAME 489 and completion of 60 credits in major.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

GAME 492: *Independent Study.* 1-6 credits.
Advanced research, computer game design, or exploration of topical studies in computer game design. Offered by Coll Visual & Performing Arts. May be repeated within the term for a maximum 12 credits.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

GAME 499: *Advanced Studies in Game Design.* 1-4 credits.
Exploration of various issues in computer game design, including theoretical aspects of games studies and production. Notes: Topics and credit vary with instructor. May be repeated when taken under different topics. Offered by Coll Visual & Performing Arts. May be repeated within the term for a maximum 12 credits.

Recommended Prerequisite: Admittance to BFA Game Design Program or instructor permission.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

500 Level Courses

GAME 599: *Advanced Studies in Game Design.* 1-4 credits.
Exploration of various issues in computer game design, including theoretical aspects of games studies and production. Notes: Topics and credit vary with instructor. May be repeated when taken under different topics. Offered by Coll Visual & Performing Arts. May be repeated within the term for a maximum 9 credits.

Recommended Prerequisite: Admittance to MA Game Design Program or instructor permission.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

600 Level Courses

GAME 600: *Research Methodologies in Game Design.* 3 credits.
Graduate seminar focusing on development of independent research project in student's area of emphasis. Explores principal methods of researching and documenting game design and game practice. Along with traditional methods of library research, emphasizes new processes of examination and investigation through the use of computer-aided research clouds and systems. Students will research and write a publishable paper following standard scientific research practice. Offered by Coll Visual & Performing Arts. May not be repeated for credit.

Recommended Prerequisite: Admittance to MA Game Design Program or instructor permission.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GAME 605: *Game Design Graduate Seminar.* 1 credit.
Students present their own research and projects, or the work of contemporary game designers for discussion and peer and faculty critiques. Special focus on developing professional public communication and presentation skills about contemporary issues in the game design and production fields. Offered by Coll Visual & Performing Arts. May be repeated within the degree for a maximum 4 credits.

Recommended Prerequisite: Admittance to MA Game Design Program or instructor permission.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GAME 610: *Game Production.* 3 credits.
Studio and lecture course in the history, practice and design and production of computer games with an emphasis on serious games development. Students will research, design and develop a fully functioning game, for desktop, console, and/or mobile platforms in this two-semester course. This course will also support the thesis research and project development. Offered by Coll Visual & Performing Arts. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Admittance to the MA Game Design Program or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GAME 617: *Teaching Practicum.* 3 credits.
Supervised classroom teaching in Mason's Computer Game Design undergraduate program, or summer Game-focused Potomac Academy Program. Offered by Coll Visual & Performing Arts. May not be repeated for credit.

Recommended Prerequisite: GAME 605 and 3 credits of GAME 610.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GAME 626: *Game Business, Entrepreneurship and Practice.* 3 credits.
Combined lecture and studio course in discovering and developing entrepreneurial skill sets in the game design, production and publishing industry. Special focus will be given to developing communication skills, planning strategies, and nurturing the aptitude and attitudes that enable students to creatively solve problems, identify opportunities, and execute those opportunities in the game design and production industry. Offered by Coll Visual & Performing Arts. May not be repeated for credit.

Recommended Prerequisite: GAME 605 and GAME 610.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GAME 628: *Advanced Game Art.* 3 credits.
Studio and Lecture course in advanced computer game modeling processes and techniques. Advanced topics in modeling interactive characters and environments will be covered, including texture painting, photosourcing, and both low and high-polygon modeling. A broad variety of art styles and game production pipelines will be explored. Offered by Coll Visual & Performing Arts. May not be repeated for credit.

Recommended Prerequisite: Admittance to MA Game Design Program or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GAME 630: *Advanced Game Animation.* 3 credits.
Combined Studio and Lecture course in creating advanced animations for interactive games, with an emphasis on realtime characters. Non-bipedal motions, rotoscoping, rigging, and other advanced topics in animation will also be explored. Offered by Coll Visual & Performing Arts. May not be repeated for credit.

Recommended Prerequisite: Admittance to the MA Game Design Program or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GAME 635: *Issues in Interactive Entertainment.* 3 credits.
Studio and lecture course in advanced design concepts for interactive game and entertainment platforms and systems. Microsoft's Kinect, Nintendo's Wii U, and Apple's AirPlay Mirroring will be studied. Offered by Coll Visual & Performing Arts. May not be repeated for credit.

Recommended Prerequisite: GAME 600, GAME 605 and 3 credits of GAME 610.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GAME 638: *Game Studio Management.* 3 credits.
Lecture Courses in managerial responsibilities and issues concerning successfully managing a small to mid-size game design studio in today's game industry marketplace. Human resources and personnel management, investor relations and board management, contract negotiations and development analysis, game design and production team oversight, research and development, budget management and realistic financial projections will be covered. Offered by Coll Visual & Performing Arts. May not be repeated for credit.

Recommended Prerequisite: GAME 610 and GAME 626.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GAME 650: *Advanced Music and Sound for Games.* 3 credits.
Combined studio and lecture course that will focus on the composition, editing, processing, mixing, and integration of sound assets, such as sfx, narration, and music into computer games. Time, frequency, and amplitude domain digital production and post-production techniques will be reviewed. Standard 2-channel, and 5.1 channel post-production/ mixing, as well as contemporary middleware sound management applications will be studied. Offered by Coll Visual & Performing Arts. May not be repeated for credit.

Recommended Prerequisite: Admittance to the MA Game Design Program or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GAME 658: *Interactive Game Systems Design.* 3 credits.
Studio and lecture course in advanced interactive games and simulations. A variety of entertainment platforms, systems, and their unique input devices will be explored, including augmented reality, social networks, and motion controllers. Games developed will use the latest online, mobile, and console platforms, as well as non-commercial prototype platforms. Offered by Coll Visual & Performing Arts. May not be repeated for credit.

Recommended Prerequisite: GAME 635.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

700 Level Courses

GAME 710: *Graduate Internship.* 3 credits.
This course prepares students to succeed in the game design industry by assisting their placement in an appropriate internship within a program approved public or commercial game design/publishing agency or firm. A total of 180 hours of internship on-site work must be earned within the semester of registration. Each student is assigned a program internship coordinator, and an on-site internship supervisor. Offered by Coll Visual & Performing Arts. May not be repeated for credit.

Recommended Prerequisite: GAME 610 and GAME 617 and permission of Program Director.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Graduate Regular scale.

GAME 796: *Directed Reading.* 1 credit.
Directed Reading must be taken in the fall of year two. Prior to the end of the first year, each student must identify a faculty member, based on interest and chosen topic that will serve as the student's faculty mentor for the thesis research and writing, or project development process. Students should also plan to devote the summer between the two academic years of study to focused preliminary reading and research for the thesis paper or project. Notes: Directed Reading is overseen by the chosen faculty mentor, and will be tailored to each student's original thesis research paper or project. Offered by Coll Visual & Performing Arts. May be repeated within the degree for a maximum 3 credits.

Recommended Prerequisite: GAME 600 and GAME 605.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GAME 797: *Proposal Writing.* 1 credit.
Proposal Writing is overseen by the chosen faculty mentor, and will be tailored to each student's original thesis research paper or project. Prior to the end of the first year, each student must identify a faculty member, based on interest and chosen topic that will serve as the student's faculty mentor for the Proposal Writing course to prepare for the thesis writing, or project development process. Offered by Coll Visual & Performing Arts. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: GAME 796.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Satisfactory/No Credit scale.

GAME 798: *Project and Applied Research.* 3 credits.
The research project and supporting written document must reflect original research, development, and production of a complete serious game for graduate level work. The graduate project will involve a study of historical practice, and suitable for a public viewing experience and presentation. The written component will support the evolution of the creative process, the historical context of the work, the intended purpose and intent, all supported with scholarly citations and references. Faculty mentors will guide the project development process. Offered by Coll Visual & Performing Arts. May be repeated within the degree for a maximum 9 credits.

Recommended Prerequisite: Permission of Graduate Faculty Mentor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Thesis

Grading:
This course is graded on the Satisfactory/No Credit scale.

GAME 799: *Thesis.* 4 credits.
The thesis project and or written document must reflect original research, analysis, and writing appropriate for graduate level work. The thesis written document should be between 85 to 100 pages in length, following university library standards of format for graduate thesis. If a thesis project is chosen, the project should compose a complete game design document, a completed and QA tested functional game using a commercially available engine, and a public presentation. Faculty mentors will guide the thesis development process for each student. Offered by Coll Visual & Performing Arts. May not be repeated for credit.

Recommended Prerequisite: Permission of Graduate Faculty Mentor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Thesis

Grading:
This course is graded on the Satisfactory/No Credit scale.

Computer Science (CS)

100 Level Courses

CS 100: *Principles of Computing.* 3 credits.
This course is intended to help students learn to think in the manner necessary to fully grasp the nature and power of the digital world around us. The early era of the Internet and the personal computer led to the need for "computer literacy." Now, the changing nature of our global society requires that students learn new ways to think about problems and how to solve them, regardless of students' specific fields of endeavor. Through this course, students will explore major issues related to the "big ideas" of computational thinking (namely, (i) Creativity, (ii) Abstraction, (iii) Data, (iv) Algorithms, (v) Programming, (vi) Internet, and (vii) Societal Impact), as well as how these issues will impact their future lives. Offered by Computer Science. Limited to two attempts.

Mason Core: Info Tech & Computing

Registration Restrictions:
Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CS 101: *Preview of Computer Science.* 2 credits.
Offers a broad overview of computer science designed to provide students with an introduction to the field of computer science and an orientation to the Computer Science department and the computing environment at the university. Includes a project to introduce problem solving using computers. All computer science majors are required to take this course within their first year. Notes: All computer science majors are required to take this course within their first year. Offered by Computer Science. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: CS 112[*C] or 112[XS].
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major in Applied Computer Science or Computer Science.

Enrollment limited to students in a Bachelor of Science degree.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Satisfactory/No Credit scale.

CS 105: *Computer Ethics and Society.* 1 credit.
Intensive introduction to legal, social, and ethical issues surrounding software development and computer use. Stresses professional conduct, social responsibility, and rigorous standards for software testing and reliability. Examines issues such as liability, ownership of information, and computer crime. Note: Students who have received credit for CS 305 or 306 should not register for CS 105. No credit will be given for CS 105 if a student has already received credit for CS 305 or 306. Offered by Computer Science. Limited to two attempts.

Registration Restrictions:
Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CS 110: *Essentials of Computer Science.* 3 credits.
Offers a broad overview of computer science designed to provide computer science majors with an introduction to their discipline. Fundamental computing concepts such as number representation, programming environments, communication tools, and basic network security measures are covered. Privacy and ethical use of computing are also discussed along with guest lectures to sample current computer science research. Note: All computer science majors are required to take this course within their first year as a computer science major. Offered by Computer Science. Limited to two attempts.

Registration Restrictions:
Enrollment limited to students in the VS-BS-ACS or VS-BS-CS programs.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CS 112: *Introduction to Computer Programming.* 4 credits.
Rigorous introduction to problem solving through development of computer programs. Focuses on identifying algorithmic patterns in problems, describing problem solutions in high-level pseudocode, then implementing in a procedural programming language. Basic programming concepts are covered in detail including expressions, control structures, simple data types, and input/output. Program testing and debugging are discussed to verify that problems are solved correctly. Note: The department will drop students who fail to meet the prerequisites. Lectures and Labs are offered in groups. Students MUST register for a lecture and a lab from the same group. Offered by Computer Science. Limited to two attempts.

Mason Core: Info Tech & Computing

Registration Restrictions:
Required Prerequisites: (minimum score of 65 in 'Math Placement Transcendentals', minimum score of 07 in 'Math Placement Transcendentals', MATH 105[C], 105T, 105[XS], 104[C], 104T, 113[C], 113[XS], 123[C] or 123[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Special scale.

200 Level Courses

CS 211: *Object-Oriented Programming.* 3 credits.
Thorough treatment of programming according to object-oriented principles. Introduces classes, interfaces, inheritance, polymorphism, and single dispatch as means to decompose problems. Covers intermediate programming techniques including error handling through exceptions, arrangement of source code into packages, and simple data structures. Intermediate debugging techniques and unit testing are covered. Note: Lectures and labs are offered in groups. Students MUST register for a lecture and a lab from the same group. Offered by Computer Science. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (CS 112[C] or 112[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:

This course is graded on the Undergraduate Special scale.

CS 222: *Computer Programming for Engineers.* 3 credits.
Introduction to C as a second programming language with emphasis on problems and language features relevant to engineers. Topics include basic data types, pointers, elementary data structures, file/output, bitwise operations, and Unix commands for compilation and debugging. Intended as terminal course in computer programming. Notes: Intended as terminal course in computer programming. Offered by Computer Science. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (CS 112[C] or 112[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CS 262: *Introduction to Low-Level Programming.* 3 credits.
Introduction to the language C, as well as operating system concepts, in UNIX, to prepare students for topics in systems programming. Offered by Computer Science. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (CS 110[*C], 110[XS] or 101[*]) and (CS 211[C], 211[XS], 222[C] or 222[XS]).
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

300 Level Courses

CS 306: *Synthesis of Ethics and Law for the Computing Professional.* 3 credits.
Practical course to become effective computer professional. Examines legal and ethical issues surrounding computer technology and its use, as well as the foundation building that is necessary to deal with those challenges. Applies philosophical bases for ethical decision making to modern concerns raised by computers and technology. Addresses topics covered by CS 105 and CS 110 in a more intensive manner and focuses on the emerging legal and ethical issues involved in e-commerce and widespread use of the Internet. Notes: Computer science majors may use this course to satisfy the Mason Core synthesis requirement, so long as they have not previously taken CS 305 for credit. Offered by Computer Science. Limited to two attempts.

Mason Core: Synthesis

Specialized Designation: Writing Intensive in Major

Recommended Prerequisite: Junior standing (at least 60 credit hours).

Recommended Corequisite: All required Mason Core courses.

Registration Restrictions:
Required Prerequisites: (((COMM 100[C], 100[XS], 101[C] or 101[XS]) and (ENGH 302[C] or 302[XS])) or ((HNRS 110[C] or 110[XS]) and (HNRS 122[C] or 122[XS])) or ((HNRS 110[C] or 110[XS]) and (HNRS 130[C] or 130[XS])) or (HNRS 131[C], 131[XS], 240[C], 240[XS], 260[C], 260[XS], 261[C], 261[XS], 360[C], 360[XS], 361[C] or 361[XS])) and (CS 105[C], 105[XS], 110[C] or 110[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Applied Computer Science or Computer Science.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CS 310: *Data Structures.* 3 credits.
Focuses on object-oriented programming with an emphasis on tools and techniques for developing moderate to large programs. Topics include use and implementation of linear and nonlinear data structures and the design and analysis of elementary algorithms. Offered by Computer Science. Limited to two attempts.

Recommended Corequisite: CS 105 or CS 110

Registration Restrictions:
Required Prerequisites: ((CS 211[C] or 211[XS]) and (MATH 113[C], 113[XS], 124[C] or 124[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CS 321: *Software Engineering.* 3 credits.
An introduction to concepts, methods, and tools for the creation of large-scale software systems. Methods, tools, notations, and validation techniques to analyze, specify, prototype, and maintain software requirements. Introduction to object-oriented requirements modeling, including use of case modeling, static modeling, and dynamic modeling using the Unified Modeling Language (UML) notation. Concepts and methods for the design of large-scale software systems. Fundamental design concepts and design notations are introduced. A study of object-oriented analysis and design modeling using the UML notation. Students participate in a group project on software requirements, specification, and object-oriented software design. Offered by Computer Science. Limited to two attempts. Equivalent to SWE 321.

Specialized Designation: Writing Intensive in Major

Registration Restrictions:
Required Prerequisites: (CS 310[C] or 310[XS]) and (ENGH 302[C] or 302[XS] or ((HNRS 110[C] or 110[XS]) and (HNRS 122[C] or 122[XS])) or ((HNRS 110[C] or 110[XS]) and (HNRS 130[C] or 130[XS])) or (HNRS 131[C], 131[XS], 240[C], 240[XS], 260[C], 260[XS], 261[C], 261[XS], 360[C], 360[XS], 361[C] or 361[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Applied Computer Science, Computer Science, Software Engineering or Systems Engineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CS 325: *Introduction to Game Design.* 3 credits.
Game design, in various electronic entertainment technologies, involves a diverse set of skills and backgrounds from narrative and art to computer programming. Surveys the technical aspects of the field, with an emphasis on programming. Offered by Computer Science. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (CS 211[C] or 211[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CS 330: *Formal Methods and Models.* 3 credits.
Abstract concepts that underlie much advanced work in computer science, with major emphasis on formal languages, models of computation, logic, and proof strategies. Offered by Computer Science. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (CS 211[C] or 211[XS]) and (MATH 125[C] or 125[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Applied Computer Science, Computer Science or Software Engineering.

Enrollment limited to students in a Bachelor of Science or Post-Baccalaureate Certificate degrees.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CS 332: *Object-Oriented Software Design and Implementation.* 3 credits.
In-depth study of software design and implementation using a modern, object-oriented language with support for graphical user interfaces and complex data structures. Topics covered will be specifications; design patterns; and abstraction techniques; including typing, access control, inheritance, and polymorphism. Students will learn the proper engineering use of techniques such as information hiding, classes, objects, inheritance, exception handling, event-based systems, and concurrency. Offered by Computer Science. Limited to two attempts. Equivalent to SWE 332.

Registration Restrictions:
Required Prerequisites: (CS 310[C] or 310[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CS 351: *Visual Computing.* 3 credits.
Focuses on programming essential mathematical and geometric concepts underlying computer graphics. Covers fundamental topics in computational geometry, 3D modeling, graphics algorithms, and graphical user interfaces using both 2D and 3D implementations. Reinforces object-oriented programming practices. Offered by Computer Science. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (CS 262[C] or 262[XS]) and (CS 310[C] or 310[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CS 367: *Computer Systems and Programming.* 4 credits.
Introduces students to computer systems from a programmer's perspective. Topics include data representation, assembly and machine-level representation of high-level language programs, the memory hierarchy, linking, exceptions, interrupts, processes and signals, virtual memory, and system-level I/O. Foundation for courses on compilers; networks; operating systems; and computer architecture, where a deeper understanding of systems-level issues is required. Offered by Computer Science. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: ((CS 262[C], 262[XS], 222[XS] or 222[C]) and (MATH 125[C] or 125[XS]) and (CS 110[C] or 110[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture, Recitation

Grading:
This course is graded on the Undergraduate Regular scale.

CS 390: *Research and Project Design Principles in Computing.* 3 credits.
This course introduces students to the research and project design process within the computing field. Students will learn about the tools of the trade, work through design principles beginning with the articulation of a question, reviewing methods of exploration, gathering evidence, communicating results, and assessing and evaluating research or project outcomes. Offered by Computer Science. Limited to two attempts.

Specialized Designation: Mason Impact.

Recommended Prerequisite: CS 310 and CS 321.

Registration Restrictions:
Required Prerequisites: CS 262[C] or 262[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CS 391: *Advanced Programming Lab.* 1 credit.
Programming-intensive lab course. Students refine problem-solving and programming skills while gaining experience in teamwork. Focuses on data structures, recursion, backtracking, dynamic programming, and debugging. Central focus is applying familiar and new algorithms and data structures to novel circumstances. Offered by Computer Science. May be repeated within the degree for a maximum 3 credits.

Registration Restrictions:
Required Prerequisites: CS 310[C] or 310[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

CS 395: *Student Initiated Special Topics.* 1 credit.
Special and emerging topics of interest to computer science undergraduates. Lectures are taught by student/faculty teams. Notes: May be repeated if topics are substantially different. Offered by Computer Science. May be repeated within the term for a maximum 3 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: Additional pre-requisites will vary by topic

Registration Restrictions:
Required Prerequisites: (CS 211[C] or 211[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major in Applied Computer Science or Computer Science.

Enrollment limited to students in a Bachelor of Science degree.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CS 399: *Special Topics.* 3 credits.
Special and emerging topics in computer science or closely related disciplines. Notes: May be repeated if topics are substantially different. Offered by Computer Science. May be repeated within the term for a maximum 6 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: Additional prerequisites will vary by topic.

Registration Restrictions:
Required Prerequisites: (CS 211[C] or 211[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

CS 425: *Game Programming I.* 3 credits.
Introduction to technologies and techniques used in modern computer games. Teams will explore the various facets of a complete design using sophisticated tools. Includes a project in which a game is prototyped; this prototype and initial design will serve as the starting point for the project in CS 426. Offered by Computer Science. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (CS 310[C] or 310[XS]) and (CS 351[C] or 351[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CS 426: *Game Programming II.* 3 credits.
Project-orientated continuation of CS 425 with an emphasis on the implementation of a complete game. Offered by Computer Science. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: ((CS 325[C] or 325[XS]) and (CS 425[C] or 425[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CS 440: *Language Processors and Programming Environments.* 3 credits.
Survey of basic programming language processors and software development tools such as assemblers, interpreters, and compilers. Topics include design and construction of language processors, formal syntactic definition methods, parsing techniques, and code-generation techniques. Offered by Computer Science. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (CS 310[C] or 310[XS]) and (CS 330[C] or 330[XS]) and (CS 367[C] or 367[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:

This course is graded on the Undergraduate Regular scale.

CS 444: *Introduction to Computational Biology.* 3 credits.
Introduces computational methods in molecular biology. Covers a broad array of topics in bioinformatics and computational biology. Organized as 3 four-week modules intended to capture the current classification of bioinformatics and computational biology methods, thereby providing students with a broad view of the field. Offered by Computer Science. Limited to two attempts.

Recommended Prerequisite: C or better in CS 310.

Registration Restrictions:
Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CS 445: *Computational Methods for Genomics.* 3 credits.
Fundamental principles and techniques for implementing computational algorithms to solve problems in biology arising from the need to process large volumes of genomic information. Topics include sequence analysis, alignment, and assembly, gene prediction, and knowledge-based protein structure prediction. Projects involve designing and programming basic alignment and prediction methods. Offered by Computer Science. Limited to two attempts.

Recommended Prerequisite: C or better in CS 310 and STAT 344.

Registration Restrictions:
Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CS 450: *Database Concepts.* 3 credits.
Covers basics to intermediate knowledge for the design, implementation, and use of relational database systems. Topics include the Entity-Relationship (ER) and Entity-Enhanced Relationship (EER) models for database design, Relational Algebra (RA), Structured Query Language (SQL), SQL programming techniques, functional dependencies and normalization, object and object-relational databases, and security. Students will practice to design, develop, and implement a relational ORACLE database and use the database for queries, transaction processing, and report generation. Offered by Computer Science. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (CS 310[C] or 310[XS]) and (CS 330[C] or 330[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CS 451: *Computer Graphics.* 3 credits.
Basic graphics principles and programming. Topics include scan conversion, transformation, viewing, lighting, blending, texture mapping, and some advanced graphics techniques. Offered by Computer Science. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (MATH 203[C] or 203[XS]) and (CS 310[C] or 310[XS]) and (CS 367[C] or 367[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CS 455: *Computer Communications and Networking.* 3 credits.
Data communications and networking protocols, with study organized to follow layers of Internet Protocol Suite (TCP/IP family of protocols). Topics include role of various media and software components, local and wide area network protocols, network performance, and emerging advanced commercial technologies. Offered by Computer Science. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (CS 310[C] or 310[XS]) and (CS 367[C] or 367[XS]) and (STAT 344[C] or 344[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CS 463: *Comparative Programming Languages.* 3 credits.
Key programming mechanisms described independently of particular machines or languages, including control, binding, procedural abstraction, types, and concurrency. Includes basic programming competence in several different types of programming languages, including a language that provides concurrency. Notes: Students who have taken CS 363 may not receive credit for CS 463. Offered by Computer Science. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (CS 330[C] or 330[XS]) and (CS 367[C] or 367[XS]) and (CS 310[C] or 310[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CS 465: *Computer Systems Architecture.* 3 credits.
Computer subsystems and instruction set architectures. Single-cycle, multiple-cycle, and pipeline architectures. Memory hierarchy, cache, and virtual memory input-output processing. Offered by Computer Science. Limited to two attempts.

Registration Restrictions:

Required Prerequisites: (CS 367[C] or 367[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CS 468: *Secure Programming and Systems.* 3 credits.
Fundamental principles and techniques for implementing secure computer systems. Topics include security and cryptography basics, vulnerability analysis, secure software development, and distributed system security. Projects involve designing and programming basic security tools, secure programs, and distributed systems. Offered by Computer Science. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (CS 310[C] or 310[XS]) and (CS 367[C] or 367[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CS 469: *Security Engineering.* 3 credits.
Covers the software subsystems that are involved in defending computer systems. Studies threats and architecting solutions against them, including but not limited to access control and identity management, network and system security, intrusion detection and recovery systems, monitoring and forensic systems. Offered by Computer Science. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (CS 330[C] or 330[XS]) and (CS 367[C] or 367[XS]) and (STAT 344[C] or 344[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CS 471: *Operating Systems.* 3 credits.
Issues in multiprogramming. Covers concurrent processes and synchronization mechanisms; processor scheduling; memory, file, I/O, and deadlock management; performance of operating systems; and projects dealing with synchronization in multiprogrammed OS and virtual memory management. Offered by Computer Science. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (CS 310[C] or 310[XS]) and (CS 367[C], 367[XS], ECE 445[C] or 445[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CS 475: *Concurrent and Distributed Systems.* 3 credits.
Practical issues in designing and implementing concurrent and distributed software. Topics include concurrent programming, synchronization, multithreading, local and wide-area network protocols, distributed computation, systems integration, and techniques for expressing coarsegrained parallelism at the application level. Projects involve network programming at application level. Offered by Computer Science. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (CS 310[C] or 310[XS]) and (CS 367[C] or 367[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CS 477: *Mobile Application Development.* 3 credits.
This project based course will teach fundamental principles of software development for the mobile device environment, emphasizing the application of numerous academic concepts and the new design and programming paradigms that stem from the use of mobile devices. Topics include user interfaces, event-based programming, interprocess communications, networking, mobile-specific capabilities and performance in a resource restricted environment. Offered by Computer Science. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (CS 310[C] or 310[XS]) and (CS 367[C] or 367[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CS 480: *Introduction to Artificial Intelligence.* 3 credits.
Principles and methods for knowledge representation, reasoning, learning, problem solving, planning, heuristic search, and natural language processing and their application to building intelligent systems in a variety of domains. Uses LISP, PROLOG, or expert system programming language. Offered by Computer Science. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (CS 310[C] or 310[XS]) and (CS 330[C] or 330[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CS 482: *Computer Vision.* 3 credits.
Basic principles of visual perception and their implementation on computer systems. Topics include early visual processing, edge detection, segmentation, intrinsic images, image modeling, representation of visual knowledge, and image understanding. Students complete projects involving real images. Offered by Computer Science. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (CS 310[C] or 310[XS]) and (MATH 203[C] or 203[XS]) and (STAT 344[C] or 344[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CS 483: *Analysis of Algorithms.* 3 credits.
Analyzes computational resources for important problem types by alternative algorithms and their associated data structures, using mathematically rigorous techniques. Specific algorithms analyzed and improved. Offered by Computer Science. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (CS 310[C] or 310[XS]) and (CS 330[C] or 330[XS]) and (MATH 125[C] or 125[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CS 484: *Data Mining.* 3 credits.
Basic principles and methods for data analysis and knowledge discovery. Emphasizes developing basic skills for modeling and prediction and performance evaluation. Topics include system design; data quality, preprocessing, and association; event classification; clustering; biometrics; business intelligence; and mining complex types of data. Offered by Computer Science. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: ((CS 310[C] or 310[XS]) and (STAT 344[C], 344[XS], 334[C] or 334[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CS 485: *Autonomous Robotics.* 3 credits.
Covers various basic topics in autonomous robotics, such as autonomous architectures and their interaction with physical hardware, elementary kinematics and robot control, motion and trajectory planning, localization, task planning, learning and adaptation, modeling, and sensor fusion. Includes projects involving physical robots. Offered by Computer Science. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (CS 262[C] or 262[XS]) and (CS 310[C] or 310[XS]) and (MATH 203[C] or 203[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CS 487: *Introduction to Cryptography.* 3 credits.
Covers formal definitions of security for the most common tasks: data encryption and authentication, in both the private key and public key settings. Covers the process of formally proving that constructions meet the appropriate security definitions. Also covers practical constructions and applications, such as how to correctly use block ciphers and hash functions for the tasks above. In addition, several current topics in cryptography may also be covered. Offered by Computer Science. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: ((CS 310[C] or 310[XS]) and (CS 330[C] or 330[XS]) and (STAT 344[C] or 344[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CS 490: *Design Exhibition.* 3 credits.
Capstone course focusing on design and successful implementation of major software project, encompassing broad spectrum of knowledge and skills, developed by team of students. Requires final exhibition to faculty-industry panel. Offered by Computer Science. May be repeated within the degree for a maximum 12 credits.

Recommended Prerequisite: Two other CS 400-level courses; and senior standing.

Registration Restrictions:
Required Prerequisites: (CS 321[C], 321[XS] or 421[C]) and (CS 483[C] or 483[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CS 491: *Industry-Sponsored Senior Design Project.* 3 credits.
Senior design project course focusing on design and successful implementation of major software project specified by an industry sponsor, encompassing broad spectrum of knowledge and skills, developed by team of students. Requires final exhibition to faculty-industry panel. Students are matched to group projects with industry partners at the start of the course; students must enroll in the two-semester Fall/Spring sequence to receive credit. Three credits may count towards the Senior Computer Science requirements, and the second three credits may count towards Computer Science-Related requirements. Offered by Computer Science. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Required Prerequisites: (CS 367[C] or 367[XS]) and (CS 321[*C] or 321[XS]) and (CS 483[*C] or 483[XS]).
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Applied Computer Science or Computer Science.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Special scale.

CS 498: *Independent Study in Computer Science.* 1-3 credits.
Research and analysis of selected problems or topics in computer science. Topic must be arranged with instructor and approved by department chair before registering. Notes: May be repeated if topics substantially different. Offered by Computer Science. May be repeated within the term for a maximum 6 credits.

Recommended Prerequisite: 60 credits, CS major, and Permission of Instructor.

Registration Restrictions:
Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

CS 499: *Special Topics in Computer Science.* 3 credits.
Topics of special interest to undergraduates. Notes: May be repeated if topics substantially different. Offered by Computer Science. May be repeated within the term for a maximum 24 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: 60 credits. Additional prerequisites may vary with nature of topic.

Registration Restrictions:
Required Prerequisites: (CS 310[C] or 310[XS]) and (CS 330[C] or 330[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

500 Level Courses

CS 500: *Special Topics.* 0-4 credits.
Select contemporary topics in Engineering and Computing. Offered by Computer Science. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

CS 504: *Principles of Data Management and Mining.* 3 credits.
Techniques to store, manage, and use data including databases, relational model, schemas, queries and transactions. On Line Transaction Processing, Data Warehousing, star schema, On Line Analytical Processing. MOLAP, HOLAP, and hybrid systems. Overview of Data Mining principles, models, supervised and unsupervised learning, pattern finding. Massively parallel architectures and Hadoop. Notes: This course cannot be taken for credit by students of the MS CS, MS ISA, MS SWE, CS PhD or IT PhD programs. Offered by Computer Science. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CS 530: *Mathematical Foundations of Computer Science.* 3 credits.
This course focuses on the topics of basic mathematical structures, mathematical logic and probability theory; and application of these concepts to problem solving and formal reasoning through hand-on practice with the use of computational tools. Notes: May not be taken for credit by students in the PhD CS or accelerated MSCS programs. May only be taken in the first semester at GMU. Offered by Computer Science. May not be repeated for credit.

Recommended Prerequisite: MATH 125 and STAT 344.

Registration Restrictions:

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CS 531: *Computer Systems and Fundamentals of Systems Programming.* 3 credits.
This course is a hands-on introduction to the systems level of programming with an emphasis on data structures and interfacing with operating systems. This course focuses on fundamental data structures needed to design and implement systems applications and continues with an introduction to the Unix Application Programming Interface, signals, threads, and interprocess communications. This course is taught from a programmatic perspective using C, with special topics in both Java and Python. May not be taken for credit by students in the PhD CS or accelerated MSCS programs. May only be taken in the first semester at GMU. Offered by Computer Science. May not be repeated for credit.

Recommended Prerequisite: CS 310 and CS 367 or equivalent.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CS 540: *Language Processors.* 3 credits.
Basic programming language processors such as assemblers, interpreters, and compilers. Topics include design and construction of language processors, formal syntactic definition methods, parsing techniques, and code generation techniques. Lab includes construction of language processors and experience with programming environments. Offered by Computer Science. May not be repeated for credit.

Recommended Prerequisite: MATH 125 and CS 310 and CS 330 and CS 465.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CS 550: *Database Systems.* 3 credits.
An introduction to database management with focus on architecting databases and using them in applications. Topics to be covered include: data modeling with the Entity-Relationship model, the relational data model and its formal languages, SQL, the theory of database design, object databases, XML and Web data. Offered by Computer Science. May not be repeated for credit.

Recommended Prerequisite: (CS 310 and CS 330) or (INFS 501 and INFS 515 and INFS 519 and SWE 510).

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CS 551: *Computer Graphics.* 3 credits.
Graphics principles and programming. Topics include graphics hardware, antialiasing, transformations, viewing, illumination, blending, texture mapping, color models, curves, surfaces, and animation. Offered by Computer Science. May not be repeated for credit.

Recommended Prerequisite: CS 310 and CS 367.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CS 555: *Computer Communications and Networking.* 3 credits.
Techniques and systems for communication of data between computational devices and layers of Internet Protocol Suite. Topics include role of various media and software components, local and

wide area network protocols, network design, performance and cost considerations, and emerging advanced commercial technologies. Emphasizes TCP/IP family of protocols. Offered by Computer Science. May not be repeated for credit.

Recommended Prerequisite: CS 310 and CS 367 and STAT 344.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CS 571: *Operating Systems.* 3 credits.
Models of operating systems. Major functions including processes, memory management, I/O, interprocess communication, files, directories, shells, distributed systems, performance, and user interface. Offered by Computer Science. May not be repeated for credit.

Recommended Prerequisite: CS 310 and CS 367 and CS 465.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CS 580: *Introduction to Artificial Intelligence.* 3 credits.
Artificial Intelligence principles and methods. Topics will include uninformed search, informed search, adversarial search, probabilistic reasoning and models, Bayes networks, machine learning fundamentals, classification and clustering, and neural networks. Additional topics may include knowledge representation, constraint satisfaction search, agent architectures, and Markov decision problems, among others. Offered by Computer Science. May not be repeated for credit.

Recommended Prerequisite: CS 310 and CS 330.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CS 583: *Analysis of Algorithms.* 3 credits.
Topics include analyzing sequential and parallel algorithmic strategies such as greedy methods, divide and conquer strategies, dynamic programming, search and traversal techniques, and approximation algorithms; and analyzing specific algorithms falling into these classes, NP-Hard and NP-Complete problems. Offered by Computer Science. May not be repeated for credit.

Recommended Prerequisite: CS 310 and CS 330 and MATH 125.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CS 584: *Theory and Applications of Data Mining.* 3 credits.
Concepts and techniques in data mining and multidisciplinary applications. Topics include databases; data cleaning and transformation; concept description; association and correlation rules; data classification and predictive modeling; performance analysis and scalability; data mining in advanced database systems, including text, audio, and images; and emerging themes and future challenges. Offered by Computer Science. May not be repeated for credit.

Recommended Prerequisite: CS 310 and STAT 344.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CS 587: *Introduction to Cryptography.* 3 credits.
Covers formal definitions of security for the most common tasks: data encryption and authentication, in both the private key and public key settings. Covers the process of formally proving that constructions meet the appropriate security definitions. Also covers practical constructions and applications, such as how to correctly use block ciphers and hash functions for the tasks above. In addition, several current topics in cryptography may also be covered. Offered by Computer Science. May not be repeated for credit.

Recommended Prerequisite: CS 330

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CS 595: *Basic Topics in Computer Science.* 3 credits.
Special topics in computer science not occurring in existing courses. Offered by Computer Science. May be repeated within the degree for a maximum 9 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

600 Level Courses

CS 600: *Theory of Computation.* 3 credits.
Introduction to logic and proof techniques, formal languages, automata theory, and computational complexity. Specific topics include regular and context-free languages, Turing machines, NP-completeness, and undecidability. Offered by Computer Science. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: CS 583[B-] or 583[XS].
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CS 630: *Advanced Algorithms.* 3 credits.
Provides an overview of advanced algorithm design and analysis techniques. Topics include algorithms for hash tables, matrix operations, number theory, string matching, computational geometry, combinatorial optimization, and linear programming; also the areas of NP-completeness and approximation algorithms. Offered by Computer Science. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: CS 583[B-] or 583[XS].
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CS 633: *Computational Geometry.* 3 credits.
Basic principles and methods for computing in field of geometric modeling. Emphasizes data structures used to represent geometric objects and algorithms for manipulating those data structures. Topics include range searching, polygon triangulation, convex hulls, motion-planning, visibility, and mesh generation. Offered by Computer Science. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: CS 583[B-] or 583[XS].
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CS 635: *Foundations of Parallel Computation.* 3 credits.
Covers three major parallel computing paradigms: MIMD computation, SIMD computation, and data flow computation. Emphasizes interfaces between algorithm design and implementation, architecture, and software. Examines parallel algorithms and parallel programming

languages relative to architecture of particular parallel computers. Offered by Computer Science. May not be repeated for credit.

Recommended Prerequisite: Proficiency in C programming language.

Registration Restrictions:
Required Prerequisites: (CS 583[B-] or 583[XS]) and (CS 571[B-] or 571[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CS 640: *Advanced Compilers.* 3 credits.
Examines advanced compiler techniques such as code optimizations for sequential and parallel machines; compilers for logical, functional, or object-oriented languages; and other topics in current literature. Offered by Computer Science. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (CS 540[B-] or 540[XS]) and (CS 583[B-] or 583[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CS 650: *Advanced Database Management.* 3 credits.
Study of the internal architecture of database systems. Topics include: physical data organization and indexing, query processing and optimization, transaction processing, database system architectures, Web services and Web data security. Offered by Computer Science. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: CS 550[B-], 550[XS], INFS 614[B-] or 614[XS].
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CS 655: *Wireless and Mobile Computing.* 3 credits.
This course provides an introduction to wireless and mobile networking. Topics include principles and architectures of wireless and mobile networking and fundamental issues of wireless communications with energy-constrained, mobile devices. It discusses physical, data link, and network layer protocols including IEEE 802.11, and emerging wireless networks such as Internet-of-Things, high-speed millimeter-waves, vehicular networks, and mobile and IoT sensing applications including indoor localization, smart-homes, and smart-cities. Offered by Computer Science. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: CS 555[B-] or 555[XS].
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CS 657: *Mining Massive Datasets with MapReduce.* 3 credits.
Covers the techniques to mine large datasets, including Distributed File Systems and Map-Reduce, similarity search, and data stream processing. Covers classic problems in data mining, such as clustering, association rule mining, and others from the point of view of scalability. Includes a final project to exercise concepts covered in class. Offered by Computer Science. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: CS 584[B-] or 584[XS].
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CS 658: *Networked Virtual Environments.* 3 credits.
Networked virtual environment overview, networking and multimedia concepts, virtual simulation concepts, efficiency/performance issues, and online conferencing/virtual classrooms. Course is based around a project with multiple segments, each covering one aspect of networked virtual environments, plus a final session where one- or two-person teams create a minimally functional networked virtual environment over the Internet using multicast network software. Lectures available online/recorded. Offered by Computer Science. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: CS 555[B-] or 555[XS].
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CS 662: *Computer Graphics Game Technologies.* 3 credits.
Addresses some graphics game techniques including collision detection, levels of detail, physics-based simulations, textures, maps, and shadows. Offered by Computer Science. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: CS 551[B-] or 551[XS].
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CS 663: *Computational Design.* 3 credits.
This course will cover the fundamentals of computational design. Students will learn how to design a computational design framework to generate different types of designs such as interior design, 3D product design, and user interface design. Topics to discuss include 3D representation, 3D modeling, procedural modeling, simulation, and interaction techniques. Students will also learn how to carry out user studies and hypothesis testing to evaluate designs. The course will also include advanced topics on using optimization and artificial intelligence techniques to generate designs. Offered by Computer Science. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: CS 583[B-] or 583[XS].
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CS 667: *Biometrics and Identity Management.* 3 credits.
Basic principles and methods for automatic authentication of individuals. Technologies include face, fingerprint, and iris recognition; and speaker verification. Additional topics cover multimodal biometrics, system design, performance evaluation, and privacy concerns. Term project required. Offered by Computer Science. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: CS 580[B-] or 580[XS].
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CS 672: *Computer System Performance Evaluation.* 3 credits.
Theory and practice of analytical models of computer systems. Topics include open and closed multiclass queuing networks, single and multiple class Mean Value Analysis, Markov Chains, performance and availability models of Internet data centers, software performance engineering, and e-commerce performance. Offered by Computer Science. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: CS 571[B-] or 571[XS].
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CS 673: *Multimedia Computing and Systems.* 3 credits.
Focuses on technological and development environments in developing multimedia applications. Projects involve experience with multimedia authoring tools and simulations to assess performance. Offered by Computer Science. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: CS 571[B-] or 571[XS].
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CS 675: *Distributed Systems.* 3 credits.
Issues in design and implementation of distributed systems and applications. Topics include distributed communication paradigms, middleware, coordination and synchronization, distributed transactions, consistency and replication, fault-tolerance and reliability, and peer-to-peer systems. Offered by Computer Science. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: CS 571[B-] or 571[XS].
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CS 681: *Instructable Cognitive Agents.* 3 credits.
Design and development of cognitive agents that learn problem-solving expertise directly from domain experts. Topics include modeling expert's knowledge, mixed-initiative reasoning based on knowledge and evidence, ontology design and development, multistrategy rule learning, and knowledge-based maintenance. Projects include development of specific cognitive agents through teaching and learning. Offered by Computer Science. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: CS 580[B-] or 580[XS].
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CS 682: *Computer Vision.* 3 credits.
Study of computational models of visual perception and their implementation in computer systems. Topics include early visual processing, edge detection, segmentation, intrinsic images, image modeling, representation of visual knowledge, and image understanding. Offered by Computer Science. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (CS 580[B-], 580[XS], 584[B-] or 584[XS]) and (CS 583[B-] or 583[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CS 683: *Parallel Algorithms.* 3 credits.
Examines design and analysis of parallel algorithms. Material focuses on algorithms for both theoretical and practical models of parallel computation. Considers algorithm design and analysis for PRAM and existing SIMD and MIMD type architectures. Topics include sorting, graph

algorithms, numerical algorithms, and computational complexity. Offered by Computer Science. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: CS 583[B-] or 583[XS].
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CS 684: *Graph Algorithms.* 3 credits.
Data structures and analytical techniques to study graph algorithms. Data structures include disjoint sets, heaps, and dynamic trees. Algorithms include minimum spanning trees, shortest path, maximum flow, and graph planarity. Offered by Computer Science. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: CS 583[B-] or 583[XS].
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CS 685: *Autonomous Robotics.* 3 credits.
Reviews developments in intelligent autonomous systems. Studies applications of artificial intelligence, computer vision, and machine learning to robotics. Topics include analysis and design of algorithms and architectures for planning, navigation, sensory data understanding, sensor fusion, spatial reasoning, motion control, knowledge acquisition, learning concepts and procedures, self-organization, and adaptation to environment. Offered by Computer Science. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: CS 580[B-] or 580[XS].
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CS 686: *Image Processing and Applications.* 3 credits.
Concepts and techniques in image processing. Discusses methods for image capture, transformation, enhancement, restoration, and encoding. Students complete projects involving naturally occurring images. Offered by Computer Science. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: CS 583[B-] or 583[XS].
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CS 687: *Advanced Artificial Intelligence.* 3 credits.
Explores foundational issues of artificial intelligence, such as roles of knowledge and search, formalization of knowledge and inference, and symbolic versus emergent approaches to intelligence. Studies advanced programming techniques for artificial intelligence, relationship to foundational issues, and important application areas for artificial intelligence. Notes: Major programming project required. Offered by Computer Science. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: CS 580[B-] or 580[XS].
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CS 688: *Machine Learning.* 3 credits.
This course covers the theory and principles underlying different machine learning paradigms. The emphasis is on statistical theory and methodology. Topics include: Model selection and generalization; Overfitting and under fitting; Bayesian theory and Decision theory; Maximum Likelihood estimation, MAP; Regularization; Bias-variance tradeoff; Curse of dimensionality; Dimensionality reduction; Linear Models for classification; Probabilistic Generative Models; Probabilistic Discriminative Models; Neural Networks (Backpropagation); Deep Learning (CNNs); Kernel methods; Support Vector Machines; Ensemble Methods; Unsupervised Learning (Clustering, EM, Mixture Modeling); Reinforcement learning. Offered by Computer Science. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: CS 580[B-], 580[XS], 584[B-] or 584[XS].
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CS 689: *Planning Motions of Robots and Molecules.* 3 credits.
Covers topics from artificial intelligence, algorithms and databases. Presents algorithms that model and simulate physical and biological systems and focuses on motion-planning algorithms for robotic systems in the presence of obstacles. Simple deterministic and sampling-based approaches to motion planning will be covered, as well as advanced planning methods including planning with kinematics and dynamic constraints. Selected topics include sensor-based motion planning, manipulation planning, assembly planning, planning under uncertainty and robotics-inspired methods to compute functionally-relevant motions of molecular chains. Offered by Computer Science. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: CS 583[B-] or 583[XS].
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CS 695: *Topics in Computer Science.* 3 credits.
Special topics in computer science not occurring in regular computer science sequence. Notes: May be repeated for credit when topics are distinctly different. Offered by Computer Science. May be repeated within the term.

Specialized Designation: Topic Varies

Recommended Prerequisite: Completion of at least two core courses and permission of the instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CS 697: *Independent Reading and Research.* 1-3 credits.
Students may undertake a course of study under supervision of consenting faculty member. Students usually submit written statement of course content and tentative reading list as part of request for approval. Literature review, project report, or other written product usually required. Offered by Computer Science. May not be repeated for credit.

Recommended Prerequisite: Completion of at least two core courses, and permission of the instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Research

Grading:
This course is graded on the Graduate Regular scale.

700 Level Courses

CS 700: *Research Methodology in Computer Science.* 3 credits.
Topics include approaches for evaluating, writing, and presenting scholarly papers, research integrity issues, and quantitative models and methods in experimental computer science. Techniques for the use of analytic and simulation models, design of experiments, hypothesis testing, and statistical analysis of data are presented. Students apply these techniques to a project, write a report, and make a presentation to the class. Offered by Computer Science. May not be repeated for credit.

Recommended Prerequisite: Admission to PhD in Computer Science or PhD in Information Technology programs.

Registration Restrictions:
Enrollment is limited to students with a major in Computer Science or Information Technology.

Enrollment limited to students in a Doctor of Philosophy degree.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CS 701: *Research Experience in Computer Science.* 3 credits.
Readings and research for early stage PhD students under the direction of a Computer Science faculty member. Research findings must be reported in a professionally prepared document and presented in a public meeting at the end of the semester. Offered by Computer Science. May be repeated within the term for a maximum 3 credits.

Recommended Prerequisite: CS 700

Registration Restrictions:
Enrollment is limited to students with a major in Computer Science or Information Technology.

Enrollment limited to students in a Doctor of Philosophy degree.

Schedule Type: Research

Grading:
This course is graded on the Graduate Regular scale.

CS 706: *Concurrent Software Systems.* 3 credits.
Topics include concurrent programming languages and constructs, and specification, design, verification, and validation of concurrent programs. Students required to solve concurrent programming problems and check solutions by using verification, testing, and debugging tools. Offered by Computer Science. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: CS 571[B-] or 571[XS].
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CS 719: *Scalable Internet Services.* 3 credits.
Discusses, from quantitative point of view, characteristics of most important technologies used to support implementation of e-business sites. Includes topics such as hardware and software architectures of e-business sites, authentication, payment services, understanding customer behavior, workload characterization, scalability analysis, and performance prediction. Notes: Term paper and project required. Offered by Computer Science. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (CS 555[B-] or 555[XS]) and (CS 571[B-] or 571[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CS 747: *Deep Learning.* 3 credits.
This course presents the theory, underlying principles and applications of Deep Learning (DL). Deep learning is a Machine Learning approach based on learning data representations as opposed to designing task-specific algorithms. The course covers the concepts of Multilayer Perceptrons (MLPs) and algorithms to train them (gradient descent, backpropagation), Regularization of DL, Convolutional Networks (CNNs), Autoencoders, Recurrent Networks (RNNs), and Deep Generative Models including Generative Adversarial Methods. Problems from various application domains such as natural language processing and computer vision will be discussed. Offered by Computer Science. May not be repeated for credit.

Recommended Prerequisite: CS 688

Registration Restrictions:
Required Prerequisites: CS 580[B-], 580[XS], 584[B-] or 584[XS].
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Graduate or Non-Degree.

Undergraduate level students may **not** enroll.

Enrollment limited to students in a Master of Science degree.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CS 752: *Interactive Graphics Software.* 3 credits.
Advanced graphics methods and tools. Topics include visualization, modeling, rendering, animation, simulation, virtual reality, graphics software tools, and current research topics. Offered by Computer Science. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (CS 551[B-] or 551[XS]) and (CS 583[B-] or 583[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CS 755: *Advanced Computer Networks.* 3 credits.
Current and emerging issues in advanced computer networks and applications. Topics include software systems associated with packet and cell-switched networking architectures and protocols, high-performance LANs, scheduling and congestion control, mobile networking, multimedia applications, and next generation of Internet. Offered by Computer Science. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: CS 555[B-] or 555[XS].
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CS 756: *Performance Analysis of Computer Networks.* 3 credits.
Analytical, measurement, and simulation techniques for modeling and analyzing computer networks. Examines elementary queuing analysis; networks of queues; routing and flow controls; and applications to local and wide area networks, Internet, and emerging networking technologies. A large portion of the course is devoted to projects, normally performed in student teams, who apply the techniques presented. Offered by Computer Science. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: CS 555[B-] or 555[XS].
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CS 773: *Real-Time Systems Design and Development.* 3 credits.
Real-time systems and principles supporting design and implementation. Emphasizes fundamental results from real-time scheduling theory and relevance to computer system design. Topics include system design issues for real-time applications involving operating systems, communication networks, databases, and multimedia Offered by Computer Science. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: CS 571[B-] or 571[XS].
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CS 774: *Computational Vision.* 3 credits.
Studies recent advances in development of machine vision algorithms and knowledge-based vision systems. Topics include scalespace; Gabor and wavelet processing; distributed and hierarchical processing using neural networks; motion analysis; active, functional, and selective perception; object and target recognition; expert systems; data fusion; and machine learning. Emphasizes system integration in terms of perception, control, action, and adaptation. Presents applications to robotics, intelligent highways, inspection, forensic, and data compression. Offered by Computer Science. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (CS 682[B-] or 682[XS]) and (CS 686[B-] or 686[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CS 775: *Advanced Pattern Recognition.* 3 credits.
Covers statistical pattern recognition, neural network, and statistical learning theory approaches. Topics include decision theory and Bayes' theorem, density (parametric and nonparametric) estimation, linear and

nonlinear discriminant analysis, SVM and kernel methods, SRM and model selection, performance evaluation, mixture of experts (AdaBoost), dimensionality reduction, feature selection and extraction, and clustering. Emphasizes experimental design, applications, and performance evaluation. Offered by Computer Science. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: CS 688[B-] or 688[XS].
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CS 777: *Human-Computer Intelligent Interaction.* 3 credits.
Current and emerging issues in human-computer intelligent interaction, and human-centered systems and their applications. Topics include video processing, visualization, virtual environments, adaptation and tutoring, image and scene modeling, analysis and synthesis, face and gesture recognition, and speech and natural language processing. Notes: Term project and topical review required. Offered by Computer Science. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: ((CS 580[B-] or 580[XS]) and (CS 551[B-] or 551[XS])) or (CS 682[B-] or 682[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CS 779: *Topics in Resilient and Secure Computer Systems.* 3 credits.
Covers study of alternate computer security, including how these methods can be combined in a layered defense and factors that affect the selection of the architectures. Reviews recent papers and reports. Offered by Computer Science. May not be repeated for credit.

Specialized Designation: Topic Varies

Registration Restrictions:
Required Prerequisites: CS 571[B-], 571[XS], ISA 562[B-] or 562[XS].
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CS 782: *Advanced Machine Learning.* 3 credits.
The course covers recent advances in the field of machine learning. Possible topics include: Learning Theory (PAC, error bounds, VC-dimension); Learning manifolds; Transfer learning; Active learning; Learning with structured data (e.g. graphs); Topic modeling; Learning with text; Graphical Models (Bayesian Networks); Learning HMMs. Topics may change depending on the instructor. Offered by Computer Science. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: CS 681[B-], 681[XS], 687[B-], 687[XS], 688[B-] or 688[XS].
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CS 787: *Decision Guidance Systems.* 3 credits.
Decision-guidance systems support an iterative process of giving actionable recommendations to and extracting feedbacks from human decision-makers, with the goal of arriving at the best possible course of action. Focuses on models, languages, algorithms and applications of Decision-Guidance Management Systems, used for fast development of decision-guidance applications. Offered by Computer Science. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: INFS 614[B-], 614[XS], CS 550[B-] or 550[XS].
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CS 788: *Autonomic Computing.* 3 credits.
Studies self-managing, self-optimizing, self-configuring, self-tuning, self-healing, and self-protecting computing systems. This course analyzes many examples of autonomic systems as well as various techniques to design and build such systems. This is a doctoral seminar based on

reading and analysis of current papers. Offered by Computer Science. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: CS 555[B-], 555[XS], 571[B-], 571[XS], ISA 562[B-] or 562[XS].
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CS 795: *Advanced Topics in CS.* 3 credits.
Advanced topics not occurring in regular sequence. Notes: May be repeated for credit when subject differs. Satisfies MS breadth requirement only if explicitly stated in syllabus in given section. Only one such course should be used for breadth requirements. Offered by Computer Science. May be repeated within the term.

Specialized Designation: Topic Varies

Recommended Prerequisite: Admission into computer science PhD program.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CS 798: *Project Seminar.* 3 credits.
Master's degree candidates undertake a project using knowledge gained in MS program. Notes: Topics chosen in consultation with advisor. Meets project or thesis requirement for MS in computer science. Offered by Computer Science. May not be repeated for credit.

Recommended Prerequisite: 18 hours of credit applicable toward the M.S. in computer science.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Thesis

Grading:
This course is graded on the Graduate Special scale.

CS 799: *Thesis.* 1-6 credits.
Original or expository work evaluated by committee of three faculty members. Offered by Computer Science. May be repeated within the degree.

Recommended Prerequisite: 18 hours of credit applicable toward the M.S. in Computer Science.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Thesis

Grading:
This course is graded on the Satisfactory/No Credit scale.

800 Level Courses

CS 800: *Computer Science Colloquium.* 0 credits.
Students are required to attend colloquia including talks by distinguished speakers, faculty candidates, and Mason faculty. Notes: This course introduces PhD students to research topics in computer science. Offered by Computer Science. May be repeated within the degree for a maximum 2 credits.

Registration Restrictions:
Enrollment is limited to students with a major in Computer Science.

Enrollment is limited to Graduate level students.

Enrollment limited to students in a Doctor of Philosophy degree.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Seminar

Grading:
This course is graded on the Satisfactory/No Credit scale.

CS 895: *Research Topics in CS.* 3 credits.
Advanced topics not occurring in regular sequence. Notes: May be repeated for credit when subject differs. Only one such course should be used for breadth requirements. Offered by Computer Science. May be repeated within the term.

Specialized Designation: Topic Varies

Recommended Prerequisite: Doctoral status.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CS 896: *Directed Reading and Research.* 1-6 credits.
Reading and research on a specific topic under the direction of a faculty member. Notes: Students can sign up for this class only after satisfying the CS PhD breadth requirement. Offered by Computer Science. May be repeated within the degree for a maximum 18 credits.

Recommended Prerequisite: Permission of Instructor.

Registration Restrictions:
Enrollment limited to students in the VS-PHD-CS program.

Enrollment is limited to Graduate level students.

Enrollment limited to students in a Doctor of Philosophy degree.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Research

Grading:
This course is graded on the Graduate Regular scale.

900 Level Courses

CS 990: *Dissertation Topic Presentation.* 0 credits.
Students put together a professional presentation of a research proposal and present it for critique to fellow students and interested faculty. Notes: Must be completed before the presentation of a dissertation research proposal. Offered by Computer Science. May not be repeated for credit. Equivalent to CEIE 990, IT 990, STAT 990.

Recommended Prerequisite: Student must have passed the PhD qualifying examinations.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Research

Grading:
This course is graded on the Satisfactory/No Credit scale.

CS 998: *Doctoral Dissertation Proposal.* 1-12 credits.
Work on a research proposal that forms the basis for a doctoral dissertation. Notes: No more than 24 credits of CS 998 and 999 may be applied to the doctoral degree requirements. Offered by Computer Science. May be repeated within the degree.

Recommended Prerequisite: Student must have passed the PhD qualifying examinations and must have a dissertation advisor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

CS 999: *Doctoral Dissertation.* 1-12 credits.
Dissertation research under the supervision of the dissertation director. Notes: No more than 24 credits of CS 998 and 999 may be applied to the doctoral degree requirements. Offered by Computer Science. May be repeated within the degree.

Recommended Prerequisite: Admission to candidacy.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy.

Enrollment is limited to Graduate level students.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

Conflict Analysis and Resolution (CONF)

100 Level Courses

CONF 101: *Conflict and Our World.* 3 credits.
Brief history of field, survey of key conflict resolution themes and theories, and intervention methods. Overview includes general factors of conflict and its resolution; and nature of conflict in interpersonal, group, organizational, and international situations. Offered by Conflict Analysis & Resolution. Limited to three attempts.

Mason Core: Social/Behavioral Sciences

Schedule Type: Lecture, Recitation

Grading:
This course is graded on the Undergraduate Regular scale.

200 Level Courses

CONF 210: *Theories of Conflict Analysis and Resolution.* 3 credits.
Students will utilize critical thinking and analytical skills to begin an in-depth examination of the major theories of conflict analysis and resolution. Theories and case studies will include root causes and dynamics of conflict and methods of conflict analysis and resolution. Offered by Conflict Analysis & Resolution. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

300 Level Courses

CONF 300: *Conflict Resolution Techniques and Practice.* 3 credits.
Advanced consideration of CONF 101 topics, introduction of core notion of reflective practice, conflict resolution techniques, practice, third party roles, and ethics. Offered by Conflict Analysis & Resolution. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CONF 301: *Research and Inquiry in Conflict Resolution.* 3 credits.
Introduces social science research methods at undergraduate level. Covers basic epistemology of social research, including quantitative and qualitative methods, emphasizing participatory action research, and evaluation and assessment work. Offered by Conflict Analysis & Resolution. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CONF 302: *Culture, Identity, and Conflict.* 3 credits.
Covers deeply rooted, intractable, or protracted social conflicts around core issues of identity, including race, ethnicity, religion, and nationalism. Explores cultural, symbolic, and discursive approaches to identity conflict. Offered by Conflict Analysis & Resolution. Limited to three attempts.

Specialized Designation: Writing Intensive in Major

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CONF 310: *Special Topics in Practice.* 1-3 credits.
Examines selected topics related to practice in the field of conflict analysis and resolution. Topics vary, addressing practical skills and knowledge necessary to conflict resolution practice. Notes: May be repeated if topics vary. Offered by Conflict Analysis & Resolution. May be repeated within the term for a maximum 6 credits.

Specialized Designation: Topic Varies

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CONF 314: *Career Development Seminar.* 1 credit.
This course offers students structured time to explore opportunities available in conflict analysis and resolution and discuss issues pertinent to career preparation. Attention is focused on identifying personal strengths, understanding the job search process, and developing the skills and documents to be successful when applying for internships and jobs. Offered by Conflict Analysis & Resolution. Limited to three attempts.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

CONF 320: *Interpersonal Conflict Analysis and Resolution.* 3 credits.
Considers personal, relational, social and cultural dimensions of interpersonal conflict. Introduces concepts and skills for understanding the causes, patterns, systems and dynamics of difficult issues and situations. Uses readings, case studies, and role plays to develop ability to analyze and intervene in interpersonal conflicts. Offered by Conflict Analysis & Resolution. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CONF 325: *Dialogue and Difference.* 3 credits.
Covers challenges of communicating across differences of age, gender, language, culture, political orientation, and contextual situations. Students will engage in preparing and analyzing communication strategies in conflict situations and will participate in a dialogue over the term that explores the meaning and experience of difference on the Mason campus. Offered by Conflict Analysis & Resolution. Limited to three attempts.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

CONF 326: *Negotiation.* 3 credits.
The ability to negotiate and manage conflicts effectively is an essential skill in international, community, organizational and personal settings. Negotiation is the art and science of securing an agreement between two or more independent parties. This course is an introduction to the analysis and practice of negotiation and provides a solid foundation for further inquiry and application. Students will examine research and theories of negotiation, how different cultures influence conflict, frameworks for analyzing negotiation, and the roles of various factors (influences and contexts, tactics and strategies) on the negotiation process and outcome. This course will include a blend of lectures, class discussions, individual and group exercises, simulations and negotiation role plays in class. Offered by Conflict Analysis & Resolution. Limited to three attempts.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

CONF 329: *Community Engagement and Collaborative Problem Solving.* 3 credits.
This course will explore how organizations and leaders across sectors can use community engagement techniques and collaborative problem solving tools to achieve their goals and reach consensus-based and mutually-beneficial solutions. The course will be hands-on and experiential-based. Students will be introduced to different problem-solving techniques and will be given opportunities to experience and facilitate activities in-class. Offered by Conflict Analysis & Resolution. Limited to three attempts.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

CONF 330: *Community, Group, and Organizational Conflict Analysis and Resolution.* 3 credits.
Covers conflict in communities, groups and organizations. Introduces theories of social harmony and conflict, drawing on sociology, social psychology, community psychology, organizational psychology, administration of justice, philosophy, and conflict resolution. Uses case studies, class presentations, and group projects to develop ability to analyze conflict and make recommendations for change. Offered by Conflict Analysis & Resolution. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CONF 331: *Simulation in Community and Organizational Conflict Resolution.* 1 credit.
Builds on the theories and concepts presented in CONF 330 to focus on the practice of group and community conflict. Through intensive simulations using conflict cases, students will have the opportunity to practice conflict resolution skills such as dialogue, problem solving, mediation and negotiation and gain a practical understanding of third party roles and intervention strategies in community, group, and organizational settings. Offered by Conflict Analysis & Resolution. Limited to three attempts.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

CONF 335: *Justice and Reconciliation.* 3 credits.
Explores justice and reconciliation from a conflict perspective. Drawing on approaches in the interdisciplinary fields of sociolegal studies and conflict analysis and resolution, the course considers these and other questions: How does injustice fuel conflict? What role should justice play in guiding conflict prevention and addressing the aftermath of violence? What is reconciliation and how do we know when it has been achieved? Are justice and reconciliation mutually reinforcing processes or does one stand in the way of the other? The first part of the course focuses on foundational concepts and questions understood through domestic US examples, examining topics such as: gender equality and gender violence, migration and integration, discrimination, identity politics, healing communities, and environmental justice. We then broaden our perspective geographically, as we examine justice and reconciliation as responses to mass atrocity. Offered by Conflict Analysis & Resolution. Limited to three attempts.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

CONF 340: *Global Conflict Analysis and Resolution.* 3 credits.
Covers conflict at macro level, introducing theories of international and global violence and conflict, drawing from disciplines of international relations, political science, intercultural communication, and conflict resolution. Covers impact of globalization and structural causes of conflict. Uses class discussions, case studies, and final paper to develop analytical skills to help in analysis of conflict. Prepares for further course work for international conflict concentration. Offered by Conflict Analysis & Resolution. Limited to three attempts.

Mason Core: Global Understanding

Schedule Type: Lecture, Recitation

Grading:
This course is graded on the Undergraduate Regular scale.

CONF 341: *Simulation in Global Conflict Resolution.* 1 credit.
Focuses primarily on global conflict resolution practice. Using the methodologies of dialogue, problem-solving, and intensive simulation, students will increase their theoretical and practical understanding of peace making, peace building, and transformation processes within a specific international case. Offered by Conflict Analysis & Resolution. May be repeated within the degree for a maximum 2 credits.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

CONF 345: *Social Dynamics of Terrorism, Security, and Justice.* 3 credits.
Presents students with analytical frameworks to account for terrorist acts and organizations and explore social dynamics underlying the development of, and response to, terrorism. Topics may include recruitment into violent groups, counterterrorism and human rights concerns, role of religious and political ideologies in terrorism and counterterrorism, media coverage of terrorism, and effects of terrorism on social structures and processes. Offered by Conflict Analysis & Resolution. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CONF 370: *Internship Field Experience.* 1-9 credits.
Internships will provide an opportunity for students to gain practical experience, reflect on those experiences, and apply academic theories outside of the normal classroom environment. Students will apply academic theories learned in the classroom to situations that arise in the work environment. Students must obtain approval and complete an internship proposal application in order to be registered for the course. Notes: Course does not have a regular meeting time; students submit work via blog and e-mail; some meetings with instructor. Offered by Conflict Analysis & Resolution. May be repeated within the degree for a maximum 9 credits.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

CONF 375: *Special Programs Field Experience.* 1-6 credits.
Learning experience in the application of conflict analysis and resolution (CAR) skills in special program settings. Provides supervised practice in CAR techniques, leadership, program implementation, and strategies to facilitate conflict resolution in educational institutions or community settings. Offered by Conflict Analysis & Resolution. May be repeated within the term for a maximum 9 credits.

Schedule Type: Fieldwork

Grading:
This course is graded on the Undergraduate Regular scale.

CONF 385: *International Field Experience.* 3 credits.
Investigates conflict theory through international field experience including participation in formally organized courses offered by Global Education Office or another form of international field experience approved by program director. Offered by Conflict Analysis & Resolution. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: CONF 101 and permission of advisor.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

CONF 386: *Context and Synthesis: Study Abroad.* 1 credit.
Investigates conflict theory through cross cultural experience which includes participation in formally organized semester abroad programs offered by the Global Education Office or another form of international

field experience approved by the program director. Offered by Conflict Analysis & Resolution. May be repeated within the degree for a maximum 2 credits.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

CONF 392: *Youth and Conflict.* 3 credits.
Explores aspects of youth and conflict in terms of context and dynamics at the local, regional, and global levels, as well as interactions with violence and peace. Youth is more than a distinct life phase or political category; this course challenges the boundaries of how we understand the considerations and constraints of the transition to adulthood. Objectives of the course are: to develop a better understanding of the generational and gendered dynamics of conflict and peace; to situate youth contextually, socially, culturally, economically, and politically; to explore impacts of gender, age, and context upon youth individually as well as within constituent groups; to incorporate youth into theoretical and practical maps of conflict analysis and resolution. Offered by Conflict Analysis & Resolution. Limited to three attempts.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

CONF 393: *Violence: Causes, Dynamics & Alternatives.* 3 credits.
Examines causes, sources, and origins of group violence with particular attention to group violence and ethnic conflict. Explores alternative proposals that explain why violence becomes a primary, or at least a viable, form of resolving conflict in some societies. Offered by Conflict Analysis & Resolution. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CONF 394: *Human Rights and Inequality.* 3 credits.
Examines inequality, social justice, and human rights in an age of globalization. Topics may include international law and order, welfare-and social policy, regionalism and multilateralism, environmental protection, gender equality, terrorist and transnational criminal networks, human trafficking, modern slavery, world poverty, corporate military firms, governance of global financial institutions, security, and transnational social movements. Offered by Conflict Analysis & Resolution. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CONF 397: *Study Abroad Special Topics.* 1-9 credits.
Transfer credit for relevant coursework taken during direct exchange study abroad trips. Offered by Conflict Analysis & Resolution. May be repeated within the term for a maximum 12 credits.

Specialized Designation: Topic Varies

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CONF 398: *Special Topics in Advanced Techniques and Practices.* 3 credits.
Examines selected topics relating to conflict resolution techniques and practices. Topics vary but may include mediation, negotiation, reflective practice, and facilitation. Notes: May be repeated if topics vary. Offered by Conflict Analysis & Resolution. May be repeated within the term for a maximum 9 credits.

Specialized Designation: Topic Varies

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CONF 399: *Special Topics in Conflict Analysis and Resolution.* 3 credits.
Examines selected topics relating to analysis or resolution of conflict. Topics vary but may include historical examination of conflict, social issues stemming from conflict, ethical issues in intervention, globalization, human rights, sources of conflict, or relationship of particular identity domains to conflict. Notes: May be repeated if topics vary. Offered by Conflict Analysis & Resolution. May be repeated within the term for a maximum 9 credits.

Specialized Designation: Topic Varies

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

CONF 425: *Mediating Conflict.* 3 credits.
A skill development course connecting conflict resolution theory and practice to the mediation process through lectures, discussion. self-reflection, experiential learning, and role-plays. This course has been approved to meet the 20-hour basic education requirements for mediation certification by the Judicial Council of Virginia and the Office of the Executive Secretary, Supreme Court of Virginia. Offered by Conflict Analysis & Resolution. Limited to three attempts.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

CONF 435: *Building Peace in Divided Societies.* 3 credits.
A major challenge to peacebuilding efforts domestically and globally are the boundaries that communities believe separates themselves from others. The boundaries have ethnic, racial, religious or cultural roots, often with long histories of division and violence. This class will examine case studies and strategies from around the globe of peacebuilding in complex communities. Offered by Conflict Analysis & Resolution. Limited to three attempts.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

CONF 490: *RS: Integration.* 3 credits.
Capstone course in which students reflect on what they have learned, integrating knowledge from course work and synthesizing it to cogent body of knowledge. Includes class discussion and final project that

demonstrates understanding of conflict theory and reflective practice. Offered by Conflict Analysis & Resolution. Limited to three attempts.

Mason Core: Synthesis

Specialized Designation: Research/Scholarship Intensive

Registration Restrictions:
Required Prerequisites: CONF 301[C] or 301[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

CONF 499: *Independent Research in Conflict Analysis and Resolution.* 1-6 credits.
Readings and research conducted on individual basis in consultation with instructor. Notes: Student may not present more than 3 credits for graduation credit. Offered by Conflict Analysis & Resolution. May be repeated within the degree for a maximum 6 credits.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

500 Level Courses

CONF 500: *Frameworks for Ethical Dispute Resolution Practice.* 3 credits.
Prepares Dispute Resolution students to play innovative and creative roles where dispute resolution is required. This foundational course looks at dispute resolution in the context of larger systems and structures and promotes a practice of dispute resolution with a lens toward increasing social justice. Students will encounter different tools and theories to support effective conflict assessment and work with intervention design principles used in the range of dispute resolution modalities. Building skills as reflective practitioners, students will develop a balance between process and ethical considerations. Offered by Conflict Analysis & Resolution. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Carter Peace Conflict Res or Health and Human Services colleges.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CONF 501: *Introduction to Conflict Analysis and Resolution.* 3 credits.
Introduces field of conflict analysis and resolution. Examines definitions of conflict and diverse views of its "resolution." Explores thinking about human behavior, and social systems as they relate to origins of conflict and role of conflict in violent and peaceful social change. Considers appropriate responses to conflict at interpersonal, intergroup, industrial, communal, and international levels. Offered by Conflict Analysis & Resolution. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Carter Peace Conflict Res, Coll Nursing Health Science or Health and Human Services colleges.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

600 Level Courses

CONF 600: *Foundations of Conflict Analysis and Resolution.* 6 credits.
This course offers an integration of theory, research and practice to investigate the inner workings of our field. It includes conflict theories, models and modes of practice that function as the grounding to subsequent courses in the curriculum, and exploration of some of the key contemporary debates. The course includes opportunities for linking theory to practice with experimental learning activities. Offered by Conflict Analysis & Resolution. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Carter Peace Conflict Res or Health and Human Services colleges.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CONF 605: *Foundations of Peacebuilding.* 6 credits.
This foundational course, building on initiatives of the United Nations and other multilateral organizations, explores dynamics of post-conflict peace building and prepares students to play innovative roles in peacebuilding and reconstruction of civil societies. The course introduces the theory, research and practice of peacebuilding programming with a focus on ethical, conflict-sensitive and inclusive process design and implementation. The course investigates the historical arc of peacebuilding practice and current implementation strategies; and examines peacebuilding theories, models and modes of practice that function as the grounding to subsequent courses in the curriculum, and explores of some of the key contemporary debates in the field. The course includes opportunities for linking theory to practice with experimental learning activities. Offered by Conflict Analysis & Resolution. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Carter Peace Conflict Res college.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CONF 610: *Conflict Inquiry.* 3 credits.
Introduces students to the philosophies behind social science research and the methods for conducting research in the field of conflict resolution. Focuses on the identification of research problems associated with particular conflict situations, selection of appropriate research methods, and the design of effective research projects. Offered by Conflict Analysis & Resolution. May not be repeated for credit.

Recommended Prerequisite: CONF 600.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Enrollment is limited to Graduate or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Carter Peace Conflict Res, Coll Nursing Health Science or Health and Human Services colleges.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CONF 620: *Reflective Practice in Interpersonal-Multiparty Conflicts.* 3 credits.
Introductory skill-building course integrating conflict theory and practice using reflective practitioner model. Students learn necessary skills for third-party facilitation and mediation, including active listening, empathy, paraphrasing, reframing, and negotiation, in addition to analytical skills of problem solving and creation of transformational processes. Cases for practice focus on interpersonal and intergroup conflict. Offered by Conflict Analysis & Resolution. May not be repeated for credit.

Recommended Prerequisite: CONF 501, 600, or 801

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Carter Peace Conflict Res or Health and Human Services colleges.

Schedule Type: Laboratory

Grading:
This course is graded on the Graduate Regular scale.

CONF 625: *Engaging Conflict.* 3 credits.
This course will provide students an experiential opportunity to consider the relationship between social science theories and conflict analysis and resolution work; and engagement in a variety of forms with real world conflict. Each course will provide students the opportunity to engage in research and practice activities, choosing the appropriate modalities for the conflict they are engaging with. Offered by Conflict Analysis & Resolution. May be repeated within the term for a maximum 12 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: CONF 600.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Carter Peace Conflict Res or Health and Human Services colleges.

Schedule Type: Fieldwork

Grading:
This course is graded on the Graduate Regular scale.

CONF 631: *Mediation in Diverse Settings.* 3 credits.
A skill development course connecting dispute resolution theory and practice to the mediation process through lectures, discussion. self-reflection, experiential learning, and role-plays. Along with consideration of foundational principles of mediation practice, the course covers a range of mediation traditions, including: facilitative mediation, evaluative mediation, transformative mediation, narrative mediation, etc. Along with understanding the mediation process, students will explore the impact on mediation of culture, power, race, gender and other contextual factors that challenge contemporary mediators. Offered by Conflict Analysis & Resolution. May not be repeated for credit.

Recommended Prerequisite: CONF 500, 501, 600, 801

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Carter Peace Conflict Res or Health and Human Services colleges.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CONF 632: *Coaching through Conflict.* 3 credits.
Participants will learn the theory and value of professional coaching. They will review and practice several models of conflict coaching. Each student will evaluate their peers and receive feedback on their coaching. The class will examine conflict styles and address these styles through coaching. The participants will understand the larger field of coaching. Each student will design a template for group coaching. And the students will learn the competencies, markers, and ethics related to professional coaching. Offered by Conflict Analysis & Resolution. May not be repeated for credit.

Recommended Prerequisite: CONF 500, 501, 600, 801

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Carter Peace Conflict Res or Health and Human Services colleges.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CONF 640: *Practicum in Contemporary Dispute Resolution.* 3 credits.
Capstone course facilitating integration of learning in the graduate certificate in dispute resolution and appropriate mentored application and experiential learning. Offered by Conflict Analysis & Resolution. May not be repeated for credit.

Recommended Prerequisite: CONF 500

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Carter Peace Conflict Res college.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CONF 650: *Conflict Analysis and Resolution Advanced Skills.* 3 credits.
Introduces innovative practices and provides structure to reflect on and improve ability to work within conflict settings. Considers the intersection of theory and practice, with special attention to the challenges of translation, adaptation, and transfer of skills and models. Offered by Conflict Analysis & Resolution. May not be repeated for credit.

Recommended Prerequisite: CONF 501, CONF 600 or CONF 801.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Carter Peace Conflict Res or Health and Human Services colleges.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CONF 651: *Collaborative Community Action & Participatory Governance.* 3 credits.
Covers designing collaborative processes to work with diverse stakeholders to build meaningful and lasting shared agreements. Considers applications in land use, development, or other community planning contexts. Offered by Conflict Analysis & Resolution. May not be repeated for credit.

Specialized Designation: Green Leaf Related Course

Recommended Prerequisite: CONF 501, CONF 600, or CONF 801

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Carter Peace Conflict Res or Health and Human Services colleges.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CONF 652: *Conflict Analysis and Resolution for Prevention, Reconstruction, and Stabilization Contexts.* 3 credits.
Considers conflict analysis and resolution approaches to designing, implementing, and evaluating holistic cross-sectoral, conflict-sensitive initiatives in areas of potential violence and postconflict reconstruction and stabilization contexts. Offered by Conflict Analysis & Resolution. May not be repeated for credit.

Recommended Prerequisite: CONF 501, CONF 600, or CONF 801

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Carter Peace Conflict Res or Health and Human Services colleges.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CONF 653: *World Religions, Diplomacy, and Conflict Resolution.* 3 credits.
Analyzes ways world religions play role in conflicts, war, diplomacy, peacemaking, and conflict resolution. Offered by Conflict Analysis & Resolution. May not be repeated for credit.

Recommended Prerequisite: CONF 501, CONF 600, or CONF 801

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Carter Peace Conflict Res or Health and Human Services colleges.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CONF 654: *Mass Atrocity: Early Warning and Prevention.* 3 credits.
This course provides students with scholarly, practical, and relevant knowledge of Genocide and Atrocity Prevention. Students will analyze genocide and mass-atrocities as part of a spectrum of violence and conflict, and gain expertise in prevention mechanisms, including: early warning indicators, early prevention strategies, diplomacy, international justice, legal infrastructures, negotiation, mediation, humanitarian relief and intervention, civilian protection, and civil society-based solutions. Offered by Conflict Analysis & Resolution. May not be repeated for credit.

Recommended Corequisite: CONF 501 or CONF 600 or CONF 801

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CONF 657: *Facilitation Skills.* 3 credits.
Covers range of skills in group facilitation processes, with emphasis on conflict analysis and resolution approaches to improve group communication. Includes skill-building exercises. Offered by Conflict Analysis & Resolution. May not be repeated for credit.

Recommended Prerequisite: CONF 501, CONF 600, or CONF 801

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Carter Peace Conflict Res or Coll Nursing Health Science colleges.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CONF 658: *Diversity and Difference in Conflict Analysis and Resolution.* 3 credits.
Covers elements of cultural diversity, understanding, and awareness, as well as creative ways of approaching issues of diversity, identity, worldviews, and territory. Considers individuals, organizations, communities and nations. Offered by Conflict Analysis & Resolution. May not be repeated for credit.

Recommended Prerequisite: CONF 501, CONF 600, or CONF 801.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Carter Peace Conflict Res or Health and Human Services colleges.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CONF 659: *Leadership in Conflict Analysis and Resolution.* 3 credits.
Covers roles and styles of leadership in interpersonal, organizational, community, group, and international conflicts. Considers cultural roles of leaders as insider-partials, negotiators, facilitators, and mediators. Offered by Conflict Analysis & Resolution. May not be repeated for credit.

Recommended Prerequisite: CONF 501, CONF 600, or CONF 801

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Carter Peace Conflict Res or Health and Human Services colleges.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CONF 660: *Conflict Assessment and Program Evaluation.* 3 credits.
Covers assessment methods appropriate to conflict contexts and related evaluation approaches and techniques for use in areas of peace building, community processes, or interpersonal conflict. Offered by Conflict Analysis & Resolution. May not be repeated for credit.

Recommended Prerequisite: CONF 501 or 502. Concurrent enrollment is also permitted.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Carter Peace Conflict Res or Coll Nursing Health Science colleges.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CONF 661: *Program Design and Monitoring.* 3 credits.
This course provides an in-depth review of the core concepts, skills and practical strategies for peacebuilding program design and monitoring that ensures achieving the desired impact and outcome parameters. The course reviews core components of the program cycle, starting with theories of peacebuilding and change that underpin program design, including project aims, inputs, outputs, outcomes and impacts; and moving to decision-making regarding program monitoring and evaluation, emphasizing developing skills in different performance evaluation and impact designs approaches including snapshot, one sample, cross-sectional, before and after, time series, and case study designs. Offered by Conflict Analysis & Resolution. May not be repeated for credit.

Recommended Prerequisite: CONF 605, CONF 660

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Carter Peace Conflict Res college.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CONF 662: *Funding and Managing Peacebuilding Programming.* 3 credits.
This course delves into the practical fundraising and implementation challenges of peacebuilding programming. The course focuses on building philanthropic support, identifying funding sources, grant writing, donor/funder management best practices, budgeting, and financial reporting for peacebuilding projects and programming. Offered by Conflict Analysis & Resolution. May not be repeated for credit.

Recommended Prerequisite: CONF 605

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Carter Peace Conflict Res college.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CONF 665: *Special Topics in Conflict Analysis and Resolution.* 3 credits.
In-depth study of contemporary areas of conflict resolution practice. Notes: Fulfills elective requirement for certificate program. Topics vary. Offered by Conflict Analysis & Resolution. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: CONF 501 or CONF 600.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Carter Peace Conflict Res college.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CONF 668: *Applied Integration for Graduate Certificates.* 3 credits.
Capstone course facilitating integration of learning in the graduate certificate programs and appropriate mentored application and experiential learning. Offered by Conflict Analysis & Resolution. May not be repeated for credit.

Recommended Prerequisite: CONF 501; CONF 660; and CONF 650, 651, 652, or 653.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Carter Peace Conflict Res or Coll Nursing Health Science colleges.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CONF 670: *Conflict Sensitive and Inclusive Peacebuilding.* 3 credits.
Humanitarian, development and peacebuilding organizations and funders are increasingly concerned with designing and implementing projects that do not exacerbate conflict dynamics by using conflict sensitive, inclusive and ethical approaches. This course prepares students to develop and implement conflict-sensitive and inclusive programming by applying in-depth knowledge of conflict dynamics; understanding the interactions between interventions and the conflict context, ensuring that the interventions minimize potential negative impacts; adjusting programming to changing conflict dynamics; and increasing capacities of communities to adapt to change, become more resilient and reduce the likelihood of relapsing into violence. Offered by Conflict Analysis & Resolution. May not be repeated for credit.

Recommended Prerequisite: CONF 605

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Carter Peace Conflict Res college.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CONF 675: *Peacebuilding Capstone.* 3 credits.
This course is taken in conjunction with MA in Peacebuilding internship course. It is a structured opportunity for students to reflect on and learn from their real-world engagements in peacebuilding work. Students integrate peacebuilding theory and practice content together with their on the ground experience for final reflection and capstone project writing assignment. The course also explores and prepares students for the most effective ways of developing and pursuing career opportunities in the peacebuilding field. Offered by Conflict Analysis & Resolution. May not be repeated for credit.

Recommended Prerequisite: CONF 605, CONF 660, CONF 661, CONF 662, CONF 670

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Carter Peace Conflict Res college.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CONF 682: *Principles of Environmental Conflict Resolution.* 3 credits.
Explores the nature and characteristics of environmental conflict and efforts to manage, resolve or transform it. Students will develop a capacity to assess the strengths and weaknesses of environmental conflict resolution processes while learning about best practices for preventing, preparing for, and addressing environmental conflict. Offered by Conflict Analysis & Resolution. May not be repeated for credit. Equivalent to EVPP 682.

Specialized Designation: Green Leaf Related Course

Recommended Prerequisite: CONF 501, CONF 600, or CONF 801

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree, Undergraduate or Washington Consortium level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Carter Peace Conflict Res or Health and Human Services colleges.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CONF 683: *Environmental Conflict Resolution: Situation Assessment, Process Design and Best Practices.* 3 credits.
Explores best practices for managing, resolving, and transforming environmental conflict using environmental conflict resolution (ECR) processes. Nature and dynamics of environmental disputes, methods for assessing conflict situations, and methods for conducting various forms of ECR processes will be covered in the context of selected case studies with emphasis on student involvement. Offered by Conflict Analysis & Resolution. May not be repeated for credit. Equivalent to EVPP 683.

Specialized Designation: Green Leaf Related Course

Recommended Prerequisite: One of CONF 501, CONF 600, CONF 682 or EVPP 682

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Carter Peace Conflict Res or Health and Human Services colleges.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CONF 694: *Internship.* 1-6 credits.
Students are expected to mesh theory and practice through observation and experience. Includes comprehensive report analyzing experiences. For 3 credits of internship students must complete 160 hours of work on site. Students must receive permission of the Internship Coordinator prior to registering. Notes: Under direction of internship coordinator, students spend at least 160 hours on project involving study, resolution of conflict for each 3-credit internship. Offered by Conflict Analysis & Resolution. May be repeated within the term for a maximum 9 credits.

Recommended Prerequisite: 21 credits, including CONF 657.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Enrollment is limited to Graduate or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Carter Peace Conflict Res, Coll Nursing Health Science or Health and Human Services colleges.

Schedule Type: Internship

Grading:
This course is graded on the Graduate Special scale.

CONF 695: *Selected Topics.* 3 credits.
Topics vary; announced each academic year. Offered by Conflict Analysis & Resolution. May be repeated within the term for a maximum 12 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: CONF 501, CONF 600 or CONF 801

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Carter Peace Conflict Res, Coll Nursing Health Science or Health and Human Services colleges.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CONF 697: *Directed Readings and Research.* 1-6 credits.
Independent reading at master's level on specific topic related to conflict analysis and resolution, as agreed to by student and faculty member. Offered by Conflict Analysis & Resolution. May be repeated within the term for a maximum 6 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: CONF 501 or CONF 600

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Carter Peace Conflict Res, Coll Nursing Health Science or Health and Human Services colleges.

Schedule Type: Research

Grading:
This course is graded on the Graduate Regular scale.

700 Level Courses

CONF 702: *Peace Studies.* 3 credits.
Examines diverse meanings of peace, conflict, and violence, and then reviews different issues relevant to understanding peace and conflict, including the sources of war, poverty and economic disparities, and ecological degradation. Other topics to be covered are peace keeping, peace building, sustainable development, ecological preservation, nonviolence, and peace movements. Offered by Conflict Analysis & Resolution. May not be repeated for credit.

Specialized Designation: Green Leaf Focused Course

Recommended Prerequisite: CONF 501, CONF 600 or CONF 801.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Carter Peace Conflict Res, Coll Nursing Health Science or Health and Human Services colleges.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CONF 704: *Narrative Approaches to Conflict Analysis.* 3 credits.
This course provides participants with the analytic tools needed to conduct their own research on conflict and conflict resolution, using a narrative perspective. This course enables students to a) review the key narrative research in the field of conflict resolution; b) design a narrative analysis of conflict; c) conduct a narrative analysis of conflicts. Offered by Conflict Analysis & Resolution. May not be repeated for credit.

Recommended Corequisite: CONF 501, CONF 600, or CONF 801.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Carter Peace Conflict Res college.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CONF 705: *Conflict and Discourse Analysis.* 3 credits.
The study of discourse, culture, narratives and public interpretations are becoming ever more important to the field of Conflict Analysis and Resolution. In this class we explore these concepts as they have been used in cutting edge approaches to the analysis and resolution of conflict. Offered by Conflict Analysis & Resolution. May not be repeated for credit.

Recommended Prerequisite: CONF 501, CONF 600, or CONF 801

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Carter Peace Conflict Res college.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CONF 706: *Ethics and Conflict.* 3 credits.
Students explore issues and controversies in our field about what is just and unjust, morally right and wrong, and good and bad. Such issues are relevant to analysis and practice before, during, after the occurrence of conflict; the major topics include: validity of pacifism, the notions of a just war, the challenges of genocide prevention, non-violent resistance, humanitarian interventions, and human rights activism. Offered by Conflict Analysis & Resolution. May not be repeated for credit.

Recommended Prerequisite: CONF 501, CONF 600, or CONF 801.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Carter Peace Conflict Res or Health and Human Services colleges.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CONF 707: *Gender and Violence.* 3 credits.
This course will address gendered dimensions of violent conflict and its transformation. Key themes to be explored include gender and post-conflict justice and reconciliation; the gendered politics of memory, speech and representation; militarism and masculinity; sexual violence and discourses of trauma, victimization and agency; and the ethics and politics of analytic and practice approaches. Case studies will include the partition of India/Pakistan; wartime sexual assault in Bosnia/the DRC; and domestic violence in the U.S. and South Asia. Offered by Conflict Analysis & Resolution. May not be repeated for credit.

Recommended Prerequisite: CONF 501, CONF 600, or CONF 801.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Carter Peace Conflict Res or Health and Human Services colleges.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CONF 708: *Identity and Conflict.* 3 credits.
Explores complex interrelations of social identity and postmodern conflicts in society. Emphasizes the role of identity in processes of conflict resolution and transformation. Critical rethinking of ethnic, national, and religious identities as both generators and outcomes of conflict are an important part of the course. Extends knowledge on structure and dynamics of identity-based conflicts and develops a framework for their resolution. Course includes lectures, simulations, and case studies. Offered by Conflict Analysis & Resolution. May not be repeated for credit.

Recommended Prerequisite: CONF 501, CONF 600, or CONF 801.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Carter Peace Conflict Res college.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CONF 720: *Ethnic and Cultural Factors in Conflict Resolution.* 3 credits.
Examines the role culture plays in genesis, structuring, and resolution of processes of conflict within and between groups. Special attention to ethnicity and other subcultural markers of identity in complex social systems as generators and outcomes of conflict. Explores relevance of variables to success or failure of conflict resolution. Offered by Conflict Analysis & Resolution. May not be repeated for credit.

Recommended Prerequisite: CONF 501, CONF 600, or CONF 801.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Carter Peace Conflict Res, Coll Nursing Health Science or Health and Human Services colleges.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CONF 721: *Conflict and Race.* 3 credits.
Addresses historic analyses of racial and ethnic identity conflicts and their resolution. Offered by Conflict Analysis & Resolution. May not be repeated for credit.

Recommended Prerequisite: CONF 501, CONF 600, or CONF 801.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Carter Peace Conflict Res, Coll Nursing Health Science or Health and Human Services colleges.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CONF 722: *Conflict and Religion.* 3 credits.
Explores role of religious ideas, practices, and organizations in conflict, war, peace making, and conflict resolution. Offered by Conflict Analysis & Resolution. May not be repeated for credit.

Recommended Prerequisite: CONF 501, CONF 600, or CONF 801.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Carter Peace Conflict Res, Coll Nursing Health Science or Health and Human Services colleges.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CONF 723: *Conflict and Gender.* 3 credits.
Examines constructs of gender and conflict as they relate to critical analysis of theory and practice. Reviews feminist theories for contributions to social and conflict theories. Uses narratives to explore how gender, power dynamics interact in conflict. Offered by Conflict Analysis & Resolution. May not be repeated for credit.

Recommended Prerequisite: CONF 501, CONF 600, or CONF 801.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Carter Peace Conflict Res, Coll Nursing Health Science or Health and Human Services colleges.

Schedule Type: Seminar

Grading:

This course is graded on the Graduate Regular scale.

CONF 725: *Conflict and Spirituality.* 3 credits.
Explores the relationship of spirituality to the dynamics of conflicts and conflict resolution. Offered by Conflict Analysis & Resolution. May not be repeated for credit.

Recommended Prerequisite: CONF 501, CONF 600, or CONF 801.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Carter Peace Conflict Res, Coll Nursing Health Science or Health and Human Services colleges.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CONF 726: *Moral and Philosophical Foundations of Conflict.* 3 credits.
Explores major historical and contemporary positions on the intellectual, moral, and religious foundations for analyzing and resolving conflict. Enhances critical abilities in metacritique, dialectics, and intellectual self-appropriation. Offered by Conflict Analysis & Resolution. May not be repeated for credit.

Recommended Prerequisite: CONF 501, CONF 600, or CONF 801.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Carter Peace Conflict Res, Coll Nursing Health Science or Health and Human Services colleges.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CONF 727: *Ethnographic Methods for Conflict Analysis and Resolution.* 3 credits.
Looks at how ethnographic tools can be used for conflict analysis. Offered by Conflict Analysis & Resolution. May not be repeated for credit.

Recommended Prerequisite: CONF 501, CONF 600, or CONF 801.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Carter Peace Conflict Res, Coll Nursing Health Science or Health and Human Services colleges.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CONF 728: *Human Rights Theory and Practice in Comparative Perspective.* 3 credits.
Introduces major controversies and debates surrounding use of human rights theory and practice cross-culturally. After basic study of human rights philosophy, uses case studies from around the world to examine problems and potential of human rights in today's globalized world. Offered by Conflict Analysis & Resolution. May not be repeated for credit.

Recommended Prerequisite: CONF 501, CONF 600, or CONF 801.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Carter Peace Conflict Res, Coll Nursing Health Science or Health and Human Services colleges.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CONF 730: *Structural Sources of Conflict.* 3 credits.
Examines how structures and institutions affect behavior and give rise to conflictual relationships at all social levels, from interpersonal to the international. Explores role of conflict resolution as political process providing opportunities for nonviolent system change. Offered by Conflict Analysis & Resolution. May not be repeated for credit.

Recommended Prerequisite: CONF 501, CONF 600, or CONF 801.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Carter Peace Conflict Res, Coll Nursing Health Science or Health and Human Services colleges.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CONF 731: *Conflict in Organizations.* 3 credits.
Explores intersection and dynamics of organizational behavior and dimensions of conflict. Involves theoretical perspectives and cases examining conflict analysis and resolution. Practices strategies for prevention and intervention. Field research in greater metropolitan area integrates course content. Offered by Conflict Analysis & Resolution. May not be repeated for credit.

Recommended Prerequisite: CONF 501, CONF 600, or CONF 801.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Carter Peace Conflict Res, Coll Nursing Health Science or Health and Human Services colleges.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CONF 732: *Conflict in Development.* 3 credits.
Examines the relationship between processes of political and economic change and conflict; the relationship between democratization and

conflict; the relationship between structural adjustment policies and conflict; and the challenges of postconflict reconstruction. Offered by Conflict Analysis & Resolution. May not be repeated for credit.

Recommended Prerequisite: CONF 501, CONF 600, or CONF 801.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Carter Peace Conflict Res, Coll Nursing Health Science or Health and Human Services colleges.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CONF 733: *Law and Justice from a Conflict Perspective.* 3 credits.
Contrasts legal processes and institutions with alternative approaches to dispute resolution. Defines and distinguishes among law, "alternative dispute resolution," and problem-solving analysis as methods for resolving rather than controlling conflict. Examines to what extent legal procedures are truly applicable to resolving deep-rooted conflict. Offered by Conflict Analysis & Resolution. May not be repeated for credit.

Recommended Prerequisite: CONF 501, CONF 600, or CONF 801.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Carter Peace Conflict Res, Coll Nursing Health Science or Health and Human Services colleges.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CONF 736: *Globalization and International Conflict.* 3 credits.
Explores economic, political, social, and cultural meanings of globalization; how they affect conflict processes at international level; and when and under what conditions globalization promotes cooperation or conflict. Offered by Conflict Analysis & Resolution. May not be repeated for credit.

Recommended Prerequisite: CONF 501, CONF 600, or CONF 801.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Carter Peace Conflict Res, Coll Nursing Health Science or Health and Human Services colleges.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CONF 741: *Negotiating in Complex Systems.* 3 credits.
The ability to negotiate and manage conflicts effectively has become an essential skill in our organizational and personal settings, as well as in international diplomacy. Negotiation is the art and science of securing an agreement between two or more independent parties. This course reviews the wide variety of approaches to the analysis and practice of negotiation and is intended to provide a solid foundation for further inquiry and application. Students will learn the history of thinking about negotiation, how different cultures influence conflict, frameworks for analyzing negotiation, and the roles of various factors (influences and contexts, tactics and strategies) on the negotiation process and outcome. Offered by Conflict Analysis & Resolution. May not be repeated for credit.

Recommended Prerequisite: CONF 500, CONF 501, CONF 600 or CONF 801

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Carter Peace Conflict Res, Coll Nursing Health Science or Health and Human Services colleges.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CONF 747: *Reconciliation.* 3 credits.
Explores processes of acknowledgment, reconciliation, forgiveness, and restitution. Reviews literature, case studies, and other research to assess applicability and impact of these efforts. Offered by Conflict Analysis & Resolution. May not be repeated for credit.

Recommended Prerequisite: CONF 501, CONF 600, or CONF 801.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Carter Peace Conflict Res, Coll Nursing Health Science or Health and Human Services colleges.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CONF 751: *Dynamics of Civil Wars.* 3 credits.
Civil wars represent some of the most vexing challenges to peace in the contemporary world. In this seminar we investigate approaches to understanding the grievances and root causes of civil wars but also new research on the political economy of civil war, organizational characteristics of insurgent movements, how rebels and civilians interact during wartime, and how transnational processes shape civil wars. A better understanding of these structures and dynamics is essential to better peacebuilding in the context of internal conflicts. Offered by Conflict Analysis & Resolution. May not be repeated for credit.

Recommended Prerequisite: CONF 501, CONF 600, or CONF 801.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Carter Peace Conflict Res or Health and Human Services colleges.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CONF 752: *Dynamics of Post-War Peacebuilding.* 3 credits.
This seminar examines the processes of war termination and comparative peace processes; components and dynamics of peacebuilding and the relationships among peacebuilding, democratization, and state-building; roles of third parties in promoting negotiations, peace implementation and sustainable peacebuilding, reconciliation and reconstruction. Offered by Conflict Analysis & Resolution. May not be repeated for credit.

Recommended Prerequisite: CONF 501, CONF 600, or CONF 801. CONF 751 recommended.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Carter Peace Conflict Res or Health and Human Services colleges.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CONF 754: *Micro-theories of Conflict.* 3 credits.
The goal of this course is to explore theoretical approaches to psychological processes, personality, in-group and intergroup dynamics, and social processes in the society as a whole with the emphasis on their role in the processes of conflict resolution and transformation. Critical understanding of psychological and socio-psychological phenomena as both generators and outcomes of conflict will be an important part of the course. This course has three main parts: psychological processes, approaches to person, and group processes and society. Offered by Conflict Analysis & Resolution. May not be repeated for credit.

Recommended Prerequisite: CONF 501, CONF 600, or CONF 801.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Carter Peace Conflict Res or Health and Human Services colleges.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CONF 755: *Transforming Conflict through Insight.* 3 credits.
The Insight approach is best understood as an applied human science. Like other applied sciences, it requires students to master an explanatory framework that enables them to frame their questions, formulate their hypotheses, verify their findings, and plan their actions. Thus, the course is designed follow an activity-based, problem-solving approach to learning and using the Insight approach. The objective is to enable students to master the Insight approach by putting it to work, with course meetings build around analytical exercises and activities designed to illuminate assigned readings. Offered by Conflict Analysis & Resolution. May not be repeated for credit.

Recommended Prerequisite: CONF 501, CONF 600, or CONF 801.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Carter Peace Conflict Res or Health and Human Services colleges.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CONF 756: *Addressing Intractable Conflict.* 3 credits.
This course is about the biggest problems facing our communities, our nation, and our world today. Our communities, our nations (the US and others), and the world have proven remarkably unable to "solve" any of these problems. Why? We assert it is because they are all underlain by a more fundamental problem the inability to constructively deal with difficult and intractable conflicts. These conflicts prevent us as individuals, organizations, and governments (at all levels) from making wise decisions or taking effective action that will address any of these pressing problems. Offered by Conflict Analysis & Resolution. May not be repeated for credit.

Recommended Prerequisite: CONF 501, CONF 600, or CONF 801.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Carter Peace Conflict Res or Health and Human Services colleges.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CONF 757: *Conflict and Literature.* 3 credits.
The purpose of this course is to teach students to read/interpret written and oral texts; explore what imaginative literature can teach us about the causes, motives, dynamics, and possibilities of resolving violent social conflicts; deepen our understanding of the human dimensions of conflicts involving mass movements for social transformation; and practice creating imaginative works of our own. Offered by Conflict Analysis & Resolution. May not be repeated for credit.

Recommended Prerequisite: CONF 501, CONF 600, CONF 801.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Carter Peace Conflict Res college.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CONF 758: *Social Dynamics of Terrorism.* 3 credits.
Presents students with analytical frameworks to account for terrorist acts and organizations and explore social dynamics underlying the development of, and response to, terrorism. Topics may include recruitment into violent groups, counterterrorism and human rights concerns, role of religious and political ideologies in terrorism and counterterrorism, media coverage of terrorism, and effects of terrorism on social structures and processes. Offered by Conflict Analysis & Resolution. May not be repeated for credit.

Recommended Prerequisite: CONF 501, CONF 600, CONF 801.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Carter Peace Conflict Res or Health and Human Services colleges.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CONF 759: *Building Peace in Divided Societies.* 3 credits.
Explores the roots of peacebuilding as a conflict resolution strategy in terms of changes over time, basic assumptions underpinning the emergence and continuance of conflict, building peace, and challenges to community participation as well as varied reactions to the building peace enterprise. The tensions theoretically and practically between building peace and continuity of the conflictual status quo will be explored in detail throughout the course. The focus on communities intersects and often conflicts with the more prominent global peacebuilding frame, often considered an elite endeavor as well as the political economy of the status quo as evidenced in the United States. Why, for example, does the term peacebuilding not appear regularly when considering domestic US conflict and its effects? There are, of course, more questions than answers. However, the focus of the course is to expand our thinking, conceptualizing, and theorizing regarding the current state of peacebuilding. Offered by Conflict Analysis & Resolution. May not be repeated for credit.

Recommended Prerequisite: CONF 501, CONF 600, or CONF 801.

Registration Restrictions:
Enrollment is limited to students with a major in Conf Analysis Resolution.

Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CONF 795: *Professional Development Seminars.* 1-3 credits.
These 1- and 2-credit courses are scheduled non-conventionally using weekends, concentrated presentations, and intersession periods to develop advanced professional skills. Possible topics include marketing conflict resolution services, academic course design, training design, mediation, facilitation, family practice, fundraising, writing for publication, advanced field research techniques, and grassroots applications of conflict resolution. Offered by Conflict Analysis & Resolution. May be repeated within the term for a maximum 6 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: CONF 501, CONF 600, or CONF 801.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Carter Peace Conflict Res, Coll Nursing Health Science or Health and Human Services colleges.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CONF 797: *Proposal Development.* 1 credit.
Covers development of research proposal for master's thesis, including framing a question, literature review, and designing appropriate methodology. Students form master's thesis committee and review Human Subjects Review Board's guidelines and procedures. Offered by Conflict Analysis & Resolution. May not be repeated for credit.

Recommended Prerequisite: CONF 600 and CONF 610.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Carter Peace Conflict Res or Health and Human Services colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Satisfactory/No Credit scale.

CONF 799: *Thesis.* 1-6 credits.
Two semesters, usually taken as 3 credits per semester. Original research or analysis under direction of thesis committee. Contact the Graduate Advisor for registration code. Offered by Conflict Analysis & Resolution. May be repeated within the degree.

Recommended Prerequisite: CONF 600 and CONF 610

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Carter Peace Conflict Res, Coll Nursing Health Science or Health and Human Services colleges.

Schedule Type: Thesis

Grading:
This course is graded on the Satisfactory/No Credit scale.

800 Level Courses

CONF 801: *Introduction to Conflict Analysis and Resolution.* 3 credits.
Introduces field of conflict analysis and resolution for doctoral students. Examines definitions of conflict and diverse views of resolution. Explores

thinking about human behavior and social systems as they relate to origins and role of conflict in violent and peaceful social change. Considers appropriate responses to conflict at interpersonal, intergroup, industrial, communal, and international levels. Notes: Prerequisite or corequisite for all PhD CONF students. Offered by Conflict Analysis & Resolution. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to students with a major in Conf Analysis Resolution.

Enrollment limited to students in a Doctor of Philosophy degree.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CONF 802: *Theories of the Person.* 3 credits.
Understanding human conflict requires knowledge of human behavior, motivation, and perception. Reviews and critically analyzes several psychological theories for application to conflict analysis and resolution theory and practice. Offered by Conflict Analysis & Resolution. May not be repeated for credit.

Recommended Prerequisite: CONF 801. Concurrent enrollment is also permitted.

Registration Restrictions:
Enrollment is limited to students with a major in Conf Analysis Resolution.

Enrollment limited to students in a Doctor of Philosophy degree.

Enrollment limited to students in the Carter Peace Conflict Res or Health and Human Services colleges.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CONF 803: *Structural Theories.* 3 credits.
Understanding social conflict and potential for conflict resolution requires that both conflict and cooperation be perceived in relation to patterns of social change. Reviews and critiques significant theories of social change to establish a basis for creative conflict analysis and resolution. Offered by Conflict Analysis & Resolution. May not be repeated for credit.

Recommended Prerequisite: CONF 801. Concurrent enrollment is also permitted.

Registration Restrictions:
Enrollment is limited to students with a major in Conf Analysis Resolution.

Enrollment limited to students in a Doctor of Philosophy degree.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CONF 804: *Alternate Theoretical Foundations.* 3 credits.
Familiarizes students with the ideas generated by the Frankfurt School of social theorists and others who have extended or altered these ideas. Students will use these insights to deepen an understanding of serious social conflicts and to explore the implications of critical theories for conflict resolution processes. Offered by Conflict Analysis & Resolution. May not be repeated for credit.

Recommended Corequisite: CONF 801.

Registration Restrictions:
Enrollment limited to students in the CA-PHD-CONF program.

Enrollment is limited to Graduate level students.

Enrollment limited to students in a Doctor of Philosophy degree.

Enrollment limited to students in the Carter Peace Conflict Res college.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CONF 811: *Quantitative Foundations.* 3 credits.
Building on logic of inquiry, introduces steps in research process to prepare dissertation and implement published research. Covers wide array of quantitative research approaches in social sciences, with emphasis on conflict analysis. Offered by Conflict Analysis & Resolution. May not be repeated for credit.

Recommended Prerequisite: CONF 801

Registration Restrictions:
Enrollment limited to students in the CA-PHD-CONF program.

Enrollment is limited to Graduate level students.

Enrollment limited to students in the Carter Peace Conflict Res, Coll Nursing Health Science or Health and Human Services colleges.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CONF 812: *Qualitative Foundations: Social Sciences.* 3 credits.
Continuation of steps in research process to prepare dissertation and implement published research. Builds on CONF 811 by examining qualitative research approaches used in social sciences, with emphasis on conflict analysis. Offered by Conflict Analysis & Resolution. May not be repeated for credit.

Recommended Prerequisite: CONF 801

Registration Restrictions:
Enrollment is limited to students with a major in Conf Analysis Resolution.

Enrollment limited to students in a Doctor of Philosophy degree.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CONF 813: *Qualitative Foundations: Humanities.* 3 credits.
Explores qualitative research design as it pertains to the humanities, including the methods and epistemology behind the various issues likely to emerge in the process of conducting research. In addition to material

on research design and methodology, reading assignments include several monographs that employ different qualitative methodologies. Offered by Conflict Analysis & Resolution. May not be repeated for credit.

Recommended Prerequisite: CONF 801.

Registration Restrictions:
Enrollment is limited to students with a major in Conf Analysis Resolution.

Enrollment limited to students in a Doctor of Philosophy degree.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CONF 820: *Reflective Practice in Interpersonal-Multiparty Conflicts.* 3 credits.
Introductory skill-building course integrating conflict theory and practice using reflective practitioner model. Students learn necessary skills for third-party facilitation and mediation, including active listening, empathy, paraphrasing, reframing, and negotiation, in addition to analytical skills of problem solving and creation of transformational processes. Cases for practice focus on interpersonal and intergroup conflict. Offered by Conflict Analysis & Resolution. May not be repeated for credit.

Recommended Corequisite: CONF 801.

Registration Restrictions:
Enrollment is limited to students with a major in Conf Analysis Resolution.

Enrollment limited to students in a Doctor of Philosophy degree.

Schedule Type: Laboratory

Grading:
This course is graded on the Graduate Regular scale.

CONF 897: *Directed Reading.* 1-6 credits.
Independent reading at doctoral level on a specific topic related to conflict and conflict resolution as agreed to by student and faculty member. Offered by Conflict Analysis & Resolution. May be repeated within the term for a maximum 6 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment is limited to students with a major in Conf Analysis Resolution.

Enrollment limited to students in a Doctor of Philosophy degree.

Schedule Type: Research

Grading:
This course is graded on the Graduate Regular scale.

900 Level Courses

CONF 998: *Doctoral Dissertation Proposal.* 1-6 credits.
Work on research proposal that forms basis for doctoral dissertation. Offered by Conflict Analysis & Resolution. May be repeated within the degree.

Recommended Prerequisite: Successful completion of comprehensive exam.

Registration Restrictions:
Enrollment limited to students in a Doctor of Philosophy degree.

Enrollment limited to students in the Carter Peace Conflict Res, Coll Nursing Health Science or Health and Human Services colleges.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

CONF 999: *Doctoral Dissertation Research.* 1-12 credits.
Research on approved dissertation topic under direction of committee. Student's dissertation proposal must be approved before registering for 999. Notes: At least 12 credits of 998 and 999 must be accumulated toward degree. Offered by Conflict Analysis & Resolution. May be repeated within the degree.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy.

Enrollment limited to students in a Doctor of Philosophy degree.

Enrollment limited to students in the Carter Peace Conflict Res, Coll Nursing Health Science or Health and Human Services colleges.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

Conservation Studies (CONS)

100 Level Courses

CONS 100: *Introduction to Field Conservation Ecology.* 2 credits.
In this immersive 1-week experience, high school students will acquire firsthand exposure to fieldwork in conservation and how conservation professionals contribute to survival of species in natural habitats. Through a combination of lectures, discussions, fieldwork and outdoor adventure students will be introduced to major concepts of ecology (including diversity, succession, species interactions, communities, populations and ecosystems) in the context of species and habitat conservation. Offered by Provost's Office. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CONS 110: *Special Topics in Conservation.* 1-3 credits.
Students acquire first-hand exposure to a specific topic in conservation and how conservation professionals contribute to the long-term survival of species. Through a combination of lectures, discussions, and field/lab work, students explore current questions, methods and applications related to a particular topic in conservation. Course Format: Sections of this Smithsonian-Mason School of Conservation course will be taught as an intensive, mixed-format (lectures, lab exercises, field exercises) offerings, in residential, full-day, 1-3-week sessions held at the 3,200 acre Smithsonian Conservation Biology Institute in Front Royal, VA. Students may also be required to complete pre-course reading assignments, and carry out and submit final projects during (or within six weeks after) the

onsite session. Offered by Provost's Office. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CONS 120: *Wicked Problems and Grand Challenges.* 3 credits.
Wicked Problems and Grand Challenges focuses on teaching principals and practice of next generation approaches for conservation and development with a problem-oriented approach. This course will review how we may harness the power of emerging exponential technologies (e.g. gene editing, machine vision, and robotics), open innovation (e.g. prizes, challenges, mass collaboration, and citizen science), and entrepreneurship (e.g. for-profit, hybrid, and open source models for scale) inside both the public and private sector to transform the efficacy and scale of conservation and development efforts. This course will review the current problem sets in conservation and development, rethink assumptions regarding how to address them, and consider real case examples of successes and failures. Finally, we will also bring in select leading social innovators and development experts who have pioneered new approaches to wicked problems. Offered by Provost's Office. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

200 Level Courses

CONS 201: *How to Succeed in Conservation.* 2 credits.
Develops professional and personal skills needed to succeed in the field of conservation. Gives an overview of best practices in conservation, as well as self-promotion and professional engagement skills (networking, social media use, online presence). Skills learned include leadership, communication, community engagement, outreach, social marketing, and conflict resolution. Introduces the range of careers and integration of disciplines in conservation. Offered by Provost's Office. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CONS 210: *Inquiry and Design.* 3 credits.
This course builds skills in scientific inquiry and experimental design as it relates to biodiversity conservation. Students will be introduced to the scientific method and how to select research questions. They will develop an independent project enabling them to practice developing a hypothesis, design a study, perform a literature review, collect and analyze original data using summary statistics, and present their findings to their peers. This class will build from the CONS 120 Grand Challenges in Conservation course and introduce methods from social sciences and quantitative analysis, to enable students to decide which follow-up data analysis course is most appropriate for their interests. Offered by Provost's Office. Limited to three attempts.

Registration Restrictions:
Required Prerequisite: CONS 120[C].
[C] Requires minimum grade of C.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

300 Level Courses

CONS 320: *Conservation in Practice.* 3 credits.
Work with a conservation mentor in a practicum experience. Create a portfolio documenting professional development. Notes: Must be taken concurrently with CONS 401, CONS 402, CONS 410, and CONS 490 Offered by Provost's Office. Limited to three attempts.

Recommended Prerequisite: A college level biological or

Recommended Corequisite: environmental science course. CONS 401, CONS 402, CONS 410, and CONS 490.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CONS 360: *Qualitative Research and Inquiry.* 3 credits.
This course introduces students to qualitative research and inquiry related to the social and biological aspects of biodiversity conservation. Students will develop understanding of qualitative research methodology and data collection through case studies of empirical research about contemporary issues. Students will examine the diverse foundational assumptions, project designs, methods of acquiring data, analytical techniques, interpretive strategies, and ethical and political considerations that characterize contemporary research in this field today. Offered by Provost's Office. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (BIOL 214[C] or STAT 250[C]).
[C] Requires minimum grade of C.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

CONS 400: *Conservation Seminar.* 2 credits.
Examines key conservation issues, based on readings and discussions from the primary literature. Teaches professional development skills for scientists in conservation including fundraising, poster presentations, and interpretation of findings for diverse audiences. Develops skills for obtaining internships, jobs, or graduate positions. Offered by Provost's Office. May be repeated within the degree for a maximum 6 credits. Equivalent to BIOL 351.

Specialized Designation: Mason Impact.

Registration Restrictions:
Required Prerequisites: (BIOL 308[C], 308[XS], EVPP 301[C], 301[XS], 302[C], 302[XS], BIOL 377[C], 377[XS], EVPP 377[C], 377[XS], INTS 401[C] or 401[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

CONS 401: *Conservation Theory.* 3 credits.
Introduces the field of conservation biology and science-based management of threatened wildlife, habitats, and human landscapes. Provides theoretical background for understanding the importance of biodiversity conservation and sustainability. Notes: Must be taken concurrently with CONS 320, CONS 402, CONS 410, and CONS 490. Students cannot get credit for this course and Biology 318 or NCLC 401. Offered by Provost's Office. Limited to three attempts.

Specialized Designation: Green Leaf Related Course, Mason Impact.

Recommended Prerequisite: A college level biological or

Recommended Corequisite: environmental science course. CONS 320, CONS 402, CONS 410, and CONS 490.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CONS 402: *Applied Conservation.* 4 credits.
A practical scientific approach to the nature of biodiversity and species loss. Students participate in field conservation exercises in a variety of settings, as well as endocrine and reproductive technology labs. Students apply field and laboratory experiences to understanding science's connection to management decision-making for conservation. Notes: Must be taken concurrently with CONS 320, CONS 401, CONS 410, and CONS 490. Offered by Provost's Office. Limited to three attempts.

Specialized Designation: Green Leaf Related Course, Mason Impact.

Recommended Prerequisite: A college level biological or

Recommended Corequisite: environmental science course. CONS 320, CONS 401, CONS 410, and CONS 490.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CONS 404: *Biodiversity Monitoring.* 4 credits.
Covers the assessment, monitoring and conservation of species and habitats as well as the tools for sampling species and habitats and the evaluation of those tools' effectiveness. Students use this practical, hands-on knowledge to prepare a series of reports and recommendations for future work. This practical, hands-on knowledge is used to prepare plans and recommendations for future work. Offered by Provost's Office. Limited to three attempts. Equivalent to BIOL 352.

Specialized Designation: Green Leaf Related Course

Registration Restrictions:
Required Prerequisites: (BIOL 308[C], 308[XS], EVPP 301[C], 301[XS], 302[C], 302[XS], BIOL 377[C], 377[XS], EVPP 377[C], 377[XS], INTS 401[C] or 401[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CONS 405: *Landscape and Macrosystems Ecology.* 4 credits.
Identify and characterize patterns in landscapes, investigate how they form and change over time, and consider anthropogenic influences. Model populations and communities across landscapes, and consider ways of managing them to achieve goals in managing species and ecosystem processes at local, regional, and continental scales. Offered by Provost's Office. Limited to three attempts.

Specialized Designation: Mason Impact.

Registration Restrictions:
Required Prerequisites: (BIOL 308[C], 308[XS], EVPP 301[C], 301[XS], 302[C], 302[XS], BIOL 377[C], 377[XS], EVPP 377[C], 377[XS], INTS 401[C] or 401[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CONS 406: *Small Population Management.* 4 credits.
Investigates species vulnerability to extinction and the methodologies of preserving genetic diversity in small populations, both in the wild and in captivity. Teaches modeling and laboratory techniques that promote successful captive breeding, such as hormone analysis and assisted reproductive techniques, as well as working with data in R. Examines captive species in the Smithsonian Conservation Biology Institute to learn husbandry practices and skills from keepers and biologists. Offered by Provost's Office. Limited to three attempts.

Specialized Designation: Mason Impact.

Registration Restrictions:
Required Prerequisites: (BIOL 308[C], 308[XS], EVPP 301[C], 301[XS], 302[C], 302[XS], BIOL 377[C], 377[XS], EVPP 377[C], 377[XS], INTS 401[C] or 401[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CONS 410: *Human Dimensions in Conservation.* 3 credits.
Provides sociological, local and global perspectives on conservation issues including adaptive management, conflict resolution, environmental economics, sustainability, public policy, environmental values and public opinion, and conservation ethics. Notes: Must be taken concurrently with CONS 320, CONS 401, CONS 402, and CONS 490. Offered by Provost's Office. Limited to three attempts.

Mason Core: Social/Behavioral Sciences, Encore: Sustainability

Specialized Designation: Green Leaf Focused Course, Mason Impact.

Recommended Prerequisite: A college level biological or

Recommended Corequisite: environmental science course. CONS 320, CONS 401, CONS 402, and CONS 490.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CONS 440: *Ecology Field Skills.* 4 credits.
Directed field studies emphasizing ecology and behavior. Topics vary but include design of field manipulation , data collection and analysis, and introduction to organisms of study site. May include field trips. Offered by Provost's Office. Limited to three attempts. Equivalent to BIOL 357, EVPP 440.

Recommended Prerequisite: BIOL308 or BIOL310 (or equivalent course), or INTS 401 Conservation Biology

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CONS 460: *Statistics and Study Design in Ecology and Conservation.* 3 credits.
An understanding of statistics and study design is essential to success in the fields of ecology and conservation. However, many of the analyses of greatest utility for ecological data are frequently unable to be addressed in introductory courses, while advanced courses often delve deeply into a limited set of techniques. This course bridges this gap: building on knowledge obtained in introductory courses, additional techniques appropriate to many forms of ecological data and more advanced approaches will be introduced. This course will address the fundamentals of study design, linking choices made when establishing a research project to the types of analyses appropriate to the chosen design. Emphasis will be placed on understanding the output of analyses, and separating statistical significance from biological or ecological significance. Additionally, skills in data manipulation, analyses, and graphics using the R statistical computing environment will be developed. Offered by Provost's Office. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (BIOL 214[C], 214[XS], SOCI 313[C], 313[XS], STAT 250[C], 250[XS], CONS 404[C] or 404[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CONS 480: *Primate Behavior, Ecology and Conservation.* 3 credits.
Using primates as a focal taxon, this two-week course examines the theoretical background on how ecology, behavior, and life history influence primate abundance, distribution, and population dynamics. Teaches data collection methods for primate behavior studies, survey methods and habitat assessment techniques. Topics include several conservation-related case studies. Includes the development of a research proposal concerning primate socio-ecological strategies to address larger conservation issues. Notes: Students have the option to register for an “add-on” field experience course, CONS 497 “Primate Behavior and Conservation in Peru”, through the Mason Study Abroad Global Education Office (GEO). In this course, students conduct independent research on primate species in the wild. The course takes place at the Los Amigos Biological Research Station in Peru. Offered by Provost's Office. Limited to three attempts.

Recommended Prerequisite: This course is open to 3rd and 4th year undergraduate students who have obtained a minimum GPA of 2.25. The course is also open to recent graduates, non-degree seeking students and non-Mason students.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CONS 490: *RS: Integrated Conservation Strategies.* 3 credits.
Integrates the course work of the Smithsonian-Mason Semester through study of current conservation issues. Students incorporate interdisciplinary aspects of conservation into a summative group case study on a chosen conservation issue and present formally before a faculty panel. Notes: Must be taken concurrently with CONS 320, CONS 401, CONS 402, and CONS 410. Offered by Provost's Office. Limited to three attempts.

Mason Core: Encore: Sustainability, Synthesis

Specialized Designation: Green Leaf Related Course, Research/ Scholarship Intensive

Recommended Prerequisite: A college level biological or

Recommended Corequisite: environmental science course. CONS 320, CONS 401, CONS 402, and CONS 410.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CONS 491: *RS: Conservation Management Planning.* 4 credits.
Explores strategies and decisions that help secure the long-term survival of threatened species and habitats. Focuses on the planning tools necessary to define and set conservation goals and quantitatively assess species and areas of conservation value and prioritization. Offered by Provost's Office. Limited to three attempts.

Mason Core: Encore: Sustainability, Synthesis

Specialized Designation: Green Leaf Related Course, Research/ Scholarship Intensive

Registration Restrictions:
Required Prerequisites: (BIOL 308[C], 308[XS], EVPP 301[C], 301[XS], 302[C], 302[XS], BIOL 377[C], 377[XS], EVPP 377[C], 377[XS], INTS 401[C] or 401[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CONS 495: *Capstone in Conservation Strategies.* 4 credits.
Students work in teams to develop a conservation plan concerning a current, challenging conservation issue with local relevance or global reach. Students use an integrated, multi-disciplinary approach to examine the topic, incorporate science-based research and evidence, and develop practical solutions for some of the world’s most pressing conservation challenges. Students will engage with various conservation practitioners to help direct project goals and develop communication plans for appropriate audiences. Offered by Provost's Office. Limited to three attempts.

Recommended Prerequisite: An approved upper-division course, preferably with a conservation focus. Students must have completed at least 85 credits, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CONS 496: *Research in Conservation.* 6 credits.
One-on-one research experience with a conservation practitioner over 5 weeks (about 36 hours per week) on a conservation research project associated with that practitioner's program. Offered by Provost's Office. May be repeated within the degree for a maximum 12 credits.

Mason Core: Capstone

Specialized Designation: Mason Impact.

Registration Restrictions:
Required Prerequisites: (BIOL 308[C], 308[XS], EVPP 301[C], 301[XS], 302[C], 302[XS], BIOL 377[C], 377[XS], EVPP 377[C], 377[XS], INTS 401[C] or 401[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

CONS 497: *Special Topics in Conservation.* 1-4 credits.
Topics of current relevance to the field of conservation. Offered by Provost's Office. May be repeated within the degree for a maximum 9 credits.

Specialized Designation: Topic Varies

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CONS 498: *Internship.* 1-3 credits.
Directed readings and final reflective paper or project in conjunction with an internship subject to instructor approval. Permission to enroll must be obtained from the Mason Center for Conservation Studies at least two weeks prior to the start of the semester. Offered by Provost's Office. May be repeated within the degree for a maximum 9 credits.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

CONS 499: *Independent Study/Research.* 1-3 credits.
An independent project or directed exploration into an area of conservation not covered by other courses. Offered by Provost's Office. May be repeated within the degree for a maximum 9 credits.

Recommended Prerequisite: Permission of instructor.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

500 Level Courses

CONS 540: *Ecology Field Skills.* 4 credits.
Graduate level directed field studies emphasizing ecology and behavior. Topics vary but include design of field manipulations, data collection and analysis, and introduction to organisms of study site. May include field trips. Offered by Provost's Office. May not be repeated for credit.

Recommended Prerequisite: BIOL 308 or BIOL 310, or EVPP 305 and EVPP 306, or INTS 401 or equivalent course

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Graduate Regular scale.

CONS 560: *Statistics and Study Design in Ecology and Conservation.* 3 credits.
An understanding of statistics and study design is essential to success in the fields of ecology and conservation. However, many of the analyses of greatest utility for ecological data are frequently unable to be addressed in introductory courses, while advanced courses often delve deeply into a limited set of techniques. This course bridges this gap: building on knowledge obtained in introductory courses, additional techniques appropriate to many forms of ecological data and more advanced approaches will be introduced. This course will address the fundamentals of study design, linking choices made when establishing a research project to the types of analyses appropriate to the chosen design. Emphasis will be placed on understanding the output of analyses, and separating statistical significance from biological or ecological significance. Additionally, skills in data manipulation, analyses, and graphics using the R statistical computing environment will be developed. Offered by Provost's Office. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (BIOL 214[C], 214[XS], SOCI 313[C], 313[XS], STAT 250[C], 250[XS], CONS 404[C] or 404[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CONS 580: *Primate Behavior, Ecology and Conservation.* 3 credits.
Using primates as a focal taxon, this two-week course examines the theoretical background on how ecology, behavior, and life history influence primate abundance, distribution, and population dynamics. Teaches data collection methods for primate behavior studies, survey methods and habitat assessment techniques. Topics include several conservation-related case studies. Includes the development of a research proposal concerning primate socio-ecological strategies to address larger conservation issues. Notes: Students have the option to register for an “add-on” field experience course, CONS 497

"Primate Behavior and Conservation in Peru", through the Mason Study Abroad Global Education Office (GEO). In this course, students conduct independent research on primate species in the wild. The course takes place at the Los Amigos Biological Research Station in Peru. Offered by Provost's Office. May not be repeated for credit.

Recommended Prerequisite: This course is open to graduate students who have obtained a minimum GPA of 3.0. The course is also open to non-Mason students.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CONS 597: *Special Topics in Conservation.* 1-4 credits.
Topics of current relevance to the field of conservation. Offered by Provost's Office. May be repeated within the degree for a maximum 9 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

600 Level Courses

CONS 625: *Statistics for Ecology and Conservation Biology.* 3 credits.
This regression-based analytical course combines lectures on theory and concepts with significant time practicing statistical tools within the R environment. The course concludes with a 2-day project session where participants work independently to conduct a full analysis of a provided dataset and present their results. This course covers: probability theory, random variables and statistical distributions, linear models, generalized linear models, model diagnostics, data transformations, visualizing results, missing data and collinearity. Offered through the Smithsonian-Mason School of Conservation in cooperation with the Smithsonian Conservation Biology Institute on site in Front Royal, VA. Course Format: This course is taught as an intensive, mixed format (lectures and computer work) offering, in a residential full-day (8:30am-6pm), 2 week session. Some optional night sessions may occur but there is a required Saturday morning session with Sunday as a free day. Offered by Provost's Office. May not be repeated for credit.

Recommended Prerequisite: Basic statistics course

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CONS 630: *Species Monitoring & Conservation.* 3 credits.
Explores monitoring and conservation research methods and approaches for specific taxa through lectures, case studies, lab exercises, and field work. Each course includes not only significant time in the field practicing field data collection methods but also significant time in the computer lab learning the latest data analysis tools. Notes: Offered through the Smithsonian - Mason School of Conservation Studies in cooperation with the Smithsonian Conservation Biology Institute on site in Front Royal, VA. Course Format: This course is taught as an intensive, mixed format (lectures and computer work) offering, in a residential full-day (8:30am-6pm), 2 week session. Students complete pre-course assignments, and are graded in participation, computer exercises and a final exam. Some night and early morning sessions may occur. Offered by Provost's Office. May be repeated within the degree for a maximum 9 credits.

Recommended Prerequisite: A general biology (or relevant species-related) course and a statistics course, or permission of instructor. Prior coursework in environmental science, zoology and ecology recommended.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CONS 645: *Estimating Animal Abundance and Occupancy.* 3 credits.
Provides a strong theoretical and analytical background to the current and accepted methods of estimating population parameters including abundance, occupancy, survival, and population change. The course teaches study design, implementation and analysis of data from distance sampling, mark-recapture, and occupancy modeling techniques, with all analysis performed and practiced in the program R. Time is provided throughout for work on a student's own data/project with help of instructors. Offered through the Smithsonian-Mason School of Conservation in cooperation with the Smithsonian Conservation Biology Institute on site in Front Royal, VA. Course Format: This course is taught as an intensive, mixed format (lectures, computer work) offering, in a residential full-day (8:30am-6pm), 2-week session. Students complete pre-course assignments, are graded in participation, computer exercises and a final exam. Night sessions may occur, there is a full day of class on Saturday. Sunday is free. Offered by Provost's Office. May not be repeated for credit.

Recommended Prerequisite: College-level introductory statistics course.

Registration Restrictions:

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CONS 697: *Special Topics in Conservation.* 1-3 credits.
Topics of current relevance to the field of conservation. Notes: May be repeated for credit with approval of the Smithsonian Mason School of Conservation. Offered through the Smithsonian-Mason School of Conservation in cooperation with the Smithsonian Conservation Biology Institute on site in Front Royal, VA. Course Format: These courses are taught as an intensive, mixed format (lectures and computer work) offering, in a residential full-day (8:30am-6pm), 1 week, 10 day or 2 week session. Students complete pre-course assignments, and are graded in participation, computer exercises and a final exam or project. Some night sessions may occur and courses may include weekend class days. Offered by Provost's Office. May be repeated within the degree for a maximum 9 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

Counseling and Development (EDCD)

500 Level Courses

EDCD 525: *Advanced Human Growth and Development.* 3 credits.
Covers human development throughout the life span, including emotional, physical, and cognitive development; and emphasizes personal adjustment and achievement. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Graduate.

Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

600 Level Courses

EDCD 601: *Introduction to Research in Counseling.* 3 credits.
Enhances knowledge of and involvement in counseling research by introducing techniques and principles to design, implement, and evaluate research projects and program development in community and school settings. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to students with a major in Counseling and Development or Counseling.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDCD 602: *Foundations in Counseling.* 3 credits.
Provides students with an introduction to the field of professional counseling. Provides graduate students in counseling with knowledge about the history and foundations of counseling, the professional identity and multifaceted role of the counselor, program mission statement and its relationship to counseling. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Graduate.

Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDCD 603: *Counseling Theories and Practice.* 3 credits.
Covers major theoretical approaches to counseling from a multicultural perspective and provides supervised introduction to basic skills. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: EDCD 602 (may be taken concurrently).

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Counseling and Development, Education, Post-Masters Counseling Lic or Psychology.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDCD 604: *Assessment and Appraisal in Counseling.* 3 credits.
Prepares students to become informed about psychological and educational tests and assessment procedures that are used and applied

in a counseling context. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisite: EDCD 601[B].
[B] Requires minimum grade of B.

Enrollment is limited to students with a major in Counseling and Development or Counseling.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDCD 606: *Counseling Children and Adolescents.* 3 credits.
Presents theories, techniques, and counseling issues relevant to children and adolescents. Provides practice with an emphasis on process and culturally competent counseling strategies. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisite: EDCD 603[B].
[B] Requires minimum grade of B.

Enrollment is limited to students with a major, minor, or concentration in Counseling or School Counseling.

Enrollment limited to students in a Graduate Certificate or Master of Education degrees.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDCD 608: *Group Processes and Analyses.* 4 credits.
Presents theories appropriate to various types of groups and descriptions of group practices, methods, dynamics, and facilitative skills. Focuses on applying theory to practice. Includes lab. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: EDCD 603[B], 606[*B] or 609[*B].
[*] May be taken concurrently.
[B] Requires minimum grade of B.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major, minor, or concentration in Counseling and Development or Counseling.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDCD 609: *Counseling Skills and Strategies for Adults.* 3 credits.
Covers counseling skills, process and strategies for adults that are associated with major counseling theories. Provides intensive practice in both technical and conceptual skills with adults, emphasizing self-awareness, case conceptualization, racial-cultural considerations, and supervised practice in a community setting. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: EDCD 611[B] or 654[B].
[B] Requires minimum grade of B.

Enrollment is limited to students with a major, minor, or concentration in Clinical Mntl Hlth Counseling or Counseling.

Enrollment limited to students in a Graduate Certificate or Master of Education degrees.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDCD 610: *Career and Educational Counseling.* 3 credits.
Presents theories and counseling issues relevant to career counseling in schools and community agencies. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: EDCD 606[B], 609[B] or 604[B].
[B] Requires minimum grade of B.

Enrollment is limited to students with a major, minor, or concentration in Counseling and Development or Counseling.

Enrollment limited to students in a Graduate Certificate or Master of Education degrees.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDCD 611: *Introduction to Ethical and Legal Issues in School Counseling.* 3 credits.
Introduces principles, practices, and application of ethical and legal issues in school counseling. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisite: EDCD 613[B].
[B] Requires minimum grade of B.

Enrollment is limited to students with a major in Counseling and Development or Counseling.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDCD 613: *Introduction to School Counseling.* 3 credits.
Addresses the role of the school counselor and provides an understanding of the coordination of counseling program components as they relate to the school and the wider community. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisite: EDCD 602[*B].
[*] May be taken concurrently.
[B] Requires minimum grade of B.

Enrollment is limited to students with a major, minor, or concentration in Counseling or School Counseling.

Enrollment limited to students in a Graduate Certificate or Master of Education degrees.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDCD 615: *School-Based Mental Health.* 3 credits.
Provides an overview of mental disorders and disabilities impacting children and adolescents, with particular attention devoted to early identification and intervention in a school setting. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: EDCD 602[*B] and 603[*B].
[*] May be taken concurrently.
[B] Requires minimum grade of B.

Enrollment is limited to students with a major, minor, or concentration in Counseling or School Counseling.

Enrollment limited to students in a Graduate Certificate or Master of Education degrees.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDCD 619: *Trauma and Crisis Counseling.* 3 credits.
Provides an introduction to trauma and crisis counseling using theories and techniques from bioecological and multicultural-social justice perspectives. Covers assessments and interventions with individuals, families, and communities who have experienced trauma/crisis. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: EDCD 525[B], 606[B] or 609[B].
[B] Requires minimum grade of B.

Enrollment is limited to students with a major in Counseling and Development or Counseling.

Enrollment limited to students in a Graduate Certificate or Master of Education degrees.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDCD 621: *School, Family, and Community Collaboration.* 2 credits.
Provides an overview of consultation and collaboration theories and practice. Helps students develop consultation and collaboration skills that may be applied in schools, community agencies, or other organizational settings. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: EDCD 602[B], 613[B] or 654[B].
[B] Requires minimum grade of B.

Enrollment is limited to students with a major in Counseling and Development or Counseling.

Enrollment limited to students in a Graduate Certificate or Master of Education degrees.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDCD 626: *Principles and Practices of School Counseling.* 3 credits.
Focuses on the comprehensive development, delivery, and evaluation of school counseling programs based on the Virginia model and the American School Counselor Association national model. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisite: EDCD 613[B].
[B] Requires minimum grade of B.

Enrollment is limited to students with a major, minor, or concentration in Counseling and Development or Counseling.

Enrollment limited to students in a Graduate Certificate or Master of Education degrees.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDCD 628: *Counseling and Social Justice.* 3 credits.
Discusses the Counseling and Development program's mission statement of Social Justice, Multiculturalism, Internationalism, Advocacy and Leadership. Provides an overview of theories and models of social justice, advocacy, and leadership. Examines theories and models from a multicultural perspective and discusses within the context of counseling in school and community settings. Examines the role of counselors as change agents, leaders, and advocates. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: EDCD 660[B] and (EDCD 654[B] or 611[B]).
[B] Requires minimum grade of B.

Enrollment is limited to students with a major, minor, or concentration in Counseling and Development or Counseling.

Enrollment limited to students in a Graduate Certificate or Master of Education degrees.

Schedule Type: Lecture

Grading:

This course is graded on the Graduate Regular scale.

EDCD 652: *Introduction to Substance Abuse Counseling.* 3 credits.
Introduces substance abuse counseling. Covers addiction issues, diagnosis and treatment planning, and individual and group counseling strategies with diverse populations. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: EDCD 606[*B-], 606[XS], 609[*B-] or 609[XS].
[*] May be taken concurrently.
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Counseling and Development or Counseling.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDCD 654: *Counseling and Ethics in Community Agencies.* 3 credits.
Provides a foundation for ethical and legal counseling practice within community and agency settings. Examines the role and professional identity of the clinical mental health counselor, with attention to multicultural and social justice perspectives. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (EDCD 602[B-] or 602[XS]) and (EDCD 603[B-] or 603[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Clinical Mntl Hlth Counseling or Counseling.

Enrollment is limited to Graduate level students.

Enrollment limited to students in a Graduate Certificate or Master of Education degrees.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDCD 656: *Diagnosis and Treatment Planning for Mental Health Professionals.* 3 credits.
Introduces students to fundamental concepts in the classification of psychopathology as well as the clinical interviewing skills necessary to apply DSM-5 diagnoses to clients in a sound and ethical manner. Incorporates an explicit focus on the role of race and culture in diagnosis and treatment. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: EDCD 603 (may be taken concurrently).

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Counseling and Development, Education or Post-Masters Counseling Lic.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDCD 658: *Couples and Family Counseling.* 3 credits.
Introduces major approaches to counseling couples and families. Uses case studies and simulations to facilitate transition from theory to practice. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: EDCD 606[B] or 609[*B].
[*] May be taken concurrently.
[B] Requires minimum grade of B.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Counseling and Development or Counseling.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDCD 660: *Multicultural Counseling.* 3 credits.
Examines multicultural issues in counseling and explores the complexities of culture and its influence on the client/counselor relationship. Promotes awareness and understanding of cultural differences and their effect on the counseling relationship. Investigates variables that interact with culture that may interfere with the counseling relationship, such as historical, political, socioeconomic, psychosocial adjustment, racism, prejudice, discrimination, and oppression. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (EDCD 608[*B] and (EDCD 606[B] or 609[B])).
[*] May be taken concurrently.
[B] Requires minimum grade of B.

Enrollment is limited to students with a major, minor, or concentration in Counseling and Development or Counseling.

Enrollment limited to students in a Graduate Certificate or Master of Education degrees.

Schedule Type: Lecture

Grading:

This course is graded on the Graduate Regular scale.

700 Level Courses

EDCD 750: *Practicum in Mental Health Counseling.* 3 credits.
Provides supervised practice in a counseling setting similar to the setting in which the student may work with an emphasis on the counseling process. Provides opportunities to practice counseling skills related to ethics, supervision, self-care, decision-making, and professional identity and relationships. Note: students without 30 hours of prior Counseling program coursework will be dropped. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisite: EDCD 608[B].
[B] Requires minimum grade of B.

Enrollment is limited to students with a major in Counseling and Development or Counseling.

Enrollment limited to students in a Graduate Certificate or Master of Education degrees.

Schedule Type: Internship

Grading:
This course is graded on the Satisfactory/No Credit scale.

EDCD 751: *Practicum in School Counseling.* 3 credits.
Provides supervised practice in a school counseling setting similar to the setting in which the student may work with an emphasis on the counseling process. Provides opportunities to practice counseling skills related to ethics, supervision, self-care, decision-making, and professional identity and relationships. Note: students without 30 hours of prior Counseling program coursework will be dropped. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisite: EDCD 608[B].
[B] Requires minimum grade of B.

Enrollment is limited to students with a major in Counseling and Development or Counseling.

Enrollment limited to students in a Graduate Certificate or Master of Education degrees.

Schedule Type: Internship

Grading:
This course is graded on the Satisfactory/No Credit scale.

EDCD 755: *Practicum in Counseling.* 3 credits.
Provides supervised practice in a counseling setting similar to the setting in which the student may work with an emphasis on the counseling process. Notes: Weekly graduate class emphasizes site processing. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: Completion of CNDV program course work except for EDCD 610 or electives (total credits cannot exceed 3 credits); overall GPA of 3.00; no grade lower than B in skills courses EDCD 603, 606/609 and 608; no more than two grades of C in any other graduate course work required by CNDV program; permission of advisor.

Registration Restrictions:

Enrollment is limited to students with a major in Counseling and Development, Education or Post-Masters Counseling Lic.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Satisfactory/No Credit scale.

EDCD 791: *Internship in Counseling.* 3 credits.
Provides supervised practice in a counseling setting similar to the setting in which the student may work with an emphasis on the counseling process. Builds on previous practicum experiences. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: Completion of CNDV program course work except for electives; overall GPA of 3.00; no grade lower than B in skills courses EDCD 603, 606/609, 608 and 755; no more than two grades of C in any other graduate course work required by CNDV program; permission of advisor.

Registration Restrictions:
Enrollment is limited to students with a major in Counseling and Development, Education or Post-Masters Counseling Lic.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Satisfactory/No Credit scale.

EDCD 792: *Internship in Mental Health Counseling I.* 3 credits.
Provides supervised practice in a clinical mental health counseling setting similar to the setting in which the student may work with an emphasis on the counseling process. Develops skills in case conceptualization, assessing needs, and applying counseling knowledge and skills with clients under supervision. Note: Completion of all required counseling program coursework with a B or better; permission of advisor; students may be concurrently registered for no more than 6 credits of the following courses: EDCD 610, EDCD 621, or electives. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisite: EDCD 750[B].
[B] Requires minimum grade of B.

Enrollment is limited to students with a major in Counseling and Development or Counseling.

Enrollment limited to students in a Graduate Certificate or Master of Education degrees.

Schedule Type: Internship

Grading:
This course is graded on the Satisfactory/No Credit scale.

EDCD 793: *Internship in Mental Health Counseling II.* 3 credits.
Provides supervised practice in a counseling setting similar to the setting in which the student may work with an emphasis on the counseling process. Builds on previous practicum and Internship I experiences,

including evaluating interventions and programs. Note: Completion of all required counseling program coursework with a B or better; permission of advisor; students may be concurrently registered for program electives. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: EDCD 792[B-] or 792[XS].
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major in Counseling and Development or Counseling.

Enrollment limited to students in a Graduate Certificate or Master of Education degrees.

Schedule Type: Internship

Grading:
This course is graded on the Satisfactory/No Credit scale.

EDCD 794: *Internship in School Counseling I.* 3 credits.
Provides supervised practice in a school counseling setting similar to the setting in which the student may work with an emphasis on the counseling process. Develops skills in case conceptualization, assessing needs, and applying counseling knowledge and skills with clients under supervision. Note: Completion of all required counseling program coursework with a B or better; permission of advisor; students may be concurrently registered for no more than 6 credits of the following courses: EDCD 610, EDCD 621, or electives. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisite: EDCD 751[B].
[B] Requires minimum grade of B.

Enrollment is limited to students with a major in Counseling and Development or Counseling.

Enrollment limited to students in a Graduate Certificate or Master of Education degrees.

Schedule Type: Internship

Grading:
This course is graded on the Satisfactory/No Credit scale.

EDCD 795: *Internship in School Counseling II.* 3 credits.
Provides supervised practice in a counseling setting similar to the setting in which the student may work with an emphasis on the counseling process. Builds on previous practicum and Internship I experiences, including evaluating interventions and programs. Note: Completion of all required counseling program coursework with a B or better; permission of advisor; students may be concurrently registered for program electives. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisite: EDCD 794[B-].
[B-] Requires minimum grade of B-.

Enrollment is limited to students with a major in Counseling and Development or Counseling.

Enrollment limited to students in a Graduate Certificate or Master of Education degrees.

Schedule Type: Internship

Grading:
This course is graded on the Satisfactory/No Credit scale.

EDCD 797: *Advanced Topics in Education.* 1-6 credits.
See EDUC 797. Offered by School of Education. May be repeated within the term.

Specialized Designation: Topic Varies

Registration Restrictions:
Required Prerequisites: (EDCD 603[B-] or 603[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major in Counseling and Development, Counseling or Post-Masters Counseling Lic.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

800 Level Courses

EDCD 894: *Advanced Family and Systems Counseling.* 3 credits.
Develops advanced level skills and competencies in the practice of family and systems counseling. Multiple theoretical models for practice in a multicultural society will be explored, as will the applications of those models in multiple professional settings. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: Admission to PhD in Counseling and Development Program.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy.

Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDCD 895: *Emerging Issues in Counseling and Development.* 3 credits.
Examines issues in counseling profession, including counseling theory and methodology, development of client groups, new roles and settings for counselors, emerging assessment procedures, new understanding of diagnosis; and impact of societal changes on counseling profession. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: Admission to the PhD program or permission of instructor.

Registration Restrictions:
Enrollment is limited to students with a major in Education.

Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:

This course is graded on the Graduate Regular scale.

EDCD 896: *Advanced Multicultural Counseling.* 3 credits.
Focuses on advanced issues in multicultural counseling, including multicultural counseling theories, skills, assessment, supervision, research, and ethics. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: Masters degree in counseling or related counseling field from an accredited institution of higher education and EDCD 660, or equivalent; EDCD 895; admission to Counseling and Development Doctoral Program, or permission of instructor.

Registration Restrictions:
Enrollment is limited to students with a major in Education.

Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

EDCD 897: *Advanced Group Counseling.* 3 credits.
For doctoral students who have had experience and training in group work. Provides greater understanding and advanced skill application in group dynamics, group process, and group leadership. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: Masters degree in counseling or related counseling field from an accredited institution of higher education and EDCD 608 or equivalent; EDCD 895; admission to the Counseling and Development Doctoral Program, or Permission of Instructor.

Registration Restrictions:
Enrollment is limited to students with a major in Education.

Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

EDCD 898: *Grant Writing and Publishing.* 3 credits.
Focuses on grant writing and publishing in counseling and psychology. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: Masters degree in counseling or related counseling field from an accredited institution of higher education; EDCD 895; admission to the Counseling and Development Doctoral Program, or Permission of Instructor.

Registration Restrictions:
Enrollment is limited to students with a major in Education.

Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

EDCD 899: *The Theory and Practice of Counseling Supervision.* 4 credits.
Explores counseling supervision theory from a multicultural and social justice perspective. Students will apply these theories by supervising Master's level community agency and school counseling practicum students under the supervision of the instructor. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: Admission to PhD in Counseling and Development Program; Master's degree in Counseling or related field, or permission of the instructor.

Registration Restrictions:
Enrollment is limited to students with a major in Education.

Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

900 Level Courses

EDCD 900: *Leadership and Advocacy in the Counseling Profession.* 4 credits.
Introduces students to broad theoretical concepts, strategies, and skills related to leadership and advocacy within the counseling profession, and will help students integrate leadership and advocacy into their professional identity. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: Admission to PhD in Counseling and Development Program.

Registration Restrictions:
Enrollment is limited to students with a major in Education.

Enrollment is limited to Graduate level students.

Enrollment limited to students in a Doctor of Philosophy degree.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDCD 990: *Advanced Internship in Counseling Leadership.* 3 credits.
Provides supervised practice in counseling leadership setting or position. Emphasizes counseling leadership in practice. Notes: Biweekly class emphasizes site processing, leadership skills, and topical seminars. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: Admission to the Ph.D. in Education program, Counseling and Development specialization; EDCD 628 or equivalent; EDCD 895.

Registration Restrictions:
Enrollment is limited to students with a major in Education.

Enrollment limited to students in a Doctor of Philosophy degree.

Schedule Type: Internship

Grading:
This course is graded on the Graduate Regular scale.

EDCD 991: *Advanced Internship in Counseling.* 6 credits.
Provides an intensive multicultural social justice oriented field based supervised experience. Emphasizes intensive use of multicultural competencies in practice, supervision, and program development and evaluation in order to address social justice issues for clients in school

or community settings. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: Admission to the Ph.D. in Education program, Counseling and Development specialization, EDCD 628 or equivalent; EDCD 895 and EDCD 896.

Registration Restrictions:
Enrollment is limited to students with a major in Education.

Enrollment is limited to Graduate level students.

Enrollment limited to students in a Doctor of Philosophy degree.

Schedule Type: Internship

Grading:
This course is graded on the Graduate Regular scale.

EDCD 992: *Advanced Internship in Social Justice.* 3 credits.
Provides opportunities to implement programs and strategies to affect social justice for clients in school or community settings. Notes: Biweekly class emphasizes topical seminars and supervision. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: Admission to the PhD in Education program, Counseling and Development specialization; EDCD 628 or equivalent; EDCD 895.

Registration Restrictions:
Enrollment is limited to students with a major in Education.

Enrollment limited to students in a Doctor of Philosophy degree.

Schedule Type: Internship

Grading:
This course is graded on the Graduate Special scale.

Criminology (CRIM)

100 Level Courses

CRIM 100: *Introduction to Criminal Justice.* 3 credits.
Overview of the American system of criminal justice, covering theories of justice, criminal law, policing, courts and associated pre and post-trial legal processes, punishment and corrections, and juvenile justice. Required for all criminology majors and minors. Offered by Criminology, Law and Society. Limited to three attempts.

Mason Core: Social/Behavioral Sciences

Specialized Designation: Mason Impact.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

200 Level Courses

CRIM 210: *Introduction to Criminology.* 3 credits.
Explores and evaluates how crime is defined and measured, and examines crime patterns and trends. Provides an overview and critical assessment of the major theories of crime causation. Notes: CRIM majors who are concentrating in criminal justice are strongly encouraged to take this course before or during the first semester of taking upper-level courses in the concentration. Offered by Criminology, Law and Society. Limited to three attempts.

Recommended Prerequisite: CRIM 100.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CRIM 220: *Introduction to Law and Society.* 3 credits.
Introduces the relationship between law and society. Discusses theoretical perspectives from a number of social science disciplines. Promotes a foundational understanding of the concept of law and the origins, development, and role of law in society, particularly outside of formal legal institutions. Topics covered may include legal mobilization, law and social change, social movements, law and inequality, and law's relationship to social control. Notes: CRIM majors who are concentrating in Law and Society are strongly encouraged to take this course before or during the first semester of taking upper-level courses in the concentration. Offered by Criminology, Law and Society. Limited to three attempts.

Recommended Prerequisite: CRIM 100.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CRIM 230: *Introduction to Homeland Security.* 3 credits.
Introduces fundamental concepts of homeland security. Examines governmental actions designed to prevent, prepare for, respond to, and recover from man-made and natural disasters. Focuses on efforts to align preparedness, incident management, and emergency response plans from various agencies (federal, state, local, tribal, private sector, and non-governmental). Notes: CRIM majors who are concentrating in homeland security and justice are strongly encouraged to take this course before or during the first semester of taking upper-level courses in the concentration. Offered by Criminology, Law and Society. Limited to three attempts.

Recommended Prerequisite: CRIM 100.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

300 Level Courses

CRIM 301: *Public Law and the Judicial Process.* 3 credits.
Covers American judicial organization and operation, role of the Supreme Court in policy formation, and selected constitutional principles. Offered by Criminology, Law and Society. Limited to three attempts. Equivalent to GOVT 301.

Recommended Prerequisite: CRIM 100

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CRIM 302: *Delinquency and the Juvenile Justice System.* 3 credits.
Presents theories of juvenile delinquency and societal reactions to it, gender differences in rates and types, historical overview, development

of juvenile justice system, and critical assessment of juvenile justice and its alternative. Offered by Criminology, Law and Society. Limited to three attempts.

Recommended Prerequisite: CRIM 100

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CRIM 304: *Computer Crime, Forensics, and Auditing.* 3 credits.
Explores relevant laws, disciplines, and skills required to pursue a successful career in computer forensics and cyber investigations. This course will be a real-to-life exposure of conducting computer forensic and cyber investigations, including hands-on demonstrations with computer forensic tools. Offered by Criminology, Law and Society. Limited to three attempts.

Recommended Prerequisite: IT 103 or IT 104.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CRIM 305: *Crime and Crime Policy.* 3 credits.
Examines the development of crime policy, including the influence of crime trends, politics, public opinion, media, criminological theory, and empirical research. Considers the effectiveness of crime policy. Offered by Criminology, Law and Society. Limited to three attempts.

Recommended Prerequisite: CRIM 100

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CRIM 306: *Criminal Justice Ethics.* 3 credits.
Analyzes ethical principles relevant for those working in criminal justice. Required for all criminology majors. Offered by Criminology, Law and Society. Limited to three attempts.

Recommended Prerequisite: CRIM 100.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CRIM 307: *Social Inequality, Crime, and Justice.* 3 credits.
Explores the significance of social inequality (especially race and gender inequality) for several crime and criminal justice issues. Examines variations in criminal offending and victimization, and explores disparities in criminal justice processing. Offered by Criminology, Law and Society. Limited to three attempts.

Recommended Prerequisite: CRIM 100

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CRIM 308: *Human Rights and Justice.* 3 credits.
Studies the norms, laws, and systems for the promotion and protection of human rights. Provides a foundation for understanding historical, legal, political, economic, and ethical aspects of human rights. Examines ideological and cultural perspectives, sources of violations, the United Nations, regional and national mechanisms, special issues (e.g., women, torture, children, minorities), and the role of nongovernmental organizations. Offered by Criminology, Law and Society. Limited to three attempts.

Recommended Prerequisite: CRIM 100

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CRIM 310: *Introduction to the Intelligence Community.* 3 credits.
Introduces students to the structure, function, and process of the intelligence community including the basic skills in writing, research, and presentation used in intelligence analysis. Required for all intelligence analysis minors. Offered by Criminology, Law and Society. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CRIM 312: *Intelligence Analysis Techniques.* 3 credits.
Introduces the key analytical techniques used by entry-level analysts In the Intelligence community. Offered by Criminology, Law and Society. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: CRIM 310[D], L310, 310[XS] or 310[XP].
[D] Requires minimum grade of D.
[XS] Requires minimum grade of XS.
[XP] Requires minimum grade of XP.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CRIM 315: *Research Methods and Analysis in Criminology.* 3 credits.
Provides an introduction to research design, methods, and analysis in the field of criminology. Students learn to understand, interpret, and critique quantitative and qualitative research approaches, and become intelligent consumers of research. Notes: This course does not meet the College's IT requirements. Offered by Criminology, Law and Society. Limited to three attempts.

Specialized Designation: Mason Impact.

Recommended Prerequisite: CRIM 100.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CRIM 320: *Crime and Place.* 3 credits.
Focuses on the analysis of locations that attract and repel crime, displacement of crime, and identifying and measuring crime

concentrations. Offered by Criminology, Law and Society. Limited to three attempts.

Recommended Prerequisite: CRIM 100.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CRIM 325: *Hate Crime.* 3 credits.
Provides an introductory understanding of the definitions of hate crime; extremist groups and individuals; reporting, investigation, and prosecution of hate crimes; and hate crime policy and legislation. Offered by Criminology, Law and Society. Limited to three attempts.

Recommended Prerequisite: CRIM 100.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CRIM 350: *Counterintelligence.* 3 credits.
Introduces the legal authority, objectives, and guidelines of the counterintelligence discipline. Covers the investigative, defensive, offensive, and collection activities of the counterintelligence function. Notes: Elective course for the Intelligence Analysis minor. Offered by Criminology, Law and Society. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: CRIM 310[D], L310, 310[XS] or 310[XP].
[D] Requires minimum grade of D.
[XS] Requires minimum grade of XS.
[XP] Requires minimum grade of XP.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

CRIM 400: *Applied Criminal Psychology.* 3 credits.
Uses overview of psychological and criminological theories to apply behavioral science theory to practical application in forensic settings. Focuses on analysis of various crime scenes and characteristics of offenders. Offered by Criminology, Law and Society. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CRIM 401: *Policing in America.* 3 credits.
Fundamental issues relevant to contemporary public policing in America: role and history of police; impact on crime, disorder, and other social problems; discretion and its control; moral hazards; police legitimacy and public support; police culture and the police organization; and community policing. Offered by Criminology, Law and Society. Limited to three attempts.

Recommended Prerequisite: CRIM 100

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CRIM 402: *Punishment and Corrections.* 3 credits.
Covers theories on forms of punishment systems; punishment and corrections as a product of historical, cultural, and political changes; differences by race and gender in punishment and corrections; problems of social control and violence in prisons; alternative rehabilitation; and community prevention strategies. Offered by Criminology, Law and Society. Limited to three attempts.

Recommended Prerequisite: CRIM 100

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CRIM 403: *Community Corrections.* 3 credits.
Studies the purposes and goals of community-based corrections and its various components, including pretrial diversion, probation, parole, and emerging alternatives to traditional incarceration. Addresses issues related to offenders returning to the community and critical issues facing jails, community corrections, and the management of offenders in community settings. Examines the role of community corrections within the broader correctional system. Offered by Criminology, Law and Society. Limited to three attempts.

Recommended Prerequisite: CRIM 100

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CRIM 404: *Crime Victims and Victimization.* 3 credits.
Explores experiences of crime victims, distribution of the risks of victimization, and causes and consequences of victimization. Also considers nature and influence of victim's rights advocates. Offered by Criminology, Law and Society. Limited to three attempts.

Recommended Prerequisite: CRIM 100

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CRIM 405: *Law and Justice around the World.* 3 credits.
Comparative inquiry into the models of legal and justice systems around the world. Considers how social and legal norms are created, and how different societies exercise powers of social control. Evaluates justice models in action, including law and courts, policing, corrections, and juvenile justice. Offered by Criminology, Law and Society. Limited to three attempts.

Mason Core: Global Understanding

Recommended Prerequisite: CRIM 100

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CRIM 406: *Family Law and the Justice System.* 3 credits.
Introduction to the elements of family law, and exploration of its influence on American social life and contemporary notions of justice. Topics include marriage and parenting, divorce, custody and support, nontraditional families, and domestic violence. Offered by Criminology, Law and Society. Limited to three attempts.

Recommended Prerequisite: CRIM 100

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CRIM 407: *Advanced Topics in Law and Society.* 3 credits.
Provides an in-depth examination of the law's role in social life to deepen students' appreciation of the law in action. Focuses on scholarly research that describes and explains how legal actors, processes, and institutions operate in the world Topics include: theories of legal change, law's relationship to class, gender, and race, and law, culture, and identity. Offered by Criminology, Law and Society. Limited to three attempts.

Specialized Designation: Topic Varies

Recommended Prerequisite: CRIM 100 or GOVT 301

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CRIM 408: *Criminal Courts.* 3 credits.
Studies the workings, advantages, and frailties of criminal courts, and explores whether the system works effectively and efficiently. Offered by Criminology, Law and Society. Limited to three attempts.

Recommended Prerequisite: CRIM 100 or GOVT 301

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CRIM 409: *Community Policing.* 3 credits.
Study of community policing, particularly in the United States. Covers history and development of community policing, community relations, problem solving, and issues of organizational change. Offered by Criminology, Law and Society. Limited to three attempts.

Recommended Prerequisite: CRIM 100

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CRIM 410: *Criminal Investigations.* 3 credits.
Focuses on criminal investigations and the role of the criminal investigator in the criminal justice system. Offered by Criminology, Law and Society. Limited to three attempts.

Recommended Prerequisite: CRIM 100.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CRIM 411: *Innovations in Policing.* 3 credits.
New developments in law enforcement's response to technical, legal, and social change. Examines law enforcement policies and practices in the past and present, and directions for the future. Offered by Criminology, Law and Society. Limited to three attempts.

Recommended Prerequisite: CRIM 100.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CRIM 422: *Controversial Legal Issues.* 3 credits.
Focuses on the study of law as an institution that continuously interacts with other social institutions at the individual, community, state, and federal levels. Examines how constitutional and statutory laws are interpreted by the courts to determine and define the law through contemporary, controversial, legal issues. Explores how the courts, using the law, resolve today's most controversial issues. Offered by Criminology, Law and Society. Limited to three attempts.

Recommended Prerequisite: CRIM 100

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CRIM 423: *Constitutional Law: Civil Rights and Liberties.* 3 credits.
Studies First Amendment freedoms of speech, press, assembly, association, and religion; the right to privacy; and Fourteenth Amendment right to equal protection. Offered by Criminology, Law and Society. Limited to three attempts. Equivalent to GOVT 423.

Recommended Prerequisite: CRIM 100

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CRIM 424: *Constitutional Law: Criminal Process and Rights.* 3 credits.
Studies constitutional law pertaining to the rights of the criminally accused from investigation and evidence through attorney, trial, and punishment stages at federal and state levels. Required for all criminology majors. Offered by Criminology, Law and Society. Limited to three attempts.

Recommended Prerequisite: CRIM 100

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CRIM 425: *Criminal Justice Management.* 3 credits.
Explains the management function for current and future criminal justice managers. Emphasizes communication, leadership skills, and organizational development. Offered by Criminology, Law and Society. Limited to three attempts.

Recommended Prerequisite: D or higher in CRIM 100

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CRIM 430: *Criminal Law.* 3 credits.
An overview of the definitions and elements of crimes, defense strategies, and the differences in criminal law across states. Offered by Criminology, Law and Society. Limited to three attempts.

Recommended Prerequisite: CRIM 100.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CRIM 460: *Surveillance and Privacy in Contemporary Society.* 3 credits.
Philosophical perspectives, historical context, technological developments, and institutional changes that surround controversies about privacy and surveillance in contemporary society. Explores public and private institutions conducting surveillance, how they calculate and manage risk, and legal constraints on surveillance activities. Offered by Criminology, Law and Society. Limited to three attempts. Equivalent to GOVT 460.

Recommended Prerequisite: CRIM 100

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CRIM 462: *Law Enforcement and Homeland Security.* 3 credits.
Examines the effect of 9/11 on law enforcement organizations in the United States and explores the evolving relationship between the military, federal, state, and local law enforcement agencies in the post-9/11 era. Emphasis on understanding the entire framework of homeland security in the United States and the unique issues faced by local law enforcement. Offered by Criminology, Law and Society. Limited to three attempts.

Recommended Prerequisite: CRIM 100

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CRIM 471: *Prevention and Deterrence of Crime.* 3 credits.
Theoretical and practical strategies for crime prevention and deterrence. Discusses social, environmental, and mechanical developments, police courts, and correctional elements of law enforcement in terms of current effectiveness and future potential for crime prevention. Offered by Criminology, Law and Society. Limited to three attempts.

Recommended Prerequisite: CRIM 100

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CRIM 475: *Theory and Politics of Terrorism.* 3 credits.
Explores origins of terrorism, tracing development from early states to a modern mode of conflict. Presents national, regional, and global perspectives. Offered by Criminology, Law and Society. Limited to three attempts.

Recommended Prerequisite: CRIM 100

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CRIM 479: *Preparation for Internship.* 3 credits.
Preparation for internship in a justice organization or justice-related work activity. Students develop a relationship with a prospective internship sponsor and develop a plan for the internship and the research to be reported. Notes: This course is only open to students majoring in Criminology, Law and Society, and should only be taken by students who intend to complete an internship. Offered by Criminology, Law and Society. Limited to three attempts.

Recommended Prerequisite: CRIM 100, 306, and 315.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CRIM 480: *Internship.* 6-12 credits.
Application of classroom learning to an applied justice setting. Students maintain daily journals, conduct research, and deliver written and oral reports. Notes: Before enrolling, students must have a plan approved by the instructor. Seminars are held several times during the semester for discussion and oral presentation. Minimum of 45 hours of on-the-job work time required for each credit. Offered by Criminology, Law and Society. May be repeated within the degree for a maximum 12 credits.

Recommended Prerequisite: CRIM 100, 306, 315, 479, and approval of department.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

CRIM 485: *Study Abroad.* 1-12 credits.
Study Abroad. Course topics, content, and locations vary. Offered by Criminology, Law and Society. May be repeated within the degree for a maximum 12 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: CRIM 100.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CRIM 490: *Special Topics.* 1-3 credits.
Recent developments in the field. Notes: Topics vary. May be used to fulfill requirements for different concentrations in the BS in criminology, law, and society depending on the topic. May be repeated when topic is different. Offered by Criminology, Law and Society. May be repeated within the term for a maximum 15 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: CRIM 100

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CRIM 491: *Honors Seminar I.* 3 credits.
Course includes readings, individual or group projects, and discussion of seminar papers. Notes: First of a two-course sequence; subject varies. May be repeated when topic varies. Offered by Criminology, Law and Society. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Mason Impact.

Recommended Prerequisite: Acceptance to pursue honors in the major.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

CRIM 492: *RS: Honors Seminar II.* 3 credits.
Course includes readings and discussion of seminar papers, leading to a research project under the direction of a faculty member. Notes: Second of a two-course sequence. Subject varies. Oral exam on the research and report may be required. May be repeated when topic varies. Offered by Criminology, Law and Society. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Research/Scholarship Intensive

Recommended Prerequisite: CRIM 491.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

CRIM 495: *Capstone in Criminology, Law and Society.* 3 credits.
Provides an in-depth examination of a historical and contemporary issues facing criminology and law and society scholars. Focuses on the philosophies, practices, and procedures used by individuals and organizations and uses a variety of materials, experiences and resources. Offered by Criminology, Law and Society. Limited to three attempts.

Mason Core: Synthesis

Specialized Designation: Mason Impact., Writing Intensive in Major

Recommended Prerequisite: CRIM 100; ENGL 101/ENGH 101; ENGL 302/ENGH 302; COMM 100, or 104.

Registration Restrictions:
Enrollment limited to students with a class of Junior or Senior.

Schedule Type: Lecture, Recitation

Grading:
This course is graded on the Undergraduate Regular scale.

CRIM 498: *Research Practicum.* 1-3 credits.
Supervised research experience with a professor in a non-classroom setting. Offers students an opportunity to gain valuable research experience and training in research. Students are required to work 45 hours (across the semester) per credit. Notes: Open to majors in CRIM with 60 credits and permission of instructor and department. Offered by Criminology, Law and Society. May be repeated within the term for a maximum 6 credits.

Recommended Prerequisite: CRIM 100 and CRIM 315.

Registration Restrictions:
Enrollment is limited to students with a major in Criminology, Law and Society.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

CRIM 499: *Independent Study.* 1-3 credits.
Reading and research on a specific topic under the direction of a faculty member. Notes: Open to majors in CRIM with 90 credits and permission of instructor and department. Written report is required; an oral exam or report may also be required. Degree requirements to be fulfilled by a particular independent study determined by student's advisor. Offered by Criminology, Law and Society. May be repeated within the term for a maximum 9 credits.

Recommended Prerequisite: CRIM 100 and 90 credits.

Registration Restrictions:
Enrollment is limited to students with a major in Criminology, Law and Society.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

500 Level Courses

CRIM 509: *Justice Organizations and Processes.* 3 credits.
Examines structures, practices, and performance of organizations involved in administration of justice: law enforcement, courts and legal agencies, corrections, regulatory and related agencies, and private organizations. Offered by Criminology, Law and Society. May not be repeated for credit. Equivalent to PUAD 509.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CRIM 510: *Policing in a Democratic Society.* 3 credits.
Fundamental issues in policing a democratic society: police mission, subculture, performance measurement, moral hazards, discretion, impact on crime and disorder, legitimacy, community policing, and other reforms. Offered by Criminology, Law and Society. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CRIM 511: *Evidence-based Crime and Justice Policy.* 3 credits.
Examines the role that science and research play in criminal justice agencies, policies and practicecs. Includes understanding the strengths and limitations of the evidence-based practices framework, reviewing evidence about the effectiveness, fairness, theoretical underpinnings, and efficiency of various policies and practices to deal with crime and justice issues, and understanding how research is translated into policy and practice. Offered by Criminology, Law and Society. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CRIM 512: *Implementing Crime and Justice Policy.* 3 credits.
Introduces students to the art and science behind implementing policies in today's criminal justice organizations. While considering effective, best, and evidence-based practices, students will learn about both processes and outcomes related to adopting, adapting, implementing and sustaining reform in justice agencies. Key concepts include technology transfer, transportability, uptake, diffusion, fidelity, and change. Offered by Criminology, Law and Society. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CRIM 513: *Leadership in Justice Organizations.* 3 credits.
Explores theory and evidence of various approaches to leadership and management as applied in justice organizations. Examples of leadership approaches include, trait, skills, style, contingency, path-goal, transformational, servant, team, and psychodynamic. Practical aspects of coping with the risks of leadership are included. Involves case studies and student self analysis using diagnostic tools. Offered by Criminology, Law and Society. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CRIM 514: *Legal and Ethical Issues in Criminal Justice.* 3 credits.
Legal and ethical issues in the making and administration of criminal justice policy in the United States. Covers the legal framework governing each issue, competing values influencing policies and practice, and the history of legal reforms in the criminal justice system. Recurrent underlying themes are legalized discretion, gender and racial equality, due process, and procedural justice. Offered by Criminology, Law and Society. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CRIM 515: *Criminal Justice Research Methods and Data Analysis.* 3 credits.
Methods of scientific inquiry applied to criminal justice issues. Includes formulation of research questions, logic of inquiry, research design, observation, measurement, and introduction to social statistics and applications to criminal justice data analysis. Learn to critique research and present data in agency reports. Offered by Criminology, Law and Society. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CRIM 516: *Evaluation of Crime and Justice Policies and Practices.* 3 credits.
The major principles and approaches of program evaluation applied to crime and justice policies. Presents a conceptual framework for problem evaluation. Explores issues and methods for developing evaluation questions and assessing various aspects of program theory, operation and outcomes. Offered by Criminology, Law and Society. May not be repeated for credit.

Recommended Prerequisite: CRIM 515.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CRIM 517: *Research Practicum in Justice Policy and Practice.* 3 credits.
Student-initiated research project supervised by instructor. Student will identify a client criminal justice organization or stakeholder group and conduct useful research on an issue of interest to that organization or group, producing a policy-oriented white paper suitable for delivery to the organization or group. Offered by Criminology, Law and Society. May not be repeated for credit.

Recommended Prerequisite: CRIM 515, CRIM 516.

Registration Restrictions:
Enrollment is limited to students with a major in Criminal Justice or Criminology, Law and Society.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CRIM 521: *The Constitution, Criminal Procedure, and Security.* 3 credits.
Focuses on understanding legal doctrines that form basis of U.S. constitutional criminal procedural rights and how doctrines develop, why courts rule as they do, and evaluating strengths, weaknesses of rights. For MS Students. Offered by Criminology, Law and Society. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CRIM 523: *Law and Social Control.* 3 credits.
Competing conceptions of law, political systems, and social control. Intellectual traditions behind social control, its definitions, and mechanisms for regulating public and private behavior, by both individuals and organizations in society. For MS Students. Offered by Criminology, Law and Society. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CRIM 541: *Conduct of Justice Organizations at the Street Level.* 3 credits.
How justice organizations behave at lowest levels, where service is delivered and discretion is greatest (suspects, victims, witnesses, police officers, prison guards, parole officers, attorneys, and others who interact with the justice system). For MS students. Offered by Criminology, Law and Society. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CRIM 544: *Corrections.* 3 credits.
Covers the social institutions and processes involved in punishment, control, and behavior change. Reviews the consequences of different policies and organizational approaches. For MS students. Offered by Criminology, Law and Society. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CRIM 545: *Crime Analysis.* 3 credits.
History, theory, and techniques of crime analysis and crime mapping. Includes routine activities, pattern, and rational choice theories. Review of data types. Application of crime analysis to crime control tactics, strategies, and administration. Offered by Criminology, Law and Society. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CRIM 561: *Politics of Crime Policy.* 3 credits.
Explores political context of crime policy. Examines influence of public opinion, interest groups, scientific community, and other political forces. In-depth, case-study comparison of several crime policies. For MS students. Offered by Criminology, Law and Society. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CRIM 562: *Crime and Place.* 3 credits.
Examines the concentration of crime at places, including geographic, environmental, and sociological features that attract or repel crime. Discusses theoretical explanations, crime prevention strategies, and the measurement of crime concentrations. For MS students. Offered by Criminology, Law and Society. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CRIM 595: *Special Topics.* 3 credits.
Recent developments in the field or topics not covered by regularly listed courses. The course content varies. For MS sudents. Offered by Criminology, Law and Society. May be repeated within the term for a maximum 9 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

700 Level Courses

CRIM 700: *Values, Ethics, and Criminal Justice Policy.* 3 credits.
Overview of important public values and classical and contemporary theories for understanding how these values apply to the criminal justice process. Offered by Criminology, Law and Society. May not be repeated for credit. Equivalent to GOVT 726.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CRIM 710: *Criminological Theory.* 3 credits.
Summarizes key principles and development of major criminological theories and evaluates the state of the empirical evidence for each one. Provides a critical assessment of different perspectives and identifies weaknesses and gaps. Offered by Criminology, Law and Society. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Graduate or Non-Degree.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CRIM 720: *Law and Social Science.* 3 credits.
Examines social science approaches to the law and the social processes that affect the behavior of legal actors and institutions. Includes theory and research in the law and society tradition. Offered by Criminology, Law and Society. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CRIM 721: *The Constitution, Criminal Procedure, and Security.* 3 credits.
Focuses on understanding legal doctrines that form basis of U.S. constitutional procedural rights and how doctrines develop, why courts rule as they do, and evaluating strengths, weaknesses of rights. Offered by Criminology, Law and Society. May not be repeated for credit.

Recommended Prerequisite: CRIM 720 or GOVT 728, or permission of instructor.

Registration Restrictions:

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CRIM 723: *Law and Social Control.* 3 credits.
Competing conceptions of law, political systems, and social control. Intellectual traditions behind social control, its definitions, and mechanisms for regulating public and private behavior, by both individuals and organizations in society. Offered by Criminology, Law and Society. May not be repeated for credit.

Recommended Prerequisite: CRIM 720 or GOVT 728, or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CRIM 730: *Courts and Constitutional Law.* 3 credits.
Role, influence, and effects of U.S. courts in creating constitutional norms and interpreting them. Special attention to First and Fourteenth Amendments, Commerce Clause. Analyzes leading court cases. Offered by Criminology, Law and Society. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CRIM 740: *Justice Organizations.* 3 credits.
Understanding and evaluating criminal justice policies, practices, and structures in an organizational context. Draws on organizational theory and empirical research to explore the challenges and opportunities to shape criminal justice processes and outcomes. Offered by Criminology, Law and Society. May not be repeated for credit. Equivalent to PUAD 790.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CRIM 741: *Street Level Criminal Justice.* 3 credits.
How justice organizations behave at lowest levels, where service is delivered and discretion is greatest (suspects, victims, witnesses, police officers, prison guards, parole officers, attorneys, and others who interact with the justice system). Offered by Criminology, Law and Society. May not be repeated for credit. Equivalent to PUAD 723.

Recommended Prerequisite: CRIM 740 or PUAD 790, or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CRIM 742: *Leadership in Justice and Security Organizations.* 3 credits.
Examines leadership theories, and explores fundamental questions about leadership in justice and security organizations today. Offered by Criminology, Law and Society. May not be repeated for credit.

Recommended Prerequisite: CRIM 740 or GOVT 790, or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CRIM 744: *Corrections.* 3 credits.
Covers the social institutions and processes involved in punishment, control, and behavior change. Reviews the consequences of different policies and organizational approaches. Offered by Criminology, Law and Society. May not be repeated for credit.

Recommended Prerequisite: CRIM 740.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CRIM 760: *Evidence-Based Crime Policy.* 3 credits.
Explores the theoretical and empirical support for crime and justice interventions and policies, and examines the translational link between research and criminal justice practices. Offered by Criminology, Law and Society. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CRIM 761: *Politics of Crime Policy.* 3 credits.
Explores political context of crime policy. Examines influence of public opinion, interest groups, scientific community, and other political forces. In-depth, case-study comparison of several crime policies. Offered by Criminology, Law and Society. May not be repeated for credit.

Recommended Prerequisite: CRIM 760/GOVT 792 or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CRIM 762: *Crime and Place.* 3 credits.
Examines the concentration of crime at places, including geographic, environmental, and sociological features that attract or repel crime. Discusses theoretical explanations, crime prevention strategies, and the measurement of crime concentrations. Offered by Criminology, Law and Society. May not be repeated for credit.

Recommended Prerequisite: CRIM 760.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CRIM 764: *Sentencing.* 3 credits.
Explores theories of punishment and sentencing practices. Examines political, sociological, criminological, and organizational influences on sentencing processes and decisions. Offered by Criminology, Law and Society. May not be repeated for credit.

Recommended Prerequisite: CRIM 760.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CRIM 780: *Research Methods.* 3 credits.
Introduces logic and methods of scientific inquiry in justice, law, and crime policy. Includes conceptualization of research questions, observation, measurement, research design, and principles of causality. Evaluation of extant research according to scientific principles. Offered by Criminology, Law and Society. May not be repeated for credit.

Recommended Prerequisite: Undergraduate course in social science research methods or statistics, or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CRIM 781: *Justice Program Evaluation.* 3 credits.
Practical exploration of assessment techniques used in evaluating need for and consequences of justice programs and policies. Design and measurement, interpreting and presenting results. Offered by Criminology, Law and Society. May not be repeated for credit. Equivalent to PUAD 791.

Recommended Prerequisite: PUAD 511/612, CRIM 780, or two graduate-level statistics courses; or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CRIM 782: *Statistics I.* 3 credits.
Focuses on descriptive and inferential statistical methods and theory with application to problems within the justice field. Explores the logic of inferential statistical methods in general and null hypothesis significance testing in particular. Covers widely used statistical procedures within the applied social sciences. Offered by Criminology, Law and Society. May not be repeated for credit.

Recommended Prerequisite: An undergraduate social science research methods course or an undergraduate statistics course.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CRIM 783: *Statistics II.* 3 credits.
Focuses on the theory and application of multivariate regression methods as applied within the justice field. Topics include tests for and consequences of violating assumptions of the generalized linear model, dummy coding of categorical variables, testing of interaction effects, logistic regression, ordered and multinominal logit, and missing data analysis. Offered by Criminology, Law and Society. May not be repeated for credit.

Recommended Prerequisite: CRIM 782 or a comparable course.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CRIM 784: *Experimental Criminology.* 3 credits.
Discusses the methodological, statistical, ethical, and practical concerns associated with experimental research designs in criminology. Offered by Criminology, Law and Society. May not be repeated for credit.

Recommended Prerequisite: CRIM 780.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CRIM 790: *Capstone in Policy and Practice.* 3 credits.
Student-initiated research project supervised by instructor. Students must work with a justice organization to conduct useful research and produce a policy-oriented white paper. Offered by Criminology, Law and Society. May not be repeated for credit.

Recommended Prerequisite: CRIM 780 or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Regular scale.

CRIM 795: *Special Topics.* 3 credits.
Recent developments in field, or topics not covered by regularly listed courses. Notes: Topics vary. May be repeated when topic is different. Offered by Criminology, Law and Society. May be repeated within the term for a maximum 15 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CRIM 796: *Directed Reading.* 1-3 credits.
Independent reading at doctoral level on specific topic related to justice, law, or crime policy as agreed to by student and faculty member and approved by coordinator of CRIM program. Offered by Criminology, Law and Society. May be repeated within the term for a maximum 15 credits.

Recommended Prerequisite: Successful completion of 12 graduate level CRIM credits.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Special scale.

CRIM 797: *Professionalization Seminar.* 0 credits.
Introduces doctoral students to research, scholarship and teaching practices in the field to promote their professional development. Notes: Required for Ph.D. students. Offered by Criminology, Law and Society. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Satisfactory/No Credit scale.

CRIM 799: *Master's Thesis.* 1-6 credits.
Research on approved master's thesis topic under direction of thesis committee with approval of chair. Notes: Minimum 3, maximum 6 credits for doctorate. Maximum of 6 credits of CRIM 799 applicable to masters degree requirements. Offered by Criminology, Law and Society. May be repeated within the degree.

Recommended Prerequisite: Submission and approval of thesis proposal.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Thesis

Grading:
This course is graded on the Satisfactory/No Credit scale.

900 Level Courses

CRIM 998: *Doctoral Dissertation Proposal.* 1-6 credits.
Work on a research proposal forming basis for doctoral dissertation. Notes: Minimum 3, maximum 6 credits for doctorate. Maximum of 24 credits of CRIM 998/CRIM 999 applicable to doctoral degree requirements. Offered by Criminology, Law and Society. May be repeated within the degree.

Recommended Prerequisite: Students must complete all core analytical course degree requirements.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

CRIM 999: *Doctoral Dissertation Research.* 1-21 credits.
Doctoral dissertation research and writing under direction of student's dissertation committee. Notes: Minimum 12, maximum 21 credits for doctorate. Maximum of 24 credits of CRIM 998/CRIM 999 applicable to

doctoral degree requirements. Offered by Criminology, Law and Society. May be repeated within the degree for a maximum 21 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy.

Enrollment is limited to Graduate level students.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

Cultural Studies (CULT)

300 Level Courses

CULT 320: *Globalization and Culture.* 3 credits.
Examines cultures in globalization, with special attention to the role of technologies and new media. Provides historical and contemporary contexts for understanding the relationships among circuits of production and consumption; population flows; social inequalities and collective identities; globalizations from "above" and "below;" built and natural environments. Offered by Cultural Studies. Limited to three attempts.

Recommended Prerequisite: GLOA 101 or SOCI 120

Registration Restrictions:
Students with a class of Freshman may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CULT 390: *Topics in Cultural Studies.* 1-3 credits.
Topics of current interest in interdisciplinary cultural studies, covering such fields as media, popular culture, political economy, social identities, or regions in globalization. Notes: May be repeated for credit when topic is different. Offered by Cultural Studies. May be repeated within the term for a maximum 9 credits.

Specialized Designation: Topic Varies

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

800 Level Courses

CULT 802: *Histories of Cultural Studies.* 3 credits.
Historical survey of principal works and theories in the development of cultural studies. Notes: This course is designed for PhD level students. Students in a related MA program may take this course as the capstone to their MA as they are about to matriculate into the PhD in cultural studies. Offered by Cultural Studies. May not be repeated for credit.

Recommended Prerequisite: Admission to doctoral program, related master's degree, or permission of instructor.

Registration Restrictions:
Enrollment is limited to students with a major in Cultural Studies.

Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CULT 804: *Histories of Cultural Studies II.* 3 credits.
Continues the historical survey of cultural studies up to the present and assesses possibilities for future development. Offered by Cultural Studies. May not be repeated for credit.

Recommended Prerequisite: Admission to a PhD program and CULT 802 or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CULT 806: *Research Seminar in Cultural Studies.* 3 credits.
Introduces research methods in cultural studies. Notes: Specific topics vary. Offered by Cultural Studies. May not be repeated for credit.

Recommended Prerequisite: Admission to a doctoral; completion of CULT 802, CULT 804.

Registration Restrictions:
Enrollment is limited to students with a major in Cultural Studies.

Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CULT 808: *Student/Faculty Colloquium in Cultural Studies.* 1 credit.
Forum for presentation of original and current research in cultural studies. Notes: Students register for 1 credit per semester over a three-semester period. Offered by Cultural Studies. May be repeated within the degree for a maximum 4 credits.

Recommended Prerequisite: Admission to doctoral program.

Registration Restrictions:
Enrollment is limited to students with a major in Cultural Studies.

Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Satisfactory/No Credit scale.

CULT 810: *Culture and Political Economy.* 3 credits.
Surveys social science and humanities classics that relate cultural production and consumption to underlying political economic conditions. Includes Marx, Lukacs, Frankfurt School, semiotic neo-Marxism, productivist theories of power indebted to Foucault, Baudrillard, Bourdieu, Harvey, Jameson, Mauss, Mill, Polanyi, Sahlins, A. Smith, and Weber. Notes: This course is designed for the PhD student. Those students not admitted to a PhD program are required to contact the instructor. Offered by Cultural Studies. May not be repeated for credit.

Recommended Prerequisite: Admission to a doctoral program, or permission of instructor.

Registration Restrictions:
Enrollment is limited to students with a major in Cultural Studies.

Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CULT 812: *Visual Culture.* 3 credits.
Examines theories, production, consumption, and reception of visual culture. Covers film, video, visual arts, music, display, ritual, performance, performativity, and theories of the aesthetic. Includes key readings from theorists such as Adorno, Artaud, Benjamin, Brecht, Bryson, Doane, Fiske, Heath, Marcuse, Merleau-Ponty, and Sartre. Notes: This course is designed for the PhD student. Those students not admitted to a PhD program are required to contact the instructor. Offered by Cultural Studies. May not be repeated for credit.

Recommended Prerequisite: Admission to a doctoral program or permission of instructor.

Registration Restrictions:
Enrollment is limited to students with a major in Cultural Studies.

Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CULT 814: *Gender and Sexuality.* 3 credits.
Investigates notion of gender functions in maintaining and analyzing issues of social and cultural power. Examines conflicting notions of sexuality and their role in cultural signification. Seeks to explicate relationship of sexuality, gender. Notes: This course is designed for the PhD student. Those students not admitted to a PhD program are required to contact the instructor. Offered by Cultural Studies. May not be repeated for credit.

Recommended Prerequisite: Admission to a doctoral program, or permission of instructor.

Registration Restrictions:
Enrollment is limited to students with a major in Cultural Studies.

Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CULT 816: *Science/Technology.* 3 credits.
Considers theories and major debates on culture of science, social construction of nature, and effects of technology on modern cultural forms. Includes readings from theorists such as Nietzsche, Heidegger, Horkheimer, Feyerabend, Bahro, Haraway, and Latour. Notes: This course is designed for the PhD student. Those students not admitted to a PhD program are required to contact the instructor. Offered by Cultural Studies. May not be repeated for credit.

Recommended Prerequisite: Admission to a doctoral program or permission of instructor.

Registration Restrictions:
Enrollment is limited to students with a major in Cultural Studies.

Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CULT 818: *Social Institutions.* 3 credits.
Considers theories of institutional practice and social structures, from Max Weber to Michel Foucault. Covers prisons, bureaucracies, museums, schools, political parties, and social movements. Notes: This course is designed for the PhD student. Those students not admitted to a PhD program are required to contact the instructor. Offered by Cultural Studies. May not be repeated for credit.

Recommended Prerequisite: Admission to a doctoral program, or permission of instructor.

Registration Restrictions:
Enrollment is limited to students with a major in Cultural Studies.

Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CULT 820: *After Colonialism.* 3 credits.
Surveys racial, ethnic, caste, and national identities in colonial contexts; the changing shape of the world system and reactions to it from the era of colonial conquest to the age of globalization. Special attention to anti-colonial critiques, postcolonial works, and the present shape of global inequalities. Notes: This course is designed for the PhD student. Those students not admitted to a PhD program are required to contact the instructor. Offered by Cultural Studies. May not be repeated for credit.

Recommended Prerequisite: Admission to a doctoral program, or permission of instructor.

Registration Restrictions:
Enrollment is limited to students with a major in Cultural Studies.

Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CULT 860: *Special Topics in Cultural Studies.* 3 credits.
Specialized interdisciplinary topics in cultural theory and analysis. Notes: These courses are designed for the PhD student. Those students not admitted to a PhD program are required to contact the instructor. Topics vary. May be repeated for credit when topic is different. Offered by Cultural Studies. May be repeated within the term.

Specialized Designation: Topic Varies

Recommended Prerequisite: Admission to a doctoral program, or permission of the instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CULT 870: *Independent Study.* 1-3 credits.
Reading and research on a specific topic guided by advisors, supporting the development of a Field Concentration. Offered by Cultural Studies. May be repeated within the term for a maximum 15 credits.

Recommended Prerequisite: Admission to a PhD program, successful completion of all core courses, or permission of director.

Registration Restrictions:
Enrollment is limited to students with a major in Cultural Studies.

Enrollment is limited to Graduate level students.

Schedule Type: Research

Grading:
This course is graded on the Graduate Special scale.

CULT 880: *Field Concentration.* 3 credits.
Intensive research course, resulting in a Field Statement and oral defense. Notes: Requires permission of field advisor. Offered by Cultural Studies. May be repeated within the term for a maximum 6 credits.

Recommended Prerequisite: Admission to cultural studies doctoral program, successful completion of core courses, and an additional 18 credits.

Registration Restrictions:
Enrollment is limited to students with a major in Cultural Studies.

Enrollment is limited to Graduate level students.

Schedule Type: Research

Grading:
This course is graded on the Graduate Special scale.

900 Level Courses

CULT 998: *Doctoral Dissertation Proposal.* 1-6 credits.
Develop research proposal that forms basis for doctoral dissertation. Notes: A maximum of 6 credits may be applied to the degree. Subject to continuous registration requirement. Offered by Cultural Studies. May be repeated within the degree for a maximum 24 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy.

Enrollment is limited to students with a major in Cultural Studies.

Enrollment is limited to Graduate level students.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

CULT 999: *Doctoral Dissertation.* 1-12 credits.
Doctoral dissertation research and writing under direction of dissertation committee. Offered by Cultural Studies. May be repeated within the degree.

Recommended Prerequisite: CULT 998.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy.

Enrollment is limited to students with a major in Cultural Studies.

Enrollment is limited to Graduate level students.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

Curriculum and Instruction (EDCI)

300 Level Courses

EDCI 372: *Teaching Mathematics in the Secondary School.* 3 credits.
Covers curricula, current issues, and research literature in secondary school mathematics. Emphasis is on developing different styles of teaching. Field experience is required for those seeking initial teacher licensure. Offered by School of Education. Limited to three attempts. Equivalent to SEED 372.

Recommended Corequisite: EDUC 422

Registration Restrictions:
Enrollment is limited to students with a major, minor, or concentration in Secondary Ed - Mathematic 6-12.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

EDCI 423: *Methods for Teaching PK-6 English Learners in Inclusive Classrooms.* 3 credits.
Examines current research, theory, and policy as applied to teaching and learning with K-6 English learners (ELs). Explores research-based methods, instructional frameworks, and culturally and linguistically responsive strategies for teaching ELs effectively in K-6 inclusive classrooms. This course requires 15 hours of field observation. Offered by School of Education. Limited to two attempts.

Recommended Prerequisite: Admission to Elementary Education licensure program; ELED course sequence as approved by advisor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Special scale.

EDCI 469: *Teaching English in Secondary School.* 3 credits.
Provides study of advanced methods, materials, content, and organization of English programs in secondary school. Offered by School of Education. Limited to three attempts. Equivalent to SEED 469.

Recommended Prerequisite: EDUC 422. Concurrent enrollment is also permitted.

Registration Restrictions:
Enrollment is limited to students with a major, minor, or concentration in Secondary Ed - English 6-12.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EDCI 472: *Advanced Methods for Teaching Mathematics in the Secondary School.* 3 credits.
Focuses on learning processes for mathematics. Introduces national and state standards regarding content and methodologies for teaching mathematics. Examines instructional methods and materials in relation to secondary mathematical content, curriculum, and assessment. Offered by School of Education. Limited to three attempts. Equivalent to SEED 472.

Recommended Prerequisite: EDCI 372, EDUC 422.

Registration Restrictions:
Enrollment is limited to students with a major, minor, or concentration in Secondary Ed - Mathematic 6-12.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EDCI 473: *Teaching Science in the Secondary School.* 3 credits.
Builds fundamental knowledge of science teaching and learning including standards-based curriculum design and research-based teaching strategies. Notes: School-based field experience required for those seeking initial teacher licensure. Offered by School of Education. Limited to three attempts.

Recommended Prerequisite: Admission to the Secondary Education Program.

Registration Restrictions:
Enrollment is limited to students with a major, minor, or concentration in Secondary Ed - Biology 6-12, Secondary Ed - Chemistry 6-12, Secondary Ed - Physics 6-12 or Secnd Ed - Earth Science 6-12.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EDCI 479: *Advanced Methods of Teaching English in the Secondary School.* 3 credits.
Guides students in working effectively with national and local standards for teaching secondary English. Continuation course in methods from EDCI 469. Offered by School of Education. Limited to three attempts. Equivalent to SEED 479.

Recommended Prerequisite: EDCI 469.

Registration Restrictions:
Enrollment is limited to students with a major, minor, or concentration in Secondary Ed - English 6-12.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EDCI 483: *Advanced Methods of Teaching Science in Secondary School.* 3 credits.
Provides advanced study of teaching and curriculum development based on research and current issues. Emphasizes integrating science and technology, adapting instruction to needs of diverse learners, and promoting safety. Offered by School of Education. Limited to three attempts. Equivalent to SEED 483.

Recommended Prerequisite: EDCI 473.

Registration Restrictions:
Enrollment is limited to students with a major, minor, or concentration in Secondary Ed - Biology 6-12, Secondary Ed - Chemistry 6-12, Secondary Ed - Physics 6-12 or Secnd Ed - Earth Science 6-12.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EDCI 490: *Student Teaching in Education.* 6 credits.
Provides intensive, supervised clinical experience in approved school for fall or spring semester. Offered by School of Education. Limited to three attempts. Equivalent to SEED 492, SEED 493, SEED 494, SEED 496.

Recommended Prerequisite: Completion of licensure and all endorsement course work.

Registration Restrictions:
Enrollment is limited to students with a major, minor, or concentration in Secondary Ed - Biology 6-12, Secondary Ed - Chemistry 6-12, Secondary Ed - Mathematic 6-12, Secondary Ed - English 6-12, Secondary Ed - Physics 6-12 or Secnd Ed - Earth Science 6-12.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Special scale.

EDCI 491: *Internship Seminar in Secondary Training.* 2 credits.
Focuses on critical reflection regarding effects of teacher actions others; develops skills as reflective practitioner; presents research-based rationales for instructional decision-making. Offered by School of Education. Limited to three attempts. Equivalent to SEED 491.

Recommended Prerequisite: Admission to the professional semester.

Recommended Corequisite: EDCI 490.

Registration Restrictions:
Enrollment is limited to students with a major, minor, or concentration in Secondary Ed - Biology 6-12, Secondary Ed - Chemistry 6-12, Secondary Ed - Mathematic 6-12, Secondary Ed - English 6-12, Secondary Ed - Physics 6-12 or Secnd Ed - Earth Science 6-12.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

500 Level Courses

EDCI 510: *Linguistics for PreK-12 ESOL Teachers.* 3 credits.
Examines language as a system, with particular focus on teaching culturally and linguistically diverse students in grades PreK-12. Considers teaching implications of phonology, morphology, syntax, semantics, and

pragmatics. Fieldwork hours are required. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (EDRD 515[B-] or 515[XS]) and (EDUC 511[B-] or 511[XS]) and (EDUC 537[B-] or 537[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in English as a Second Language or Curriculum and Instruction.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDCI 516: *Bilingualism and Language Acquisition Research.* 3 credits.
Examines first and second language acquisition theories past and present. Explores how PK-12 bilingual and multilingual learners' cultures and languages are valuable assets in classrooms and addresses implications for instruction and assessment. Develops understanding of research around instructional environments that promote bilingualism and biliteracy. Fieldwork hours are required. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (EDRD 515[*B-] or 515[*XS]) and (EDUC 511[B-] or 511[XS]) and (EDUC 537[B-] or 537[XS]).
[*] May be taken concurrently.
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDCI 519: *Methods of Teaching Culturally and Linguistically Diverse Learners.* 3 credits.
Examines approaches, methods, and techniques for teaching culturally and linguistically diverse learners in bilingual and ESL classrooms, as well as resources available in the field. Critically analyzes and demonstrates teaching approaches based on second language acquisition research, including teaching language through content. Fieldwork hours are required. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (EDCI 510[*B-] or 510[*XS]) and (EDCI 516[B-] or 516[XS]).
[*] May be taken concurrently.
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDCI 520: *Assessment of Language Learners.* 3 credits.
Examines innovative approaches to assessing language learners. Topics include identification, placement, monitoring of student progress, development of authentic performance-based measures, design of portfolios, application of measurement concepts, analysis of assessment instruments, and linking assessments to instruction. Fieldwork hours are required. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: EDCI 519[*B-], 519[*XS], 560[*B-] or 560[*XS].
[*] May be taken concurrently.
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDCI 544: *Curriculum and Methods of Teaching in Elementary Education.* 3 credits.
Introduction to general methods of teaching in elementary schools focusing on planning, teaching strategies, management, assessment, and differentiation. Offered by School of Education. May not be repeated for credit. Equivalent to ELED 544.

Recommended Prerequisite: Admission to the Elementary Education graduate program; must be taken in programmatic sequence.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:

This course is graded on the Graduate Regular scale.

EDCI 545: *Assessment and Differentiation.* 3 credits.
Provides a research-based introduction to differentiated instruction for children in grades PK-6. Emphasis on the assessment of learners and differentiation of instruction to meet the needs of all learners. Offered by School of Education. May not be repeated for credit. Equivalent to ELED 545.

Recommended Prerequisite: Admission into the Elementary Education graduate program, must be taken in programmatic sequence.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDCI 552: *Mathematics Methods for the Elementary Classroom.* 1-3 credits.
Introduces methods for teaching all children topics in arithmetic, geometry, algebra, probability, and statistics in elementary grades. Focuses on using manipulatives and technologies to explore mathematics and solve problems. Notes: Requires field experience in public schools. Offered by School of Education. May be repeated within the degree for a maximum 3 credits. Equivalent to ELED 552.

Recommended Prerequisite: Admission to the Elementary Education licensure program.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Curriculum and Instruction.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

EDCI 553: *Science Methods for the Elementary Classroom.* 1-3 credits.
Develops skills and abilities in science teaching methods, applications of technology, safety practices, and creation of integrated science curricula. Examines science teaching based on contemporary theory, practice, and standards. Notes: Requires field experience in public schools. Offered by School of Education. May be repeated within the degree for a maximum 3 credits. Equivalent to ELED 553.

Recommended Prerequisite: Admission to the Elementary Education licensure program.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Curriculum and Instruction.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

EDCI 554: *Methods of Teaching Social Studies and Integrating Fine Arts in the Elementary Classroom.* 3 credits.
Focuses on the design and delivery of standards-based integrated curriculum centered on the social sciences. Includes integration of fine arts and examines the central role of the arts in learning. Notes: School-based field experience required. Offered by School of Education. May be repeated within the degree for a maximum 3 credits. Equivalent to ELED 554.

Recommended Prerequisite: Admission into Elementary Education graduate program; must be taken in programmatic sequence.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Curriculum and Instruction.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

EDCI 555: *Literacy Teaching and Learning in Diverse Elementary Classrooms I.* 3 credits.
Provides research-based introduction to literacy teaching and learning for younger children. Emphasizes language development; reading and writing processes; emergent literacy; culture, families, and literacy; and literacy integration in the curriculum. Notes: School-based field experience required. Offered by School of Education. May not be repeated for credit. Equivalent to ELED 555.

Recommended Prerequisite: Admission to the Elementary Education licensure program.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDCI 556: *Literacy Teaching and Learning in Diverse Elementary Classrooms II.* 1-3 credits.
Provides research-based introduction to literacy teaching and learning for older children. Emphasizes literacy and language processes and development; connections among cultures, families, and literacy; and literacy integration in curriculum. Notes: School-based field experience required. Offered by School of Education. May be repeated within the degree for a maximum 3 credits. Equivalent to ELED 556.

Recommended Prerequisite: Admission to the Elementary Education Licensure program.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Curriculum and Instruction.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

EDCI 557: *Integrating Technology in PreK-6.* 3 credits.
Studies the development and integration of technology in the elementary education curriculum including the use of technology to address the learning needs of diverse students. Notes: School-based field experience required. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: Admission to the Elementary Education licensure program.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Curriculum and Instruction.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDCI 559: *Research and Assessment in Elementary Education.* 3 credits.
Provides teacher candidates an understanding of research paradigms utilizing systematic evidence to improve practice and further skills in assessment of learning outcomes. Emphasizes linking research and practice, making instructional decisions based on systematically collected data. Offered by School of Education. May not be repeated for credit. Equivalent to ELED 559.

Recommended Prerequisite: Admission into Elementary Education graduate program; capstone course for degree must be taken last in programmatic sequence.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDCI 560: *Methods of Teaching in Foreign/World Languages.* 3 credits.
Covers approaches, theories, and methods of teaching foreign and second languages, with practical application to classroom. Students demonstrate teaching strategies, develop lesson and unit-planning skills, and evaluate curricula and materials. Notes: Requires field experience in schools. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: EDCI 516[*B-], 516[*XS], SPAN 502[B-] or 502[XS].
[*] May be taken concurrently.
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDCI 567: *Teaching Social Studies in the Secondary School.* 3 credits.
Provides teacher candidates an introduction to methods, frameworks, and practices of teaching social studies in secondary schools. Notes: Requires 15 hours of school-based field experience. Offered by School of Education. May not be repeated for credit. Equivalent to SEED 567.

Recommended Prerequisite: EDUC 522. Concurrent enrollment is also permitted.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduation Deadline Extended, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDCI 569: *Teaching English in the Secondary School.* 3 credits.
Provides study of advanced methods, materials, content, and organization of English programs in secondary school. Notes: 15 hours school-based field experience required. Offered by School of Education. May not be repeated for credit. Equivalent to SEED 569.

Recommended Prerequisite: EDUC 522. Concurrent enrollment is also permitted.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDCI 570: *Teaching Young Adult Literacy in a Multicultural Setting.* 3 credits.
Examines literary works written for and about young adults. Introduces critical issues surrounding teaching young adult literature in multiculturally diverse public schools and requires reading and reviewing young adult literature from several genres. Offered by School of Education. May not be repeated for credit. Equivalent to SEED 502.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDCI 572: *Teaching Mathematics in the Secondary School.* 3 credits.
Emphasizes developing different styles of teaching. Notes: 15 hours school-based field experience required. Offered by School of Education. May not be repeated for credit. Equivalent to SEED 572.

Recommended Prerequisite: EDUC 522. Concurrent enrollment is also permitted.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDCI 573: *Teaching Science in the Secondary School.* 3 credits.
Provides study of methods, materials, content, and organization of science programs. Emphasizes curriculum planning, current methodologies, safety, and trends in secondary schools. Notes: 15 hours school-based field experience required. Offered by School of Education. May not be repeated for credit.

Specialized Designation: Green Leaf Related Course

Recommended Prerequisite: EDUC 522. Concurrent enrollment is also permitted.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDCI 580: *Human Development and Learning.* 3 credits.
Examines overarching principles and theories of human growth and development. Explores the various domains of development – physical, cognitive, language, social/emotional, and moral – through the major theories of educational psychology. Explores how students learn and are motivated to learn. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a concentration in TESOL PK-Adult Non-Licensure.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDCI 581: *Understanding Culturally and Linguistically Diverse Learners.* 3 credits.
Examines the ways that race, ethnicity, language, religion, socioeconomic status, gender, sexual orientation, and ability intersect to affect educational experiences for culturally and linguistically diverse (CLD) learners of all ages. Invites educators to deepen understanding of culture and explore their own cultural identities with implications for equitable pedagogical practices with CLD learners. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a concentration in TESOL PK-Adult Non-Licensure.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDCI 582: *Foundations in Language and Literacy.* 3 credits.
Focuses on the relationship of language to reading and the connection between language structure and learning to read in English. Examines theories of language acquisition and the complexity of language development and the reading process for ESL/EFL/EAL students. Explores key factors that influence and enhance English language learning and development. Introduces literacy instruction and literacy assessment for ESL/EFL/EAL learners, and explores sociocultural perspectives on literacy. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a concentration in TESOL PK-Adult Non-Licensure.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDCI 583: *Research and Practice with Bi-Multilingual Learners.* 3 credits.
Examines first and second language acquisition theories and sociopolitical contexts of research around the development of bi-multilingualism past and present. Studies bilingual/multilingual learners' cultures and languages through asset-based perspectives and addresses implications for pedagogical practices that promote bi-multilingualism and biliteracy. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a concentration in TESOL PK-Adult Non-Licensure.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDCI 584: *Linguistics for TESOL Professionals.* 3 credits.
Examines language as a system, with particular focus on teaching culturally and linguistically diverse students across all levels. Considers teaching implications of phonology, morphology, syntax, semantics, and pragmatics. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a concentration in TESOL PK-Adult Non-Licensure.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDCI 585: *TESOL Methodology.* 3 credits.
Examines approaches, methods, and techniques for teaching culturally and linguistically diverse ESL/EFL/EAL learners, as well as resources available in the field. Demonstrates and critically analyzes teaching approaches based on second language acquisition research, including teaching language through content. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a concentration in TESOL PK-Adult Non-Licensure.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDCI 586: *Assessment in English Language Teaching.* 3 credits.
Examines innovative approaches to assessing ESL/EFL/EAL learners. Focuses on topics such as identification, placement, monitoring of student progress, development of authentic performance-based measures, design of portfolios, application of measurement concepts, analysis of assessment instruments, and linking assessment to instruction. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a concentration in TESOL PK-Adult Non-Licensure.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDCI 587: *Content Literacy in English Language Teaching.* 3 credits.
Focuses on research-based instructional strategies for integrating development of ESL/EFL/EAL learners' academic language and literacy skills with learning of content concepts across grade levels and disciplinary areas. Emphasizes sociocultural practices that leverage ESL/EFL/EAL learners' social, cultural, linguistic, and knowledge capitals to strengthen academic achievement in content classrooms and discipline-specific fields. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a concentration in TESOL PK-Adult Non-Licensure.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDCI 588: *Consultation and Collaboration in Educational Settings.* 3 credits.
Focuses on ways in which education professionals can collaborate in serving EAL/EFL/ESL students. Explores methods for co-planning and co-teaching as well as ways for sharing responsibilities for instruction and assessment. Examines ways for managing difficult professional interactions and how to implement collaborative and inclusive models of education. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a concentration in TESOL PK-Adult Non-Licensure.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

EDCI 589: *Cultural and Linguistic Inquiry in TESOL.* 3 credits.
Provides culminating experience that emphasizes TESOL professional as change agent through critical inquiry into cultural and linguistic influences on learning environments and language/literacy learning experiences. Provides opportunity to research key aspects of critical inquiry and apply to practice across TESOL settings through master's capstone project. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a concentration in TESOL PK-Adult Non-Licensure.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDCI 597: *Special Topics in Education.* 1-6 credits.
Provides advanced study on selected topic or emerging issue in American or international education. Notes: May be repeated for credit with GSE permission. Offered by School of Education. May be repeated within the degree.

Specialized Designation: Topic Varies

Recommended Prerequisite: Admission to program in GSE.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in ASTL-Alternative Education, ASTL-Early Childhood Educ, Gifted Child Education, ASTL - History, ASTL-Instructional Technology, ASTL - Literacy/Reading, ASTL - Mathematics, ASTL-NBPTS Preparation Core, ASTL - Science or Curriculum and Instruction.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

600 Level Courses

EDCI 600: *Workshop in Education.* 1-6 credits.
Offers full-time workshops and weekend seminars on selected topics in education and education tour seminars. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

EDCI 617: *Using Digital and Popular-Culture Media with Grades 4-12.* 3 credits.
Exposes students to recent knowledge on how middle and high school teachers can use digital media and popular culture texts to engage students in subject area learning or literacy development. Focus is on grades 4-12. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: Admission to a GSE licensure, Master's, or doctoral program and at least one year of PK-12 teaching experience, completion of EDCI 569, EDCI 567, EDCI 572, EDCI 573, or EDCI 544, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Curriculum and Instruction.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDCI 621: *Introduction to Gifted and Talented Learners.* 3 credits.
Examines nature and needs of gifted and talented learners by exploring their varied characteristics. Analyzes the role of culture, language, income, dis/ability, and ethnicity in the manifestation and identification of gifts and talents. Prepares teachers to examine issues in gifted education, and recognize and advocate for underrepresented student groups in gifted programs. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in ASTL-Alternative Education, ASTL-Early Childhood Educ, Gifted Child Education, ASTL - History, ASTL-Instructional Technology, ASTL - Literacy/Reading, ASTL - Mathematics, ASTL-NBPTS Preparation Core, ASTL - Science, Adv Stud T/L or Curriculum and Instruction.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDCI 622: *Curriculum and Instructional Strategies for Gifted Learners.* 3 credits.
Develops personal and professional rationale for differentiating instruction in mixed-ability classrooms, as well as skills and knowledge of strategies to utilize pre-assessment data and plan for and implement differentiated instruction for diverse gifted learners. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in ASTL-Alternative Education, ASTL-Early Childhood Educ, ASTL - History, ASTL-Instructional Technology, ASTL - Literacy/Reading, ASTL - Mathematics, ASTL-NBPTS Preparation Core, ASTL - Science, Curriculum and Instruction or Gifted Education.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDCI 623: *Supporting the Social Emotional Needs of Gifted Learners.* 3 credits.
Provides a framework to examine the social and emotional development of gifted learners. Offers exploration of research-informed strategies related to the affective guidance of gifted students, including instructional environment considerations. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Curriculum and Instruction.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDCI 624: *Advanced Assessment and Evaluation of Gifted Learners.* 3 credits.
Examines perspectives and understandings of assessment as related to gifted learners including assessment for identification and curricular assessment. Explores and critiques traditional roles of intelligence assessments as means for gifted evaluation. Develops advanced understandings of assessment practices and fosters awareness of the influences of language, culture, ethnicity, gender, and exceptionality on recognition and subsequent identification of giftedness. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in ASTL-Alternative Education, ASTL-Early Childhood Educ, Gifted Child Education, ASTL - History, ASTL-Instructional Technology, ASTL - Literacy/Reading, ASTL - Mathematics, ASTL-NBPTS Preparation Core, ASTL - Science or Curriculum and Instruction.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDCI 625: *Contemporary Issues and Trends in Gifted Education.* 3 credits.
Focuses on research, trends, issues, legislation, and litigation concerning gifted and talented children. Provides professionals in gifted education and related fields with knowledge and skills to serve as advocates for gifted-child education. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: EDCI 621, 622, 623, and 624.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in ASTL-Alternative Education, ASTL-Early Childhood Educ, Gifted Child Education, ASTL - History, ASTL-Instructional Technology, ASTL - Literacy/Reading, ASTL - Mathematics, ASTL-NBPTS Preparation Core, ASTL - Science, Adv Stud T/L or Curriculum and Instruction.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDCI 626: *Action Research in Gifted Education.* 3 credits.
Opportunity to identify and investigate school-based problem and apply inquiry, writing, and research skills to relevant issue or concern in gifted education. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in ASTL-Alternative Education, ASTL-Early Childhood Educ, Gifted Child Education, ASTL - History, ASTL-Instructional Technology, ASTL - Literacy/Reading, ASTL - Mathematics, ASTL-NBPTS Preparation Core, ASTL - Science or Curriculum and Instruction.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDCI 627: *Advanced Practicum in Gifted Education.* 3 credits.
Intensive supervised clinical experiences for one semester in accredited elementary or secondary school. Students supervised in setting that includes scheduled observations and seminar experiences. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: EDCI 621, 622, 623, and 624.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in ASTL-Alternative Education, ASTL-Early Childhood Educ, Gifted Child Education, ASTL - History, ASTL-Instructional Technology, ASTL - Literacy/Reading, ASTL - Mathematics, ASTL-NBPTS Preparation Core, ASTL - Science, Adv Stud T/L or Curriculum and Instruction.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Graduate Special scale.

EDCI 630: *Supporting English Learners in PK-12 Schools.* 3 credits.
Provides new knowledge for classroom teachers who wish to know more about second language acquisition and how to effectively serve English Learners in their classrooms and schools. Examines research in first and second language acquisition, bilingualism, and includes teachers' application of new knowledge for culturally responsive curriculum development and student assessment. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDCI 644: *Mathematics Learning and Assessment (K-8).* 3 credits.
Introduces students to learning theories and associated assessment practices specific to mathematics education. Intended for mathematics specialists and teachers interested in problems of learning and assessment across K-8 settings in mathematics education. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: Admission to the MEd in Education Leadership, Mathematics Education Leadership concentration

Registration Restrictions:

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Curriculum and Instruction or Education Leadership.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDCI 645: *Curriculum Development in Mathematics Education.* 3 credits.
Analysis, design, and evaluation of school mathematics curricula. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: Admission to the Mathematics Education Leadership Masters Degree Program or permission of the instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Curriculum and Instruction or Education Leadership.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDCI 646: *Mathematics Education Leadership for School Change.* 3 credits.
Surveys current literature and large-scale studies in mathematics education. Engages students in research, study, and discussion of factors that affect teaching and learning of mathematics in school settings. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: Admission to the Mathematics Education Leadership Masters Degree Program or permission of the instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDCI 660: *Integrated STEM Teaching.* 3 credits.
Provides an interdisciplinary approach to integrating science, technology, engineering, and mathematics (STEM) into teaching practice across all disciplines. Explores aspects of STEM education through literature, recent national reports, discussion, and practice. Involves participation in problem-based and project-based learning activities, inquiry learning, while using technology to gain and display information. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

EDCI 663: *Research in Science Teaching.* 3 credits.
Investigates the research and methodology involved in teaching and learning biological, chemical, physical, and earth sciences from K-12. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: Course in teaching science in elementary or secondary school, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in ASTL-Alternative Education, ASTL-Early Childhood Educ, Gifted Child Education, ASTL - History, ASTL-Instructional Technology, ASTL - Literacy/Reading, ASTL - Mathematics, ASTL-NBPTS Preparation Core, ASTL - Science, Curriculum and Instruction or Education Leadership.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

EDCI 666: *Research in Mathematics Teaching.* 3 credits.
Explores curricula, current issues, and research literature in elementary school mathematics. Emphasizes development of different styles of teaching. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDCI 667: *Advanced Methods of Teaching Social Sciences in the Secondary School.* 3 credits.
Emphasizes interdisciplinary curriculum and instruction, implementing national state standards, authentic assessment, and adaptations for

diverse populations. Notes: School-based field experience required. Offered by School of Education. May not be repeated for credit. Equivalent to SEED 667.

Recommended Prerequisite: EDCI 567 and EDUC 522.

Recommended Corequisite: EDRD 619.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDCI 669: *Advanced Methods of Teaching English in the Secondary School.* 3 credits.
Continuation course in methods (See EDCI 569). Guides students in working effectively with national and local standards for teaching secondary English. School-based field experience required. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: EDCI 569 and EDUC 522.

Recommended Corequisite: EDRD 619.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDCI 670: *Advanced Methods in Science Teaching.* 3 credits.
Application of major principles of education and psychology for the improvements of science teaching in secondary schools. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDCI 671: *Innovations in Science Teaching.* 3 credits.
Focuses on the development and selection of teaching materials that reflect concepts of technology innovation with an emphasis on middle and secondary school science. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDCI 672: *Advanced Methods of Teaching Mathematics in the Secondary School.* 3 credits.
Focuses on learning processes for mathematics. Introduces national and state standards regarding content and methodologies for teaching mathematics. Examines instructional methods and materials in relation to secondary mathematical content, curriculum, and assessment. School-based field experience required. Offered by School of Education. May not be repeated for credit. Equivalent to SEED 672.

Recommended Prerequisite: EDCI 572, EDUC 522.

Recommended Corequisite: EDRD 619.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDCI 673: *Advanced Methods of Teaching Science in the Secondary School.* 3 credits.
Provides advanced study of teaching and curriculum development based on research and current issues. Emphasizes integrating science and technology, and adapting instruction to the needs of diverse learners. School-based field experience required. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: EDCI 573 and EDUC 522.

Recommended Corequisite: EDRD 619.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDCI 684: *Advanced Methods of Teaching Foreign/Second Languages in PK-12 Schools.* 3 credits.
Blends theoretical knowledge and practical application. Provides advanced study of second language pedagogy and teaching trends. Topics include multiple learning styles, alternative forms and assessment, and teaching diverse populations. Notes: Requires school-based field experience. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (EDCI 520[*B-] or 520[*XS]) and (EDCI 560[B-] or 560[XS]).
[*] May be taken concurrently.
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

700 Level Courses

EDCI 702: *Internship in Mathematics Education.* 3 credits.
Offers practical experiences and professional challenges for mathematics leaders in authentic educational settings. Activities emphasize school-based and classroom based research and leadership. Develops the skills and abilities of the mathematics leaders to analyze classroom practice, investigate teaching and disseminate information about mathematics education in professional development settings for teachers. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to students with a major in Curriculum and Instruction or Education Leadership.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Graduate Regular scale.

EDCI 776: *Consultation and Collaboration in Diverse K-12 Settings.* 3 credits.
Focuses on ways in which practicing education professionals collaborate in serving diverse learners and their families. Explores methods for co-planning and co-teaching in the general education classroom and ways for sharing responsibilities for instruction and assessment. Includes ways for dealing with difficult interactions are part of understanding how to implement collaborative and inclusive models of education for diverse learners. Offered by School of Education. May not be repeated for credit.

Recommended Corequisite: Completion of all other program requirements EDCI 777

Registration Restrictions:
Required Prerequisites: EDCI 792, 793 or 794.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Special scale.

EDCI 777: *Research to Practice.* 3 credits.
Provides culminating experience that synthesizes and applies essential elements of teaching culturally & linguistically diverse and exceptional learners in international contexts. Emphasizes teacher as change agent through critical inquiry into practice. Promotes collaboration among teachers and school professionals to advance achievement of diverse learners. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: Completion of all other program requirements

Recommended Corequisite: EDCI 776

Registration Restrictions:
Required Prerequisites: EDCI 792, 793 or 794.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

EDCI 790: *Internship in Education.* 1-6 credits.
Intensive, supervised clinical experience for full semester in accredited school. Students must register for appropriate section. Offered by School of Education. May be repeated within the term for a maximum 6 credits. Equivalent to ELED 790, SEED 792, SEED 793, SEED 794, SEED 795.

Recommended Prerequisite: EDUC 522, EDUC 672, two methods classes in content area; passing Praxis II and VCLA, completing all endorsements.

Recommended Corequisite: EDCI 791.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Satisfactory/No Credit scale.

EDCI 791: *Internship Seminar in Secondary Teaching.* 2 credits.
Focuses on critical reflection regarding effects of teacher actions on others; develops skills as a reflective practitioner; presents research-

based rationales for instructional decision-making. Offered by School of Education. May not be repeated for credit. Equivalent to SEED 791.

Recommended Prerequisite: Admission to the professional semester.

Recommended Corequisite: EDCI 790.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

EDCI 792: *Internship in Education: PK-6 International Elementary Education.* 6 credits.
Provides intensive, supervised clinical experience for a full semester in an accredited school. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: Completion of all licensure tests and endorsement requirements.

Registration Restrictions:
Required Prerequisites: (EDRD 515[B-] or 515[XS]) and (EDUC 511[B-] or 511[XS]) and (EDUC 512[B-] or 512[XS]) and (EDUC 513[B-] or 513[XS]) and (EDUC 514[B-] or 514[XS]) and (EDUC 516[B-] or 516[XS]) and (EDUC 520[B-] or 520[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Satisfactory/No Credit scale.

EDCI 793: *Internship in Education: PK-12 ESL/ESOL Education.* 6 credits.
Provides intensive, supervised clinical experience for full semester in accredited school. Students must register for appropriate section. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: Completion of all licensure tests and endorsement requirements.

Registration Restrictions:
Required Prerequisites: (EDCI 510[B-] or 510[XS]) and (EDCI 516[B-] or 516[XS]) and (EDCI 519[B-] or 519[XS]) and (EDCI 520[B-] or 520[XS]) and (EDRD 515[B-] or 515[XS]) and (EDRD 610[B-] or 610[XS]) and (EDUC 511[B-] or 511[XS]) and (EDUC 537[B-] or 537[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Satisfactory/No Credit scale.

EDCI 794: *Internship in Education: PK-12 Foreign/World Language Education.* 6 credits.
Provides intensive, supervised clinical experience for a full semester in an accredited school. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: Completion of all licensure tests and endorsement requirements.

Registration Restrictions:
Required Prerequisites: (EDCI 516[B-] or 516[XS]) and (EDCI 520[B-] or 520[XS]) and (EDCI 560[B-] or 560[XS]) and (EDCI 684[B-] or 684[XS]) and (EDRD 620[B-] or 620[XS]) and (EDUC 511[B-] or 511[XS]) and (EDUC 537[B-] or 537[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Satisfactory/No Credit scale.

EDCI 797: *Advanced Topics in Education.* 1-6 credits.
Advanced study of selected topics in education for students preparing for doctoral studies or who have been admitted to the PhD program in education. Notes: May be repeated for credit with CEHD approval. Offered by School of Education. May not be repeated for credit.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

800 Level Courses

EDCI 810: *Foundations of Science Education Research.* 3 credits.
Explores and analyzes the range of research designs currently utilized by science education researchers. Develops an understanding of the assumptions and frameworks of different types of science education inquiry through an examination of ways of knowing. Examines historical trends that have taken place in science education. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: Permission of instructor.

Recommended Corequisite: EDUC 800.

Registration Restrictions:
Enrollment is limited to students with a concentration in Science Education Research.

Enrollment limited to students in the E1-PHD-EDUC program.

Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDCI 811: *Current Trends in Science Education Research.* 3 credits.
Provides an in-depth examination and analysis of literature and research in science education. Examines theoretical foundations of research studies in science education, discusses methodologies of research, critique research, and examines trends in emerging science education research. Includes presentations by science education researchers as well as opportunities for graduate students to explore research ideas with colleagues within the class. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: EDCI 810.

Registration Restrictions:
Enrollment limited to students in the E1-PHD-EDUC program.

Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDCI 813: *Focused Science Education Research.* 3 credits.
Provides an opportunity for students to gain hands-on experience designing and conducting a research study in science education that leads to publication and/or conference presentations. The scholarship embodied in student development to this point in the doctoral program will lead students to work with a science education faculty member of their choice to development and seek to answer a research question of interest. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: EDRS 810, EDRS 811, EDRS 827.

Registration Restrictions:
Students cannot enroll who have a concentration in Science Education Research.

Enrollment limited to students in the E1-PHD-EDUC program.

Enrollment is limited to Graduate level students.

Schedule Type: Internship

Grading:
This course is graded on the Graduate Regular scale.

EDCI 855: *Mathematics Education Research on Teaching and Learning.* 3 credits.
Surveys most current research literature in mathematics education. Engages students in research, study, and discussion of mathematics education research on teaching and learning in school settings. Builds on students' educational and professional experiences to ensure students are well versed in research that has influenced mathematics education. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: Admission to the Mathematics Education Leadership Ph.D. program.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

EDCI 856: *Mathematics Education Curriculum Design and Evaluation.* 3 credits.
Engages in research, analysis, design, and evaluation of school mathematics curricula from various methodologies and theoretical approaches. Examines how mathematics education and mathematics curricula is culturally, historically, and politically situated. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: Admission to the Mathematics Education Leadership PhD program.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

EDCI 857: *Preparation and Professional Development of Mathematics Teachers.* 3 credits.
Engages students in the study of the attributes of effective professional development in mathematics education. Develops expertise in designing and teaching mathematics methods courses, and creating and providing professional development experiences for practicing teachers. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: Admission to the Mathematics Education Leadership PhD program.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

EDCI 858: *Mathematics Education Research Design and Evaluation.* 3 credits.
Examines methods of research appropriate for mathematics education. Develops knowledge of the scope and evolution of research methodologies from a range of perspectives. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: Admission to the Mathematics Education Leadership PhD program.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

EDCI 859: *Current Issues in Mathematics and STEM Education Research.* 3 credits.
This introduces contemporary topics in mathematics education research. Students learn about current issues in research design and topics of interest in mathematics teaching, learning, policy and practice. They apply this knowledge to develop pilot studies. Offered by School of Education. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

Cyber Security Engineering (CYSE)

100 Level Courses

CYSE 101: *Introduction to Cyber Security Engineering.* 3 credits.
Provides comprehensive introduction to the principles, applications, and practice of cyber security engineering. Students learn the basic concepts and terminology of cyber security and how cyber security is commonly addressed after the design and implementation phases. Students are introduced to the systems engineering and design processes and learn to integrate and apply cyber security tools and techniques in these processes. Offered by Cyber Security Engineering. Limited to two attempts.

Registration Restrictions:
Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CYSE 130: *Introduction to Computing for Digital Systems Engineering.* 3 credits.
The course introduces students to programming in the context of Systems Design process. Students learn to take a systems perspective when approaching problems and designing solutions, how the structure and behavior of a system is modeled using SysML, and to implement the system model using programming techniques in Python. The course explores various Python modules (standard library and 3rd Party) that extend the basic language functionality in useful ways, in particular, for model based systems engineering. The students apply their programming skills to solve commonly encountered Task Automation, Data Mining, Cleansing, and Transformation. Course emphasizes the use of appropriate Web Services APIs and technologies commonly encountered in Data Analytics and AI to find, access, and analyze available data and datasets. Offered by Cyber Security Engineering. Limited to two attempts. Equivalent to SYST 130.

Mason Core: Info Tech & Computing

Recommended Prerequisite: Passing score on the math placement test for MATH 113.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

200 Level Courses

CYSE 205: *Systems Engineering Principles.* 3 credits.
Introduction to systems engineering with a focus on cyber security engineering. Emphasize development of analytical, technical, management, and teamwork skills through exercises in planning, documentation, presentation, and the creative process of IT engineering design. Analyze case studies involving systems engineering role in cyber security. Offered by Cyber Security Engineering. Limited to two attempts. Equivalent to SYST 205.

Registration Restrictions:
Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CYSE 211: *Operating Systems and Lab.* 3 credits.
Addresses basic issues such as virtual memory, kernel and user mode, system calls, threads, context switches, interrupts, interprocess communication, coordination of concurrent activities. May also address: concurrency, processes and multi-threading, context switching, synchronization, scheduling, and deadlock. Memory management, dynamic memory allocation, address translation. Management of file systems, storage devices, directories, protection, scheduling and crash recovery. Offered by Cyber Security Engineering. Limited to two attempts.

Registration Restrictions:
Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CYSE 220: *Systems Modeling.* 3 credits.
Introduces modeling of dynamical systems. Formulation of mathematical models from system descriptions, including computer, economic, transportation, electrical power and mechanical systems. Analytical and numerical methods for solving models and studying their behavior. Discrete-time and continuous time systems. Linear and nonlinear systems. Introduction to computer modeling using MATLAB. Offered by Cyber Security Engineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (MATH 203[C] or 203[XS]) and (PHYS 160[C] or 160[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CYSE 230: *Computer Networking.* 3 credits.
Introduces network concepts; OSI reference model and layering; data coding; analog/digital communications review; physical layer and data link control; Data Link Layer Control protocols; flow control; error control; link management; common link protocols. LAN and WAN; connection-oriented and connectionless packet switching; circuit-switched networks

and control signaling; congestion control and traffic management; transport layer client-server model; domain name systems, routing methods. Offered by Cyber Security Engineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (CS 112[C] or 112[XS]) and (CYSE 101[C] or 101[XS]) and (MATH 113[C] or 113[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

300 Level Courses

CYSE 301: *Digital Systems.* 3 credits.
Introduces digital circuits, systems and computers. Topics include binary systems and codes, digital logic gates and circuits, microelectronics and integrated circuits, coding and multiplexing, multi-vibrators, shift registers, counters, analog-to-digital converters, and elementary computer architecture. Offered by Cyber Security Engineering. Limited to two attempts. Equivalent to ECE 301.

Registration Restrictions:
Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CYSE 325: *Discrete Events Systems Modeling.* 3 credits.
Introduces basic modeling of the dynamics of discrete event systems. Both analytical and simulation techniques for the modeling and analysis of such systems are considered. Relevant concepts from discrete mathematics are included and appropriate software tools are used to examine different engineering applications. Offered by Cyber Security Engineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (STAT 344[C] or 344[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Cyber Security Engineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CYSE 330: *Introduction to Network Security.* 3 credits.
Introduces cryptography and its applications in networks. Reviews basic firewalls architectures and VPNs. Overview of current network security protocols, security of routing protocols, the DNS, and e-mail security. Discuss threat of attacks that use viruses, worms, rootkits, botnets and countermeasures; distributed denial of service attacks and spam countermeasures. Introduces basic concepts of security of wireless networks. Offered by Cyber Security Engineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (CYSE 101[C] or 101[XS]) and (CS 222[C] or 222[XS]) and (CYSE 230[C] or 230[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Cyber Security Engineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

CYSE 411: *Secure Software Engineering.* 3 credits.
This course provides a foundation for building secure software by applying security principles to the software development lifecycle. Topics covered include: security in requirements engineering, secure designs, risk analysis, threat modeling, deploying cryptographic algorithms, defensive coding, penetration testing, fuzzing, static analysis, and security assessment. Students will learn the practical skills for developing and testing secure software. Notes: This course may be of interest to students specializing in software aspects of cyber security engineering. Offered by Cyber Security Engineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (CS 222[C] or 222[XS]) or ((CDS 130[C] or 130[XS]) and (SYST 230[C] or 230[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Cyber Security Engineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CYSE 421: *Industrial Control Systems Security.* 3 credits.
Provides an introduction to industrial control systems (ICS). Covers fundamental concepts of control loop and its main components. Human-Machine Interface (HMI) and displays. Remote measurements through networks or through telemetry. Diagnostic and maintenance utilities. Input-Output servers. Data historian utility. SCADA systems. ICS Security. Connectivity of the control system network to other networks. Possible security threats. Vulnerability assessments. Multilayer defense strategies. Offered by Cyber Security Engineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (CYSE 230[C] or 230[XS]) and (ECE 301[C] or 301[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Cyber Security Engineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CYSE 424: *Embedded and Real Time Systems.* 3 credits.
Presents design methodology, principles and practice for the development of real-time embedded systems and their application to robotics, mechatronics, sensing, signal processing, and control. They include automated sensors, switches and PLCs. Topics include system decomposition, multi-tasking, task communication and synchronization, system modeling, time analysis, principles of filter and controller implementation, 'fuzzy' engineering, and multimicrocontroller systems. Offered by Cyber Security Engineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (ECE 301[C] or 301[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Cyber Security Engineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CYSE 425: *Secure RF Communications.* 3 credits.
Reviews current systems of Radio Frequency (RF) communications and related cyber security issues. This course focuses on security issues in wireless networks, such as cellular networks, wireless LANs, Bluetooth, NFC, RFID, mobile security, anti-jamming communication, and physical layer security. The course will first present an overview of wireless networks, then focus on attacks and discuss proposed solutions and their limitations. Offered by Cyber Security Engineering. Limited to two attempts. Equivalent to ECE 425.

Registration Restrictions:
Required Prerequisites: ((CS 222[C], 222[XS], 262[C] or 262[XS]) and (ECE 465[C], 465[XS], CYSE 230[C], 230[XS], CS 455[C] or 455[XS]) and (MATH 125[C], 125[XS], ECE 231[C] or 231[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Computer Engineering, Computer Science, Cyber Security Engineering, Electrical and Computer Engr or Electrical Engineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CYSE 430: *Critical Infrastructure Protection.* 3 credits.
Consists of a four week lecture course followed by ten weekly seminars presented by students. The lecture part provides a description of US Designated Critical Infrastructure Sectors and a corresponding list of federal sector specific agencies (SSAs). Each student selects a sector, develops and presents a seminar talk on critical cyber security issues involved in a given sector. Offered by Cyber Security Engineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: SYST 205[C] or 205[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Cyber Security Engineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CYSE 445: *System Security and Resilience.* 3 credits.
Focuses on modeling and evaluation of the engineering systems that are expected to operate in a contested cyber environment. Covers architectures and modeling, uses a variety of techniques, establishing measures of performance that are relevant to the domain of operation, evaluating the security or vulnerability of the system to cyber exploits, and then assessing its resilience. Offered by Cyber Security Engineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: ((CYSE 325[*C] or 325[XS]) and (CYSE 230[C] or 230[XS]) and (ECE 301[C] or 301[XS])).
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman or Sophomore may **not** enroll.

Enrollment is limited to students with a major, minor, or concentration in Cyber Security Engineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CYSE 450: *Cyber Vulnerability Lab.* 1 credit.
Lab for CYSE 445. Provides hands-on experience in security issues of network systems. Issues in ethical hacking, penetration testing, forensics and incident handling and response will be discussed. Notes: This is a hands-on lab course, with short lecture introductions. Offered by Cyber Security Engineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (CYSE 445[*C] or 445[XS]).
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Cyber Security Engineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

CYSE 460: *Power Systems and Smart Grid Security.* 3 credits.
Covers fundamentals of power systems; basics of electricity, electricity generation, economics of supply and demand, and electricity market operations in regulated and deregulated environment. The other part of the course will cover Smart Grid and its impact on the energy industry. Also includes Energy policy modeling and analysis. Offered by Cyber Security Engineering. Limited to two attempts.

Registration Restrictions:
Enrollment is limited to students with a major, minor, or concentration in Cyber Security Engineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CYSE 461: *Power Grid Security.* 3 credits.
Overview of integrating smart grid into the current system. Includes the seven domains (bulk generation, transmission, distribution, customer, operations, markets, and service providers) as well as the electrical and communication interfaces that connect the layers and domains. Focuses on monitoring equipment in the smart grid. Provides an overview of security principles and approaches for applying them to the smart grid. Offered by Cyber Security Engineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisite: CYSE 460[C].
[C] Requires minimum grade of C.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CYSE 462: *Mobile Devices and Network Security.* 3 credits.
Embedded security features of hand-held wireless devices. Data link layer encryption and authentication protocols applied in mobile devices. Security factors in the decisions on configuring wireless mobile devices and network infrastructure. Robust cryptography that is needed to attain the highest levels of integrity, authentication, and confidentiality. Offered by Cyber Security Engineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (CYSE 425[C], 425[XS], ECE 425[XS] or 425[C]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Computer Engineering, Cyber Security Engineering or Electrical and Computer Engr.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CYSE 465: *Transportation Systems Design.* 3 credits.
Discusses common elements and differences among problems that occur securing road, rail, air and sea transportation systems. Covers threats to control systems. Introduces control measures. Discusses past, present and future of in-vehicle and on-road safety systems, and cyber threats to emerging autonomous cars. Analyzes cyber threats to aviation and sea transportation security and available countermeasures. Offered by Cyber Security Engineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: SYST 230[C] or 230[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman or Sophomore may **not** enroll.

Enrollment is limited to students with a major, minor, or concentration in Cyber Security Engineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CYSE 467: *GPS Security.* 3 credits.
Provides background in long-range navigation developments; early global systems; space based systems; GPS and GLONASS systems; system architecture; spacecraft and earth station characteristics; design concepts of the CA and P GPS signal modes; frequencies, modulation, and other design aspects; clock issues; range and accuracy calculations and limitations; advanced concepts. Explains advanced concepts in global navigation satellite systems. Offered by Cyber Security Engineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (CYSE 425[C] or 425[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CYSE 470: *Human Factors and Cyber Security Engineering.* 3 credits.
This course explores the human factor in cyber security engineering. The focus is on understanding human performance characteristics and limitations, and the various research, design, and evaluation methods needed to address them when engineering secure systems. Topics include, for example, perception, cognition, memory, situation awareness, decision making, stress, automation, and human-computer display and interaction design principles. Offered by Cyber Security Engineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: ((SYST 205[C] or 205[XS]) and (STAT 344[C], 344[XS], 346[C] or 346[XS])).
[C] Requires minimum grade of C.

[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Cyber Security Engineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CYSE 475: *Cyber Physical Systems.* 3 credits.
Introduces cyber physical systems as an integration of physical processes, computation, and networking. Discusses modeling and simulation of cyber physical systems, system design and implementation. Analyze such systems based on abstractions for modeling physical systems and abstractions for modeling data transformations. Covers security issues in cyber physical systems and applications selected from infrastructure, energy, transportation, robotics, manufacturing, and communications domains. Offered by Cyber Security Engineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: ((CYSE 330[C] or 330[XS]) and (CYSE 421[C] or 421[XS]) and (CYSE 450[C] or 450[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CYSE 476: *Cryptography Fundamentals.* 3 credits.
Covers basic concepts of cryptology, types of cryptosystems, security services, and key management. Gradually introduces mathematical background required for understanding cryptography. Discusses modern secret-key stream and block ciphers, modes of operation, public key cryptosystems (RSA, elliptic curve, and post-quantum cryptography), hash functions, message authentication codes, and digital signature schemes. Covers key cracking machines, side-channel attacks, and fault attacks. Discusses popular cryptographic modules, such as True Random Number Generators and Physical Unclonable Functions, used for key generation and device authentication. Introduces educational and public domain software implementing modern cryptographic algorithms. Offered by Cyber Security Engineering. Limited to two attempts. Equivalent to ECE 476.

Registration Restrictions:
Required Prerequisites: (ECE 301[C], 301[XS], 231[C], 231[XS], 331[C] or 331[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major in Computer Engineering, Computer Science, Cyber Security Engineering or Electrical Engineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CYSE 477: *Intrusion Detection.* 3 credits.
The objective of this course is to provide an in depth introduction to the science and art of intrusion detection. The course covers methodologies, techniques, and tools for monitoring events in computer systems or networks, with the objective of preventing and detecting unwanted process activity and recovering from malicious behavior. Offered by Cyber Security Engineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: SYST 230[C] or 230[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman or Sophomore may **not** enroll.

Enrollment is limited to students with a major, minor, or concentration in Cyber Security Engineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CYSE 478: *Cyber Security Audit and Compliance.* 3 credits.
Fundamental concepts of the Cyber Security Compliance and Testing process. This will revolve around defining a control framework, the attendant control objectives and the reporting system for an organization. Covers the process of creating a control structure with goals and objectives, audit a given cyber infrastructure against it, and if found inadequate, establish a systematic remediation procedure. Offered by Cyber Security Engineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: CYSE 421[C] or 421[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CYSE 479: *Methods of User Authentication.* 3 credits.
Discusses limitations of passwords and PINs and introduces alternatives. Covers user authentication based on security tokens and smart cards. Introduces basics of biometric systems, based on information such as fingerprints, facial features, iris, and voice. Discusses the use and security of electronic ID cards and passports. Covers methods of distinguishing human from internet bots over the network, such as CAPTCHA's. Offered by Cyber Security Engineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (CYSE 211[C] or 211[XS]) and (CYSE 301[C] or 301[XS]) and (CYSE 330[C] or 330[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:

This course is graded on the Undergraduate Regular scale.

CYSE 480: *Reverse Software Engineering.* 3 credits.
Introduces various types of malicious software (malware). Discusses malware analysis using virtual machines, sandboxes, process monitors, packet sniffers, de-obfuscation, etc. Introduces hardware Trojans and other forms of malicious hardware. Discusses prevention techniques at the design, fabrication, and post-fabrication level. Introduces various countermeasures against malicious software and hardware. The course has a lab with Windows and Android operating systems. Offered by Cyber Security Engineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (CYSE 211[C] or 211[XS]) and (ECE 301[C] or 301[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman or Sophomore may **not** enroll.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CYSE 491: *Engineering Senior Seminar.* 3 credits.
This course covers a variety of responsibilities of cyber security engineers including: engineering ethics, government policies, laws and regulations affecting cyber security engineering, industry practices, entrepreneurship. Effective technical communications. Incorporates global implications of cyber security engineering. Speakers include faculty, invited guests from industry and government, as well as students. Offered by Cyber Security Engineering. Limited to two attempts.

Specialized Designation: Writing Intensive in Major

Recommended Corequisite: CYSE 492.

Registration Restrictions:
Students with a class of Freshman or Sophomore may **not** enroll.

Enrollment is limited to students with a major, minor, or concentration in Cyber Security Engineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CYSE 492: *Senior Advanced Design Project I.* 3 credits.
First semester of a two semester capstone course in the Cyber Security Engineering program. Development of a design project by a team of students. Conception of the project and determination of its feasibility. Work includes developing preliminary design and implementation plan. Projects will aim at the integration of the technical material learned in several courses and incorporation of industry input. Offered by Cyber Security Engineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: CYSE 491[*C] or 491[XS].
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman or Sophomore may **not** enroll.

Enrollment is limited to students with a major, minor, or concentration in Cyber Security Engineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CYSE 493: *Senior Advanced Design Project II.* 3 credits.
Second semester of a two semester capstone course in the Cyber Security Engineering program. Project includes designing a cyber-physical security system, writing required software, assembling hardware if needed, conducting experiments or studies, and testing the complete system. Requires oral and written reports during project and at completion. Offered by Cyber Security Engineering. Limited to two attempts.

Mason Core: Capstone

Registration Restrictions:
Required Prerequisites: (CYSE 492[C] or 492[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

CYSE 498: *Independent Study in Cyber Security Engineering.* 1-3 credits.
Research and analysis of selected problems or topics in Cyber Security Engineering. Topic must be arranged with instructor and approved by department chair before registering. Notes: May be repeated if topics substantially different. Offered by Cyber Security Engineering. May be repeated within the term for a maximum 6 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Students with a class of Freshman or Sophomore may **not** enroll.

Enrollment is limited to students with a major in Cyber Security Engineering.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

CYSE 499: *Special Topics in Cyber Security Engineering.* 3 credits.
Special Topics in the Cyber Security Engineering area, with different content in different terms. Offered by Cyber Security Engineering. May be repeated within the term for a maximum 12 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: 60 credits towards BS in Cyber Security Engineering.

Registration Restrictions:
Enrollment limited to students with a class of Junior, Senior Plus or Senior.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

500 Level Courses

CYSE 521: *Industrial Control Systems Security.* 3 credits.
Provides an introduction to industrial control systems (ICS) at a Graduate level. Covers fundamental concepts of control loop and its main components.Human-Machine Interface (HMI) and displays. Remote measurements through networks or through telemetry. Diagnostic and maintenance utilities. Input-Output servers. Data historian utility. SCADA systems. ICS Security. Connectivity of the control system network to other networks. Possible security threats. Vulnerability assessments.Multilayer defense strategies. Offered by Cyber Security Engineering. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CYSE 550: *Cyber Security Engineering Fundamentals.* 3 credits.
This is the introductory graduate course in Cyber Security Engineering. It is a technical course that provides the required foundations for successful completion of the MS CYSE program. The course introduces key subjects in the area, such as engineering systems and cyber security problems in engineering; cyber security design; introduction to Cryptography; system and network security; identity management; adversarial modeling; vulnerability assessment; and industrial control and manufacturing security. Offered by Cyber Security Engineering. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Satisfactory/No Credit scale.

CYSE 570: *Fundamentals of Operating Systems.* 3 credits.
Operating system design and implementation as it relates to management and interaction of processor, memory, files, and I/O devices. Includes security considerations and a review of data structures, programming concepts, and computer systems architecture. Offered by Cyber Security Engineering. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Graduate Regular scale.

CYSE 580: *Hardware and Cyber Physical Systems.* 3 credits.
Covers computer architecture and hardware to support subsequent cyber-physical systems modules. Introduces cyber-physical systems as an integration of physical processes, computation, and networking. Discusses modeling and simulation of cyber-physical systems, system design, and implementation. Covers security issues in cyber-physical systems and applications selected from infrastructure, energy, transportation, robotics, manufacturing, and communications domains. Students study and build cyber-physical systems. Offered by Cyber Security Engineering. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Graduate Regular scale.

CYSE 587: *Cyber Security Systems Engineering.* 3 credits.
This course addresses cyber security from the standpoint of systems engineers. It introduces core principles for the design and management of resilient and robust systems throughout their complete lifecycle. Topics include but are not limited to lifecycle assurance of systems, risk analysis, models for secure systems development and management, gap analysis, quantitative methods for cyber security, and special topics in cyber security. The course also covers distinct technologies for assessing system vulnerabilities, measuring and modeling risk, reducing uncertainty in risk management, and others. Target audience consists of engineers who want to expand their skill sets to better align with the demands of current cyber security jobs, as well as those who intent to work on cyber security research. Cyber security professionals would also benefit from the course by being exposed to a systems engineering, holistic perspective on cyber security design, development, and management. Offered by Cyber Security Engineering. May not be repeated for credit. Equivalent to CYSE 787, SYST 687, SYST 787.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

600 Level Courses

CYSE 610: *Networks and Cyber Security.* 3 credits.
Introduction to architectures and protocols of computer networks and concept of packet switching. Topics include ISO standard layer

model, physical interfaces and protocols, data link control, multi-access techniques, packet switching, routing and flow control, network topology, data communication subsystems, error control coding, local area network, wireless communications, satellite packet broadcasting, packet radio, interconnection of packet-switching networks, network security and privacy, and various examples of computer networks. Security threats and countermeasures are addressed in detail to include firewalls, intrusion detection and prevention, physical security, and network monitoring. Offered by Cyber Security Engineering. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Graduate Regular scale.

CYSE 650: *Topics in Cyber Security Engineering.* 3 credits.
Topics not covered in department's regular Cyber Security Engineering offerings. Course content may vary each semester depending on instructor and the perception of students' needs. Offered by Cyber Security Engineering. May be repeated within the term for a maximum 6 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CYSE 670: *Secure Design of Connected and Automated Vehicles.* 3 credits.
This research oriented course addresses the research and engineering challenges faced in designing and implementing connected automated vehicles. These involve multiple aspects of sensing, recognition, control and communication aspects for vehicles and road-side infrastructure. Two important aspects of automated and connected vehicles are the need to minimize traffic delays and congestion while being cognizant and accommodating the needs of pedestrians, bicyclist and other entities that need to share the roads and roadside spaces. In addition, special needs such as providing the right of way for emergency vehicles and traffic arrangements around special events and parking in congested cities are issues that needs to be addressed in a comprehensive framework for connected automated vehicles. The class will discuss current topics related to communication standards such as 5G/DSRC, basic Safety Message Systems etc., and how they would work with existing traffic signals and vehicular contr Offered by Cyber Security Engineering. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CYSE 680: *Advanced Manufacturing Automation Security.* 3 credits.
This course explores the application of Cyber Security concepts in support of advanced manufacturing. The focus is on techniques applicable to Industrial Automation and Control Systems (IACS) against threats to security through unexpected situations, activities or occasions, or through consider assault. Topics include cyber-physical security, establishing causality between cyber execution, physical production, and energy consumption for intelligent efficiency, and detection of cyber threats based on physical process anomalies in advanced manufacturing systems. The course will also cover advanced equipment and product management functions, distributed vulnerability discovery, causality analysis and attack defenses, and Cyber-physical ledger infrastructure. Offered by Cyber Security Engineering. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CYSE 682: *Formal Methods for Cyber Physical Systems Security.* 3 credits.
Formal techniques applied to computer security provide a reliable way of demonstrating that a system is immune to entire classes of attacks (provided the assumptions of the models are satisfied). This is a stark contrast with the more general approach of ruling a system as secure until an attack proves otherwise. This course explores the various ways in which formal methods can be applied to the security of cyber-physical systems. Emphasis is given to CPS used in advanced manufacturing industries and their associated supply chain networks. Topics include formal specification languages for security properties, security analysis utilities, domain-specific security concerns, translating informal requirements to formal specifications in languages such as AADL, satisfiability solvers (SAT), satisfiability modulo theories (SMT), real-time model checking, verification of system requirements, and case studies of formally verified secure systems. Offered by Cyber Security Engineering. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CYSE 683: *Reverse Engineering Industrial Automation.* 3 credits.
This course presents fundamental, systems-level concepts for developing an understanding of the underlying functionality of an industrial system without a prior access to the system's design specifications. Considers generalized approaches to developing a set of specifications for a complex system through orderly examination of specimens of that system. Illustrates procedures for identifying the system's components

and their interrelationships. Demonstrates methods for creating representations of the system in another form or at a higher level of abstraction. Presents fundamental definitions for forward engineering, reverse engineering, design recovery, restructuring and reengineering. Case studies from several domain areas will be presented to include: integrated circuit (IC) and circuit board analysis, communications protocol analysis, software disassembly, and programmable logic verification. Offered by Cyber Security Engineering. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CYSE 690: *Cyber Security Engineering Capstone Project.* 3 credits.
Analysis and design of a complex cybersecrurity-engineered integrated system involving software, hardware and people. Involves application of cyber security engineering principles to the design, implementation and operation of the system. Includes requirements analysis, analysis of design alternatives, assessment of threats, and risk, economical and regulatory considerations. Requires oral and written reports throughout the course. Offered by Cyber Security Engineering. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: ((AIT 660[B-] or 660[XS]) and SYST 687[B-] and (CYSE 570[B-], CS 571[B-] or 571[XS]) and CYSE 580[B-] and 610[B-] and (ECE 646[B-] or 646[XS])).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

CYSE 698: *Independent Study and Research.* 3 credits.
Study of a selected area in Cybersecurity EngineeringI under the supervision of a faculty member. A written report is required. Offered by Cyber Security Engineering. May be repeated within the degree for a maximum 12 credits.

Recommended Prerequisite: Completion of at least 2 MS CYSE core courses

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Regular scale.

700 Level Courses

CYSE 750: *Advanced Topics in Cyber Security Engineering.* 3 credits.
Advanced topics not covered in department's regular systems engineering offerings. Course content may vary each semester depending on instructor and the perception of students' needs. May be repeated for credit when topics are distinctly different. Offered by Cyber Security Engineering. May be repeated within the term for a maximum 6 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CYSE 787: *Cyber Security Systems Engineering.* 3 credits.
This course addresses cyber security from the standpoint of systems engineers. It introduces core principles for the design and management of resilient and robust systems throughout their complete lifecycle. Topics include but are not limited to lifecycle assurance of systems, risk analysis, models for secure systems development and management, gap analysis, quantitative methods for cyber security, and special topics in cyber security. The course also covers distinct technologies for assessing system vulnerabilities, measuring and modeling risk, reducing uncertainty in risk management, and others. Target audience consists of engineers who want to expand their skill sets to better align with the demands of current cyber security jobs, as well as those who intent to work on cyber security research. Cyber security professionals would also benefit from the course by being exposed to a systems engineering, holistic perspective on cyber security design, development, and management. Offered by Cyber Security Engineering. May not be repeated for credit. Equivalent to CYSE 587, SYST 687, SYST 787.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

CYSE 799: *Cyber Security Engineering Master Thesis.* 1-6 credits.
Research project chosen and completed under the guidance of a graduate faculty member, which results in a technical report acceptable to a three#member faculty committee, and an oral defense. Offered by Cyber Security Engineering. May be repeated within the degree.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Thesis

Grading:
This course is graded on the Satisfactory/No Credit scale.

Dance (DANC)

100 Level Courses

DANC 101: *Dance Appreciation.* 3 credits.
Introduces dance as universal human activity, expression of cultural identity, and art form. Survey of global dance includes folk, ceremonial and ritual, trance, court, classical, and theatrical. Offered by School of Dance. Limited to three attempts.

Mason Core: Arts

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

DANC 114: *Rhythmic Analysis and Music Resources for Dance.* 3 credits.
Introduces rhythmic structure, notation, and basic forms of music. Offered by School of Dance. Limited to three attempts.

Registration Restrictions:
Enrollment is limited to students with a major in Dance.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

DANC 118: *World Dance.* 3 credits.
Performance of a world dance form through presentation of fundamental techniques, music and culture. Area of concentration may vary to include an array of world dance forms. Offered by School of Dance. May be repeated within the term for a maximum 6 credits.

Mason Core: Global Understanding

Specialized Designation: Non-Western Culture

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

DANC 119: *Dance in Popular Culture: Afro-Latino Dance.* 3 credits.
Performance of a popular dance form through presentation of fundamental techniques, music, and culture. Area of concentration may vary to include an array of popular dance forms. Offered by School of Dance. May be repeated within the degree for a maximum 6 credits.

Mason Core: Arts

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

DANC 120: *Special Topics in Dance.* 1-3 credits.
Rotating topic. Introduction and exploration of topical studies in dance or related study areas; topic depends on instructor. Notes: May be repeated if course content differs. Offered by School of Dance. May be repeated within the term for a maximum 9 credits.

Specialized Designation: Topic Varies

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

DANC 125: *Modern/Contemporary Dance I.* 3 credits.
Introduces fundamentals of modern dance technique. Emphasizes improving anatomical awareness and alignment, increasing strength and flexibility, and developing rhythmic sensitivity. Offered by School of Dance. May be repeated within the degree for a maximum 6 credits.

Mason Core: Arts, Encore: Well-Being

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

DANC 131: *Beginning Jazz Technique.* 3 credits.
Introduces fundamentals of jazz dance technique, explores the musical and cultural traditions of jazz dance, and its historical context. Emphasizes improving anatomical awareness and alignment, increasing strength and flexibility, and developing rhythmic sensitivity. Also introduces jazz improvisation and choreography. Offered by School of Dance. May be repeated within the degree for a maximum 6 credits.

Mason Core: Arts

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

DANC 145: *Ballet I.* 3 credits.
Introduces fundamental elements of ballet technique and vocabulary. Stresses learning vocabulary and movement characteristics of this highly stylized art form. Emphasizes improving anatomical awareness and alignment, increasing strength and flexibility, and developing musicality. Offered by School of Dance. May be repeated within the degree for a maximum 6 credits.

Mason Core: Arts, Encore: Well-Being

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

DANC 150: *Dance Improvisation.* 3 credits.
Explores movement invention and discovery. Movement explored in relation to other art forms such as literature, painting, sculpture, and architecture; enhancing kinesthetic awareness; sensitivity to others; and the environment. Prerequisite for dance composition and choreography series. Offered by School of Dance. Limited to three attempts.

Registration Restrictions:
Enrollment is limited to students with a major in Dance.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

DANC 161: *Beginning Tap Dance.* 3 credits.
Introductory exploration of rhythms and steps basic to the art form of tap dancing including its musical and cultural traditions. Emphasizes improving anatomical awareness and alignment, increasing strength

and flexibility and developing rhythmic sensitivity. Offered by School of Dance. May be repeated within the degree for a maximum 6 credits.

Mason Core: Arts

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

DANC 170: *Orientation to Dance Production.* 1 credit.
Introduces sound, lighting, and stage management elements and terminology as related to dance performance. Intensive workshop setting emphasizes laboratory experience. Offered by School of Dance. Limited to three attempts.

Registration Restrictions:
Enrollment is limited to students with a major in Dance.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

DANC 190: *First Year Seminar.* 0 credits.
Introduction to School of Dance, CVPA, and university resources available to dance majors. Weekly meetings focus on learning about opportunities for involvement in dance, the community, and adjusting academically. Each class addresses a topic to assist dance majors to effectively transition to college life. Offered by School of Dance. Limited to three attempts.

Registration Restrictions:
Enrollment is limited to students with a major in Dance.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

200 Level Courses

DANC 210: *Anatomy and Kinesiology for Dance.* 3 credits.
Covers aspects of anatomy and kinesiology that directly apply to correct development of dance technique. Emphasizes exercise correctives and imagery to correct insufficient muscle pattern and reduce stress on the body. Offered by School of Dance. Limited to three attempts.

Registration Restrictions:
Enrollment is limited to students with a major in Dance.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

DANC 225: *Modern/Contemporary Dance II.* 3 credits.
Further develops knowledge, skills, and appreciation of modern dance through continued exploration of techniques, aesthetics, and creativity. Continuing the development of anatomical awareness and alignment, technical clarity, and rhythmic sensitivity. Offered by School of Dance. May be repeated within the degree for a maximum 9 credits.

Mason Core: Arts

Recommended Prerequisite: DANC 125 or permission of instructor.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

DANC 231: *Intermediate Jazz Technique.* 3 credits.
Further study of the concepts of jazz dance technique, and in-depth study of 21st century jazz dance forms. Emphasizes furthering anatomical awareness and alignment, developing technical clarity, rhythm and syncopation. Continues exploration of jazz improvisation and choreography. Offered by School of Dance. May be repeated within the degree for a maximum 12 credits.

Mason Core: Arts

Recommended Prerequisite: DANC 131 or permission of instructor.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

DANC 245: *Ballet II.* 3 credits.
Further develops fundamental elements of ballet technique and vocabulary. Stresses increasing vocabulary and movement characteristics of this highly stylized art form. Continuing emphasis on improving anatomical awareness and alignment, increasing strength and flexibility, and developing musically. Offered by School of Dance. May be repeated within the degree for a maximum 9 credits.

Mason Core: Arts

Recommended Prerequisite: DANC 145 or permission of instructor.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

DANC 251: *Dance Composition I.* 3 credits.
Introduces basic principles for composing dance movement. Focuses on simple compositional forms as they apply to solo performer, discussion, analysis, and evaluation of artistic choices. Students maintain video and written journals to document their artistic process. Offered by School of Dance. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (DANC 150[C] or 150[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major in Dance.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

DANC 252: *Dance Composition II.* 3 credits.
Explores compositional elements in dance as they apply to group forms. Offers continued experience in developing and manipulating movement phrases using a variety of compositional forms. Introduces conducting rehearsals and selecting music. Students discuss, analyze, and evaluate artistic choices in composition using appropriate dance arts vocabulary and terminology, and maintain video and written journals to document artistic process. Offered by School of Dance. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: ((DANC 150[C] or 150[XS]) and (DANC 251[C] or 251[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major in Dance.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

DANC 270: *Dance Production Lab.* 1 credit.
Practical experience in stage crew, sound, or lighting of dance productions through rehearsal to public performance for university dance concerts or guest artist programs. Offered by School of Dance. May be repeated within the term for a maximum 6 credits.

Registration Restrictions:
Required Prerequisites: (DANC 170[C] or 170[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major in Dance.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

300 Level Courses

DANC 301: *What is Dance?.* 3 credits.
Explores connections among literature, music, theater, and visual art within aesthetic framework of dance. Examines development and ideals of Western theatrical dance, and historical and social context in which they were created. Method of instruction includes lecture, discussion, and studio experiences. Offered by School of Dance. Limited to three attempts.

Mason Core: Arts

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

DANC 304: *Intermediate Ballet I.* 1-3 credits.
Emphasizes anatomical awareness and principles of ballet technique. Barre, center, and grand allegro combinations expand technical skills, ballet vocabulary and musicality. Offered by School of Dance. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Enrollment is limited to students with a major in Dance.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

DANC 305: *Intermediate Modern/Contemporary Dance I.* 1-3 credits.
Contemporary studio practice builds anatomical awareness and knowledge while increasing strength, flexibility and stamina. Emphasis on ability to quickly learn material and replicate accurately. Projects build an understanding of precedents, and contemporary practices. Offered by School of Dance. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Enrollment is limited to students with a major in Dance.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

DANC 314: *Intermediate Ballet II.* 1-3 credits.
Provides continued expansion of ballet technique and vocabulary with focus on development of dynamic range, and rhythmic facility while maintaining high technical standards. Emphasizes increasing technical proficiency, improving anatomical awareness, and developing deeper understanding of skills and principles of ballet technique. Offered by School of Dance. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Enrollment is limited to students with a major in Dance.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

DANC 315: *Intermediate Modern/Contemporary Dance II.* 1-3 credits.
Continued expansion of modern dance vocabulary while emphasizing somatic alignment principles as applied to contemporary technique. Focus on developing increased dynamic range and rhythmic sensitivity. Offered by School of Dance. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Enrollment is limited to students with a major in Dance.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

DANC 318: *Global Perspectives: World Dance Forms.* 3 credits.
Continued in-depth study of world dance form including technique, music, and culture. Texts, video, performances, music, participatory events, and guest artist presentations. Lecture, studio. Area of concentration varies to include as many cultures as possible. Offered by School of Dance. May be repeated within the degree for a maximum 6 credits.

Mason Core: Global Understanding

Registration Restrictions:
Required Prerequisites: (DANC 118[C], 118[XS] or 119[C]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

DANC 324: *Introduction to Dance Conditioning.* 1-3 credits.
Course involves intensive rehabilitation and conditioning exercises and realignment training geared for the individual dancer. In-depth understanding of injury prevention and neuromuscular re-education are

applied to ballet and modern technique classes. Offered by School of Dance. May be repeated within the term for a maximum 12 credits.

Registration Restrictions:
Enrollment is limited to students with a major in Dance.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

DANC 325: *Modern/Contemporary Dance III.* 1-3 credits.
Explores intermediate level of modern dance technique. Emphasizes improving anatomical awareness, increasing strength and flexibility, expanding modern dance vocabulary, and developing flow and dynamic range. Offered by School of Dance. May be repeated within the term for a maximum 24 credits.

Mason Core: Arts

Registration Restrictions:
Enrollment is limited to students with a major in Dance.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

DANC 331: *Advanced Jazz Dance.* 3 credits.
In-depth studio study of 21st century jazz dance forms. Continues concepts and vocabulary introduced in DANC 231, and further emphasizes alignment, technical clarity and virtuosity. Emphasizes mastery of rhythm and syncopation. Offered by School of Dance. May be repeated within the degree for a maximum 6 credits.

Mason Core: Arts

Recommended Prerequisite: DANC 231 or permission of instructor.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

DANC 345: *Ballet III.* 1-3 credits.
Provides continued ballet training for intermediate-level dancer. Emphasizes increasing technical proficiency, improving anatomical awareness, and developing deeper understanding of skills and principles of ballet technique and how they provide foundation to teach and perform. Offered by School of Dance. May be repeated within the term for a maximum 24 credits.

Mason Core: Arts

Registration Restrictions:
Enrollment is limited to students with a major in Dance.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

DANC 360: *Choreography.* 3 credits.
Continued choreographic exploration and research, culminating in bringing completed works to production. Offered by School of Dance. Limited to three attempts.

Specialized Designation: Mason Impact.

Registration Restrictions:
Required Prerequisites: ((DANC 150[C] or 150[XS]) and (DANC 251[C] or 251[XS]) and (DANC 252[C] or 252[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major in Dance.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

DANC 362: *RS: Directed Choreography.* 1 credit.
Faculty-guided, individual learning experience where students learn to choreograph a dance work by auditioning dancers, costuming, staging, lighting, selecting musical accompaniment, and composing original movement material. Offered by School of Dance. May be repeated within the term for a maximum 6 credits.

Specialized Designation: Mason Impact., Research/Scholarship Intensive

Registration Restrictions:
Required Prerequisites: ((DANC 150[C] or 150[XS]) and (DANC 251[C] or 251[XS]) and (DANC 252[C] or 252[XS]) and (DANC 360[C] or 360[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major in Dance.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

DANC 370: *Dance Performance.* 1 credit.
Practical experience in performance, repertory, and choreography through rehearsal and public performance of university dance concerts or guest artist programs. Offered by School of Dance. May be repeated within the degree for a maximum 12 credits.

Recommended Prerequisite: Audition.

Registration Restrictions:
Enrollment is limited to students with a major in Dance.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

DANC 371: *Residency Workshop.* 1 credit.
Rehearsal and performance of new or restaged dance by guest choreographer in intensive rehearsal setting. Offered by School of Dance. May be repeated within the term for a maximum 6 credits.

Recommended Prerequisite: Audition.

Registration Restrictions:
Enrollment is limited to students with a major in Dance.

Schedule Type: Studio

Grading:

This course is graded on the Undergraduate Regular scale.

DANC 372: *Advanced Dance Production.* 1 credit.
Methodology and practice of costume and lighting design, as dictated by specific needs of dance performance. Notes: Taught in series of workshop settings. Offered by School of Dance. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: ((DANC 170[C] or 170[XS]) and (DANC 270[C] or 270[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major in Dance.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

DANC 390: *Dance History I.* 3 credits.
Examines dance as it developed as Western theatrical form from its beginnings in social and folk dance through evolution into ballet. Emphasizes romantic and classical ballet. Also studies American dance forms as they evolved in spectacles, burlesques, minstrelsy, and social dance. All forms of dance placed in social, political, cultural, aesthetic, and historical contexts. Offered by School of Dance. Limited to three attempts.

Mason Core: Arts

Specialized Designation: Writing Intensive in Major

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

DANC 391: *Dance History II.* 3 credits.
Examines revolutions in transformation of 20th-century Western dance into forms and institutions that radically departed from predecessors. Development of contemporary dance carried with it reflections of the influence of technology and media as well as concept of global culture. Renewed interest in traditional dance forms acknowledges power of dance to serve as carrier of cultural and societal values. Dance forms placed in social, political, cultural, aesthetic, and historical contexts. Offered by School of Dance. Limited to three attempts.

Mason Core: Arts

Specialized Designation: Writing Intensive in Major

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

DANC 399: *Independent Study.* 1-3 credits.
Individual research or creative project supervised by faculty member. Offered by School of Dance. May be repeated within the term for a maximum 6 credits.

Recommended Prerequisite: Permission of director of School of Dance.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

DANC 404: *Intermediate Ballet I.* 1-3 credits.
Emphasizes anatomical awareness and principles of ballet technique. Barre, center, and grand allegro combinations expand technical skills, ballet vocabulary and musicality. Offered by School of Dance. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Enrollment is limited to students with a major in Dance.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

DANC 405: *Intermediate Modern/Contemporary Dance II.* 1-3 credits.
Contemporary studio practice builds anatomical awareness and knowledge while increasing strength, flexibility and stamina. Emphasis on ability to quickly learn material and replicate accurately. Projects build an understanding of precedents, and contemporary practices. Offered by School of Dance. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Enrollment is limited to students with a major in Dance.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

DANC 410: *Introduction to Contemporary Movement Theories.* 3 credits.
Introduction to movement theories combining somatic theory with practical application to dance training. Focus on ways somatic practices can deepen perceptual processes and influence movement aesthetics. Theories studied may include: Alexander Technique, Feldenkrais Method, Body-Mind Centering, and Ideokinesis. Offered by School of Dance. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: DANC 210[C] or 210[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major in Dance.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

DANC 414: *Intermediate Ballet II.* 1-3 credits.
Provides continued expansion of ballet technique and vocabulary with focus on development of dynamic range, and rhythmic facility while maintaining high technical standards. Emphasizes increasing technical proficiency, improving anatomical awareness, and developing deeper understanding of skills and principles of ballet technique. Offered by School of Dance. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Enrollment is limited to students with a major in Dance.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

DANC 415: *Intermediate Modern/Contemporary II.* 1-3 credits.
Continued expansion of modern dance vocabulary while emphasizing somatic alignment principles as applied to contemporary technique. Focus on developing increased dynamic range and rhythmic sensitivity. Offered by School of Dance. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Enrollment is limited to students with a major in Dance.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

DANC 418: *Global Dance Intensive.* 3 credits.
Intensive investigation of selected dance idiom within cultural and artistic contexts. Course work supplemented by participation in and observation of ambient culture. Analyzes similarities, differences, and common antecedents between selected culture and North American dance idioms. Offered by School of Dance. May be repeated within the degree for a maximum 6 credits.

Mason Core: Global Understanding

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

DANC 420: *Special Topics in Dance.* 1-3 credits.
In-depth presentation and exploration of topical studies in dance or related study areas. Notes: Topic depends on instructor. Offered by School of Dance. May be repeated within the term for a maximum 9 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: 9 hours of DANC or permission of instructor.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

DANC 424: *Advanced Ballet I.* 1-3 credits.
Advanced study of ballet technique. Emphasizes refining alignment, ability to self-correct and replicate sophisticated classical movement sequences while exploring artistic expression. Offered by School of Dance. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Enrollment is limited to students with a major in Dance.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

DANC 425: *Advanced Modern/Contemporary Dance I.* 1-3 credits.
Advanced-level exploration of modern dance technique. Studio practice emphasizes increasing expressiveness, flow and dynamic range,refining alignment, ability to self-correct, and replicating sophisticated movement sequences. Offered by the School of Dance Offered by School of Dance. May be repeated within the term for a maximum 6 credits.

Mason Core: Arts

Registration Restrictions:
Enrollment is limited to students with a major in Dance.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

DANC 434: *Advanced Ballet II.* 1-3 credits.
Advanced level of ballet training at the pre-professional level. Emphasis on attainment of high quality technical and performance skills, application of anatomical principles, and mastery of sophisticated movement sequences. Offered by School of Dance. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Enrollment is limited to students with a major in Dance.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

DANC 435: *Advanced Modern/ Contemporary II.* 1-3 credits.
Pre-professional study with an emphasis on developing individual artistry through an exploration of personal interpretation of contemporary choreography. Focus on preparing students to enter professional fields of dance. The class will include learning choreography, performance techniques, interpretation skills as well as performance analysis and audition practice. Offered by School of Dance. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Enrollment is limited to students with a major in Dance.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

DANC 445: *Ballet IV.* 1-3 credits.
Provides preprofessional ballet training for advanced-level dancer. Emphasizes attainment of high-quality technical and performance skills, application of anatomical principles, and mastery of sophisticated classical movement sequences. Offered by School of Dance. May be repeated within the term for a maximum 18 credits.

Registration Restrictions:
Enrollment is limited to students with a major in Dance.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

DANC 453: *Teaching Creative Movement.* 3 credits.
Provides theory, methodology, and practicum experience in preparation for teaching creative movement to children K-12, with some application to special populations. Offered by School of Dance. Limited to three attempts.

Registration Restrictions:
Enrollment is limited to students with a major in Dance.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

DANC 454: *Methods of Teaching Dance.* 3 credits.
Examines dance pedagogy, focusing on principles needed for teaching sound technique. Students learn skills, methods, and instructional procedures for classroom. Emphasizes curriculum development, proper course sequencing, implementation of teaching strategies, and classroom management techniques. Students study teaching methods appropriate for K-12, gifted and talented, and special-needs students. Intensive practice in implementing these skills includes lab, field-teaching experiences. Offered by School of Dance. Limited to three attempts.

Mason Core: Oral Communication

Registration Restrictions:
Enrollment limited to students with a class of Senior.

Enrollment is limited to students with a major in Dance.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

DANC 462: *Independent Choreography.* 1-3 credits.
Independent, in-depth choreographic exploration of the creative process. Mentored explo-ration guides students to verbally articulate, defend and critique their vision, effectively manage audition and rehearsals, demonstrate a clear grasp of compositional function and form to support intent, and make informed decisions. Offered by School of Dance. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Required Prerequisites: (DANC 150[C] or 150[XS]) and (DANC 251[C] or 251[XS]) and (DANC 252[C] or 252[XS]) and (DANC 360[C] or 360[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

DANC 470: *Advanced Dance Performance.* 1 credit.
Advanced experience in performance, repertory, and choreography through rehearsal and public performance of university dance concerts. Offered by School of Dance. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Required Prerequisites: DANC 370[C] or 370[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

DANC 471: *Advanced Residency Workshop.* 1 credit.
This course offers advanced experience in guest artist residencies including, rehearsals and performance of new or re-staged choreographic work. May be repeated for total 6 credits. Offered by School of Dance. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Required Prerequisites: DANC 371[C] or 371[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

DANC 490: *Senior Dance Seminar.* 3 credits.
Culminating seminar devoted to analyzing and synthesizing knowledge and skills gained through undergraduate course work as it applies to dance, arts education, and professional development. Students develop senior project including written and oral presentation in public forum. Offered by School of Dance. Limited to three attempts.

Mason Core: Synthesis

Registration Restrictions:
Enrollment limited to students with a class of Senior Plus or Senior.

Enrollment is limited to students with a major in Dance.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

500 Level Courses

DANC 501: *Graduate Dance Seminar.* 1-3 credits.
Presentation and discussion of current issues in dance specific to education, research, and professional development in the field. Offered by School of Dance. May be repeated within the degree.

Recommended Prerequisite: Admission to MFA in Dance program.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

DANC 510: *Contemporary Movement Theories.* 3 credits.
In-depth study of movement theories combining somatic theory with practical application to dance training. Focus is on ways somatic practices can deepen perceptual processes and influence movement aesthetics. Offered by School of Dance. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Admission to Dance MFA program.

Registration Restrictions:

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Studio

Grading:
This course is graded on the Graduate Regular scale.

DANC 520: *Special Topics in Dance.* 1-3 credits.
In-depth presentation and exploration of topical studies in dance and/or related study areas. Notes: Topic depends on instructor. Offered by School of Dance. May be repeated within the term for a maximum 9 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: Admission to Dance MFA program.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

DANC 525: *Advanced Modern Dance.* 1-3 credits.
Advanced study of modern technique, emphasizing sophisticated technical ability and performance skills, includes comparison of pedagogical perspectives. Offered by School of Dance. May be repeated within the term for a maximum 18 credits.

Recommended Prerequisite: Admission to Dance MFA program.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Studio

Grading:
This course is graded on the Graduate Regular scale.

DANC 545: *Advanced Ballet.* 1-3 credits.
Advanced study of ballet technique with an emphasis on high technical ability, performance skills and ballet vocabulary, includes comparison of pedagogical perspectives. Offered by School of Dance. May be repeated within the term for a maximum 18 credits.

Recommended Prerequisite: Admission to Dance MFA program.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Studio

Grading:
This course is graded on the Graduate Regular scale.

DANC 560: *Advanced Choreography.* 3 credits.
Intensive study and exploration of choreographic forms. Offered by School of Dance. May be repeated within the term for a maximum 12 credits.

Recommended Prerequisite: Admission to Dance MFA program.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory

Grading:
This course is graded on the Graduate Regular scale.

DANC 570: *Advanced Dance Performance.* 1-3 credits.
Public performance/presentations in university or professional productions. Offered by School of Dance. May be repeated within the degree for a maximum 12 credits.

Recommended Prerequisite: Admission to Dance MFA program.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

DANC 571: *Residency Workshop.* 3 credits.
Rehearsal direction of a new or restaged work by a guest choreographer in an intensive rehearsal process. Offered by School of Dance. May be repeated within the degree for a maximum 9 credits.

Recommended Prerequisite: Admission to Dance MFA program.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Studio

Grading:
This course is graded on the Graduate Regular scale.

DANC 598: *Philosophy and Aesthetics of Dance.* 3 credits.
Study of philosophical theories and aesthetic principles of dance as a performing art. Offered by School of Dance. May not be repeated for credit.

Recommended Prerequisite: DANC 390 and DANC 391, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

DANC 599: *Independent Study.* 3 credits.
Individual research or creative project. Offered by School of Dance. May be repeated within the term for a maximum 6 credits.

Recommended Prerequisite: Admission to Dance MFA program.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Special scale.

600 Level Courses

DANC 615: *Contemporary Trends.* 3 credits.
Study of contemporary art and artists and their philosophical theories, aesthetics and practices as they relate to the creation of new work. Offered by School of Dance. May not be repeated for credit.

Recommended Prerequisite: Admission to Dance MFA program.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

DANC 627: *Advanced Teaching Seminar.* 3 credits.
Discussion and readings from varied pedagogical theories examining diverse approaches to teaching technique and theory culminating in development of a teaching portfolio. Offered by School of Dance. May not be repeated for credit.

Recommended Prerequisite: Admission to Dance MFA program.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

DANC 672: *Dance Production.* 3 credits.
Artistic Direction of university or professional performance including mentoring of choreographers, adjudication of work, coordination with lighting designer, costumer, sound technician and managing director. Offered by School of Dance. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Admission to Dance MFA program.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory

Grading:
This course is graded on the Graduate Regular scale.

DANC 680: *Dance Management.* 3 credits.
Exploration of the technical, financial and economical aspects of dance management including areas of marketing, fundraising, publicity, incorporation, booking non-profit vs. profit making organizations and issues relating to current practices in the performing arts industry. Offered by School of Dance. May not be repeated for credit.

Recommended Prerequisite: Admission to Dance MFA program.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

700 Level Courses

DANC 790: *Internship.* 1-3 credits.
In depth study in selected subject area of interest. Offered by School of Dance. May be repeated within the degree for a maximum 9 credits.

Recommended Prerequisite: Admission to Dance MFA program.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Graduate Regular scale.

DANC 798: *Directed Choreography/Project.* 1-3 credits.
This course provides intensive independent choreographic study, culminating in the creation of a significant dance work or body of works, presented in a professional level public performance. The choreography must demonstrate the student's mastery of choreographic craft, an original concept and compelling artistry. Offered by School of Dance. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Admission to MFA in Visual and Performing Arts: Dance Concentration and DANC 560.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Thesis

Grading:
This course is graded on the Satisfactory/No Credit scale.

DANC 799: *Thesis.* 1-6 credits.
Creation and documentation of original research including planning, performance, recording and written reflecting under direction of thesis committee. Offered by School of Dance. May be repeated within the degree.

Recommended Prerequisite: Admission to Dance MFA program.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Thesis

Grading:
This course is graded on the Satisfactory/No Credit scale.

Data Analytics Engineering (DAEN)

500 Level Courses

DAEN 500: *Data Analytics Fundamentals.* 3 credits.
Provides a foundation in data analytics from which the student will build. Focuses on a dataset where students will use analytics tools and apply statistical methodologies in order to extract information of value. Offered by Volgenau School of Engineering. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Satisfactory/No Credit scale.

DAEN 527: *Learning From Data.* 3 credits.
This is an introductory course in machine learning and pattern recognition that covers basic theory, algorithms, and applications. Machine learning is the science of getting computers to act without being explicitly programmed. This course balances theory and practice, and covers the mathematical as well as the heuristic aspects. It provides a broad introduction to machine learning and pattern recognition. Topics include: (i) supervised learning (parametric/non-parametric algorithms, support vector machines, kernels, neural networks). (ii) Unsupervised learning (clustering, dimensionality reduction, recommender systems, autoencoders). (iii) Learning theory (bias/variance tradeoffs, VC theory, generalization). (iv) Ensemble methods (boosting and bagging, random forests). (v) Deep learning (deep belief networks, convolutional neural networks, deep autoencoders). The course will draw from numerous case studies and applications. Offered by Volgenau School of Engineering. May not be repeated for credit. Equivalent to ECE 527.

Recommended Prerequisite: (MATH 203 and STAT 346) or equivalent

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

600 Level Courses

DAEN 690: *Data Analytics Project.* 3 credits.
Capstone project course for MS in Data Analytics program. Key activity is completion of a major applied team project resulting in an acceptable technical report and oral briefing. Student should plan to take this course in the last semester of studies. Offered by Volgenau School of Engineering. May not be repeated for credit.

Recommended Prerequisite: Completion of 18 credit hours of coursework in the MS Data Analytics program and departmental approval to register. It is also recommended that DAEN 690 be taken in your last semester.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

DAEN 698: *Data Analytics Research Project.* 1-3 credits.
Conduct a research project to be chosen and completed under guidance of a graduate faculty member that results in an acceptable technical report. Notes: No more than a total of three credits may be taken from within the DAEN program. Offered by Volgenau School of Engineering. May be repeated within the term for a maximum 3 credits.

Recommended Prerequisite: Graduate Standing, completion of at least two core courses and a minimum of 12 credits in the DAEN program, and permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Research

Grading:
This course is graded on the Graduate Regular scale.

Design (DSGN)

100 Level Courses

DSGN 101: *Introduction to Design Thinking.* 3 credits.
Teaches the fundamentals of Design Thinking (DT), a problem solving and learning process that can be applied to solve problems using interdisciplinary domains by bridging knowledge from the humanities, social sciences, learning sciences, natural sciences and engineering. Offered by School of Art. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

DSGN 102: *Design in the Modern World.* 3 credits.
Through a set of case studies, teaches the history of modern design, with an emphasis on the twentieth century and the cultural contexts for design choices. Also provides experience in iterative design process. Offered by School of Art. Limited to three attempts.

Mason Core: Arts

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

DSGN 401: *Design Thinking Capstone.* 3 credits.
In this capstone course, students will examine the design thinking process as a means to better understand and solve problems. Students will develop Design Thinking skills in light of their work as ethnographers, strategists, and storytellers through a hybrid of seminar discussions and collaborative projects. Over the course of the semester, students will directly apply what they have learned to challenges about which they are passionate. Offered by School of Art. Limited to three attempts.

Recommended Prerequisite: 6 credits in selected elective track

Registration Restrictions:
Required Prerequisites: (DSGN 101[C] or 101[XS]) and (DSGN 102[C] or 102[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Digital Forensics (DFOR)

500 Level Courses

DFOR 500: *Introduction to Forensic Technology and Analysis.* 3 credits.
Presents an overview of technologies related to the digital forensics process. It will introduce software, analysis, operating systems, networking, and other aspects required as the base for forensic examiners. Not intended to be taken for credit by students in the MS CFRS/DFCA program. Offered by Electrical & Comp. Engineering. May not be repeated for credit. Equivalent to CFRS 500.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the following colleges:

- College of Science
- Schar School of Policy and Gov
- School of Business
- Volgenau School of Engineering

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

DFOR 510: *Digital Forensics Analysis.* 3 credits.
Explains digital forensics crime scene procedures, beginning with initial walk-through and evaluation; identification and collection of potential evidence; preparation of intrusion investigation; aspects of working with investigators and attorneys; reverse engineering with file identification and profiling; application of critical thinking in determination of significance of artifacts; and analysis and reporting of evidence. Offered by Electrical & Comp. Engineering. May not be repeated for credit. Equivalent to CFRS 510.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

DFOR 590: *Special Topics in Digital Forensics.* 3 credits.
Presents selected topics from recent developments and applications in various digital forensics disciplines. Helps the professional digital forensics community keep abreast of current developments, and provides an applications-oriented introduction to emerging areas of digital forensics. Offered by Electrical & Comp. Engineering. May be repeated within the degree for a maximum 6 credits. Equivalent to CFRS 590.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

600 Level Courses

DFOR 660: *Network Forensics.* 3 credits.
Deals with the collection, preservation, and analysis of network-generated digital evidence such that the evidence can be successfully presented in a court of law (both civil and criminal). The relevant federal laws will be examined as well as private sector applications. The capture/intercept of digital evidence, the analysis of audit trails, the recording of running processes, and the reporting of such information will be examined. Offered by Electrical & Comp. Engineering. May not be repeated for credit. Equivalent to CFRS 660, TCOM 660.

Recommended Prerequisite: TCOM 535 and a working knowledge of computer programming.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the following colleges:

- College of Science
- Schar School of Policy and Gov
- School of Business
- Volgenau School of Engineering

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

DFOR 661: *Digital Media Forensics.* 3 credits.
Covers the collection, preservation, and analysis of digital media such that the evidence can be successfully presented in a court of law (both civil and criminal). The relevant federal laws and private sector applications will be examined, as well as the seizure, preservation, and analysis of digital media. Offered by Electrical & Comp. Engineering. May not be repeated for credit. Equivalent to CFRS 661, TCOM 661.

Recommended Prerequisite: DFOR 510 and a working knowledge of computer operating systems (e.g. CYSE 211, IT 342, or equivalent).

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the following colleges:

- College of Science
- Schar School of Policy and Gov
- School of Business
- Volgenau School of Engineering

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

DFOR 663: *Operations of Intrusion Detection for Forensics.* 3 credits.
Introduces students to network and computer intrusion detection and its relation to forensics. Addresses intrusion detection architecture, system types, packet analysis, and products. Presents advanced intrusion detection topics such as intrusion prevention and active response, decoy systems, alert correlation, data mining, and proactive forensics.

Offered by Electrical & Comp. Engineering. May not be repeated for credit. Equivalent to CFRS 663, TCOM 663.

Recommended Prerequisite: TCOM 535 and a working knowledge of computer programming.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

DFOR 664: *Incident Response Forensics.* 3 credits.
Addresses incident detection, response, and those aspects of computer forensics pertinent to the investigation of trade secret theft, economic espionage, copyright infringement, piracy, and fraud. Procedures for gathering, preserving, and analyzing forensic evidence are discussed in detail and are applied to both computer and network incident response forensics. Offered by Electrical & Comp. Engineering. May not be repeated for credit. Equivalent to CFRS 664, TCOM 664.

Recommended Prerequisite: TCOM 535.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

DFOR 698: *Independent Reading and Research.* 1-3 credits.
Studies selected area in computer forensics under the supervision of a faculty member. A written report is required. Notes: No more than a total of six credits may be taken from a combination of DFOR 698 and DFOR 798 for credit within the DFOR program. Offered by Electrical & Comp. Engineering. May be repeated within the degree for a maximum 6 credits. Equivalent to CFRS 698.

Specialized Designation: Topic Varies

Recommended Prerequisite: At least two core courses in the DFOR program and permission of instructor

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Research

Grading:
This course is graded on the Graduate Regular scale.

700 Level Courses

DFOR 710: *Memory Forensics.* 3 credits.
Introduces students to memory forensics, specifically the acquisition, investigation, and analysis of artifacts that reside in random access memory (RAM). Memory forensics provides an evidentiary wellspring of unique digital artifacts with regards to computer forensics and digital investigations (e.g. intrusion and malware incidents). Offered by Electrical & Comp. Engineering. May not be repeated for credit. Equivalent to CFRS 710.

Recommended Prerequisite: DFOR 510 and DFOR 660

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

DFOR 720: *Digital Audio Video Forensics.* 3 credits.
Presents an overview of digital multimedia (audio, images, video) forensic analysis to include methods, legal framework, software, hardware, and other aspects required for forensic/investigative examination. Offered by Electrical & Comp. Engineering. May not be repeated for credit. Equivalent to CFRS 720.

Recommended Prerequisite: DFOR 510 and DFOR 661

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

DFOR 725: *Linux Forensics.* 3 credits.
Presents the concepts, tools, and techniques used for forensic collection and analysis of Linux based operating systems and filesystems. Introduces, demonstrates, and discusses current research in the use of the Linux operating system and open source forensic tools with emphasis on developing custom functionality from multiple components.

Offered by Electrical & Comp. Engineering. May not be repeated for credit. Equivalent to CFRS 725.

Recommended Prerequisite: DFOR 510 and DFOR 661

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

DFOR 730: *Forensic Deep Packet Inspection.* 3 credits.
Presents tools, techniques, and methodologies used to conduct deep packet forensic analysis. Application of industry best practices to both the collection and subsequent analysis of network packets with an emphasis on hands-on exercises using various digital analytical tools. Notes: Course will consist of exercises conducted in a lab environment with concurrent lectures (combined total of 3 credits for lab and lecture exercises). Offered by Electrical & Comp. Engineering. May not be repeated for credit. Equivalent to CFRS 730.

Recommended Prerequisite: DFOR 660

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Graduate Regular scale.

DFOR 737: *Cloud Forensics.* 3 credits.
Introduces students to various cloud platforms and their featured and prepares students to acquire memory, disk and other cloud resources from cloud providers. Students will perform forensics on gathered artifacts. The course will take students from understanding what resources are available in a cloud provider to what artifacts exists and how to capture and analyze them. Offered by Electrical & Comp. Engineering. May not be repeated for credit. Equivalent to CFRS 737.

Recommended Prerequisite: DFOR 510 and DFOR 660 or permission from instructor

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

DFOR 760: *Legal and Ethical Issues in IT.* 3 credits.
Presents legal and ethics topics in the context of digital forensics. Includes legal principles, types of crimes, witness testimony, and forensics report writing. Offered by Electrical & Comp. Engineering. May not be repeated for credit. Equivalent to CFRS 760.

Recommended Prerequisite: DFOR 510

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

DFOR 761: *Malware Reverse Engineering.* 3 credits.
Reviews disassembled code for potentially malicious binary, or piece of malware, in order to gain a better understanding of how a binary functions when executed. Analyzes behavioral aspects as they are executed in a controlled environment. Environment changes (file, system, network, process, etc.), network communications, communications with remote devices, and so on, are closely observed for actionable information. Notes: Course will consist of exercises conducted in a lab environment with concurrent lectures (combined total of 3 credits for lab and lecture exercises). Offered by Electrical & Comp. Engineering. May not be repeated for credit. Equivalent to CFRS 761.

Recommended Prerequisite: DFOR 510 and DFOR 660

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Graduate Regular scale.

DFOR 762: *Mobile Device Forensics.* 3 credits.
Reviews forensic evidence contained within mobile devices, including address books, call logs, text messages, video files, audio files, and Internet history. Discusses procedures and technologies associated with mobile devices and how such procedures differ from traditional digital forensics. Analyzes collected data and correlates information with data from carriers. Hands-on exercises included. Notes: Course will consist of exercises conducted in a lab environment with concurrent lectures (combined total of 3 credits for lab and lecture exercises). Offered by Electrical & Comp. Engineering. May not be repeated for credit. Equivalent to CFRS 762.

Recommended Prerequisite: DFOR 510 and DFOR 661

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

DFOR 763: *Registry Forensics - Windows.* 3 credits.
Presents the concepts, tools, and techniques used for forensic collection, identification, and analysis of the Windows registry; review the structure and layout of the Windows registry and be introduced to the types of artifacts that can be found within; evaluate and interpret data from the Windows registry with emphasis on hand-on exercises. Notes: Course will consist of exercises conducted in a lab environment with concurrent lectures (combined total of 3 credits for lab and lecture exercises). Offered by Electrical & Comp. Engineering. May not be repeated for credit. Equivalent to CFRS 763.

Recommended Prerequisite: DFOR 510 and DFOR 661

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Graduate Regular scale.

DFOR 764: *Mac Forensics.* 3 credits.
Presents the basic tools and techniques used to conduct a Mac and iOS forensic analysis. Application of industry best practices to both the collection and subsequent analysis of Mac iOS systems with an emphasis on hands-on exercises using currently available open-source and commercial tools. Notes: Course will consist of exercises conducted in a lab environment with concurrent lectures (combined total of 3 credits for lab and lecture exercises). Offered by Electrical & Comp. Engineering. May not be repeated for credit. Equivalent to CFRS 764.

Recommended Prerequisite: DFOR 510 and DFOR 661

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

DFOR 767: *Penetration Testing in Digital Forensics.* 3 credits.
Presents the concepts, tools, and techniques used for penetration testing, vulnerability exploitation, assessment, reporting, and forensics; teaches multiple attack vectors as well as the defensive measures protecting against such attacks; focuses heavily on post attack forensics allowing for a complete picture of the attack process. Notes: Course will consist of exercises conducted in a lab environment with concurrent lectures (combined total of 3 credits for lab and lecture exercises). Offered by Electrical & Comp. Engineering. May not be repeated for credit. Equivalent to CFRS 767.

Recommended Prerequisite: DFOR 660 and DFOR 663

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Graduate Regular scale.

DFOR 768: *Digital Warfare.* 3 credits.
Presents concepts of forensic attribution, context, and motivations behind computer attacks including those tied to cyber warfare and cyber terrorism activities. Tactics, techniques, and procedures of current cyber-attacks will be addressed. Offered by Electrical & Comp. Engineering. May not be repeated for credit. Equivalent to CFRS 768.

Recommended Prerequisite: DFOR 510 and DFOR 660

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

DFOR 769: *Anti-Forensics.* 3 credits.
Presents concepts of anti-forensics and obfuscation used in order to inhibit, frustrate, and mislead digital forensics examiners. Techniques, attempts, and actions used to negatively impact the existence, volume, or amount of evidence from digital repositories will be examined with goal of understanding and detecting anti-forensics. Offered by Electrical & Comp. Engineering. May not be repeated for credit. Equivalent to CFRS 769.

Recommended Prerequisite: DFOR 510 and DFOR 660

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Graduate Regular scale.

DFOR 770: *Fraud and Forensics in Accounting.* 3 credits.
Prepares students to undertake forensic accounting, a specialty practice area of accounting, in order to develop the necessary expertise to be prepared to give expert evidence in any resultant trial. Offered by Electrical & Comp. Engineering. May not be repeated for credit. Equivalent to CFRS 770.

Recommended Prerequisite: DFOR 510

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the following colleges:

- College of Science
- Schar School of Policy and Gov
- School of Business
- Volgenau School of Engineering

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

DFOR 771: *Digital Forensic Profiling.* 3 credits.
Presents the application of criminal profiling to digital forensic evidence and cybercrime. Covers typologies of cyber criminals and reviews how the results of digital forensics can be used to profile individuals to better facilitate investigative interviews and prosecutions. Applies digital profiling to the identification of criminal behavior for insider threats and fraud. Offered by Electrical & Comp. Engineering. May not be repeated for credit. Equivalent to CFRS 771.

Recommended Prerequisite: DFOR 510 and DFOR 661

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Graduate Regular scale.

DFOR 772: *Forensic Artifact Extraction.* 3 credits.
Presents tools and techniques for the extraction and processing of digital artifacts from various media and formats. Foundations are presented and examples are developed for Windows, Linux, Mac, and media filesystems, files, RAM, Windows Registry, solid state devices, network traffic, and mobile devices. Emphasis on applications and hands-on exercises.
Notes: Course will consist of exercises conducted in a lab environment with concurrent lectures (combined total of 3 credits for lab and lecture. Offered by Electrical & Comp. Engineering. May not be repeated for credit. Equivalent to CFRS 772.

Recommended Prerequisite: DFOR 510 and DFOR 661

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Graduate Regular scale.

DFOR 773: *Mobile Application Forensics and Analysis.* 3 credits.
Presents mobile applications forensics and analysis. Analyze mobile applications on both the android and iPhone platforms in a lab environment in order to understand the weaknesses, pitfalls, and forensic challenges that exist or potentially exist when developing mobile client side software as well as identify forensic artifacts left behind from applications. Offered by Electrical & Comp. Engineering. May not be repeated for credit. Equivalent to CFRS 773.

Recommended Prerequisite: DFOR 762

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Graduate Regular scale.

DFOR 775: *Kernel Forensics and Analysis.* 3 credits.
Introduces students to low level programming analysis and low level API's. Students will learn the basics of kernel level device drivers, how to load and unload software from the kernel, modification of kernel objects, interrupt and call hooking and memory hiding techniques. Offered by Electrical & Comp. Engineering. May not be repeated for credit. Equivalent to CFRS 775.

Recommended Prerequisite: DFOR 761

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

DFOR 780: *Advanced Topics in Digital Forensics.* 3 credits.
Teaches advanced topics from recent developments and applications in various areas of digital forensics. Enhances the professional engineering community's understanding of breakthrough developments in specific areas of digital forensics. Active participation of the students is encouraged in the form of writing and presenting papers in various research areas of the advanced topic. Offered by Electrical & Comp. Engineering. May be repeated within the term for a maximum 6 credits. Equivalent to CFRS 780.

Specialized Designation: Topic Varies

Recommended Prerequisite: Permission of Instructor

Registration Restrictions:
Enrollment is limited to Graduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

DFOR 790: *Advanced Digital Forensics.* 3 credits.
Capstone course for the MS in digital forensics program. Students will be exposed to case studies and be required to conduct digital forensic investigations of digital media, intercepted packet switched data, and multisource log information to successfully complete each case study. Notes: To be taken in the last year prior to the completion of degree requirement. Offered by Electrical & Comp. Engineering. May not be repeated for credit. Equivalent to CFRS 790.

Recommended Prerequisite: DFOR 660, 661, and (663 or 664), and a minimum of 18 credits in the MS Digital Forensics Program prior to registration.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

DFOR 798: *Research Project.* 1-3 credits.
Conduct a research project to be chosen and completed under guidance of a graduate faculty member that results in an acceptable technical report. Notes: No more than a total of six credits may be taken from a combination of DFOR 698 and DFOR 798 for credit within the DFOR program. Offered by Electrical & Comp. Engineering. May be repeated within the degree for a maximum 6 credits. Equivalent to CFRS 798.

Specialized Designation: Topic Varies

Recommended Prerequisite: At least two core courses and a minimum of 12 credits in the DFOR program; permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Thesis

Grading:
This course is graded on the Satisfactory/No Credit scale.

Early Childhood Education (ECED)

200 Level Courses

ECED 201: *Introduction to Early Childhood Education for Diverse Learners.* 3 credits.
Explores major theories of learning in culturally, linguistically, ability, and socioeconomically diverse early childhood education contexts. Focuses on identifying developmentally effective approaches, instructional strategies, and tools to connect with children and families that positively influence young children's learning. Emphasizes anti-biased curriculum and considers advocacy pathways for early childhood educators. Offered by School of Education. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

ECED 401: *Developmental Pathways of Diverse Learners, Birth-Adolescence.* 3 credits.
Examines child and adolescent development from diverse perspectives. Addresses typical and atypical physical, social and emotional, language, and intellectual development. Explores role of individual differences and culture in understanding and interpreting child and adolescent development. Offered by School of Education. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ECED 402: *Foundations of Language and Literacy for Diverse Prekindergarten and Kindergarten Learners.* 3 credits.
Examines complexity of language and literacy development of diverse young learners. Emphasizes language acquisition, reading, and writing in prekindergarten and kindergarten contexts. Focuses on evidence-based assessment and instructional practices that promote prekindergarten and kindergarten children's language and literacy development. Explores social, cultural, affective, cognitive, and educational factors that play a role in language acquisition and literacy learning. Note: Field experience required. Offered by School of Education. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ECED 403: *Inclusive Curriculum for Young Learners: Planning Instruction and Guidance.* 3 credits.
Explores principles of learning, curriculum development, and relationship between assessment and instruction. Examines role of play and active exploration in learning. Addresses guiding children's behavior and the role of families and culture in children's learning. Notes: Field experience required. Offered by School of Education. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ECED 404: *Engaging Families of Diverse Learners, Birth – Grade 6.* 3 credits.
Focuses on strategies for developing culturally appropriate family professional engagement to benefit children, birth – sixth grade,

including children from diverse cultural and linguistic backgrounds and children with special needs. Explores theories and research supporting a family-centered approach, including family and professional rights and responsibilities, especially in the special education process. Offered by School of Education. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ECED 405: *Introduction to Early Childhood Special Education.* 3 credits.
Surveys current knowledge about young children with disabilities within the context of human growth and development and learning expectations in the preschool years. Includes historical factors and legislation affecting service delivery. Notes: Field experience required. Offered by School of Education. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ECED 406: *Medical and Developmental Aspects of Disabilities of Diverse Young Learners.* 3 credits.
Focuses on medical and developmental aspects of children with disabilities, birth to age 5. Emphasizes the role of professionals in service delivery. Explores etiology, symptomatology, and management of neuromotor and developmental disabilities. Emphasizes positioning, adaptive strategies, and understanding assistive technology devices. Offered by School of Education. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: ECED 401[C], 401[XS], 501[B-] or 501[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.
[B-] Requires minimum grade of B-.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ECED 411: *Assessment of Diverse Young Learners.* 3 credits.
Examines types of assessment, including family-centered child assessment, for planning and implementing effective programs for culturally, linguistically, and ability diverse children, birth through third grade. Addresses selection, administration, analysis, and interpretation of formal and informal assessments. Notes: Field experience required. Offered by School of Education. Limited to three attempts.

Specialized Designation: Writing Intensive in Major

Registration Restrictions:
Required Prerequisites: ((ECED 401[C], 401[XS], 501[B-] or 501[XS]) and (ECED 403[C], 403[XS], 503[B-] or 503[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.
[B-] Requires minimum grade of B-.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ECED 412: *Language and Literacy Assessment and Instruction for Diverse Primary Grade Learners.* 3 credits.
Examines ways to assess and develop reading, writing, and the language arts in primary grade classrooms. Addresses instructional strategies and practices that promote language and literacy development in culturally, linguistically, socioeconomically, and ability diverse children. Offered by School of Education. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: ((ECED 401[C], 401[XS], 501[B-] or 501[XS]) and (ECED 402[C], 402[XS], 502[B-] or 502[XS]) and (ECED 403[C], 403[XS], 503[B-] or 503[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.
[B-] Requires minimum grade of B-.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ECED 413: *Integrating Social Studies Across the Content Areas for Diverse Young Learners.* 3 credits.
Explores social studies content, assessment, curriculum development, planning, and instructional practices. Examines strategies for guiding children's behavior, integrating social studies instruction across content areas, and planning and implementing community of learners inclusive of children with diverse abilities and cultural, linguistic, and socio-economic backgrounds. Offered by School of Education. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: ((ECED 401[C], 401[XS], 501[B-] or 501[XS]) and (ECED 403[C], 403[XS], 503[B-] or 503[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.
[B-] Requires minimum grade of B-.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ECED 415: *Mathematics for Diverse Young Learners.* 3 credits.
Examines ways to foster development of mathematics in preschool to third-grade children. Covers construction of mathematics lessons and hands-on experiences that promote learning in children with diverse abilities and cultural and linguistic backgrounds. Offered by School of Education. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: ((ECED 401[C], 401[XS], 501[B-] or 501[XS]) and (ECED 403[C], 403[XS], 503[B-] or 503[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.
[B-] Requires minimum grade of B-.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ECED 416: *Science for Diverse Young Learners.* 3 credits.
Examines ways to foster development of science in preschool to third-grade children. Covers construction of science lessons and hands-on experiences that promote learning in children with diverse abilities and

cultural and linguistic backgrounds. Offered by School of Education. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: ((ECED 401[C], 401[XS], 501[B-] or 501[XS]) and (ECED 403[C], 403[XS], 503[B-] or 503[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.
[B-] Requires minimum grade of B-.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ECED 422: *Developing Language, Literacy, and Communication of Diverse Infants and Toddlers.* 3 credits.
Examines instructional strategies, resources, and technologies, including assistive technologies, to develop language, literacy, and communication of diverse infants and toddlers. Explores monolingual and multilingual language acquisition, cultural and linguistic diversity, and language delays and disorders. Focuses on the importance of adult-child interaction and the role of the family in children's language, literacy, and communication development. Note: Field experience required. Offered by School of Education. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: ECED 401[C], 401[XS], 501[B-] or 501[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.
[B-] Requires minimum grade of B-.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ECED 423: *Early Intervention for Infants & Toddlers with Disabilities: Collaborative & Consultative Approaches.* 3 credits.
Covers methods of service delivery for infants and toddlers with disabilities and their families. Explores key aspects of consultation, interdisciplinary collaboration, service coordination, and family-centered services. Focuses on culturally responsive practices. Offered by School of Education. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: ECED 404[C], 404[XS], 504[B-] or 504[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.
[B-] Requires minimum grade of B-.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ECED 450: *Practicum in Early Childhood Education for Diverse Learners.* 3 credits.
Provides opportunities to observe and participate in early care and education programs for young children with varied abilities and from diverse cultural, linguistic, and socioeconomic backgrounds. Offers a context for developing and enacting content, strategies, and pedagogical knowledge. Explores the implementation of recommended practices in inclusive environments. Examines classroom environments, assessment and instructional practices, family engagement, and guiding and supporting positive behavior. Offered by School of Education. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (ECED 401[C] or 401[XS]) and (ECED 402[C] or 402[XS]) and (ECED 403[C] or 403[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Fieldwork

Grading:
This course is graded on the Undergraduate Regular scale.

ECED 470: *Advanced Practicum in Early Childhood Education for Diverse Learners.* 3 credits.
Provides opportunity for practical application of inclusive practices based on early childhood principles, theories, and recommended practices. Offers context for developing and enacting content, strategies, and pedagogical knowledge. Provides opportunity to work with young children and their families in early care and education program settings that serve children with varied abilities from diverse cultural, linguistic, and socioeconomic backgrounds. Promotes collaboration with families and other professionals. Enhances communication skills and professionalism. Offered by School of Education. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (ECED 401[C] or 401[XS]) and (ECED 402[C] or 402[XS]) and (ECED 403[C] or 403[XS]) and (ECED 404[C] or 404[XS]) and (ECED 411[C] or 411[XS]) and ECED 450[C].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Fieldwork

Grading:
This course is graded on the Undergraduate Regular scale.

ECED 485: *Applied and Teacher Research in Early Childhood Education.* 3 credits.
Develops fundamental concepts, principles, and methods of research in early childhood education, with emphasis on interpreting and applying research results. Critiques research and uses findings in educational settings. Offered by School of Education. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ECED 490: *Internship in Early Childhood Education.* 3-6 credits.
Enables students to participate full time in an internship in early childhood education (birth-grade 3). Links university course work to real world of working with diverse young children and their families. Offered by School of Education. May be repeated within the term for a maximum 12 credits.

Mason Core: Capstone

Registration Restrictions:
Required Prerequisites: (ECED 401[C] or 401[XS]) and (ECED 402[C] or 402[XS]) and (ECED 403[C] or 403[XS]) and (ECED 404[C] or 404[XS]) and (ECED 411[C] or 411[XS]).
[C] Requires minimum grade of C.

XS Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Early Childhood Spec Ed Licens, Early Chld Sp Ed E/P Ed Licl, Early/ Primary Educ PK-3 Lic, Early Childhood Ed-PK3 or Early Childhood Special Educ.

Enrollment limited to students in a Bachelor of Science or Post-Baccalaureate Certificate degrees.

Enrollment limited to students in the Education Human Development college.

Schedule Type: Student Teaching

Grading:
This course is graded on the Satisfactory/No Credit scale.

ECED 491: *Seminar in Early Childhood Education for Diverse Learners.* 3 credits.
Provides opportunity to evaluate and reflect upon classroom practices and interactions with diverse young children, families, and other professionals. Examines evidence-based practices used in early childhood classrooms to respond to the individual and group strengths, needs, and interests of young children with varied abilities from culturally, linguistically, and socioeconomically diverse backgrounds. Offered by School of Education. May be repeated within the degree for a maximum 9 credits.

Registration Restrictions:
Required Prerequisites: ECED 490*C or 490*.
* May be taken concurrently.
C Requires minimum grade of C.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

ECED 492: *Internship in Early Childhood Education (Non-Licensure).* 6-12 credits.
Enables students to participate full time in an internship in early childhood education (birth-grade 3). Links university coursework to real world of working with diverse young children and their families in contexts not prescribed by licensure regulations in the Commonwealth of Virginia. Offered by School of Education. May be repeated within the term for a maximum 12 credits.

Mason Core: Capstone

Registration Restrictions:
Required Prerequisites: ECED 401C, 401XS, 402C, 402XS, 403C, 403XS, 404C, 404XS, 411C or 411XS.
C Requires minimum grade of C.
XS Requires minimum grade of XS.

Schedule Type: Internship

Grading:
This course is graded on the Satisfactory/No Credit scale.

ECED 497: *Special Topics in Early Childhood Education.* 1-3 credits.
Provides study on selected topic or emerging issue in Early Childhood Education. Notes: May be repeated for credit with ECE program permission. Offered by School of Education. May be repeated within the term for a maximum 9 credits.

Specialized Designation: Topic Varies

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

500 Level Courses

ECED 501: *Developmental Pathways of Diverse Learners, Birth-Adolescence.* 3 credits.
Examines child and adolescent development from diverse perspectives. Addresses typical and atypical physical, social and emotional, language, and intellectual development. Explores role of individual differences and culture in understanding and interpreting child and adolescent development. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECED 502: *Foundations of Language and Literacy for Diverse Prekindergarten and Kindergarten Learners.* 3 credits.
Examines complexity of language and literacy development of diverse young learners. Emphasizes language acquisition, reading, and writing in prekindergarten and kindergarten contexts. Focuses on evidence-based assessment and instructional practices that promote prekindergarten and kindergarten children's language and literacy development. Explores social, cultural, affective, cognitive, and educational factors that play a role in language acquisition and literacy learning. Notes: Field experience required. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECED 503: *Inclusive Curriculum for Young Learners: Planning Instruction and Guidance.* 3 credits.
Explores principles of learning, curriculum development, and relationship between assessment and instruction. Examines role of play and active exploration in learning. Addresses guiding children's behavior and the

role of families and culture in children's learning. Notes: Field experience required. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECED 504: *Engaging Families of Diverse Young Learners.* 3 credits.
Focuses on strategies for developing culturally appropriate family professional partnerships to benefit children, including children from diverse cultural and linguistic backgrounds and children with special needs. Explores theories and research supporting a family-centered approach, including family and professional rights and responsibilities, especially in the special education process. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECED 505: *Introduction to Early Childhood Special Education.* 3 credits.
Surveys current knowledge about young children with disabilities within the context of human growth and development and learning expectations in the preschool years. Includes historical factors and legislation affecting service delivery. Notes: Field experience required. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECED 506: *Medical and Developmental Aspects of Disabilities of Diverse Young Learners.* 3 credits.
Focuses on medical and developmental aspects of children with disabilities, birth to age 5. Emphasizes the role of professionals in service delivery. Explores etiology, symptomatology, and management of neuromotor and developmental disabilities. Emphasizes positioning, adaptive strategies, and understanding assistive technology devices. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (ECED 401[C], 401[XS], 501[B-] or 501[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.
[B-] Requires minimum grade of B-.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECED 511: *Assessment of Diverse Young Learners.* 3 credits.
Examines types of assessment, including family-centered child assessment, for planning and implementing effective programs for culturally, linguistically, and ability diverse children, birth through third grade. Addresses selection, administration, analysis, and interpretation of formal and informal assessments. Notes: Field experience required. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (ECED 401[C], 401[XS], 501[B-] or 501[XS]) and (ECED 403[C], 403[XS], 503[B-] or 503[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.
[B-] Requires minimum grade of B-.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECED 512: *Language and Literacy Assessment and Instruction for Diverse Primary Grade Learners.* 3 credits.
Examines ways to assess and develop reading, writing, and the language arts in primary grade classrooms. Addresses instructional strategies and practices that promote language and literacy development in culturally, linguistically, socio-economically, and ability diverse children. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: ((ECED 401[C], 401[XS], 501[B-] or 501[XS]) and (ECED 402[C], 402[XS], 502[B-] or 502[XS]) and (ECED 403[C], 403[XS], 503[B-] or 503[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.
[B-] Requires minimum grade of B-.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECED 513: *Integrating Social Studies Across the Content Areas for Diverse Young Learners.* 3 credits.
Explores social studies content, assessment, curriculum development, planning, and instructional practices. Examines strategies for guiding children's behavior, integrating social studies instruction across content areas, and planning and implementing community of learners inclusive of children with diverse abilities and cultural, linguistic, and socio-economic backgrounds. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: ((ECED 401[C], 401[XS], 501[B-] or 501[XS]) and (ECED 403[C], 403[XS], 503[B-] or 503[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.
[B-] Requires minimum grade of B-.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECED 514: *Mathematics and Science for Diverse Young Learners.* 3 credits.
Examines ways to foster development of mathematics and science in preschool to third-grade children. Covers construction of math and science lessons and hands-on experiences that address the needs of culturally, linguistically, and ability diverse children. Notes: Field experience required. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: Admission to the Early Childhood Education program or approval of course instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECED 515: *Mathematics for Diverse Young Learners.* 3 credits.
Examines ways to foster development of mathematics in preschool to third-grade children. Covers construction of mathematics lessons and hands-on experiences that promote learning in children with diverse abilities and cultural and linguistic backgrounds. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: ((ECED 401[C], 401[XS], 501[B-] or 501[XS]) and (ECED 403[C], 403[XS], 503[B-] or 503[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.
[B-] Requires minimum grade of B-.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECED 516: *Science for Diverse Young Learners.* 3 credits.
Examines ways to foster development of science in preschool to third-grade children. Covers construction of science lessons and hands-on experiences that promote learning in children with diverse abilities and cultural and linguistic backgrounds. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: ((ECED 401[C], 401[XS], 501[B-] or 501[XS]) and (ECED 403[C], 403[XS], 503[B-] or 503[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.
[B-] Requires minimum grade of B-.

Enrollment limited to students with a class of Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECED 522: *Developing Language, Literacy, and Communication of Diverse Infants and Toddlers.* 3 credits.
Examines instructional strategies, resources, and technologies, including assistive technologies, to develop language, literacy, and communication of diverse infants and toddlers. Explores monolingual and multilingual language acquisition, cultural and linguistic diversity, and language delays and disorders. Focuses on the importance of adult-child interaction and the role of the family in children's language, literacy, and communication development. Notes: Field experience required. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: Admission to the Early Childhood Education program or approval of course instructor.

Registration Restrictions:
Required Prerequisites: (ECED 401[C], 401[XS], 501[B-] or 501[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.
[B-] Requires minimum grade of B-.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECED 523: *Early Intervention for Infants & Toddlers with Disabilities: Collaborative & Consultative Approaches.* 3 credits.
Covers methods of service delivery for infants and toddlers with disabilities and their families. Explores key aspects of consultation, interdisciplinary collaboration, service coordination, and family-centered services. Focuses on culturally responsive practices. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: Admission to the Early Childhood Education program or approval of course instructor.

Registration Restrictions:
Required Prerequisites: (ECED 404[C], 404[XS], 504[B-] or 504[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.
[B-] Requires minimum grade of B-.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECED 597: *Special Topics in Early Childhood Education.* 1-3 credits.
Provides study on selected topic or emerging issue in Early Childhood Education. Notes: May be repeated for credit with ECE program permission. Offered by School of Education. May be repeated within the term for a maximum 9 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

600 Level Courses

ECED 601: *Frameworks for Early Childhood Education.* 3 credits.
Analyzes foundational frameworks for developing perspectives for working with culturally, linguistically, and ability diverse young learners, birth to age 8, and their families. Examines foundational work from fields of early childhood education, early childhood special education, multicultural education, and second language acquisition. Notes: Must be taken as final course or with final courses of the program. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECED 685: *Applied and Teacher Research in Early Childhood Education.* 3 credits.
Develops fundamental concepts, principles, and methods of research in early childhood education, with emphasis on interpreting and applying research results. Critiques research and uses findings in educational settings. Serves as a capstone course in early childhood education. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: Taken with or after final course of program or with permission of the program.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECED 691: *Policy Perspectives in Early Childhood Education.* 3 credits.
Explores historical and current trends and issues involving legislation and policy in early childhood education, multilingual education, early childhood special education, and multicultural education. Focuses on historical role of social advocacy, development of advocacy skills, and collaboration and consultation with other professionals and staff in early childhood education of services and context of service delivery. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

700 Level Courses

ECED 781: *Seminar in Early Childhood Education.* 3 credits.
Provides opportunities to evaluate and reflect upon instructional practices and interactions with culturally, linguistically, socioeconomically, and ability diverse young children, their families, and other professionals. Examines evidence-based practices used in early childhood settings to manage the environment, guide behavior, and provide instruction that responds to each child's strengths, needs, and interests. Emphasizes professionalism and foundations of early education and care. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (ECED 788[*B-], 788[*XS], 788[*], 789[*B-], 789[*XS] or 789[*]).
[*] May be taken concurrently.
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

ECED 788: *Internship in Early Childhood Education Prekindergarten-Third Grade.* 3-6 credits.
Enables teacher candidates to participate full time in an internship in early/primary education prekindergarten – third grade. Provides opportunities to synthesize learning across coursework and field experiences and apply content and pedagogical knowledge in a classroom setting with culturally, linguistically, ability, and socioeconomically diverse young children and their families. Offered by School of Education. May be repeated within the term for a maximum 6 credits.

Recommended Prerequisite: Admission to the Early Education for Diverse Learners Licensure Concentration, completion of required licensure coursework, and completion of standardized test requirements. ECED 781 must be taken concurrently.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Satisfactory/No Credit scale.

ECED 789: *Internship in Early Childhood Special Education Birth - Five.* 3-6 credits.
Enables teacher candidates to participate full time in an internship in early childhood special education (birth-5). Provides opportunities to synthesize learning across coursework and field experiences and apply content and pedagogical knowledge in a classroom setting with culturally, linguistically, ability, and socioeconomically diverse young children and their families. Offered by School of Education. May be repeated within the term for a maximum 6 credits.

Recommended Prerequisite: Admission to the Early Childhood Special Education Licensure Concentration, completion of required licensure coursework, and completion of standardized test requirements. ECED 781 must be taken concurrently.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Satisfactory/No Credit scale.

ECED 790: *Internship with Diverse Preschool Children.* 3 credits.
Enables students to participate full time in an internship with diverse preschool children. Links university course work to real world of working with diverse young learners and their families. Offered by School of Education. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: ECED 401 or 501, ECED 403 or 503, and Admission to the Early Childhood Education Prekindergarten – Third Grade (Licensure) Graduate Certificate Program. All endorsement and standardized test requirements (Praxis Core Academics Skills for Educators or qualifying substitution, Praxis II, and Virginia Communication and Literacy Assessment) must be met the semester prior to the internship.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Satisfactory/No Credit scale.

ECED 791: *Internship with Diverse Infants and Toddlers.* 3 credits.
Enables students to participate full time in an internship with diverse infants/toddlers. Links university course work to real world of working with diverse young learners and their families. Notes: Students enroll in both infant/toddler (3 credits) and preschool (3 credits) internships. Offered by School of Education. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: ECED 401 or 501, ECED 403 or 503, and Admission to the Early Childhood Special Education (Licensure) Graduate Certificate Program. All standardized test requirements (Praxis Core Academic Skills for Educators or qualifying substitution and Virginia Communication and Literacy Assessment) must be met the semester prior to the internship.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Satisfactory/No Credit scale.

ECED 793: *Internship in Preschool Early Childhood Special Education.* 3 credits.
Enables students to participate full time in an internship in preschool early childhood special education. Links university course work to real world of working with diverse young learners and their families. Offered by School of Education. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: ECED 401 or 501, ECED 403 or 503, and Admission to the Early Childhood Special Education (Licensure) Graduate Certificate Program. All standardized test requirements (Praxis Core Academic Skills for Educators or qualifying substitution and Virginia Communication and Literacy Assessment) must be met the semester prior to the internship.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Satisfactory/No Credit scale.

ECED 795: *Internship in Kindergarten - Third Grade.* 3 credits.
Enables students to participate full time in an internship in early childhood education in kindergarten through third grade. Links university course work to real world of working with diverse young learners and their families. Offered by School of Education. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: ECED 401 or 501, ECED 403 or 503, and Admission to the Early Childhood Education Prekindergarten - Third Grade Licensure Graduate Certificate Program. Endorsement and standardized test requirements (Praxis Core Academics Skills for Educators or qualifying substitution, Praxis II, and Virginia Communication and Literacy Assessment) must be met prior to applying for the internship.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Satisfactory/No Credit scale.

800 Level Courses

ECED 801: *Current Research and Trends in Early Childhood Education.* 3 credits.
Examines research and trends in the early education of children. Explores issues that influence the education of young children with special education needs and children from culturally, linguistically, and economically diverse backgrounds. Examines practices appropriate for diverse young learners. Offered by School of Education. May be repeated within the term for a maximum 6 credits.

Recommended Prerequisite: Admission to the PhD in Education program or post-master's status and approval of course instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

ECED 803: *Teacher Preparation and Professional Development.* 3 credits.
Explores research and current recommended practices related to teacher preparation and professional development. Provides opportunity for practical application with preservice or inservice teachers. Offered by School of Education. May not be repeated for credit. Equivalent to EDUC 803.

Recommended Prerequisite: Admission to the PhD in Education program or post-master's status and approval of course instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

ECED 804: *Family Research and Practice in Early Childhood Education.* 3 credits.
Explores the relationship between families and professionals in providing appropriate early care and education, birth through grade 3, including children with special education needs and those from culturally, linguistically, and economically diverse backgrounds. Includes in-depth study, analysis, and discussions of original research as well as syntheses of findings. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: Admission to the PhD in Education program or or advanced-master's status with approval of course instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

ECED 812: *Early Writing: Cognition, Language, and Literacy.* 3 credits.
Examines writing research and practice related to cognition, language, and literacy in the early education of diverse learners, including special education and multicultural/multilingual education. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: Admission to the PhD in Education program or advanced-master's status with approval of course instructor.

Registration Restrictions:
Enrollment is limited to students with a major in Education.

Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

Economics (ECON)

100 Level Courses

ECON 100: *Economics for the Citizen.* 3 credits.
Not available to economics majors. Broad introduction to economic concepts and how they can contribute to a better understanding of the world around us. Applies and develops concepts to current economic and social problems and issues. Less formal modeling than in the 103-104 sequence. Offered by Economics. Limited to three attempts.

Mason Core: Social/Behavioral Sciences

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ECON 103: *Contemporary Microeconomic Principles.* 3 credits.
Introduces microeconomics in the context of current problems. Explores how market mechanism allocates scarce resources among competing uses; uses supply, demand, production, and distribution theory to analyze problems. Offered by Economics. Limited to three attempts.

Mason Core: Social/Behavioral Sciences

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ECON 104: *Contemporary Macroeconomic Principles.* 3 credits.
Introduces macroeconomics in the context of current problems. National income analysis, money and banking, economic growth and stability, unemployment, inflation, and role of government. Offered by Economics. Limited to three attempts.

Mason Core: Social/Behavioral Sciences

Recommended Prerequisite: ECON 103.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ECON 105: *Environmental Economics for the Citizen.* 3 credits.
Introduction to economic concepts and how they can be applied to environmental policy issues such as air and water pollution, climate change, natural resource use, and sustainability. Focus is on concepts, policy, and case studies rather than formal modeling exercises. Offered by Economics. Limited to three attempts.

Mason Core: Social/Behavioral Sciences, Encore: Sustainability

Specialized Designation: Green Leaf Focused Course

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

200 Level Courses

ECON 296: *Special Topics in Economics.* 3 credits.
Provides coverage of a specialized topic in economics at the introductory level. Topics vary by section. Notes: May be repeated for credit when topic is different. Offered by Economics. May be repeated within the term for a maximum 9 credits.

Specialized Designation: Topic Varies

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

300 Level Courses

ECON 306: *Intermediate Microeconomics.* 3 credits.
Basic factors of price and distribution theory: analysis of demand, costs of production and supply relationships, and price and output determination under various market structures. Offered by Economics. Limited to three attempts.

Recommended Prerequisite: ECON 103 and 104 and MATH 108 or 113.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ECON 308: *Managerial Economics and Strategy.* 3 credits.
Analysis of major strategic business situations including pricing strategy, incentives and contracts, game theory, and vertical and horizontal integration. Offered by Economics. Limited to three attempts.

Recommended Prerequisite: ECON 306.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ECON 309: *Economic Problems and Public Policies.* 3 credits.
Economic problems in light of current and proposed public policies. Topics include environmental issues, international trade policies, and regulatory issues and their historical roots. Offered by Economics. Limited to three attempts.

Recommended Prerequisite: ECON 100 or 103 and 104 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ECON 310: *Money and Banking.* 3 credits.
Monetary, commercial, and central banking systems, with particular emphasis on their relationship with American government programs, fiscal policies, and controls. Offered by Economics. Limited to three attempts.

Recommended Prerequisite: ECON 103, 104 or permission of instructor.

Schedule Type: Lecture

Grading:

This course is graded on the Undergraduate Regular scale.

ECON 311: *Intermediate Macroeconomics.* 3 credits.
Aggregate economic accounts, including measuring national income; determinants of levels of income and output; and causes and solutions for problems of unemployment, inflation, and economic growth. Offered by Economics. Limited to three attempts.

Recommended Prerequisite: ECON 103 and 104 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ECON 321: *Economics of Labor.* 3 credits.
Defines factors that determine levels of wages and employment, and economic consequences. Emphasizes recent developments in unionism, collective bargaining, and industrial technology. Offered by Economics. Limited to three attempts.

Recommended Prerequisite: ECON 306.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ECON 330: *Public Finance.* 3 credits.
Covers intergovernmental financial relationships; types, incidences, and consequences of taxation; other sources of governmental income; governmental expenditures and their effect; public economic enterprises; public borrowing; and debt management and its economic effect. Offered by Economics. Limited to three attempts.

Recommended Prerequisite: ECON 306 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ECON 335: *Environmental Economics.* 3 credits.
Microeconomic analysis of environmental problems. Topics include externalities and market failure, alternative solutions and policies, problems in monitoring and enforcement, economic analysis of development of legislation and regulation, and applications to current policy issues. Offered by Economics. Limited to three attempts.

Specialized Designation: Green Leaf Focused Course

Recommended Prerequisite: ECON 103 and 104.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ECON 340: *Introduction to Mathematical Economics.* 3 credits.
Mathematical treatment of theory of firm and household behavior, stabilization policy, growth theory, input-output analysis, and linear programming. Offered by Economics. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (ECON 306[C] or 306[XS]) and (ECON 311[C] or 311[XS]) and (MATH 113[C] or 113[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ECON 345: *Introduction to Econometrics.* 3 credits.
Modern statistical techniques in estimating economic relations. Offered by Economics. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: ((ECON 306[D], 306[XS] or 306[XP]) and (ECON 311[D], 311[XS] or 311[XP])) and ((STAT 250[D], 250[XS] or 250[XP]) and (STAT 350[D], L350, 350[XS] or 350[XP])) or ((STAT 344[D], 344[XS] or 344[XP]) and (STAT 354[D], 354[XS] or 354[XP])).
[D] Requires minimum grade of D.
[XS] Requires minimum grade of XS.
[XP] Requires minimum grade of XP.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ECON 355: *The Political Economy of Nonprofit Institutions.* 3 credits.
Applies the basic principles of economics to teach students to think critically about nonprofit institutions. Examines the economics of nonprofit institutions, how incentives influence the evolution of charities, and current issues in nonprofit organizations. Offered by Economics. Limited to three attempts.

Specialized Designation: Writing Intensive in Major

Recommended Prerequisite: ECON 103 and ECON 104 or permission of instructor.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

ECON 360: *Economics of Developing Areas.* 3 credits.
Economic growth characteristic of developing countries. Economic development, obstacles to development, policies, and planning. Offered by Economics. Limited to three attempts.

Mason Core: Global Understanding

Recommended Prerequisite: ECON 103 and 104 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ECON 361: *Economic Development of Latin America.* 3 credits.
Economic development, institutions, and problems of Latin America. Offered by Economics. Limited to three attempts.

Mason Core: Global Understanding

Specialized Designation: Non-Western Culture

Recommended Prerequisite: ECON 103 and 104 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ECON 362: *African Economic Development.* 3 credits.
Issues of economic development as applied to Africa. Includes overview of early economic history in Africa and post-independence development, and contemporary development problems. Offered by Economics. Limited to three attempts.

Mason Core: Global Understanding

Specialized Designation: Non-Western Culture

Recommended Prerequisite: ECON 103 and 104.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ECON 365: *Topics in Economic History.* 3 credits.
Possible topics include ancient, medieval, modern European, and American economic history, using econometric analysis as necessary. Notes: May be repeated when topic is different. Offered by Economics. May be repeated within the term for a maximum 6 credits.

Specialized Designation: Topic Varies, Writing Intensive in Major

Recommended Prerequisite: ECON 103 and 104.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ECON 367: *Money, Markets, and Economic Policy.* 3 credits.
Applies basic economic concepts and principles to issues facing the U.S. and global economies. Topics include productivity and economic growth, taxes, healthcare, globalization, income distribution and financial crises, with an emphasis on market structure, social institutions and the not-always rational behavior of investors and consumers. Offered by Economics. Limited to three attempts. Equivalent to GOVT 367.

Mason Core: Social/Behavioral Sciences

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

ECON 370: *Economics of Industrial Organization.* 3 credits.
Factors influencing industrial structure, and industrial conduct and performance. Offered by Economics. Limited to three attempts.

Recommended Prerequisite: ECON 306 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ECON 374: *Health Economics.* 3 credits.
Microeconomic analysis of health and medicine. Topics include the determinants of health, health externalities, health insurance, the health effects of medicine, the supply and demand of medicine, medical quality and regulation, and information asymmetries. Offered by Economics. Limited to three attempts.

Recommended Prerequisite: ECON 103 and ECON 104 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ECON 380: *Economies in Transition.* 3 credits.
Examines problems and achievements of formerly communist and socialist countries including China, Eastern European countries, and Russia and other countries of the former Soviet Union as they transition to more market-oriented economies. Includes market economics and central planning. Offered by Economics. Limited to three attempts.

Mason Core: Global Understanding

Recommended Prerequisite: ECON 103 and 104 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ECON 385: *International Economic Policy.* 3 credits.
Introduces economic way of thinking on trade and international finance. Presents historical and current information on consequences of trade and protectionism. Notes: May not be applied toward the elective course requirement needed for a major or minor in economics. Offered by Economics. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ECON 390: *International Economics.* 3 credits.
Foreign exchange market, balance of payment, foreign trade policies, and theories of international trade. Offered by Economics. Limited to three attempts.

Recommended Prerequisite: ECON 306 and ECON 311 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ECON 395: *Effective Writing in Economics.* 3 credits.
Develops students' ability to express economic arguments effectively through writing. Applies the basic principles of economics to teach students to think critically about economic problems. Offered by Economics. Limited to two attempts.

Specialized Designation: Writing Intensive in Major

Recommended Prerequisite: ECON 103 and ECON 104 or permission of instructor

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

ECON 398: *Internship.* 3-6 credits.
Students find economics-related internship with assistance from Career Services. Pre-internship proposal and final reflections paper required. Offered by Economics. Limited to three attempts.

Recommended Prerequisite: 6 upper-level hours in economics, Junior standing, and permission of instructor.

Schedule Type: Internship

Grading:
This course is graded on the Satisfactory/No Credit scale.

400 Level Courses

ECON 403: *Austrian Economics.* 3 credits.
Microeconomic and macroeconomic models and misallocation of resources. Alternative economic tools from noted Austrian economists. Offered by Economics. Limited to three attempts.

Recommended Prerequisite: ECON 306 and 311.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ECON 410: *Public Choice.* 3 credits.
Applies economic theory, methodology to study nonmarket decision making. Offered by Economics. Limited to three attempts.

Recommended Prerequisite: ECON 306.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ECON 412: *Game Theory and Economics of Institutions.* 3 credits.
Introduces game theory and its relevance for analyzing framework of rules and institutions within which economic processes occur. Applies game theoretical concepts to comparative analysis of causes and effects of alternative institutional arrangements. Offered by Economics. Limited to three attempts.

Recommended Prerequisite: ECON 306 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ECON 415: *Law and Economics.* 3 credits.
Economic analysis of the law. Topics include introduction to legal institutions and legal analysis; application of economic concepts to the law of property, contracts and torts, criminal and constitutional law; economic efficiency of common law; and public choice perspective on the evolution of the law. Offered by Economics. Limited to three attempts.

Recommended Prerequisite: ECON 306 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ECON 420: *International Money and Finance.* 3 credits.
Examines models of balance of payments, exchange rate behavior, and open economy macroeconomics. Includes international financial system and issues such as globalization and international financial instability. Offered by Economics. Limited to three attempts.

Recommended Prerequisite: ECON 306 and 311, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ECON 421: *Financial Economics.* 3 credits.
Provides a survey of financial economics including a brief overview of the U.S. and international financial system and the role of different financial institutions. Covers the leading theoretical models in the field. Offered by Economics. Limited to three attempts.

Recommended Prerequisite: ECON 103, ECON 104, ECON 306, ECON 311.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

ECON 435: *Economics of Energy.* 3 credits.
Examines various issues in the energy industry using tools from microeconomic theory, law and economics and public choice. Topics include issues related to oil, historical and current energy regulation, and environmental issues associated with energy. Offered by Economics. Limited to three attempts.

Specialized Designation: Writing Intensive in Major

Recommended Prerequisite: ECON 306.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ECON 440: *Economic Systems Design: Principles and Experiments.* 3 credits.
Introduces design principles to develop systems to allocate resources. Students must participate in experiment demonstrations of different allocation mechanisms. They also are exposed to experimental methods in economics and market design. Offered by Economics. Limited to three attempts. Equivalent to SYST 480.

Recommended Prerequisite: MATH 213.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ECON 445: *Design and Analysis of Experiments.* 3 credits.
Topics include comparing two or more treatments, and computing and interpreting analysis of variance. Discusses randomized block, Latin square, and factorial designs; and applications to economics experiments. Offered by Economics. Limited to three attempts.

Recommended Prerequisite: STAT 250 or 344, or MATH 351, or IT 250, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ECON 460: *Senior Seminar in Philosophy, Politics, and Economics.* 3 credits.
Covers issues in the philosophy, economics, and political science of institutions, information, and collective action. Through case studies of existing legal and political institutions, applies the insights to problems in politics, policy making, social-choice theory, and social, moral, and political philosophy. (Specific content varies). Notes: Serves as the capstone course for the PPE program. Offered by Economics. Limited to three attempts. Equivalent to GOVT 469, PHIL 460.

Recommended Prerequisite: PHIL 358 and ECON 412 or permission of instructor.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

ECON 470: *Economics of Regulation.* 3 credits.
Examines various issues surrounding concepts of regulation using tools from microeconomic theory and public choice. Topics include antitrust, rate regulation, policy rationales for regulation, and issues of current interest. Offered by Economics. Limited to three attempts.

Specialized Designation: Writing Intensive in Major

Recommended Prerequisite: ECON 306.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ECON 471: *Airline Economics.* 3 credits.
Economic theory as it is applied to commercial airlines. Offered by Economics. Limited to three attempts.

Recommended Prerequisite: ECON 306 or permission of instructor.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

ECON 481: *The Development of Economic Thought.* 3 credits.
Developments in economic thought from 1500 to the present. Emphasizes historical origins, impact on contemporary economics, and theoretical validity. Offered by Economics. Limited to three attempts.

Recommended Prerequisite: ECON 306 and 311 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ECON 485: *Smithian Political Economy I.* 3 credits.
Studies the thought of Adam Smith. As the first in a two-course sequence, course focuses on The Theory of Moral Sentiments. Offered by Economics. Limited to three attempts.

Specialized Designation: Writing Intensive in Major

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ECON 486: *Smithian Political Economy II.* 3 credits.
Studies the thought of Adam Smith. As the second in a two-course sequence, course focuses on The Wealth of Nations. Offered by Economics. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ECON 491: *Capstone in Economics.* 3 credits.
Project-based course to develop an academic portfolio and demonstrate mastery in economic theory, statistical analysis, and critical thinking in the discipline of economics. Offered by Economics. Limited to three attempts.

Mason Core: Capstone

Registration Restrictions:
Required Prerequisites: ((ECON 306[C] or 306[XS]) and (ECON 311[C] or 311[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Senior Plus or Senior.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

ECON 492: *Study Abroad.* 1-6 credits.
Study abroad under supervision of George Mason faculty. Course topics, content, and locations vary. Notes: May be repeated with permission of department. Offered by Economics. May be repeated within the degree for a maximum 12 credits.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ECON 493: *Capstone Internship.* 3 credits.
Experience learning opportunity as a culminating experience in the major with a focus on applying scholarly research in economics to practical problems in the workplace. Offered by Economics. Limited to three attempts.

Mason Core: Capstone

Registration Restrictions:

Required Prerequisites: ((ECON 306[C] or 306[XS]) and (ECON 311[C] or 311[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Senior Plus or Senior.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

ECON 494: *Introduction to Independent Research in Economics.* 3 credits.
Develops skills in finding and evaluating sources, oral presentation, and academic writing. Offered by Economics. Limited to three attempts.

Specialized Designation: Mason Impact.

Recommended Prerequisite: ECON 306 and 311.

Registration Restrictions:
Enrollment limited to students with a class of Junior, Senior Plus or Senior.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

ECON 495: *RS: Honors Thesis in Economics.* 3-6 credits.
Honors-level research on a self-selected topic in economics culminating in a substantial research paper and an oral presentation. Notes: Requirements for departmental honors in the major are in addition to the coursework required for the major. ECON 495 credit may not be applied toward the elective course requirement needed for a major or minor in economics. Offered by Economics. May be repeated within the degree for a maximum 6 credits.

Mason Core: Capstone

Specialized Designation: Research/Scholarship Intensive

Recommended Prerequisite: ECON 494 with minimum grade of B or permission from the instructor with an approved research proposal.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Special scale.

ECON 496: *Special Topics in Economics.* 3 credits.
Subject matter varies. Notes: May be repeated when topic is different. Offered by Economics. May be repeated within the term for a maximum 24 credits.

Specialized Designation: Topic Varies

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ECON 499: *Independent Study.* 1-4 credits.
Individual study of selected area of economics. Notes: Directed research paper required. Offered by Economics. May be repeated within the term for a maximum 9 credits.

Recommended Prerequisite: Economics majors with 90 credits, and permission of both the department and instructor.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

500 Level Courses

ECON 535: *Survey of Applied Econometrics.* 3 credits.
Applied introduction to estimating economic relationships. Includes simple equation and simultaneous equation system estimation. Non-Degree students are permitted to enroll based on space availability determined one week before the first day of classes AND on meeting the prerequisites AND with permission of instructor. Offered by Economics. May not be repeated for credit.

Recommended Prerequisite: Admission to master's program in economics or OM 210 or STAT 250 and 350, and ECON 306 and 311, and MATH 113; or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

600 Level Courses

ECON 611: *Microeconomic Theory.* 3 credits.
Covers theory of behavior of consumers, firms, and resource suppliers; theories of choice under risk and uncertainty; partial equilibrium analysis of competitive and noncompetitive markets; general equilibrium analysis; and welfare economics. Introduces capital theory. Notes: Non-Degree students are permitted to enroll based on space availability determined one week before the first day of classes AND on meeting the prerequisites AND with permission of instructor. Offered by Economics. May not be repeated for credit.

Recommended Prerequisite: Admission to master's program in economics or ECON 306 and 311, and MATH 113; or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECON 612: *Microeconomic Theory II.* 3 credits.
Nature of the firm; theory of supply; and production functions, factor pricing, and supplies. Introduces microeconomic foundations of theories of public finance and public choice. Notes: Non-Degree students are permitted to enroll based on space availability determined one week before the first day of classes AND on meeting the prerequisites AND with permission of instructor. Offered by Economics. May not be repeated for credit.

Recommended Prerequisite: ECON 611.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECON 615: *Macroeconomic Theory.* 3 credits.
Survey course covering monetary theory, theories of consumption and saving, budget deficits, economic growth, international finance, and monetary and fiscal policies. Notes: Non-Degree students are permitted to enroll based on space availability determined one week before the first day of classes AND on meeting the prerequisites AND with permission of instructor. Offered by Economics. May not be repeated for credit.

Recommended Prerequisite: Admission to master's program in economics, or ECON 306 and 311, and MATH 113; or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECON 623: *American Economic History.* 3 credits.
Explores development of American economy and evolution of economic institutions. Notes: ECON 637 recommended. Offered by Economics. May not be repeated for credit.

Recommended Prerequisite: ECON 611 and 615, or ECON 715 and 811, taken concurrently; or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECON 630: *Mathematical Economics I.* 3 credits.
Topics covered include: constrained maximization, differential calculus, integral calculus, linear algebra, matrix algebra, probability, and set theory. Emphasis is placed on economic applications. Notes: Non-Degree students are permitted to enroll depending on space availability determined one week before the first day of classes AND on meeting the prerequisites AND with permission of instructor. Offered by Economics. May not be repeated for credit.

Recommended Prerequisite: Admission to master's program in economics, or ECON 306 and 311, and MATH 113, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECON 637: *Econometrics I.* 3 credits.
Techniques of estimating relationships between economic variables. Introduces multiple regression and problems associated with single equation model-autocorrelation, multicollinearity, and heteroscedasticity. Notes: Non-Degree students are permitted to enroll based on space availability determined one week before the first day of classes AND on meeting the prerequisites AND with permission of instructor. Offered by Economics. May not be repeated for credit.

Recommended Prerequisite: Acceptance to PhD program in economics, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECON 676: *Comparative Economic Systems.* 3 credits.
Capitalism, socialism, and corporatism historical perspective. Includes examination of economies of representative contemporary countries. Offered by Economics. May not be repeated for credit.

Registration Restrictions:

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECON 690: *MA Economics Capstone.* 3 credits.
This is a project-based course where students develop an academic portfolio to demonstrate their mastery in economic theory, statistical analysis, and critical thinking in the discipline of economics. Offered by Economics. May not be repeated for credit.

Recommended Prerequisite: Admissions to master's program in economics.

Registration Restrictions:
Required Prerequisites: (ECON 535[B-] or 535[XS]) and (ECON 611[B-] or 611[XS]) and (ECON 612[B-] or 612[XS]) and (ECON 615[B-] or 615[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

ECON 695: *Special Topics in Economics.* 3 credits.
Topics vary according to interests of instructor. Emphasizes new areas of discipline. Offered by Economics. May be repeated within the term.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

700 Level Courses

ECON 715: *Macroeconomic Theory I.* 3 credits.
Covers classical, neoclassical, Keynesian, and post-Keynesian theories of income and employment determination; theories of inflation and growth; and demand for money and implications for effectiveness of monetary vs. fiscal policy. Notes: Non-Degree students are permitted to enroll based on space availability determined one week before the first day of classes AND on meeting the prerequisites AND with permission of instructor. Offered by Economics. May not be repeated for credit.

Recommended Prerequisite: Admission to doctoral program in economics, or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECON 799: *Master's Thesis.* 1-6 credits.
Research on approved thesis topic under direction of thesis committee. Notes: Students must register for a minimum of three credit hours in their first semester of 799 and maintain continuous enrollment in 799 while writing and submitting a thesis. A maximum of 6 credits of 799 may be applied to the degree. Offered by Economics. May be repeated within the degree.

Recommended Prerequisite: Admission to MA economics program and permission of thesis advisor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Thesis

Grading:
This course is graded on the Satisfactory/No Credit scale.

800 Level Courses

ECON 811: *Microeconomic Theory I.* 3 credits.
Theory and applications of behavior of consumers, firms, and resource suppliers. Partial equilibrium analysis of various market structures and introduction to intertemporal choice and capital theory. Review and analysis of classic works in microeconomic theory. Notes: Non-Degree students are permitted to enroll based on space availability determined one week before the first day of classes AND on meeting the prerequisites AND with permission of instructor. Offered by Economics. May not be repeated for credit.

Recommended Prerequisite: Admission to doctoral program in economics, or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECON 812: *Microeconomic Theory II.* 3 credits.
Examines nature of firm; theory of supply; and production functions, factor pricing, and supplies. Introduces microeconomic foundations of theories of public finance and public choice. Notes: Non-Degree students are permitted to enroll based on space availability determined one week before the first day of classes AND on meeting the prerequisites AND with

permission of instructor. Offered by Economics. May not be repeated for credit.

Recommended Prerequisite: ECON 811.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECON 816: *Macroeconomic Theory II.* 3 credits.
Aggregate economic activity and price levels with emphasis on dynamic models. Notes: Non-Degree students are permitted to enroll based on space availability determined one week before the first day of classes AND on meeting the prerequisites AND with permission of instructor. Offered by Economics. May not be repeated for credit.

Recommended Prerequisite: ECON 715 and 811 or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECON 817: *Monetary Theory and Policy.* 3 credits.
Theory of mechanisms through which central banking affects economic activity and prices. Analyzes demand for money and its relationship to economic activity. Develops monetary theory with emphasis on current theories and controversies in the field. Offered by Economics. May not be repeated for credit.

Recommended Prerequisite: ECON 615 or 715 and 535 or 637, or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECON 820: *History of Economic Thought.* 3 credits.
Explores major figures in history of economic thought and tools of analysis they created. Emphasizes classical, neoclassical, and Keynesian theories. Offered by Economics. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECON 821: *History of Economic Thought II.* 3 credits.
Covers development of economic analysis from marginal revolution of 1877 to present. Emphasizes development of neoclassical economic theory. Offered by Economics. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECON 823: *Topics in Economic History.* 3 credits.
Offers economic analysis of various historical epochs including Industrial Revolution, evolution of political reform, rise of unions, and growth of government. Offered by Economics. May not be repeated for credit.

Recommended Prerequisite: ECON 611 and 615, or ECON 715 and 811; or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECON 827: *Economic Philosophy.* 3 credits.
Analyzes philosophical organization, including interrelations between economics and legal and political institutions; philosophical presuppositions of capitalist economy under constitutional democracy; alternative presuppositions for non-capitalist economies; and critical evaluation of history of ideas in social and moral philosophy. Offered by Economics. May not be repeated for credit.

Recommended Prerequisite: ECON 611 or 811 or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECON 828: *Constitutional Economics.* 3 credits.
Analyzes existing and proposed elements of economic constitution. Emphasizes fiscal, monetary, transfer, and regulatory powers of government and constitutional limits on such powers, especially in the United States. Includes analysis of proposed changes in limits. Offered by Economics. May not be repeated for credit.

Recommended Prerequisite: ECON 611 or 811 or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECON 829: *Economics of Institutions.* 3 credits.
Analyzes framework of rules and institutions for economic activities and transactions. Includes emergence and working properties of different institutions, and classical and contemporary approaches to economic theory of institutions. Offered by Economics. May not be repeated for credit.

Recommended Prerequisite: ECON 611 or 811 or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECON 830: *Mathematical Economics I.* 3 credits.
Includes algebra and multivariate calculus applied to advanced economic problems. Also covers unconstrained and constrained optimization, formal models of market equilibrium, and models of economic dynamics in continuous and/or discrete time. Notes: Non-degree students are permitted to enroll on space availability determined one week before the first day of classes AND on meeting the prerequisites AND with permission of instructor. Offered by Economics. May not be repeated for credit.

Recommended Prerequisite: Admission to doctoral program in economics, or ECON 306 and 311, and MATH 113, MATH 114, and familiarity with elementary differential calculus (univariate and multivariate), elementary integration (univariate), basic matrix/linear algebra (addition, multiplication, inversion), univariate optimization, and logarithms; or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECON 831: *Mathematical Economics II.* 3 credits.
Develops the foundations of choice, price, and general equilibrium theory. Topics include choice, preference and utility; consumer demand; competitive firms; general equilibrium; and social choice and welfare. Special attention is paid to uncertainty and dynamic choice. Offered by Economics. May not be repeated for credit.

Recommended Prerequisite: Admission to doctoral program in economics, or ECON 306 and 311, and MATH 113; or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECON 838: *Econometrics II.* 3 credits.
Explores econometric models and simultaneous equation systems. Includes identifying parameters and least squares bias, alternative estimation methods, and block recursive systems. Offered by Economics. May not be repeated for credit.

Recommended Prerequisite: ECON 637 or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECON 839: *Constitutional Economics II.* 3 credits.
Uses economic analysis and methods to explore more deeply than in Constitutional Economics I specific issues in Constitutional Economics. Offered by Economics. May not be repeated for credit.

Recommended Prerequisite: ECON 828.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECON 840: *Law and Economics I.* 3 credits.
Uses economics to analyze U.S. Common-law system, evaluating efficiency and logic of evolution. Notes: No prior knowledge of law required. Offered by Economics. May not be repeated for credit.

Recommended Prerequisite: ECON 611 or 811; or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECON 841: *Law and Economics II.* 3 credits.
Explores empirical analyses of law of property, torts, crime, and family. Also looks at law's effects on freedom and economic growth. Offered by Economics. May not be repeated for credit.

Recommended Prerequisite: ECON 611 or 811, and ECON 535 or 637; or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECON 843: *Smithian Political Economy I.* 3 credits.
Explores the moral philosophy of Adam Smith, with a focus on The Theory of Moral Sentiments, which is studed cover-to-cover in "Great Books" fashion. Offered by Economics. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:

This course is graded on the Graduate Regular scale.

ECON 844: *Industrial Organization and Public Policy I.* 3 credits.
Structure of American industry and underlying determinants. Includes structure and conduct on industrial performance in light of theory and empirical evidence; and rational antitrust policy and analysis of impact on structure and performance. Offered by Economics. May not be repeated for credit.

Recommended Prerequisite: ECON 611 or 811 or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECON 845: *Smithian Political Economy II.* 3 credits.
Explores the political economy of Adam Smith, with a focus on The Wealth of Nations, which is studied cover-to-cover in "Great Books" fashion. Offered by Economics. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECON 846: *Industrial Organization and Public Policy II.* 3 credits.
Covers relationship of law, economics, and theories of social control of property rights. Includes theories of market structure and industrial performance. Offered by Economics. May not be repeated for credit.

Recommended Prerequisite: ECON 844, and ECON 535 or 637; or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECON 852: *Public Choice I.* 3 credits.
Applies economic theory and methodology to study of nonmarket decision making. Offered by Economics. May not be repeated for credit.

Recommended Prerequisite: ECON 611 or 811 or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECON 854: *Public Choice II.* 3 credits.
Applies public choice approach to study such topics as causes and consequences of governmental growth, behavior of public bureaucracies, and economic reasoning behind constitutional limitations on size and growth of government. Offered by Economics. May not be repeated for credit.

Recommended Prerequisite: ECON 852 or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECON 856: *Non-Market Decision Making.* 3 credits.
Explores the economics of non-market decision making. Considers the application of rational choice theory to decision making by a variety of persons who are neither traditional buyers nor sellers in a variety of contexts that are not traditional markets. Offered by Economics. May not be repeated for credit.

Recommended Prerequisite: ECON 852 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECON 866: *Economic Development.* 3 credits.
Explores forces contributing to or retarding economic progress in developing countries. Includes role of foreign trade, economic integration, foreign investment, multinational corporations, and technological transfers. Offered by Economics. May not be repeated for credit.

Recommended Prerequisite: ECON 611 and 615, or 715 and 811, or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECON 869: *International Trade and Policy.* 3 credits.
Studies classical, neoclassical, and modern theories of international trade; theory and practice of world trade models such as project LINK; foreign investment and economic growth, tariffs and nontariff barriers, and economic integration; and recent developments, with emphasis on natural resources. Offered by Economics. May not be repeated for credit.

Recommended Prerequisite: ECON 611 or 811 or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECON 871: *International Monetary Economics.* 3 credits.
Examines international adjustment mechanism, price and income effects, controls, and monetarist approach; development of international monetary system; demand for international reserves; capital movements; and role of International Monetary Fund. Offered by Economics. May not be repeated for credit.

Recommended Prerequisite: ECON 615 or 715 or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECON 880: *Theory of the Market Process I.* 3 credits.
Examines theory developed by Menger, Mises, Hayek, and others of the Austrian School; and compares with other popular theories. Offered by Economics. May not be repeated for credit.

Recommended Prerequisite: ECON 611 or 811 or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECON 881: *Theory of Market Process II.* 3 credits.
Continuation of ECON 880. Explores the market-process approach to analyzing capital accumulation and growth; money and credit institutions; inflation and unemployment; and industrial fluctuations. Offered by Economics. May not be repeated for credit.

Recommended Prerequisite: ECON 880, or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECON 885: *Experimental Economics.* 3 credits.
Designed for graduate students to learn how experimental methods can be used to inform economic research and practice. Students expected to have working understanding of basic economic concepts and multivariate calculus. Offered by Economics. May not be repeated for credit.

Recommended Prerequisite: ECON 611 or 811 or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECON 886: *Experimental Economics II.* 3 credits.
Research in experimental design. Topics represent basic tools to build, test, and implement exchange mechanisms in an applied setting. Offered by Economics. May not be repeated for credit.

Recommended Prerequisite: ECON 885 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECON 895: *Special Topics in Economics.* 3 credits.
Topics vary according to interests of instructor. Emphasizes new areas of discipline. Offered by Economics. May be repeated within the term.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECON 896: *Directed Reading and Research.* 1-9 credits.
Independent reading and research paper on a topic agreed on by student and faculty member. Offered by Economics. May be repeated within the term.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Enrollment is limited to Graduate level students.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Regular scale.

900 Level Courses

ECON 998: *Doctoral Dissertation Proposal Research..* 1-9 credits.
Research on prospective dissertation topic. Notes: For students who have completed course work but have not yet advanced to candidacy. Offered by Economics. May be repeated within the degree.

Recommended Prerequisite: Admission to PhD economics program, and completed at least 48 credits of coursework, and passed required doctoral exams, and permission of dissertation advisor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

ECON 999: *Doctoral Dissertation Research.* 1-15 credits.
Research on approved dissertation topic under direction of dissertation committee. Notes: 24 credits may be applied to doctoral degree requirement. Offered by Economics. May be repeated within the degree.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy.

Enrollment is limited to Graduate level students.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

Education (EDUC)

200 Level Courses

EDUC 200: *Introduction to Education: Teaching, Learning and Schools.* 3 credits.
Introduces educational issues related to learning, schooling and teaching. Examines roles of teachers and nature of American schools and learners. Requires 15 hours of school-based field experience during the course. Offered by School of Education. Limited to two attempts.

Mason Core: Social/Behavioral Sciences

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EDUC 203: *Disability in American Culture.* 3 credits.
Examines disability, past and present, in American culture through changes in historical, political, legal and societal responses to people with disabilities. Analyzes the disability experience through social and behavioral science perspectives, including diversity, bioethical and human rights conceptualizations/constructs of disability. Offered by School of Education. Limited to three attempts.

Mason Core: Social/Behavioral Sciences

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

300 Level Courses

EDUC 300: *Introduction to Teaching.* 3 credits.
Introduction to educational issues; not applicable in graduate-level teacher education programs. Examines roles of teacher, nature of American schools, and potential contributions of students. Notes: Requires school-based field experience during course. Offered by School of Education. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EDUC 301: *Educating Diverse and Exceptional Learners.* 3 credits.
Introduces educational issues. Explores psychological, sociological, educational, and physical aspects of diverse populations in today's schools for early and middle education. Emphasizes litigation and legislation pertaining to education of diverse populations. Notes: Requires school-based field experience during course. Offered by School of Education. Limited to two attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EDUC 302: *Human Growth and Development.* 3 credits.
Introduces educational issues. Examines human development through life span with special emphasis on cognitive, language, physical, social, and emotional development of children. Emphasizes contemporary theories of human development and their relevance to educational practice. Notes: Requires school-based field experience. Offered by School of Education. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EDUC 372: *Human Development, Learning, and Teaching.* 3 credits.
Explores processes that influence intellectual, social, emotional, moral, ethical, and physical development of middle and high school students. Examines research and theories for understanding learning process. Notes: School-based field experience required. Offered by School of Education. Limited to three attempts. Equivalent to SEED 440.

Registration Restrictions:
Enrollment is limited to students with a major, minor, or concentration in Secondary Ed - Biology 6-12, Secondary Ed - Chemistry 6-12, Secondary Ed - Mathematic 6-12, Secondary Ed - English 6-12, Secondary Ed - Physics 6-12 or Secnd Ed - Earth Science 6-12.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

EDUC 422: *Foundations of Secondary Education.* 3 credits.
Analyzes philosophical assumptions, curriculum issues, learning theories, and history associated with current teaching styles. Emphasizes applications to all disciplines taught in secondary schools. Examines educational trends and issues. Notes: 15 hours school-based field experience required. Offered by School of Education. Limited to three attempts. Equivalent to SEED 422.

Recommended Prerequisite: Admission to the secondary Education Program.

Registration Restrictions:

Enrollment is limited to students with a major, minor, or concentration in Secondary Ed - Biology 6-12, Secondary Ed - Chemistry 6-12, Secondary Ed - Mathematic 6-12, Secondary Ed - English 6-12, Secondary Ed - Physics 6-12 or Secnd Ed - Earth Science 6-12.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

500 Level Courses

EDUC 501: *Human Development and Learning.* 3 credits.
Examines human growth and development through physical, cognitive, language, social/emotional, and moral developmental domains. Note: This course is not designed to be transferable or eligible to count towards a degree program. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDUC 502: *Curriculum and Instruction – Teaching All Learners.* 3 credits.
Focuses on frameworks and methods for effective implementation of curricula across PK-12 teaching contexts that support academic progress toward Virginia Standards of Learning for all PK-12 learners. Builds capacity to apply culturally relevant curricula, methodologies, and materials responsive to strengths and needs of all PK-12 learners. Note: This course is not designed to be transferable or eligible to count towards a degree program. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDUC 503: *Assessment of and for Learning.* 3 credits.
Examines innovative approaches to K-12 classroom assessment. Examines identification, placement, monitoring of student progress, development of authentic performance-based measures, design of portfolios, application of measurement concepts, analysis of assessment instruments, and linking assessment to instruction. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDUC 504: *Foundations of Education.* 3 credits.
Examines the historical, philosophical, and sociological foundations of education as they relate to U.S. schools. Explores the relationship between society and education, teaching as a profession, as well as professionalism and ethical standards. Note: This course is not designed to be transferable or eligible to count towards a degree program. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDUC 505: *Classroom and Behavior Management in PreK-12 Classrooms.* 3 credits.
Focuses on understanding and applying age-appropriate and culturally responsive research-based classroom and behavior management techniques across PreK-12 school-wide and classroom settings. Examines positive behavior supports for individual PreK-12 students, including strategies for self-management, self-discipline, and emotional well-being. Explores various PreK-12 school crisis management and safety plans. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDUC 506: *Foundations of Literacy.* 3 credits.
Provides an overview of the research and theory related to the reciprocal processes of reading and writing. Emphasizes evidence-based instructional practices for teaching phonological awareness, phonics, fluency, vocabulary, comprehension, and writing. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDUC 511: *Child and Adolescent Development in Global Contexts.* 3 credits.
Provides an introduction to teaching culturally and linguistically diverse and exceptional learners. Includes analysis of human growth and development, an overview of psychology, and introduction to using technology across the curriculum. Note: Fieldwork hours are required. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

EDUC 512: *Teaching Elementary Social Studies in International Schools.* 3 credits.
Builds expertise in methods, including experiential and student-centered learning and developing comprehensive lessons plans to enhance teaching social studies in international PK-6 classrooms. Exposes prospective teachers to critical issues and concerns in teaching social studies in the global classroom. Fieldwork hours are required. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: EDUC 511[B-] or 511[XS].
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

EDUC 513: *Teaching Elementary Math in International Schools.* 3 credits.
Presents topics in school mathematics with particular emphasis on developing common PK-6 strands for application in international schools. Focuses on exploring, verifying, and explaining concepts using concrete materials. Fieldwork hours are required. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: EDUC 511[B-] or 511[XS].
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

EDUC 514: *Teaching Elementary Science in International Schools.* 3 credits.
Covers theory and practices of effective teaching of PK-6 science in international schools. Uses laboratory and discovery techniques to design essential science components and integrate them with other disciplines. Introduces design and implementation of activities for developing concepts solving problems, and strengthening thinking skills in PK-6 science. Fieldwork hours are required. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (EDUC 511[B-] or 511[XS]) and (EDUC 512[B-] or 512[XS]) and (EDUC 513[B-] or 513[XS]) and (EDUC 537[B-] or 537[XS]) and (EDRD 515[B-] or 515[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

EDUC 516: *Language Across the Elementary International School Curriculum.* 3 credits.
Introduces current methods of teaching integrated language arts in elementary school settings (PK-6). Includes language and literacy development, second language acquisition, reading and writing in content areas, and children's literature. International focus considers needs of second-language learners in regular classroom settings. Fieldwork hours are required. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (EDUC 511[B-] or 511[XS]) and (EDUC 512[B-] or 512[XS]) and (EDUC 513[B-] or 513[XS]) and (EDUC 537[B-] or 537[XS]) and (EDRD 515[B-] or 515[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

EDUC 518: *Military-Connected Youth.* 1 credit.
Provides knowledge and understanding about working with military-connected youth and their families. Emphasizes knowledge of the military culture, strategies for easing school transitions for military-connected youth, and resources for supporting military-connected youth and their families in schools and communities. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

EDUC 520: *Elementary Curriculum, Instruction, and Assessment in International Schools.* 3 credits.
Addresses interrelationship of instruction, curriculum, and assessment in international schools. Includes review of research and effective practice. Note: Fieldwork hours are required. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (EDUC 511[B-] or 511[XS]) and (EDUC 512[B-] or 512[XS]) and (EDUC 513[B-] or 513[XS]) and (EDUC 537[B-] or 537[XS]) and (EDRD 515[B-] or 515[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

EDUC 522: *Foundations of Secondary Education.* 3 credits.
Analyzes philosophical assumptions, curriculum issues, learning theories, and history associated with current teaching styles. Emphasizes applications to all disciplines taught in secondary schools. Examines current educational trends and issues in relation to sociology of secondary school settings. Notes: 15 hours school-based field experience required. Offered by School of Education. May not be repeated for credit. Equivalent to SEED 522.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDUC 537: *Introduction to Culturally & Linguistically Diverse Learners.* 3 credits.
Examines the ways intersections of race, ethnicity, language, socioeconomic status, gender, sexual orientation, and ability affect equity for PK-12 culturally and linguistically diverse (CLD) learners. Invites educators to interrogate ways that personal cultural identity and biases influence instructional and assessment practices with CLD learners and relationships with families. Fieldwork hours are required. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDUC 542: *Foundations of Education.* 3 credits.
Examines the historical, philosophical, and sociological foundations of education as they relate to elementary schools, with a particular emphasis on teaching a culturally diverse population. Students will develop an understanding of the relationship between society and education. School-based field experience required. Offered by School of Education. May not be repeated for credit. Equivalent to ELED 542.

Recommended Prerequisite: Admission to the Elementary Education licensure program.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDUC 543: *Children, Family, Culture, and Schools, 4-12 Year Olds.* 3 credits.
Examines child and family development and ways children, families, schools, and communities interrelate. Links children's developing physical, social, emotional, and cognitive abilities to planning curriculum and developing instructional strategies. Notes: Requires school-based field experience. Offered by School of Education. May not be repeated for credit. Equivalent to ELED 543.

Recommended Prerequisite: Admission to the Elementary Education licensure program.

Registration Restrictions:

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDUC 547: *Scientific Inquiry and the Nature of Science.* 3 credits.
Incorporates understanding about scientific knowledge in K-12 classrooms. Builds fundamental knowledge of scientific inquiry and the nature of scientific knowledge and skills to weave this knowledge explicitly in curriculum. Focuses on developing inquiry-based lessons for students to investigate science and assessing student understanding of science and the nature of science. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

EDUC 592: *Effective Collaboration for Teaching Diverse Learners in Secondary Social Studies.* 3 credits.
Provides history-social studies candidates in secondary education with knowledge and skills necessary to meet the needs of diverse learners in the history-social studies classroom. Emphasizes teacher collaboration between general and special education teachers as an authentic model of practice. Notes: Taught concurrently and in close proximity with special education faculty teaching EDSE 662 to emphasize collaboration between special education and general education teachers. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDUC 595: *Perspectives on Exceptl Tching.* 3 credits.
Provides an opportunity for pre-service and in-service teachers to interact with young people and teachers in a range of school settings, exploring and documenting their points of view on teaching using a range of methods and visual and technology-oriented media and interview procedures. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

EDUC 597: *Special Topics in Education.* 1-6 credits.
Provides advanced study on selected topic or emerging issue in American or international education. Notes: May be repeated for credit with GSED permission. Offered by School of Education. May be repeated within the term.

Specialized Designation: Topic Varies

Recommended Prerequisite: Admission to program in Graduate School of Education.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDUC 598: *Directed Reading, Research, and Individual Projects.* 1-6 credits.
Presents various subjects and projects, principally by directed study, discussion, research, and participation under supervision of graduate faculty member. Offered by School of Education. May be repeated within the term for a maximum 12 credits.

Recommended Prerequisite: Admission to degree program, and permission of dean.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Regular scale.

600 Level Courses

EDUC 606: *Education and Culture.* 3 credits.
Uses cultural inquiry process (CIP) and web site to acquire cultural, social, and language-related perspectives on educational processes; and teaches skills to analyze educational settings and expand strategies to address puzzlements in students' own practice. Offered by School of Education. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Required Prerequisites: (EDUC 612[B-] or 612[XS]) and (EDUC 613[B-] or 613[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in ASTL-Alternative Education, ASTL-Early Childhood Educ, Gifted Child Education, ASTL - History, ASTL-Instructional Technology, ASTL - Literacy/Reading, ASTL - Mathematics, ASTL-NBPTS Preparation Core, ASTL - Science or Curriculum and Instruction.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

EDUC 608: *Teacher Leadership for Professional Learning.* 3 credits.
Examines teacher leadership as a vehicle for professional growth and change. Focuses on the role of teacher learning in strengthening school capacity and offers teachers a foundation for enacting teacher leadership in their own school contexts via mentoring, collaboration, and related professional development endeavors. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDUC 612: *Inquiry into Practice.* 2 credits.
Provides experience using research skills to foster systematic and thoughtful inquiry into classroom practice. Explores relevant classroom practice issues through critical writing, action, and research. Emphasizes cultural diversity and gender issues in research. Offered by School of Education. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in ASTL-Alternative Education, ASTL-Early Childhood Educ, ASTL-Foreign Languages/French, ASTL-Foreign Languages/Spanish, Gifted Child Education, ASTL - History, ASTL-Instructional Technology, ASTL - Lit Reading Specialist, ASTL - Literacy/Reading, ASTL - Mathematics, ASTL-NBPTS Preparation Core, ASTL - LIT PK12 Clsrm Teachers, ASTL-Physical Education, ASTL - Science, ASTL-Teacher Leadership, Curriculum and Instruction or Dsgning Dgtl Lrning in Schools.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

EDUC 613: *How Students Learn.* 3 credits.
Advanced course in study of learning based on research and theory from different disciplines. Focuses on increasing students' learning through study of different learning systems, and understanding each learner in context of learning process itself. Offered by School of Education. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Required Prerequisites: EDUC 612[B-] or 612[XS].
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in ASTL-Alternative Education, ASTL-Early Childhood Educ, Gifted Child Education, ASTL - History, ASTL-Instructional Technology, ASTL - Literacy/Reading, ASTL - Mathematics, ASTL-NBPTS Preparation Core, ASTL - Science, Adv Stud T/L or Curriculum and Instruction.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

EDUC 614: *Designing and Assessing Teaching and Learning.* 2 credits.
Explores design and development of curricular, pedagogical, and assessment strategies responsive to needs and interests of students. Investigates factors that affect teaching and learning, and examines multiple ways of knowing that teachers bring to classrooms. Offered by School of Education. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Required Prerequisites: (EDUC 612[B-] or 612[XS]) and (EDUC 613[*B-] or 613[*XS]).
[*] May be taken concurrently.
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in ASTL-Alternative Education, ASTL-Early Childhood Educ, Gifted Child Education, ASTL - History, ASTL-Instructional Technology, ASTL - Literacy/Reading, ASTL - Mathematics, ASTL-NBPTS Preparation Core, ASTL - Science, Adv Stud T/L or Curriculum and Instruction.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

EDUC 615: *Educational Change.* 2 credits.
Explores influences on educational change at classroom, school, community, state, and national levels. Investigates implications of factors and influences that affect educational change. Analyzes influences and factors, and involves students in reflecting on their own experiences. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (EDUC 612[B-] or 612[XS]) and (EDUC 613[B-] or 613[XS]) and (EDUC 614[B-] or 614[XS]) and (EDUC 606[*B-] or 606[*XS]).
[*] May be taken concurrently.
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in ASTL-Alternative Education, ASTL-Early Childhood Educ, Gifted Child Education, ASTL - History, ASTL-Instructional Technology, ASTL - Literacy/Reading, ASTL - Mathematics, ASTL-NBPTS Preparation Core, ASTL - Science or Curriculum and Instruction.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

EDUC 621: *Teaching and Learning in the International Baccalaureate Programme.* 3 credits.
Focuses on principles and practices of the International Baccalaureate, organized around four areas of inquiry: curriculum processes, teaching & learning, assessment, and professional learning. Fieldwork hours are required. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a concentration in ASTL- Adv Intl Baccalaureate, Int'l Baccalaureate Education or IB in Teaching Learning.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

EDUC 622: *Curriculum Development across IB Programs.* 3 credits.
Explores the development of practical knowledge about the design and structure of the IB programs' curricula. Provides a foundation for understanding how the programs are implemented and how student learning developed within them is assessed. Fieldwork hours are required. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: EDUC 621[*B-] or 621[*XS].
[*] May be taken concurrently.
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a concentration in ASTL- Adv Intl Baccalaureate, Int'l Baccalaureate Education or IB in Teaching Learning.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

EDUC 623: *Models and Strategies for Teaching and Learning in IB Schools.* 3 credits.
Focuses on the development of the capacity of teachers in IB schools to adopt appropriate teaching strategies and techniques instrumental in ensuring program learning outcomes are achieved. Furthermore, participants develop a deep understanding of the critical relationship between teaching and learning. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (EDUC 621[B-] or 621[XS]) and (EDUC 622[B-] or 622[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a concentration in ASTL- Adv Intl Baccalaureate, Int'l Baccalaureate Education or IB in Teaching Learning.

Enrollment is limited to Graduate, Non-Degree, Undergraduate or Washington Consortium level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

EDUC 624: *Assessment and Learning in IB Schools.* 3 credits.
Explores the essential role of assessment in teaching IB learners. Addresses formative and summative assessment practices as an integral part of the IB curriculum as well as the use of assessment for

differentiation and planning. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (EDUC 621[*B-] or 621[*XS]).
[*] May be taken concurrently.
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a concentration in ASTL- Adv Intl Baccalaureate, Int'l Baccalaureate Education or IB in Teaching Learning.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

EDUC 626: *Inquiry into Action: IB Teachers, Learners, and Schools.* 3 credits.
Uses the action research and qualitative process to help educational practitioners plan and complete an action research study related to IB learners, teachers, or schools. Examines the social, cultural, and ethical issues of conducting research with students. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (EDUC 621[B-] or 621[XS]) and (EDUC 622[B-] or 622[XS]) and (EDUC 623[*B-] or 623[*XS]) and (EDUC 624[B-] or 624[XS]).
[*] May be taken concurrently.
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a concentration in ASTL- Adv Intl Baccalaureate, Int'l Baccalaureate Education or IB in Teaching Learning.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

EDUC 627: *Contemporary Issues and Trends in IB.* 3 credits.
Focuses on current IB research, trends, and issues as well as international, national, and state/provincial legislation concerning schools and the potential impact on IB schools. Participants are prepared as leaders and advocates for IB programs and their students. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: Admission to GSE, enrollment in FAST TRAIN IB certificate program and completion of EDUC 621, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

EDUC 628: *Curriculum for IB Leadership.* 3 credits.
Develops knowledge about the philosophy, design, and structure of the International Baccalaureate and its curriculum. Examines current trends and issues in the leadership of IB and international schools. Provides a foundation for understanding the significant role of school leaders in the authorization and implementation of IB programs and curriculum. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

EDUC 647: *Critical Reflective Practice.* 1.5 credit.
Engages students in a learning community of teachers to develop skills of critical reflection on professional practice. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Graduate or Senior Plus.

Enrollment is limited to students with a concentration in Transformative Teaching.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Students in the GMU Korea campus may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

EDUC 649: *Critical Dialogue in Education.* 1.5 credit.
Offers opportunity to develop critical dialogue and peer feedback skills focused on professional practice. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Graduate or Senior Plus.

Enrollment is limited to students with a concentration in Transformative Teaching.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Students in the GMU Korea campus may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

EDUC 651: *Critical Theories and Pedagogies.* 3 credits.
Explores critical theories and pedagogies experientially, including alternative assessments that address educational equity and access, power, and approaches for deepening our practice as citizens in a democracy. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: EDUC 647.

Registration Restrictions:
Enrollment limited to students with a class of Graduate or Senior Plus.

Enrollment is limited to students with a concentration in Transformative Teaching.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Students in the GMU Korea campus may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

EDUC 653: *Technology and Learning.* 3 credits.
Develops technological knowledge and skills to support teaching and learning and to sustain and enhance learning communities. Teachers explore and critique the possibilities and concerns of using technology in learning environments. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: EDUC 647.

Registration Restrictions:
Enrollment limited to students with a class of Graduate or Senior Plus.

Enrollment is limited to students with a concentration in Transformative Teaching.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Students in the GMU Korea campus may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

EDUC 655: *Teacher Research Methods.* 3 credits.
Introduces teacher research methods and situates them in relation to other research approaches. Emphasizes the understanding and use of various research methods as innovative approaches to teaching and learning. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: EDUC 651 and EDUC 653.

Registration Restrictions:
Enrollment limited to students with a class of Graduate or Senior Plus.

Enrollment is limited to students with a concentration in Transformative Teaching.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Students in the GMU Korea campus may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

EDUC 657: *Teaching for Democracy and Social Justice.* 3 credits.
Focuses on the research that supports teachers to create democratic classroom practices and to support PK-12 students in exercising civic rights. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: EDUC 651 and EDUC 653.

Registration Restrictions:
Enrollment limited to students with a class of Graduate or Senior Plus.

Enrollment is limited to students with a concentration in Transformative Teaching.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Students in the GMU Korea campus may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

EDUC 659: *Teacher Leadership.* 1.5 credit.
Engages learners in data gathering exercises toward articulating a leadership agenda in the context of PK-12 educational environments. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: Admission into the MEd Curriculum and Instruction concentration in Teacher Inquiry, Development and Empowerment for Social Justice program (TIDES) cohort. Completion of EDUC 655 and EDUC 657.

Registration Restrictions:
Enrollment limited to students with a class of Graduate or Senior Plus.

Enrollment is limited to students with a concentration in Transformative Teaching.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Students in the GMU Korea campus may **not** enroll.

Schedule Type: Seminar

Grading:

This course is graded on the Graduate Regular scale.

EDUC 661: *Teacher Empowerment and Policy.* 1.5 credit.
Provides advanced study on a selected topic or emerging issue in American or international education with particular attention to developing policy solutions. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: EDUC 655 and EDUC 657.

Registration Restrictions:
Enrollment limited to students with a class of Graduate or Senior Plus.

Enrollment is limited to students with a concentration in Transformative Teaching.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Students in the GMU Korea campus may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

EDUC 663: *Culturally Relevant Pedagogy.* 3 credits.
Offers opportunity to view how language and culture shape realities, including perceptions of children as learners. Explores cultural constraints and transformative possibilities embedded within cultures. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: EDUC 659.

Registration Restrictions:
Enrollment limited to students with a class of Graduate or Senior Plus.

Enrollment is limited to students with a concentration in Transformative Teaching.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Students in the GMU Korea campus may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

EDUC 665: *Teacher Inquiry in Practice I.* 3 credits.
Builds further understanding of teacher research as teachers form and frame salient questions, examine the existing literature related to their questions, and take actions to improve teaching and learning. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: EDUC 659.

Registration Restrictions:
Enrollment limited to students with a class of Graduate or Senior Plus.

Enrollment is limited to students with a concentration in Transformative Teaching.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Students in the GMU Korea campus may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

EDUC 667: *Teacher Inquiry in Practice II.* 3 credits.
Builds on the teacher research project begun in Teacher Inquiry in Practice I as teachers continue to address their pedagogical questions, take actions to improve teaching and learning, gather, analyze and interpret multiple forms of data, and share their experience in communities of practice. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: EDUC 663 and EDUC 665.

Registration Restrictions:
Enrollment limited to students with a class of Graduate or Senior Plus.

Enrollment is limited to students with a concentration in Transformative Teaching.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Students in the GMU Korea campus may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

EDUC 669: *Teaching and Learning in Practice.* 3 credits.
Admission into the MEd Curriculum and Instruction concentration in Transformative Teaching program. Completion of the EDUC 663 and EDUC 665. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: EDUC 663 and EDUC 665.

Registration Restrictions:
Enrollment limited to students with a class of Graduate or Senior Plus.

Enrollment is limited to students with a concentration in Transformative Teaching.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Students in the GMU Korea campus may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

EDUC 672: *Human Development and Learning: Secondary Education.* 3 credits.
Explores developmental issues associated with middle and high school students, and theories that provide basis for understanding learning process. Addresses implications for designing instruction and

curriculum. Offered by School of Education. May not be repeated for credit. Equivalent to SEED 540.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDUC 674: *Assessing Learning and Teaching in the Secondary School Classroom.* 3 credits.
Supports beginning teachers' development and design of assessment practices for promoting student learning. Focuses on individual differences and classroom, teacher, school, and cultural factors that impact assessment; different types and purposes of assessment; and relationship of assessment to national and state standards. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: EDUC 522 and advanced methods course.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Curriculum and Instruction or Secondary Education Licensure.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDUC 675: *Research in Secondary Education.* 3 credits.
Links evidence of student learning to make informed instructional decisions. Engages students in critiquing various research paradigms, reviewing literature, and systematically collecting and interpreting evidence to improve practice. Facilitates completion of the M.Ed. exit requirement. Notes: All students enrolled in this course must be working daily in or have access to a classroom setting classroom setting, since the major course assignment involves a classroom-based teacher research project. The M.Ed. program exit requirement is completed in EDUC 675. Offered by School of Education. May not be repeated for credit. Equivalent to SEED 675.

Registration Restrictions:
Required Prerequisite: EDCI 790.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Curriculum and Instruction or Secondary Education Licensure.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

700 Level Courses

EDUC 797: *Advanced Topics in Education.* 1-6 credits.
Advanced study of selected topics in education for students preparing for doctoral studies or who have been admitted to the PhD program in education. Notes: May be repeated for credit with GSED approval. Offered by School of Education. May be repeated within the term.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

800 Level Courses

EDUC 800: *Ways of Knowing.* 3 credits.
Provides understanding of characteristic ways of knowing in various liberal arts disciplines while examining subject matter, scope, key concepts, principles, methods, and theories. Analyzes philosophical traditions underlying educational practice and research. Notes: Required course during first spring semester of study in the program. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: Admission to the PhD program.

Registration Restrictions:
Enrollment is limited to students with a major in Education.

Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

EDUC 801: *Seminar for Teaching in Teacher Education.* 1 credit.
Provides doctoral students an opportunity to develop their own expertise as teacher educators. Examines practical supports for engaging adult learners. Explores specific challenges, experiences, and emerging issues students confront as they facilitate their first courses within a higher education context. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: ECED 803 or EDUC 803. Special circumstances may be accommodated upon request.

Recommended Corequisite: Serving as a course instructor for an undergraduate or graduate level course for teacher candidates. Special circumstances may be accommodated upon request.

Registration Restrictions:

Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Satisfactory/No Credit scale.

EDUC 802: *Leadership Seminar.* 3 credits.
Intensive study of leadership, emphasizing decision and change processes, and assessment and development of leadership skills. Notes: Required course during first semester of study in the program. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to students with a major in Education.

Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

EDUC 803: *Teacher Preparation and Professional Development.* 3 credits.
Explores research and current recommended practices related to teacher preparation and professional development. Provides opportunity for practical application with preservice or inservice teachers. Offered by School of Education. May not be repeated for credit. Equivalent to ECED 803.

Recommended Prerequisite: Approval of instructor and acceptance to PhD program.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

EDUC 804: *Seminar for Supervision in Teacher Education.* 1 credit.
Provides doctoral candidates practical and pedagogical support for supervising teacher candidates in clinical settings. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: EDUC 854. Special circumstances may be accommodated upon request.

Recommended Corequisite: Supervision of teacher candidates. Special circumstances may be accommodated upon request.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Satisfactory/No Credit scale.

EDUC 815: *Research Inquiries in International Education.* 3 credits.
Focuses on the intersection of international education and research methodologies in educational settings. Students will delve into the construction, implementation, and impact of research in international settings or with an internationally-minded perspective. Through critical inquiry into practice, the course offers students the opportunity to develop more sophisticated understandings of the research process in international education settings. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: EDUC 880 or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

EDUC 845: *Multilingual Learners With Diverse Educational Needs.* 3 credits.
Examines examine issues surrounding identification, assessment, and instruction of multilingual learners with diverse educational needs. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: Admission to the PhD Program in Education or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

EDUC 850: *The Study of Teaching.* 3 credits.
Explores the history and development of the search for teaching effectiveness. The course will trace the various definitions of effectiveness and the methods created to assess effectiveness. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: EDRS 810.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDUC 851: *Research on Teacher Education.* 3 credits.
Explores the history and development of the search for effectiveness in the preparation of preservice teachers and the continuing professional development of practicing teachers. The students will examine the substance and gaps in the study of the education of educators. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: EDRS 810.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDUC 852: *Technology and Teacher Development.* 3 credits.
Investigates the latest research and issues related to technology integration in teacher education; includes research supporting the incorporation of technology in staff development for in-service K-12 educators, as well as preservice university coursework. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDUC 853: *World Perspectives of Teacher Education.* 3 credits.
Focuses on the cross-cultural analysis of current U.S. and internationally based teacher preparation and continuing professional development pedagogical models, policy reforms, and their historical contexts. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: Admission to doctoral program.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

EDUC 854: *Working in Schools: Spanning Boundaries/Expanding Roles.* 3 credits.
Prepares future teacher educators and professional developers for their work in K-12 settings. Examines the principles of clinical field experiences, the foundations of school-university partnerships, and the roles/relationships of all stakeholders engaged in field-based teacher preparation and teacher professional development. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students in the E1-PHD-EDHD or E1-PHD-EDUC programs.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDUC 855: *Critical Perspectives in Education.* 3 credits.
Explores the theory and practice of critical perspectives in education. Examines how issues of power, culture, and consciousness shape education, education systems, and educational research. Connects students' lived experiences with assumptions that govern dominant discourses in and around education. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDUC 860: *STEM Education Research and Policy.* 3 credits.
Examines research on science, technology, engineering, and mathematics (STEM) education issues and education policy issues including the rationale for STEM education, STEM education policy, models of STEM schools in K-12 education, STEM education leadership, informal STEM education, STEM curriculum and instruction, and research in STEM education. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: EDRS 810 (may also be taken concurrently).

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

EDUC 865: *Curriculum Theory and Practice.* 3 credits.
Examines theories of the design, deliberation, and analysis of curricula across subject matters and learning contexts. Surveys key concepts, principles, methods, and theories of curriculum thought in both U.S. and international contexts. Analyzes philosophical perspectives underlying curriculum theory and practice. Explores the consequences of curriculum decisions for educators and learners. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: Admission to The PhD in Education program, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

EDUC 870: *Education Policy: Process, Context, and Politics.* 3 credits.
Examines public policy decision-making in education at local, state, and national levels, and its impact on education institutions, students, and public. Focuses on theories and methodological approaches, and resolution of competing policy arguments in political arena. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to students with a major in Education.

Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDUC 871: *Advanced Policy Issues in Education.* 3 credits.
In-depth analysis of selected education policy issues. Focuses on issue interactions and education-related policy actions by different levels of government. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: EDUC 870 or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDUC 872: *Social Science Research and Education Policy.* 3 credits.
Focuses on research base used to support education policy actions. Focuses on analyzing strength of this research. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: EDRS 810,811, and 812 or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDUC 873: *Education Policy: Comparative and International Perspectives.* 3 credits.
Using interdisciplinary approach, addresses education policy issues that transcend national boundaries and have implications for educators in fostering social justice and global awareness. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to students with a major in Education.

Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDUC 874: *The Achievement Gap.* 3 credits.
Focuses on achievement gap in schools. Students research and analyze gaps in student achievement related to race and ethnicity, limited English proficiency, family background, gender, poverty, and ableism, and practices designed to close the gap. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students in a Doctor of Philosophy degree.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDUC 875: *Contemporary and Emerging Issues in Education Policy.* 3 credits.
Focuses on identifying and analyzing factors that promote new initiatives in education policy agenda. Attention given to nontraditional sources of education policy initiatives. Notes: Must be admitted to PhD program. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: EDUC 870 (concurrent enrollment is also permitted) and admission to the PhD program.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDUC 876: *Teacher Development and Education Policy.* 3 credits.
Focuses on the impact of policy actions at the local, state, and national levels on teacher preparation and continuing professional development. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: EDUC 870 or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDUC 877: *Teacher Policy in Historic Perspective.* 3 credits.
Examines the history of policies pertaining to public school teachers in the United States. Evaluate and engage current policy debates by putting the past and present into conversation. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: Admission to The PhD in Education program, or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

EDUC 878: *Intercultural Competence: Theory and Research Application to International Education.* 3 credits.
Explores and examines intercultural competence theory and research as a teaching and learning framework in international education. Emphasizes the comparison of alternative models of intercultural competence development, research paradigms using intercultural competence theory in international education, and empirical studies that examine and explore the use of intercultural competence theory in education. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: EDUC 880.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

EDUC 879: *Language and Second Language Acquisition Research in International Education.* 3 credits.
Examines the theoretical and historical role of language in international education, with special emphasis on the foundations and variables of second language acquisition. Focuses the role of language in cross-cultural and international contexts, the application of language acquisition theories and empirical studies globally. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: EDUC 880.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Enrollment limited to students in a Doctor of Philosophy degree.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

EDUC 880: *Introduction to International Education.* 3 credits.
Using interdisciplinary approach, addresses education policy issues that transcend national boundaries and have implications for educators in fostering social justice and global awareness. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students in a Doctor of Philosophy degree.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDUC 881: *Seminar in Bilingual Education: Policy.* 3 credits.
Examines historical development of education for language minority students in United States, including federal and state legislation and court decisions. Explores policy issues regarding administrative program models, instructional approaches, curricular reform, and assessment policies for language minority students developed in response to legal mandates, legislative decisions, and school reform movement. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to students with a major in Education.

Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

EDUC 882: *Second Language Acquisition: Theory, Research, and Practice.* 3 credits.
Examines the theoretical foundations of second language acquisition with focus on linguistic, anthropological, sociological, psychological, and educational research through theory and practice. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to students with a major in Education.

Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

EDUC 883: *Seminar in Sociocultural Theory.* 3 credits.
Explores and analyzes the theoretical contributions of sociocultural theory. Focuses on the growing body of contemporary research on literacy, equity in education and emancipatory teaching for diverse students. Offered by School of Education. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Admission to the PhD in Education program or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

EDUC 885: *History of Education in the United States.* 3 credits.
Examines the history of education in the United States and explores the social, political, cultural, and economic forces that have shaped reform initiatives. Uses history to engage questions around citizenship, equality, and democracy. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: Admission to the PhD in Education program, or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

EDUC 886: *School Reform in the United States: Politics and Policies.* 3 credits.
Explores a broad range of reform initiatives shaping public education and examines the ways politics infuses education policy. Investigates the disciplinary and methodological frameworks scholars have used to study school reform. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: Admission to the PhD in Education program, or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

EDUC 887: *Neighborhood, Community, Education Policy.* 3 credits.
Explores the intersection of historical, social, political, and economic policies and conditions and communities in the US. Focuses on

understanding trends in the formation of neighborhoods and the development of American cities, schools, and communities. Examine the politics and policies of selected neighborhoods and communities through developing community development profiles and proposals. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: Admission to PhD in Education program or with permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDUC 890: *Doctoral Internship in Education.* 1-6 credits.
Interns work with appropriate staff member in cooperating school, school system, or other educational institution, agency, or setting. Notes: Requires 100 hours of on-site internship completed over at least a five-week period. Up to 6 credits of EDUC 890 may be applied toward PhD degree requirements. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: Admission to the PhD program and prior approval of the advisor and PhD director.

Registration Restrictions:
Enrollment is limited to students with a major in Education.

Enrollment is limited to Graduate level students.

Schedule Type: Internship

Grading:
This course is graded on the Graduate Special scale.

EDUC 892: *Social Justice and Equity in International Education.* 3 credits.
Examines ideological, cultural, and systemic structural inequities in various educational settings at national and international levels. Focuses on educational practices that promote equity and social change throughout the world. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: EDUC 880.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDUC 893: *Seminar in Educational Anthropology.* 3 credits.
Examines theories and research from educational anthropology and educational sociology to clarify and address contemporary educational issues and concerns. Focuses on U.S. public schools, with comparative materials from other educational settings and societies. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: Admission to the PhD in Education program or permission of the instructor.

Registration Restrictions:
Enrollment is limited to students with a major in Education.

Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

EDUC 894: *Seminar in Multicultural Education.* 3 credits.
Examines knowledge base, policy issues, and curricular and instructional features of multicultural education in United States and other countries. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: Admission to the Ph.D. in Education program or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

EDUC 896: *Special Topics in Education.* 3 credits.
Explores selected topics in education across all doctoral specializations. Offered by School of Education. May be repeated within the term for a maximum 6 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment is limited to Graduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

EDUC 897: *Independent Study for the Doctor of Philosophy in Education.* 1-6 credits.
Structured learning experience to extend and develop skills and knowledge relative to field of professional expertise. Offered by School of Education. May be repeated within the term.

Recommended Prerequisite: Admission to the PhD program and prior approval of advisor and PhD director.

Registration Restrictions:
Enrollment is limited to students with a major in Education.

Enrollment is limited to Graduate level students.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Special scale.

900 Level Courses

EDUC 994: *Advanced Internship in Education.* 3 credits.
Internship in setting related to student's major area of study. Requires minimum of 100 hours completed over at least a five-week period. Each intern works with appropriate staff member in cooperating school, school system, or other educational institution or agency. Notes: Internship must

be in setting that differs from regular employment. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: Admission to the PhD program and prior approval of advisor and PhD director.

Registration Restrictions:
Enrollment is limited to students with a major in Education.

Enrollment limited to students in a Doctor of Philosophy degree.

Schedule Type: Internship

Grading:
This course is graded on the Graduate Special scale.

EDUC 998: *Doctoral Dissertation Proposal.* 1-6 credits.
Work on research proposal that forms basis for doctoral dissertation, under guidance of dissertation chair and doctoral committee. Notes: May be repeated, but no more than 6 credits of EDUC 998 may satisfy doctoral degree requirements. Offered by School of Education. May be repeated within the degree for a maximum 12 credits.

Recommended Prerequisite: Admission to candidacy in the PhD program, successful completion of the doctoral qualifying exam, and EDRS 810, 811, and 812 or their equivalents.

Registration Restrictions:
Enrollment is limited to students with a major in Education.

Enrollment limited to students in a Doctor of Philosophy degree.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

EDUC 999: *Doctoral Dissertation Research.* 1-9 credits.
Provides continued faculty assistance on individual basis to complete dissertation planned in EDUC 998 and initiate new projects. Notes: Requires successful completion of EDUC 998 and faculty approval of proposal. Offered by School of Education. May be repeated within the degree.

Recommended Prerequisite: EDUC 998 and faculty approval of proposal.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy.

Enrollment is limited to students with a major in Education.

Enrollment limited to students in a Doctor of Philosophy degree.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

Education Instructional Technology (EDIT)

400 Level Courses

EDIT 401: *Introduction to Learning Technologies.* 3 credits.
Provides an overview of the field of learning technologies, including its history, theoretical foundations, design processes, and technologies. Illustrates how learning technologies can be applied in a variety of teaching and training contexts including e-learning, educational software, instructional design, corporate training, and curriculum development. Offered by School of Education. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EDIT 426: *Web Accessibility and Design.* 3 credits.
Provides instruction for accessible web design using HTML and existing authoring tools. Section 508 web accessibility standards and assistive technologies to access the computer will be explored. Notes: Class may be delivered via distance education. Offered by School of Education. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

500 Level Courses

EDIT 504: *Introduction to Educational Technology.* 3 credits.
Examines uses of and issues in educational technology. Explores curriculum integration of technology, and focuses on learning and using commercially available applications software. Notes: Field experience in public schools will be required during course. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDIT 526: *Web Accessibility and Design.* 1-3 credits.
Develops understanding of principles of universal web design. Students apply this understanding by designing and developing accessible web site using web authoring tools. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDIT 530: *Scripting and Programming.* 2 credits.
Enables development of computer-based educational materials using widely known educational scripting language. Students explore basic

authoring capabilities, and learn to apply those capabilities by designing and producing materials using commands, procedures, and functions of scripting language. Offered by School of Education. May be repeated within the term for a maximum 10 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDIT 561: *Teaching with Telecommunications.* 1 credit.
Develops expertise with various aspects of telecommunications tools, and models ways these tools can be used for personal learning and integration into teaching/learning process. Addresses e-mail, Internet, web, and online databases. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDIT 571: *Visual Design and Applications.* 1-3 credits.
Provides basic knowledge of the range of capabilities of available graphic and visual design applications. Students learn to cultivate effective visual design practices for creating instructional products. Offered by School of Education. May be repeated within the term.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDIT 572: *Digital Audio/Video Design and Applications.* 1-3 credits.
Provides basic knowledge of the range of capabilities of available audio and video design applications. Students learn to cultivate effective audio and video design practices for creating instructional products. Offered by School of Education. May be repeated within the term.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDIT 573: *Project Management.* 1-3 credits.
Explores project management principles and applications used to manage, plan, and track large-scale, complex instructional design projects. Offered by School of Education. May be repeated within the term.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDIT 574: *Social Media and Digital Collaboration Applications.* 1-3 credits.
Provides basic knowledge of the range of capabilities of available social networking, teleconferencing, and collaboration applications. Students learn to integrate the latest information and communication technologies into the creation of instructional products. Offered by School of Education. May be repeated within the degree for a maximum 3 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDIT 575: *e-Learning Design Applications.* 1-3 credits.
Provides basic knowledge of available applications for creating, delivering, managing and tracking e-learning experiences. Students learn to create instructional products using the latest e-learning design applications. Notes: Content customized to particular software tool presented. Offered by School of Education. May be repeated within the term.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDIT 576: *Mobile Learning and Applications.* 1-3 credits.
Explores current best practices and techniques required to deliver effective learning content through mobile devices. Students learn pedagogical approaches to mobile learning as well as investigate various mobile platforms and applications. Offered by School of Education. May be repeated within the term for a maximum 3 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDIT 590: *Educational Research in Technology.* 3 credits.
Focuses on developing skills, insights, and understanding basics to performing research in the field of Instructional Design and Technology. Develops expertise in action research methodology, design, and implementation. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

600 Level Courses

EDIT 601: *Instructional Design and Technology (IDT) Portfolio.* 1 credit.
Enables students to create and publish digital portfolio that demonstrates effective and meaningful integration and syntheses of instructional design and technology concepts, principles, and competencies learned across program courses at mid-degree program point. Notes: To be taken at mid-degree program point with minimum 12 and maximum 15 credits. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: Minimum of 12 credits and a maximum of 15 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDIT 611: *Innovations in e-Learning.* 3 credits.
Explores leading-edge learning technologies and their integration into the e-learning design process. Hands-on activities focus on technology planning, selection, implementation, and evaluation utilizing instructional design best practices. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

700 Level Courses

EDIT 701: *Advanced Instructional Design and Technology (IDT) Portfolio.* 1 credit.
Enables students to create and publish a digital portfolio that demonstrates effective and meaningful integration and syntheses of instructional design and technology concepts, principles, and competencies learned across program courses at end-degree program point. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisite: (EDIT 601[B]).
[B] Requires minimum grade of B.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDIT 704: *Instructional Technology Foundations and Theories of Learning.* 3 credits.
Reviews practical and pedagogical issues related to design and development of technological instruction. Emphasizes investigating instructional design as a field and community of practice, and reviewing core learning theory constructs applicable to design of instructional technology. Offered by School of Education. May be repeated within the degree for a maximum 3 credits.

Registration Restrictions:

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDIT 705: *Instructional Design.* 3 credits.
Helps students analyze, apply, and evaluate principles of instructional design to develop education and training materials spanning a wide range of knowledge domains and instructional technologies. Focuses on variety of instructional design models, with emphasis on recent contributions from cognitive science and related fields. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: Teaching or Training Experience or equivalent.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDIT 706: *Business of Learning Design and Technologies.* 3 credits.
Explores the business issues underlying the selection, implementation and evaluation of technology-based learning interventions. Focuses on developing the skills necessary to improve performance and achieve measurable, positive change that supports an organization's strategic goals. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: EDIT 705 or instructor permission.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDIT 710: *Online Teaching Essentials.* 1 credit.
Explores the essential concepts and skills to effectively teach online courses. Introduces the topics of designing and managing online courses, assessing online students' knowledge and skills, facilitating online student collaboration and communication, and establishing a supportive online learning community. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDIT 730: *Advanced Instructional Design.* 3 credits.
Provides students with the knowledge and skills for designing highly contextualized and engaging problem-solving learning environment using a grounded, theory-based design approach. Emphasizes the design of technology supported learning environments using a variety of pedagogical models. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: EDIT 705[B-], 705[XS], EDCI 705[B-] or 705[XS].
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDIT 732: *Analysis and Design of Technology-Based Learning Environments.* 3 credits.
Enables design, implementation, and evaluation of technology-based education and training materials using advanced computer-based authoring tools. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: EDIT 730 or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDIT 751: *Overview of Learning Analytics and Big Data.* 3 credits.
Explores the tools, technologies and methods for capitalizing on data stored in enterprise-wide information systems to support executive-level learning and performance support decision-making. Focuses on demonstrating the bottom line business value of learning through evidence-based talent needs. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: Admission to Executive Chief Learning Officer (ECLO) Certificate Program, or permission of advisor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDIT 752: *Design and Implementation of Technology-based Learning Environments.* 3 credits.
Students design and produce multimedia/hypermedia applications based on current theory and research in instructional design and cognitive science. Examines user needs, information models, structure, and media

selection and uses to inform design and production of final project. Offered by School of Education. May be repeated within the degree for a maximum 3 credits.

Registration Restrictions:
Required Prerequisite: (EDIT 732[B]).
[B] Requires minimum grade of B.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDIT 760: *Blended and Online Teachers and Learners.* 1 credit.
Examines the attributes of teachers and K-12 learners with emphasis on attitudes, behaviors, and adaptations required by blended and online teachers and learners. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDIT 761: *Models of Blended and Online Learning.* 2 credits.
Provides opportunities for learners to identify, explore, and evaluate a range of educational models for K-12 blended and online learning. These include the flipped classroom, mentor-mentee dyad, group collaborative, synchronous, asynchronous, parent directed e-learning, mobile learning, and web-delivered instruction. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDIT 762: *Quality K-12 Blended and Online Learning.* 1 credit.
Examines and evaluates quality indicators for the design of blended and online learning pointing to the six major areas for consideration: instructor-learner, learner-learner, learner-content, learner-interface, learner-instructional strategies, and social presence. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDIT 763: *Tools for K-12 Blended and Online Learning.* 2 credits.
Examines tools that structure and support blended and online learning with particular emphasis on the unique affordances of each tool including tools for producing, delivering, and supporting blended and online learning. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDIT 764: *Blended and Online Communication.* 3 credits.
Examines strategies to assess, respond to, and target blended and online communication. Develops expertise in questioning and listening, supporting self-regulation, and clarifying conceptual understanding. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDIT 765: *Facilitating K-12 Blended and Online Learning.* 2 credits.
Develops expertise in facilitating and moderating blended and online learning to include synchronous and asynchronous environments, community building strategies, questioning strategies, prompting reflection, and facilitating conceptual understanding. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDIT 766: *Understanding Blended and Online Presence.* 2 credits.
Examines strategies to create teacher presence, to establish and express self, to promote learner-learner connections, and to compensate for situations where teacher-learner and learner-learner are separated. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDIT 767: *Designing K-12 Blended and Online Learning.* 3 credits.
Develops frameworks for designing and structuring blended and online learning opportunities and emphasizes course content and learning outcomes, selection of appropriate online models, and organization of online lessons and courses, online learning tools, and assessment and evaluation strategies. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: Admission to MED in Curriculum and Instruction Concentration in Blended and Online Learning in Schools.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDIT 768: *K-12 Online Design I.* 1 credit.
Develops frameworks for designing and structuring online learning opportunities and emphasizes course content and learning outcomes, selection of appropriate online models, and organization of online lessons and courses online learning tools, and assessment and evaluation strategies. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: Admission to MED in Curriculum and Instruction Concentration in Blended and Online Learning in Schools.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDIT 769: *K-12 Online Design II.* 1 credit.
Focuses on the creation of online courses appropriate for K-12 learners and culminates in comprehensive design documents that detail goals, assessments, learning tools, and detailed scripts or documents ready for the production phase. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: Admission to MED in Curriculum and Instruction Concentration in Blended and Online Learning in Schools.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDIT 772: *Virtual Worlds, Augmented Reality, and Gaming Applications.* 1-3 credits.
Provides basic knowledge of available applications and platforms for creating contextually-based learning environments such as immersive virtual worlds, simulated worlds, alternate reality games, and massive multiplayer online role playing games for e-learning. Offered by School of Education. May be repeated within the term.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDIT 773: *Human Computer Interface Design for Teaching and Learning.* 3 credits.
Provides overview of human-computer interface issues related to instructional design of technology-centered learning environments. Examines continuum of human-computer feedback. Offered by School of Education. May be repeated within the degree for a maximum 3 credits.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDIT 780: *Principles of School-Based Design.* 3 credits.
Develops and applies a comprehensive set of digital design strategies appropriate for creating engaging learning opportunities for students in PreK-12 environments. Emphasizes school-based design principles, design processes, and design patterns at the intersection of technology, teaching. and learning. Offered by School of Education. May not be repeated for credit.

Recommended Corequisite: EDIT 781.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDIT 781: *Designing for Information Using.* 3 credits.
Explores ways in which PreK-12 teachers can design digital environments that connect learners' ability to search, sort, create, communicate, and synthesize information and information resources with learning activities. Emphasizes teachers' ability to design for digital citizenship and information use. Offered by School of Education. May not be repeated for credit.

Recommended Corequisite: EDIT 780.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDIT 782: *Designing for Literacy.* 3 credits.
Explores 21st century definitions of literacy related to multiple symbolic environments (e.g. visual, numeric, alphabetic). Examines the practice of design that integrates technology to promote literacy competence across media and across PreK-12 abilities and interests. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: EDIT 780 and EDIT 781.

Recommended Corequisite: EDIT 783.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDIT 783: *Designing for Problem Solving.* 3 credits.
Examines problem solving as an educational goal, as a cognitive process, and as a series of strategies and habits of mind. Emphasizes and provides practice in the design of digital problem solving environments where technology affords opportunities at the intersection of content learning and problems solving. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: EDIT 780 and EDIT 781.

Recommended Corequisite: EDIT 782.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDIT 784: *Designing for Community Participation.* 3 credits.
Explores the impact of social media, globalization, collaboration, and diversity as they influence, enable, and challenge learners' ability to participate in a variety of community settings. Emphasizes the practice of design strategies to prepare PreK-12 learners to use technology for learning and participating in varies and diverse communities. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: EDIT 782 and EDIT 783.

Recommended Corequisite: EDIT 785.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDIT 785: *Designing School-Based Digital Learning.* 3 credits.
Develops frameworks for designing and structuring school-based digital learning. Emphasizes the interaction of design, technology, and content learning to influence teachers' practice in service of PreK-12 learners' abilities to problem solve, use information, participate productively in communities, become knowledgeable, and effectively communicate. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: EDIT 782 and EDIT 783.

Recommended Corequisite: EDIT 784.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDIT 787: *Teacher Leadership and Advocacy for Digital Learning.* 3 credits.
Enables PreK-12 teacher leaders to support colleagues in the design of classroom and school-based digital learning. Explores advocacy as a strategy to engage colleagues and communities in the design of school-based initiatives related to teaching, learning, and technology. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: EDIT 782 and EDIT 783

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDIT 790: *Practicum in Instructional Technology.* 1-6 credits.
Provides supervised practice in applying knowledge and skills of student's chosen track through placement in appropriate work setting. Offered by School of Education. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Special scale.

EDIT 791: *Project Development Practicum I.* 1-6 credits.
Engages students in the application of design and production process for the solution of learning challenges with particular emphasis on the design and development phase of the design process. Offered by School of Education. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: EDIT 768.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDIT 792: *Project Development Practicum II.* 1-6 credits.
Facilitates the application of design and production processes to the solution of learning challenges with particular emphasis on the implementation and evaluation phase of the design process. Offered by School of Education. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: EDIT 769.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDIT 797: *Advanced Topics in Education.* 1-6 credits.
Advanced study of selected topics in education for students preparing for doctoral studies or who have been admitted to the PhD program in education. Notes: May be repeated for credit with CEHD approval. Offered by School of Education. May be repeated within the degree.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

800 Level Courses

EDIT 801: *Nature and Process of Design.* 3 credits.
Examines multi- and cross-disciplinary perspectives on the nature and process of designing and developing learning technologies. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to students with a major in Education.

Enrollment is limited to Graduate level students.

Enrollment limited to students in a Doctor of Philosophy degree.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

EDIT 802: *Cognition and Technology: A Multidisciplinary Approach.* 3 credits.
Examines learning interactions between cognition and technology using multiple disciplinary perspectives including, cognitive science, psychology, neuroscience, education, design theory, instructional design, technology design, anthropology, sociology, information science, philosophy, semiotics, and linguistics. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to students with a major in Education.

Enrollment is limited to Graduate level students.

Enrollment limited to students in a Doctor of Philosophy degree.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDIT 803: *Design-Based Research.* 3 credits.
Provides an introduction to systematic cycles of design-based research in education. Explores cycles of research within design, development and implementation of educational and training interventions applicable to all content domains. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: EDRS 810[B-] or 810[XS].
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDIT 891: *Design Research Independent Study.* 1-9 credits.
Applies multiple design research cycles to an identified research problem to systematically test and improve technology-based product interventions or other curriculum/training strategies or materials in order to develop knowledge related to teaching, learning and/or training in context. Offered by School of Education. May be repeated within the degree for a maximum 9 credits.

Recommended Prerequisite: EDRS 811, EDRS 812, and EDIT 803 or equivalent.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Special scale.

EDIT 895: *Emerging Trends in Learning Technologies.* 3 credits.
Covers selected emerging trends in learning technologies. Examines ways learning technologies provide infrastructure for creating, managing, and evaluating innovative types of teaching-learning environments. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: Admission to the Ph.D. program or permission of instructor.

Registration Restrictions:
Enrollment is limited to students with a major in Education.

Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

Education Leadership (EDLE)

400 Level Courses

EDLE 412: *Schools and the Law.* 3 credits.
Provides an extensive overview of legal and ethical issues in schools. Reviews and analyzes key legal and ethical principles, explores court decisions, and examines federal and state statutes. Offered by School of Education. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EDLE 420: *Organization and Management of Schools.* 3 credits.
Studies basic issues in leadership, organization, and governance of schools. Explores theories and models of leadership how leaders conceptualize school organization, with an emphasis on distributed leadership in professional environments, systems thinking, and organizational change. Offered by School of Education. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (EDUC 300[C] or L300).
[C] Requires minimum grade of C.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

600 Level Courses

EDLE 610: *Leading Schools and Communities.* 3 credits.
Examines critical functions of leadership and organizational management, complex decision making responsibilities of school executives, and constructive relationships between schools and communities. Incorporates historical, ethical, philosophical, and sociological foundations of American education and the impact of organizational structure on reform and student achievement. Practical and academic emphasis on leadership skill development and dispositions. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (EDLE 620[B-] or 620[XS]) and (EDLE 690[B-] or 690[XS]) and (EDLE 791[IP] or 792[IP]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.
[IP] Requires minimum grade of IP.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Enrollment is limited to students with a major in Education Leadership.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDLE 612: *Education Law.* 3 credits.
Provides legal foundations of U.S. public schools. Examines general principles of statutory and case law, and applies judicial decisions to educational environments. Focuses on legal responsibilities, constraints, and opportunities of public school officials. Includes component of Special Education law. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (EDLE 620[B-] or 620[XS]) and (EDLE 690[B-] or 690[XS]) and EDLE 791[IP].
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.
[IP] Requires minimum grade of IP.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Enrollment is limited to students with a major in Education Leadership.

Enrollment is limited to Graduate or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDLE 613: *Education Law for Independent and Nonpublic Schools.* 3 credits.
Provides legal foundations of independent, private, and parochial schools. Examines general principles of contract, statutory, and case law, and applies judicial decisions to nonpublic education environments. Focuses on legal issues, responsibilities, constraints, and opportunities of nonpublic school constituents. Includes component addressing Governing Board Responsibilities and Liability. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (EDLE 620[B-] or 620[XS]) and (EDLE 690[B-] or 690[XS]) and EDLE 792[IP].
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.
[IP] Requires minimum grade of IP.

Enrollment is limited to students with a major in Education Leadership.

Enrollment limited to students in a Master of Education degree.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDLE 614: *Managing Financial and Human Resources.* 3 credits.
Explores basic functions in financial and human resource management. Examines legalities, ethics, and politics of resource procurement and allocation. Provides experiences to help students better understand tasks typically performed by school leaders. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (EDLE 620[B-] or 620[XS]) and (EDLE 690[B-] or 690[XS]) and EDLE 791[IP].
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.
[IP] Requires minimum grade of IP.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Enrollment is limited to students with a major in Education Leadership.

Enrollment is limited to Graduate or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDLE 615: *Managing Financial and Human Resources for Independent Schools.* 3 credits.
Explores basic functions in financial and human resource management. Examines legalities, ethics, and politics of resource procurement and allocation. Provides experiences to help students better understand tasks typically performed by school leaders in the independent school settings with an overview of public settings. Students learn to apply business principles and financial processes that are the foundation for successful independent school management. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (EDLE 620[B-] or 620[XS]) and (EDLE 690[B-] or 690[XS]) and EDLE 792[IP].
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.
[IP] Requires minimum grade of IP.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Enrollment is limited to students with a major in Education Leadership.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDLE 616: *Curriculum Development and Evaluation.* 3 credits.
Examines the relationship of the written, taught, and tested curriculum and identifies critical leadership decisions that can positively impact student achievement. Identifies components of effective curriculum guides. Mini-document for personal use is constructed. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (EDLE 620[B-] or 620[XS]) and (EDLE 690[B-] or 690[XS]) and (EDLE 791[IP] or 792[IP]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.
[IP] Requires minimum grade of IP.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Enrollment is limited to students with a major in Education Leadership.

Enrollment is limited to Graduate or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDLE 618: *Supervision and Evaluation of Instruction.* 3 credits.
Provides a theoretical and practical overview of the supervision and evaluation of instruction. Introduces the domains of supervision and inquiry into current issues and best practices in supervision. Uses a variety of interactive exercises to assist in the development of practical skills for using the clinical process and developmental approach to supervision. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (EDLE 620[B-] or 620[XS]) and (EDLE 690[B-] or 690[XS]) and (EDLE 791[IP] or 792[IP]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.
[IP] Requires minimum grade of IP.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Enrollment is limited to students with a major in Education Leadership.

Enrollment is limited to Graduate or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDLE 620: *Organizational Theory and Leadership.* 3 credits.
Studies basic organizational theories and models of leadership and management. Emphasizes shared leadership in professional environments, communication skills, systems thinking, and personal and organizational change. Bridges theory to practical applications in educational settings. Offered by School of Education. May not be repeated for credit.

Recommended Corequisite: Application to the Education Leadership program.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:

This course is graded on the Graduate Regular scale.

EDLE 634: *Contemporary Issues in Education Leadership.* 3 credits.
Examines current and emerging issues and trends impacting education. Includes demographic shifts; globalization; technology; data-based decision making; inclusion of diverse learners in American schools; and recent research on student achievement when influenced by race, gender, and poverty. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Enrollment is limited to students with a major in Education Leadership.

Enrollment is limited to Graduate or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDLE 635: *Governance and the Independent School Boardroom.* 3 credits.
Provides an overview of the best practices and workings of the independent school board and develops skills, insights, and understanding of how school heads/directors can "manage up" to accomplish their goals and objectives. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: EDLE 620 and EDLE 690.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDLE 636: *Adult Motivation and Conflict Management in Education Settings: A Case Study Approach.* 3 credits.
Uses case studies and simulations to examine conflict mediation and resolution skills, and safety and security issues. Focuses on character and ethics education in schools, coaching and mentoring, and adult motivation to support positive behaviors in work settings. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Enrollment is limited to students with a major in Education Leadership.

Enrollment is limited to Graduate or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDLE 690: *Using Research to Lead School Improvement.* 3 credits.
Develops skills, insights, and understanding of how leaders use research to improve schools, with emphasis on the use of assessment and research data to identify school improvement needs and to design school improvement projects. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: EDLE 620[B-] or 620[XS].
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Enrollment is limited to students with a major in Education Leadership.

Enrollment is limited to Graduate or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

700 Level Courses

EDLE 791: *Internship in Educational Leadership.* 3 credits.
Offers wide range of practical experiences and professional challenges in authentic educational settings. Activities emphasize strategic, instructional, organizational, political, and community leadership. Notes: Course must be taken in second term of program. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: EDLE 620 or EDSE 743 (may be taken concurrently).

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Enrollment is limited to students with a major in Education Leadership.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Satisfactory/No Credit scale.

EDLE 792: *Internship in Independent School Leadership.* 3 credits.
Offers a wide range of practical and professional experiences for aspiring and current school heads. Emphasizes strategic, instructional, organizational, political, and community leadership in the independent school context. Note: Course must be taken in the second term of program. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: EDLE 620.

Recommended Corequisite: EDLE 690.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Satisfactory/No Credit scale.

800 Level Courses

EDLE 801: *Contemporary Organization Theory.* 3 credits.
Engages students in the study of major organization theories that inform educational leadership research. Students us theory to help inform their own research interests. Students begin work on analytical literature review. Notes: May be taken as corequisite with EDLE 802. First in three-course sequence. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: Admission to the Ph.D. in Education program.

Recommended Corequisite: EDLE 802.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDLE 802: *Leadership and Decision Making.* 3 credits.
Engages students in the study of major leadership and decision theories that inform educational leadership research. Students use theory to help inform their own research interests. Students begin work on analytical literature review. Notes: May be taken as corequisite with EDLE 801. Second in three course sequence. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: EDLE 801. Concurrent enrollment is also permitted.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDLE 812: *Education Law.* 3 credits.
Provides an understanding of the legal foundations of U.S. public schools and higher education through examination of general principles of statutory and case law and application of judicial decisions to educational environments. Focuses on legal responsibilities, constraints, and opportunities of public school officials and requires students conduct research regarding legal issues and apply legal analysis and reasoning to a variety of situations. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

EDLE 813: *Social and Political Forces in Education Leadership.* 3 credits.
Examines the social and political forces that shape education in the United States and the effect of these forces on school leadership. Examines the social and political functions of schooling in the past and present. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: Admission to Ph.D. in Education Program.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDLE 814: *Education Finance and Human Resources.* 3 credits.
Investigates and evaluates principles of human resource management and economic, legal and technical dimensions of school finance at the federal, state, and local levels of government. Reviews concepts and develops approaches for planning and implementing activities for effective human resource management, including current theories and practices related to recruitment, development, and appraisal of personnel. Applies concepts and procedures of conflict resolution, effective communication skills, managing change processes, and creating and maintaining a positive school system organization climate. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

EDLE 816: *Instructional Leadership-Curriculum Policy and Practice.* 3 credits.
Focuses on curriculum and instruction theory, policy, and practice with research emphasis on instructional leadership. Students develop research proposals to investigate instructional leadership in schools and districts, and relate instructional leadership to their own specific research interests. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: Admission to Ph.D. in Education Program.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDLE 818: *Instructional Leadership-Supervision Policy and Practice.* 3 credits.
Introduces current topics and research in supervision and instruction, including theory and empirical work focused on instruction, teacher learning, teacher evaluation, and instructional leadership. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: Admission to Ph.D. in Education Program.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDLE 895: *Emerging Issues in Administration and Supervision.* 3 credits.
Covers selected emerging issues in educational leadership. Students engage in research, study, discussion, and writing about various topics selected for study. Offered by School of Education. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Admission to PhD program, or permission of instructor.

Registration Restrictions:
Enrollment is limited to students with a major in Education.

Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

Education Policy (EDPO)

300 Level Courses

EDPO 303: *Politics of American Education.* 3 credits.
Focuses on the study of the American political system. Explores how interactions between various levels and branches of government affect education. Informs students studying the American political system and students interested in careers in education. Offered by School of Education. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

600 Level Courses

EDPO 600: *History of Education Reform.* 3 credits.
Explores the history of education reform in the United States and the connections between the past and present-day policy initiatives and debates. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

EDPO 601: *P-12 Policy Challenges.* 3 credits.
Explores current public education policymaking from real-world perspective of federal, state and local executive and legislative branch leaders. Equips students with practical skills in understanding and shaping education policy. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

EDPO 602: *Higher Education Policy.* 3 credits.
Examines higher education policy issues, developments, trends and debates at the federal and state level. Discusses current debates and proposals for reform in the areas of postsecondary affordability, access, equity, quality, and accountability, with a focus on underserved populations, including low-income and minority students. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

EDPO 603: *Conflict and Consensus: Education, Interest Groups and Advocacy.* 3 credits.
Explores points of conflict and consensus across the education landscape. Examines the role of interest groups and advocacy in education reform and policy. Offered by Graduate School of Education. May not be repeated for credit. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

EDPO 604: *Education Policy Implementation.* 3 credits.
Focuses on the implementation stage of the policy process and examines the interactions among education policies, stakeholders, and places. Provides students with an understanding of the contexts and factors that impede or promote the implementation of education policies and considers strategies for effectively achieving the desired policy objectives. Offered by Graduate School of Education. May not be

repeated for credit. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

800 Level Courses

EDPO 884: *Federal Education Policy.* 3 credits.
Explores critical issues and trends in federal education policy and examines the development and impact of major federal education legislation and reforms, from early childhood through higher education. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: Admission to the PhD in Education program or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

Education Research (EDRS)

200 Level Courses

EDRS 220: *Introduction to Applied Quantitative Analysis.* 3 credits.
Develops fundamental concepts and methods of statistics in social science settings. Explores applications of descriptive and inferential statistics including hypothesis testing, correlational and comparative methods. Offered by School of Education. Limited to three attempts.

Mason Core: Quantitative Reasoning

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

500 Level Courses

EDRS 531: *Educational and Psychological Measurement.* 3 credits.
Emphasizes techniques and principles used in the construction, administration, and quantification of measuring devices for evaluation purposes. Discusses interpretation of standardized tests of ability, aptitude, achievement, interest, and personality. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: Appropriate methods and advanced methods courses. Concurrent enrollment is also permitted.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDRS 590: *Education Research.* 3 credits.
Develops skills, insights, and understanding to perform research, with emphasis on interpreting and applying research results. Critiques research, and uses findings in educational settings. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

600 Level Courses

EDRS 620: *Quantitative Inquiry in Education.* 3 credits.
Examines fundamental concepts and methods of statistics as applied to educational problems, including descriptive and inferential statistics. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: EDRS 590 or equivalent experience.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDRS 621: *Qualitative Inquiry in Education.* 3 credits.
Focuses on basic application of naturalistic research methods. Examines major theoretical frameworks and qualitative research techniques, which include content analysis, coding, and interpretation of data. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: EDRS 590 or equivalent experience.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDRS 630: *Educational Assessment.* 3 credits.
Examines research theory and practice relevant to assessments. Focuses on assessment strategies for students including developing skills to select, score, and interpret educational assessments. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDRS 631: *Program Evaluation.* 3 credits.
Focuses on perspectives of existing and emerging issues, theories, and models of program evaluation. Involves implementation of program evaluation in related fields and school districts. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDRS 680: *Advanced Evaluation Methods and Internship.* 1-4 credits.
Expands knowledge about evaluation with practical experience in the field through an internship and combines advanced thinking about evaluation theories, issues, methodologies, and research on evaluation. Emphasizes evaluation in educational contexts including K-12, higher education, government, and informal learning environments. Also considers evaluation work in grant-funded projects. Offered by School of Education. May be repeated within the degree for a maximum 8 credits. Equivalent to EDRS 880.

Recommended Prerequisite: EDRS 590, 620, 621, and 631.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Satisfactory/No Credit scale.

700 Level Courses

EDRS 797: *Advanced Topics in Education.* 1-6 credits.
Advanced study of selected topics in education for students preparing for doctoral studies or who have been admitted to the PhD program in education. Notes: May be repeated for credit with CEHD approval. Offered by School of Education. May be repeated within the degree.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

800 Level Courses

EDRS 810: *Problems and Methods in Education Research.* 3 credits.
Advanced course in interpreting and applying education research methods. Emphasizes comparison of alternative philosophies of research, ways of formulating questions and hypotheses, research plans, and analysis procedures. Students evaluate existing studies, and investigate a range of research approaches. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: Admission to the PhD program or permission of instructor.

Registration Restrictions:
Enrollment is limited to students with a major in Education or Music Education.

Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDRS 811: *Quantitative Methods in Educational Research.* 3 credits.
Emphasizes advanced methods of conducting research using quantitative methods of data collection, and analysis appropriate for research in education. Includes design of experimental and quasiexperimental research studies, and methods of analysis appropriate to these studies, including analyzing variance and multiple linear regression. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: EDRS 810[B-] or 810[XS].
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students in the AR-PHD-MUE or E1-PHD-EDUC programs.

Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDRS 812: *Qualitative Methods in Educational Research.* 3 credits.
Teaches how to apply qualitative data collection and analysis procedures in educational research, including ethnographic and other field-based methods, and unobtrusive measures. Notes: Emphases vary depending on student interests and needs. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: EDRS 810[B-] or 810[XS].
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students in the AR-PHD-MUE or E1-PHD-EDUC programs.

Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDRS 818: *Critical Discourse Analysis in Education Research.* 3 credits.
Prepares students with a working knowledge of discourse analysis and its application to ethnographic and qualitative research in education. Focuses on critical discourse analysis as a resource to improve classroom interaction and transform educational practice and as an analytic tool for a social analysis of education in a wide variety of local, national and international education contexts and settings. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: EDRS 810 EDRS 811 EDRS 812 or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Special scale.

EDRS 820: *Evaluation Methods for Educational Programs and Curricula.* 3 credits.
Explores development and types of current systems and models for evaluating educational programs and curricula. Emphasizes evaluation needs and problems of public and private elementary and secondary schools, and colleges and universities. Also considers needs of government agencies, industry, and health-related organizations. Notes: Prior completion of EDRS 811 and 812 helpful but not required. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: EDRS 810[B-] or 810[XS].
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDRS 821: *Advanced Applications of Quantitative Methods.* 3 credits.
Advanced study of applications of quantitative methods in educational research, reinforcing and building on concepts and skills acquired in EDRS 811. Uses modular approach, and provides advanced study of techniques appropriate to survey research, group-experimental and quasiexperimental research, selected multivariate procedures and factor analysis, and quantitative synthesis (meta-analysis) of research. Combines text reading assignments, critiques, and discussion of relevant journal articles; and application activities. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (EDRS 810[B-] or 810[XS]) and (EDRS 811[B-] or 811[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDRS 822: *Advanced Applications of Qualitative Methods.* 3 credits.
Advanced seminar devoted to study of current topics in qualitative research. Deals with cutting-edge information on selected advanced topics in qualitative research, and provides opportunities to apply new skills and knowledge to projects related to students' interests. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (EDRS 810[B-] or 810[XS]) and (EDRS 812[B-] or 812[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDRS 823: *Advanced Research Methods in Single Subject/Case Design.* 3 credits.
Prepares students to conduct research using single subject design and single case study design. Provides understanding of salient features as well as advantages, disadvantages of these research methodologies. Students critique and analyze published research using these methodologies. Provides opportunities to apply these methodologies to research questions related to student interests. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (EDRS 810[B-] or 810[XS]) and (EDRS 811[B-] or 811[XS]) and (EDRS 812[B-] or 812[XS]).

B- Requires minimum grade of B-.
XS Requires minimum grade of XS.

Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDRS 824: *Mixed Methods Research: Integrating Qualitative and Quantitative Approaches.* 3 credits.
Advanced research seminar that integrates qualitative and quantitative approaches, methods, and data in a single study. The course covers the paradigms and "mental models" that inform both approaches, and the ways in which qualitative and quantitative goals, questions, methods, and interpretive strategies can be productively combined. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (EDRS 810B- or 810XS) and (EDRS 811B- or 811XS) and (EDRS 812B- or 812XS).
B- Requires minimum grade of B-.
XS Requires minimum grade of XS.

Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

EDRS 825: *Advanced Research Methods in Self-Study of Professional Practice.* 3 credits.
Prepares students to conduct research using the self-study research methodology, a qualitative research approach for systematically examining one's practitioner role for improvement-aimed purposes with contributions to the educational field and knowledge base. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: Admission to PhD in Education program.

Registration Restrictions:
Required Prerequisites: (EDRS 810B- or 810XS) and (EDRS 811B- or 811XS) and (EDRS 812B- or 812XS).
B- Requires minimum grade of B-.
XS Requires minimum grade of XS.

Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDRS 826: *Qualitative Case Study Methods.* 3 credits.
Advanced research seminar on qualitative case study design and application in educational research. Topics include descriptive, theoretical, evaluation, and policy case study design and methods. Students will conduct and critique a case study appropriate to their discipline. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: EDRS 812B- or 812XS.
B- Requires minimum grade of B-.
XS Requires minimum grade of XS.

Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

EDRS 827: *Introduction to Measurement and Survey Development.* 3 credits.
Develops knowledge and skills related to measurement and survey development and use in research for education, psychology, and related fields. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: EDRS 811B- or 811XS.
B- Requires minimum grade of B-.
XS Requires minimum grade of XS.

Enrollment limited to students with a class of Graduate.

Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDRS 828: *Item Response Theory.* 3 credits.
Develops knowledge and skills related to Item Response Theory with application in the context of education, psychology, and related fields. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: EDRS 821B-, 821XS, 827B- or 827XS.
B- Requires minimum grade of B-.
XS Requires minimum grade of XS.

Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDRS 830: *Hierarchical Linear Modeling.* 3 credits.
Analyzes nested data structures (e.g. students within classrooms) as well as student growth. Students will learn through reading assignments, lecture and applications using a computer program for data analysis. Students will be expected to critically read multilevel methods used in published research, analyze data, and provide written report of results in APA format. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: EDRS 821B- or 821XS.
B- Requires minimum grade of B-.
XS Requires minimum grade of XS.

Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDRS 831: *Structural Equation Modeling.* 3 credits.
Focusing on the development of knowledge and skills related to structural equation modeling and research applications in education, psychology, and related fields. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: EDRS 811.

Registration Restrictions:
Required Prerequisites: EDRS 821[B-] or 821[XS].
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDRS 832: *Document Analysis and Archival Research.* 3 credits.
Examines the methodological foundations of and analytical approaches to document-based research. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (EDRS 810[B-] or 810[XS]) and (EDRS 811[B-] or 811[XS]) and (EDRS 812[B-] or 812[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students in the E1-PHD-EDHD or E1-PHD-EDUC programs.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

EDRS 833: *Participatory Action Research.* 3 credits.
Explores theoretical concepts associated with participatory action research and teaches how to apply participatory data collection and analysis procedures in educational research. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (EDRS 812[B-] or 812[XS]) and (EDRS 822[B-] or 822[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDRS 836: *Narrative Inquiry.* 3 credits.
Teaches theory behind narrative inquiry and application of narrative data collection and analysis procedures in educational research. Builds students' abilities to conduct narrative data collection and analysis. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (EDRS 812[B-] or 812[XS]) and (EDRS 822[B-] or 822[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDRS 850: *Grounded Theory.* 3 credits.
Prepares students to apply and critique grounded theory and related methods. Includes various approaches to design with particular attention to analysis techniques and theoretical selection, sensitivity, and saturation. Recommends students obtain IRB approval prior to beginning this course. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: EDRS 822.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDRS 880: *Advanced Evaluation Methods and Internship.* 1-4 credits.
Expands knowledge about evaluation with practical experience in the field through an internship and combines advanced thinking about evaluation theories, issues, methodologies, and research on evaluation. Emphasizes evaluation in educational contexts including K-12, higher education, government, and informal learning environments. Also considers evaluation work in grant-funded projects. Offered by School of Education. May be repeated within the degree for a maximum 8 credits. Equivalent to EDRS 680.

Recommended Prerequisite: EDRS 810, 811, 812, and 820.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Satisfactory/No Credit scale.

EDRS 895: *Qualitative Methods Capstone Project.* 3 credits.
Provides the opportunity to formulate, engage and complete a qualitative research project, research internship, or pilot study of their choice under faculty supervision in an advanced and specialized seminar. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: EDRS 812, EDRS 822.

Registration Restrictions:
Enrollment is limited to students with a major in Qualitative Research.

Enrollment is limited to Graduate level students.

Schedule Type: Research

Grading:
This course is graded on the Satisfactory/No Credit scale.

EDRS 897: *Special Topics in Research Methods.* 3 credits.
Develops knowledge and skills of selected advanced research methods topic(s). Offered by School of Education. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students in the E1-PHD-EDHD or E1-PHD-EDUC programs.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

Educational Psychology (EDEP)

300 Level Courses

EDEP 350: *Perspectives on Achievement Motivation.* 3 credits.
Focuses on theories and concepts of human achievement motivation; and examines strategies, techniques and interventions that promote and sustain motivation in formal and informal learning contexts. Offered by School of Education. Limited to three attempts.

Mason Core: Social/Behavioral Sciences

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

500 Level Courses

EDEP 550: *Theories of Learning and Cognition.* 3 credits.
Explores theoretical perspectives on learning and cognition, and relation of these theories to construction of learning environments, student motivation, classroom management, assessment, and technology to support teaching and learning. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDEP 551: *Principles of Learner Motivation.* 3 credits.
Focuses on theories and concepts of human motivation; and examines strategies, techniques, and interventions that promote and sustain learner motivation. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDEP 591: *Data-Driven Decision Making for Continuous Educational Improvement.* 3 credits.
Provides an intellectual and practical framework for creating and understanding formative and summative assessments of student performance. Emphasis is placed on the learning principles, cognitive processes, and psychometric models as they pertain to assessment issues. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDEP 592: *Understanding Data in Data-Driven Decision Making.* 3 credits.
Provides a comprehensive understanding of educational data that drive decisions at the classroom and system level. Emphasizes understanding and evaluating technical qualities of data presented in a variety of forms, ethical issues related to gathering and using educational data, and the use of technology to support data use. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: EDEP 591-may be taken concurrently.

Recommended Corequisite: EDEP 591

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDEP 593: *Data-Driven Decision Making: Analysis and Interpretation of Assessment Data.* 3 credits.
Focusing on the development of knowledge and skills related to analyzing and interpreting educational assessment data. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: EDEP 592.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDEP 594: *Data-Driven Decision-Making Application in Education Contexts.* 3 credits.
Applies fundamental knowledge of assessment using team-based projects. Incorporates development of assessments and the analysis, interpretation, and reporting of assessment data to inform curriculum and instruction based on the context-specific needs of educators. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: EDEP 593.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

EDEP 597: *Special Topics in Educational Psychology.* 1-3 credits.
Covers critical current and emerging issues in educational psychology across the span of human development with an emphasis on research methodology and evidence-based practice. Offered by School of Education. May be repeated within the term for a maximum 6 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

600 Level Courses

EDEP 632: *Human Development.* 3 credits.
Examines the course of human development from early childhood to adulthood within the context of educational psychology. Emphasizes principles of research in human development and the major areas of cognitive, linguistic, and social contexts of development as they pertain to learners in schools and beyond. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

EDEP 653: *Culture and Intelligence.* 3 credits.
Explores different theoretical perspectives on intelligence as they relate to individual and cultural differences. Examines issues related to heritability and measures of intelligence, and intelligence in the cultural context. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDEP 654: *Learning, Motivation, and Self-Regulation.* 3 credits.
Focuses on theories and research on self-regulation of academic learning. Presents multidimensional conceptual framework for studying and applying self-regulation in educational contexts. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: EDEP 550, 551.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

700 Level Courses

EDEP 798: *Directed Inquiry in Educational Psychology.* 1-3 credits.
Offers a capstone experience to students after completion of majority of program coursework with the exception of 6 credit hours. Enables students to demonstrate their integrative knowledge and skills accrued through study in their concentration area in educational psychology. Offered by School of Education. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Project mentor approval and completion of coursework in the MS in Educational Psychology exclusive of 6 credit hours.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Special scale.

EDEP 799: *Thesis in Educational Psychology.* 1-3 credits.
The thesis is based on original research. It enables students to demonstrate their integrative knowledge and skills accrued through study in their concentration area in educational psychology. Offered by School of Education. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Thesis chair approval and completion of coursework in the MS in Educational Psychology exclusive of 6 credit hours.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Satisfactory/No Credit scale.

800 Level Courses

EDEP 820: *Teaching, Learning, and Cognition.* 3 credits.
Focuses on foundational educational psychology theories including cognitive, social, and constructivist themes and their implications for improving instructional practices and learning at all developmental levels and content areas. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: EDUC 800, EDUC 805, EDLE 802, and EDRS 810.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDEP 821: *Sociocultural Processes in Learning, Instruction, and Motivation.* 3 credits.
Examines processes by which social, cultural, and linguistic variables influence human behavior. Focuses on differences within and between cultural groups related to student's learning and achievement in educational settings. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: EDUC 800, EDUC 805, EDLE 802, and EDRS 810.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDEP 822: *Advanced Learning, Motivation, and Self-Regulation.* 3 credits.
Examines development of self-regulatory and motivational processes as they relate to educational practice. Emphasizes how processes influence students' self-motivation and achievement in various domains. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: EDUC 800, EDUC 805, EDLE 802, and EDRS 810.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDEP 823: *Research Project in Educational Psychology: Sequence I.* 3 credits.
Focuses on development and implementation of research studies in educational psychology. Students acquire skills regarding developing research questions and a sound methodological approach for their study. Notes: First in two-course sequence. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: EDEP 820, 821, and 822.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDEP 824: *Research Project in Educational Psychology: Sequence II.* 3 credits.
Focuses on development and implementation of research studies in educational psychology. Students acquire skills regarding collecting, analyzing, and interpreting data. Notes: Second in two course sequence. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: EDEP 823.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

Electrical and Computer Engineering (ECE)

100 Level Courses

ECE 101: *Introduction to Electrical and Computer Engineering.* 3 credits.
Introduces fundamental concepts in Electrical and Computer engineering and provides insight to the various careers in each field. Both theory and practical applications of electronic components are covered through examples of real world applications. Topics are reinforced through hands-on laboratory experiments. Offered by Electrical & Comp. Engineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (minimum score of 13 in 'Math Placement Algebra I', minimum score of 07 in 'Math Placement Algebra II' and minimum score of 07 in 'Math Placement Transcendentals') or (MATH 105[C], 105[XS], 113[*C], 113[XS], 115[*C], 115[XS], 123[*C] or 123[XS]).
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

200 Level Courses

ECE 201: *Introduction to Signals and Systems.* 3 credits.
Provides an introduction to key concepts for the description and analysis of signals and systems with an emphasis on discrete-time signals and systems. Specific topics include sinusoidal and complex exponential signals, sampling, spectrum representation of signals via DTFT and DFT, system properties, convolution, impulse response and frequency response. The associated computer lab provides opportunities to apply concepts to physical reality. Note: Students must register for both lecture and lab. Offered by Electrical & Comp. Engineering. Limited to two attempts.

Specialized Designation: Mason Impact.

Registration Restrictions:
Required Prerequisites: (MATH 114[C], 114[XS], 116[C] or 116[XS]) and (ECE 101[C] or 101[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ECE 231: *Digital System Design.* 3 credits.
Covers principles of digital logic and digital system design and implementation in VHDL. Topics include number systems; Boolean algebra; analysis, design, and minimization of combinational logic circuits; analysis and design of synchronous and asynchronous finite state machines; and introduction to VHDL and behavioral modeling of combinational and sequential circuits. Offered by Electrical & Comp. Engineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: ((CS 112[C], 112[XS], CDS 130[XS] or 130[C]) and (ECE 101[C], 101[XS], PHYS 261[XS] or 261[C]) and (ECE 232[*C] or 232[XS])).
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ECE 232: *Digital System Design Lab.* 1 credit.
Lab associated with ECE 231. Offered by Electrical & Comp. Engineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: ((CS 112[C], 112[XS], CDS 130[XS] or 130[C]) and (ECE 101[C], 101[XS], PHYS 261[XS] or 261[C]) and (ECE 231[*C] or 231[XS])).
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

ECE 285: *Electric Circuit Analysis I.* 3 credits.
Covers the first half of electric circuit theory and practice. Topics include DC analysis of circuits including Ohm's and Kirchhoff's laws, Thevenin and Norton equivalents, and analysis of circuits with resistors, capacitors, inductors, and operational amplifiers. Includes lab experiments to reinforce topics covered in the course. Offered by Electrical & Comp. Engineering. Limited to two attempts.

Specialized Designation: Mason Impact.

Registration Restrictions:
Required Prerequisites: ((PHYS 260[C] or 260[XS]) and (PHYS 261[C] or 261[XS]) and (ECE 101[C] or 101[XS])) and (MATH 214[*C], 214[XS] or 216[*C]) and (MATH 203[*C] or 203[XS]).
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Laboratory, Lecture, Recitation

Grading:
This course is graded on the Undergraduate Regular scale.

ECE 286: *Electric Circuit Analysis II.* 3 credits.
Covers the second half of electric circuit theory and practice. Topics include AC analysis of circuits including phasors, frequency response, power analysis, and transformers. Includes a project and lab experiments to reinforce topics covered in the course. Offered by Electrical & Comp. Engineering. Limited to two attempts.

Specialized Designation: Mason Impact.

Registration Restrictions:
Required Prerequisites: (ECE 285[C] or 285[XS]) and (MATH 214[C], 214[XS] or 216[C]) and (MATH 203[C] or 203[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Laboratory, Lecture, Recitation

Grading:
This course is graded on the Undergraduate Regular scale.

300 Level Courses

ECE 301: *Digital Electronics.* 3 credits.
Introduces digital systems, circuits, and computers. Topics include binary systems and codes, digital logic gates and circuits, microelectronics and integrated circuits, coding and multiplexing, multivibrators, shift registers, counters, A/D converters, and elementary computer architecture. Notes: Not intended for those majoring in electrical or computer engineering. Offered by Electrical & Comp. Engineering. Limited to two attempts. Equivalent to CYSE 301.

Registration Restrictions:
Required Prerequisites: MATH 125[C], 125[XS], 114[C], 114[XS], IT 102[C], 102[XS], MATH 116[C] or 116[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ECE 305: *Electromagnetic Theory.* 3 credits.
Static and time varying electric and magnetic fields, dielectrics, magnetization, Maxwell's Equations, and introduction to transmission lines. Course uses vector calculus and algebra of complex numbers. Offered by Electrical & Comp. Engineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (MATH 214[C], 214[XS] or 216[C]) and (PHYS 260[C] or 260[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture, Recitation

Grading:
This course is graded on the Undergraduate Regular scale.

ECE 321: *Continuous-Time Signals and Systems.* 3 credits.
Introduction to the processing and analysis of continuous-time signals and systems in the time-domain via differential equations and in the transform-domain using Laplace and Fourier transforms. Specific topics include the frequency response of LTI systems, Bode plots, system functions, block diagrams, filter design, and a rigorous treatment of sampling and aliasing. Includes applications to communications, circuits, control, and signal processing. Students must register for lecture, lab, and recitation. Offered by Electrical & Comp. Engineering. Limited to two attempts.

Specialized Designation: Mason Impact.

Registration Restrictions:
Required Prerequisites: ((ECE 201[C] or 201[XS]) and (ENGR 107[C] or 107[XS]) and (MATH 203[*C] or 203[XS]) and (MATH 214[*C], 214[XS], 216[XS] or 216[*C])).
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Laboratory, Lecture, Recitation

Grading:
This course is graded on the Undergraduate Regular scale.

ECE 330: *Circuit Theory.* 3 credits.
This course introduces circuit analysis and design for non-ECE majors. Students develop an understanding of circuit analysis concepts such as nodal, mesh, and source transformation. Circuits with inductors, capacitors, resistors, and operational amplifiers are analyzed. Two projects are designed and built by students. A circuit simulation environment is used to simulate and analyze circuits. Offered by Electrical & Comp. Engineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (PHYS 260[C] or 260[XS]) and (PHYS 261[C] or 261[XS]) and (MATH 214[C] or 214[XS]) and (MATH 203[*C], 203[XS], ME 351[*C] or 351[XS]).
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ECE 333: *Linear Electronics I.* 3 credits.
Principles of operation and application of electron devices and linear circuits. Topics include semiconductor properties, diodes, bipolar and field effect transistors, biasing, amplifiers, frequency response, operational amplifiers, and analog design. Notes: ECE 334 is usually taken concurrently with ECE 333. Offered by Electrical & Comp. Engineering. Limited to two attempts.

Specialized Designation: Writing Intensive in Major

Registration Restrictions:
Required Prerequisites: (ECE 280[C], 285[C] or 285[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Computer Engineering, Electrical and Computer Engr or Electrical Engineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture, Recitation

Grading:
This course is graded on the Undergraduate Regular scale.

ECE 334: *Linear Electronics Lab I.* 1 credit.
Lab associated with ECE 333. Offered by Electrical & Comp. Engineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (PHYS 261[C], 261[XS] or 265[C]) and (ECE 333[*C] or 333[XS]).
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major in Computer Engineering or Electrical Engineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

ECE 350: *Embedded Systems and Hardware Interfaces.* 3 credits.
This course introduces embedded systems design through project-based activities. The platform runs on Linux and students design their own IoT (Internet of Things) system as well as demonstrate dashboards with cloud-based data. Hardware interfaces and several types of sensors and actuators are incorporated as part of the projects. Students also learn how to simulate and test signal-conditioning circuits, eventually integrating those as part of their projects. Offered by Electrical & Comp. Engineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (CS 222[C], 222[XS], 262[C] or 262[XS]) and (ECE 280[C], 280[XS], 285[C] or 285[XS]) and ((ECE 301[C], 301[XS] or L301) or ((ECE 331[C], 331[XS], 231[C] or 231[XS]) and (ECE 332[C], 332[XS], 232[C] or 232[XS]))).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Computer Engineering, Computer Science, Electrical and Computer Engr or Electrical Engineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ECE 370: *Robot Design.* 3 credits.
Introduces the concept of robot design and implementation. The focus will be on electrical design philosophies, mechanical design philosophies, and controller design. Assignments are heavily based on the design, simulation and implementation of real-world robotic applications. Assessments are primarily in project form and make use of 3D printing and other manufacturing techniques. Offered by Electrical & Comp. Engineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (ECE 220[C], 220[XS], 321[XS] or 321[C]) and (CS 222[C] or 222[XS]) and (ECE 280[C], 280[XS], 285[C], 285[XS], BENG 380[XS] or 380[C]) and ((ECE 301[C], L301 or 301[XS]) or ((ECE 331[C] or 331[XS]) and (ECE 332[C] or 332[XS])) or ((ECE 231[C] or 231[XS]) and (ECE 232[C] or 232[XS]))).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Computer Engineering, Electrical and Computer Engr or Electrical Engineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ECE 390: *Engineering Design and Fabrication.* 3 credits.
Project based course where students will design projects containing analog and digital components as well as mechanical parts. Students will simulate, build, and test their projects. Offered by Electrical & Comp. Engineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (BENG 380[C], ECE 280[C], 285[C] or 285[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ECE 392: *Engineering Design Studio.* 1 credit.
Identification and feasibility study of advanced engineering problems. Application of math, physics and engineering methods to challenging projects. Preliminary design, modeling, simulation and prototyping of projects. This course should be taken the semester preceding ECE/BENG 492. Offered by Electrical & Comp. Engineering. May be repeated within the degree for a maximum 2 credits.

Recommended Prerequisite: 75 hours of completed coursework applicable to the EE, CpE, or BIOE degree and permission of instructor.

Registration Restrictions:
Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

ECE 410: *Applications of Discrete-Time Signal Processing.* 3 credits.
Introduces fundamental concepts of digital signal processing. Emphasis on the theoretical and numerical tools used for frequency domain analysis of sampled signals. Topics covered include sampling, the discrete Fourier transform, fast transform algorithms, spectral analysis, and digital filtering. Offered by Electrical & Comp. Engineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: ((ECE 220[C], 220[XS], 321[C] or 321[XS]) and (STAT 346[C] or 346[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Computer Engineering, Electrical and Computer Engr or Electrical Engineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ECE 415: *Power System Analysis.* 3 credits.
Introduces the concepts of power system analysis commonly encountered in the study and practice of electric power engineering. Emphasis is on topics of modern power system modeling, operation and protection, power flow studies, economic dispatch, symmetrical and asymmetrical fault calculations, and system protection. Students will use interactive power system simulation tools to complete homework assignments and a comprehensive term project. Offered by Electrical & Comp. Engineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (ECE 286[C], 286[XS], 330[C], 330[XS], PHYS 306[C] or 306[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Computer Engineering, Electrical and Computer Engr, Electrical Engineering, Mechanical Engineering or Physics.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ECE 416: *Electric Machinery and Modern Applications.* 3 credits.
The course examines the principles, construction, characteristics, operation, and applications of electric machines. Topics covered include electromechanical energy conversion, synchronous machines, induction machines, direct current machines, linear generators, and their applications in modern power grids, renewable energy harvesting, electric vehicles, and flywheel energy storage systems. Computer simulation tools will be used throughout the course to demonstrate the behavior of machines and systems. Offered by Electrical & Comp. Engineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: ((ECE 286[C], 286[XS], 330[XS] or 330[C])) or (PHYS 306[C] or 306[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Computer Engineering, Electrical and Computer Engr, Electrical Engineering, Mechanical Engineering or Physics.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ECE 417: *Smart Grid and Cyber Security.* 3 credits.
The course covers smart grid and system security of integrated cyber and physical power systems. Other topics include power system operation and control, smart grid technology, cyber-physical power system security, vulnerability of the integrated system, intrusion detection, mitigation and defense, and system restoration. Offered by Electrical & Comp. Engineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (ECE 286[C], 286[XS], 330[C] or 330[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Computer Engineering, Cyber Security Engineering, Electrical and Computer Engr, Electrical Engineering or Mechanical Engineering.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ECE 421: *Classical Systems and Control Theory.* 3 credits.
Introduces analysis and synthesis of feedback systems, including functional description of linear and nonlinear systems, block diagrams and signal flow graphs; state-pace representation of dynamical systems, frequency response methods, Root Locus, Nyquist, and other stability criteria; performance indices and error criteria; and applications to mechanical and electromechanical control systems. Offered by Electrical & Comp. Engineering. Limited to two attempts. Equivalent to SYST 421.

Registration Restrictions:
Required Prerequisites: (ECE 220[C], 220[XS], 321[C] or 321[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Computer Engineering, Electrical and Computer Engr or Electrical Engineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ECE 424: *Modern Control Systems Design.* 3 credits.
Introduces state-space modeling, analysis, and control of feedback systems using time-domain methods rather than frequency-domain methods, and the connections between the two. In particular the course will emphasize the connections between physical real-world systems and mathematical control problems. Specific topics include modeling and realization theory, stability analysis and control of linear systems, controllability and observability, introductions to digital control, linear optimal control, and nonlinear control. Students will demonstrate their obtained knowledge through the design of a complete control system including choices of sensors/actuators in addition to the controller. The course will include extensive use of Matlab and Simulink. Offered by Electrical & Comp. Engineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: ECE 421[C], 421[XS], ME 432[C] or 432[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Bioengineering, Computer Engineering, Electrical and Computer Engr, Electrical Engineering, Mechanical Engineering or Systems Engineering.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ECE 425: *Secure RF Communications.* 3 credits.
Reviews current systems of Radio Frequency (RF) communications and related cyber security issues. This course focuses on security issues in wireless networks, such as cellular networks, wireless LANs, Bluetooth, NFC, RFID, mobile security, anti-jamming communication, and physical layer security. The course will first present an overview of wireless networks, then focus on attacks and discuss proposed solutions and their limitations. Offered by Electrical & Comp. Engineering. Limited to two attempts. Equivalent to CYSE 425.

Registration Restrictions:
Required Prerequisites: ((CS 222[C], 222[XS], 262[C] or 262[XS]) and (ECE 465[C], 465[XS], CYSE 230[C], 230[XS], CS 455[C] or 455[XS]) and (MATH 125[C], 125[XS], ECE 231[C] or 231[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Computer Engineering, Computer Science, Cyber Security Engineering, Electrical and Computer Engr or Electrical Engineering.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ECE 429: *Modern Control Systems Lab.* 1 credit.
Laboratory experiments for topics in control systems analysis, design, and implementation. Offered by Electrical & Comp. Engineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (ECE 421[C], 421[XS], ME 432[C] or 432[XS]) and (ECE 424[*C] or 424[XS]).
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Computer Engineering, Electrical Engineering or Mechanical Engineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

ECE 430: *Principles of Semiconductor Devices.* 3 credits.
Introduces solid-state physics and its application to semiconductors and semiconductor devices. Topics include band theory, doping, p-n junctions, diffusion theory, low-frequency circuits, devices including bipolar transistor, MOSFET, CMOS, and photo transistors. Offered by Electrical & Comp. Engineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (ECE 333[C] or 333[XS]) and (ECE 305[C] or 305[XS]) and (MATH 214[C], 214[XS] or 216[C]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Computer Engineering, Electrical and Computer Engr or Electrical Engineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ECE 431: *Digital Circuit Design.* 3 credits.
Analysis and design of CMOS digital integrated circuits. Topics include: MOSFET transistor design equations for "hand" analysis and models for computer (SPICE) simulations; static and dynamic characteristics of inverters; fabrication, mask layout, and simulation; static and dynamic CMOS, pass transistor and transmission gate integrated circuit styles; combinational and sequential integrated circuits; semiconductor memory cell types and memory cell arrays. Offered by Electrical & Comp. Engineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: ((ECE 331[C], 331[XS], 231[C] or 231[XS]) and (ECE 333[C] or 333[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Computer Engineering, Electrical and Computer Engr or Electrical Engineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ECE 433: *Linear Electronics II.* 3 credits.
Second course in linear electronics. Covers differential amplifiers, feedback circuits, power amplifiers, feedback amplifier frequency response, analog integrated circuits, operational amplifier systems, oscillators, wide band and microwave amplifiers, and computer-aided design. Offered by Electrical & Comp. Engineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (ECE 286[C] or 286[XS]) and (ECE 333[C] or 333[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Computer Engineering, Electrical and Computer Engr or Electrical Engineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ECE 434: *Linear Electronics II Laboratory.* 1 credit.
Second lab course in linear electronics involving analysis and design of topics listed in ECE 433. Offered by Electrical & Comp. Engineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (ECE 334[C] or 334[XS]) and (ECE 433[*C] or 433[XS]).
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major in Computer Engineering or Electrical Engineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

ECE 436: *Printed Circuit Board Design Lab.* 1 credit.
Introduces fundamental concepts of Printed Circuit Board (PCB) design and fabrication. Selected topics include design workflow, schematics, symbols, footprints, rules checking, dimensioning, component selection, customization and layout optimization. Software tools are used to design and create multi-layer PCBs based on through-hole as well as surface mount technology. Students learn how to select and solder electrical and mechanical components onto their manufactured boards. Offered by Electrical & Comp. Engineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (ECE 232[C] or 232[XS]) and (ECE 334[C] or 334[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Computer Engineering or Electrical Engineering.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

ECE 445: *Computer Organization.* 3 credits.
General overview of operating a digital computer. Topics include computer arithmetic, arithmetic unit, hardwired and microprogrammed control, memory, register-to-register, input-output operations, and behavioral modeling of computer organization using VHDL. Offered by Electrical & Comp. Engineering. Limited to two attempts. Equivalent to INFS 515.

Registration Restrictions:
Required Prerequisites: (((ECE 331[C] or 331[XS]) or (ECE 231[C] or 231[XS])) and ((ECE 332[C] or 332[XS]) or (ECE 232[C] or 232[XS])) and (CS 262[C], 262[XS], 222[C] or 222[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Computer Engineering, Electrical and Computer Engr or Electrical Engineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ECE 446: *Device Driver Development.* 3 credits.
Addresses device driver and kernel level software programming and development. The C programming language and program trouble shooting are reviewed. Basics of device driver software, Character driver operations and data structures, concurrency and race conditions, kernel timers, memory allocation, communications with hardware, interrupt handling, kernel data types, memory mapping and Direct Memory Access concepts are explored. Offered by Electrical & Comp. Engineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: ECE 445[C], 445[XS], CS 465[C] or 465[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Computer Engineering, Computer Science, Electrical and Computer Engr or Electrical Engineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ECE 447: *Microcontrollers.* 4 credits.
Explores designing with microcontrollers and microcontroller interfacing. Topics include the role of microcontrollers compared with microprocessors, microcontroller architecture and organization, interfacing with sensors and input/output devices, embedded system programming using C, and assembly language and design tools. Students perform laboratory exercises devoted to constructing systems including a microcontroller and ancillary hardware. Notes: This course is highly recommended for ECE 492/493 students interested in using microcontroller technology in their senior design projects. It should be taken before ECE 493. Offered by Electrical & Comp. Engineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: ECE 350[C] or 350[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major in Computer Engineering, Computer Science, Electrical and Computer Engr or Electrical Engineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ECE 448: *FPGA Design with VHDL.* 4 credits.
Practical introduction to modeling of digital systems with VHDL for logic synthesis. Overview of design flow and tools for FPGAs. Discusses verification of digital systems using testbenches, prototyping boards and modern testing equipment, and illustrates VHDL-based design methodology with multiple examples from communications, control, DSP,

and cryptography. Laboratory experiments create link between simulation and actual hardware implementation based on FPGA boards. Offered by Electrical & Comp. Engineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (ECE 445[C] or 445[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Computer Engineering, Electrical and Computer Engr or Electrical Engineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ECE 450: *Mobile Robots.* 3 credits.
Introduces mobile robotic systems. Topics include overview of power systems, motors, behavior-based programming, sensors, and sensor integration. Design projects conceived, developed, implemented, and presented. Offered by Electrical & Comp. Engineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: ECE 350[C] or 350[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Computer Engineering, Electrical and Computer Engr or Electrical Engineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ECE 460: *Communication and Information Theory.* 3 credits.
Introduction to analog and digital communications. Topics include review of important concepts from signals and systems theory and probability theory; Gaussian processes and power spectral density; digital transmission through additive white Gaussian channels; sampling and pulse code modulation; analog signal transmission and reception using amplitude, frequency and phase modulation; and effects of noise on analog communication systems. Offered by Electrical & Comp. Engineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: ((ECE 220[C], 220[XS], 321[C] or 321[XS]) and (STAT 346[C] or 346[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Computer Engineering, Electrical and Computer Engr or Electrical Engineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ECE 461: *Communication Engineering Laboratory.* 1 credit.
Lab experiments in analog and digital communication areas covered in ECE 460. Offered by Electrical & Comp. Engineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (ECE 334[C] or 334[XS]) and (ECE 460[C] or 460[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major in Computer Engineering or Electrical Engineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

ECE 462: *Data and Computer Communications.* 3 credits.
Introduces modern data communications and computer networks. Topics include point-to-point communication links and transmission of digital information, modems, and codecs; packet switching, multiplexing, and concentrator design; multiaccess and broadcasting; local area and wide area networks; architectures and protocols for computer networks; OSI reference model and seven layers; physical interfaces and protocols; and data link control layer and network layer. Provides examples of data networks. Offered by Electrical & Comp. Engineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (STAT 344[C], 344[XS], 346[C] or 346[XS]) and (ECE 220[C], 220[XS], 321[C] or 321[XS]) and (ECE 231[C], 231[XS], 331[C], 331[XS], 301[C], L301 or 301[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Computer Engineering, Electrical and Computer Engr or Electrical Engineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ECE 463: *Digital Communications Systems.* 3 credits.
Introduces digital transmission systems. Topics include quantization, digital coding of analog waveforms, PCM, DPCM, DM, baseband transmission, digital modulation schemes, ASK, FSK, PSK, MSK, QAM, pulse shaping, intersymbol interference, partial response, voice-band and wideband modems, digital cable systems, regenerative repeaters, clock recovery and jitter, multipath fading, digital radio design, optimal receiver design, MAP receiver, and probability of error. Offered by Electrical & Comp. Engineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: ECE 460[C] or 460[XS].

C Requires minimum grade of C.
XS Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Computer Engineering, Electrical and Computer Engr or Electrical Engineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ECE 465: *Computer Networking Protocols.* 3 credits.
Introduces computer networking protocols and concepts, emphasizing Internet and Internet Protocol Suite. Covers computer networking protocols at application, transport, and network layers, including multimedia networking protocols, and network security and management. Offered by Electrical & Comp. Engineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (STAT 346[C], 346[XS], 344[C] or 344[XS]) and (CS 222[C], 222[XS], 211[C] or 211[XS]).
C Requires minimum grade of C.
XS Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Computer Engineering, Electrical and Computer Engr, Electrical Engineering or Systems Engineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ECE 467: *Computer Networking Laboratory.* 1 credit.
Hands#on experience designing and configuring Internet and computer networks in both physical and virtual environments. Students are exposed to real world computer networking technologies, concepts, and scenarios including the basics of packet forwarding, dynamic routing protocols, network virtualization, and packet capture and dissection tools. The coursework will allow students to work with open#source network simulation and configuration environment. Recommended to be taken after completion of 75 credits applicable to the program. Offered by Electrical & Comp. Engineering. Limited to two attempts.

Recommended Corequisite: ECE 465

Registration Restrictions:
Students with a class of Freshman or Sophomore may **not** enroll.

Enrollment is limited to students with a major in Computer Engineering or Electrical Engineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

ECE 470: *Introduction to Humanoid Robotics.* 3 credits.
Covers basic robot architecture with a focus on humanoid robotics. Topics include mechanical design philosophies, electrical design philosophies, and controller design of high DOF systems. Simulation of various parts and functionalities of humanoids culminates in a term project , which includes hardware demonstrations. Offered by Electrical & Comp. Engineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (CS 112[C] or 112[XS]) and (ECE 280[C], 280[XS], 285[C], 285[XS], BENG 380[C] or 380[XS]) and ((ECE 301[C], L301 or 301[XS]) or ((ECE 331[C] or 331[XS]) and (ECE 332[C] or 332[XS])) or ((ECE 231[C] or 231[XS]) and (ECE 232[C] or 232[XS]))).
C Requires minimum grade of C.
XS Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Computer Engineering, Electrical and Computer Engr or Electrical Engineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ECE 476: *Cryptography Fundamentals.* 3 credits.
Covers basic concepts of cryptology, types of cryptosystems, security services, and key management. Gradually introduces mathematical background required for understanding cryptography. Discusses modern secret-key stream and block ciphers, modes of operation, public key cryptosystems (RSA, elliptic curve, and post-quantum cryptography), hash functions, message authentication codes, and digital signature schemes. Covers key cracking machines, side-channel attacks, and fault attacks. Discusses popular cryptographic modules, such as True Random Number Generators and Physical Unclonable Functions, used for key generation and device authentication. Introduces educational and public domain software implementing modern cryptographic algorithms. Offered by Electrical & Comp. Engineering. Limited to two attempts. Equivalent to CYSE 476.

Registration Restrictions:
Required Prerequisites: (ECE 301[C], 301[XS], 231[C], 231[XS], 331[C] or 331[XS]).
C Requires minimum grade of C.
XS Requires minimum grade of XS.

Enrollment is limited to students with a major in Computer Engineering, Computer Science, Cyber Security Engineering or Electrical Engineering.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ECE 491: *Engineering Seminar.* 1 credit.
Engineering ethics, professionalism, role of engineer in society, current topics, and employment opportunities. Notes: Students cannot receive credit for both ECE 491 and BENG 491. Students are encouraged to register only after completion of at least 75 credits applicable to the electrical engineering or computer engineering program. Offered by Electrical & Comp. Engineering. Limited to two attempts. Equivalent to BENG 491.

Specialized Designation: Writing Intensive in Major

Registration Restrictions:

Required Prerequisites: ((COMM 100[C], 100[XS], 101[C] or 101[XS]) and (ENGH 302[C], 302[XS] or ENGL 302[C])) or HNRS 353[C].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman or Sophomore may **not** enroll.

Enrollment is limited to students with a major in Computer Engineering or Electrical Engineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

ECE 492: *Senior Advanced Design Project I.* 1 credit.
Conception of senior design project and determination of feasibility of proposed project. Work includes developing preliminary design and implementation plan. Students planning to use microcontroller technology in their projects should enroll in ECE 447 before taking ECE 493. Note: Registration is allowed only after completion of at least 90 credits applicable to the electrical engineering or computer engineering program. Offered by Electrical & Comp. Engineering. Limited to two attempts.

Mason Core: Capstone, Synthesis

Specialized Designation: Mason Impact.

Registration Restrictions:
Required Prerequisites: (((COMM 100[C], 100[XS], 101[C] or 101[XS]) and (ENGH 302[C], 302[XS] or ENGL 302[C])) or (HNRS 353[C], 360[C] or 361[C]) and (ECE 201[C] or 201[XS]) and (ECE 286[C] or 286[XS]) and (ECE 350[C] or 350[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major in Computer Engineering or Electrical Engineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ECE 493: *RS: Senior Advanced Design Project II.* 2 credits.
Implementation of project for which preliminary work was done in ECE 492. Project includes designing and constructing hardware, writing required software, conducting experiments or studies, and testing complete system. Requires oral and written reports during project and at completion. Notes: Students planning to use microcontroller technology in their projects should enroll in ECE 447 before taking ECE 493. If meeting time conflicts with other courses, come directly to the ECE department for registration. Offered by Electrical & Comp. Engineering. Limited to two attempts.

Mason Core: Capstone, Synthesis

Specialized Designation: Research/Scholarship Intensive

Registration Restrictions:
Required Prerequisites: (ECE 492[C] or 492[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major in Computer Engineering or Electrical Engineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ECE 498: *Independent Study in Electrical and Computer Engineering.* 1-3 credits.
Directed self-study of special topics of current interest in ECE. Topic must be arranged with an instructor and approved by department chair before registering. Offered by Electrical & Comp. Engineering. May be repeated within the term for a maximum 3 credits.

Registration Restrictions:
Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

ECE 499: *Special Topics in Electrical and Computer Engineering.* 0-4 credits.
Topics of special interest to undergraduates. Notes: May be repeated if topics substantially different. Offered by Electrical & Comp. Engineering. May be repeated within the term for a maximum 11 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Students with a class of Freshman or Sophomore may **not** enroll.

Enrollment is limited to students with a major in Computer Engineering or Electrical Engineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

500 Level Courses

ECE 500: *Special Topics.* 0-4 credits.
Select contemporary topics in Engineering and Computing. Offered by Electrical & Comp. Engineering. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

ECE 505: *Hardware Security.* 3 credits.
Covers security and trust in hardware, in relation to both ASIC and FPGA technologies. Topics include ASIC and FPGA manufacturing supply chain, threats and security challenges such as IP piracy, overproduction, counterfeiting, trojan insertion, reverse engineering, etc. Discusses various attacks against hardware, including physical, invasive, destructive, logical, and side channel attacks. Spans various hardware defense solutions including metering, locking, obfuscation, watermarking, access control, Trojan testing, IP core isolation, and the theory and practice of physical unclonable functions. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: ((ECE 301 or ECE 231 or ECE 331) and (CS 211 or CS 222)) or permission of instructor

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECE 507: *Seminar in Emerging Technologies.* 3 credits.
Study of emerging technologies, how they are identified, how they evolve, actions which may encourage or stifle their growth, government influences, societal influences, examples of success and failure, and some lessons to be learned which are unique to government information technology. Topics covered will include a general introduction to emerging technologies, with emphasis on IT, discussion of difficulty in letting go of legacy systems, the DOD Global Information Grid, Cyberwarfare, Complex Adaptive Systems, and Federal Government support of Research and Development. Cannot be used in the PhD IT program. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECE 508: *Internet of Things.* 3 credits.
Introduces the principles, technologies, challenges, and required expertise needed for building the Internet of Things (IoT) solutions. It provides a big picture of what is involved in IoT. Topics covered in this course include analog and digital sensing, interfacing sensors with microcontrollers, digital communication protocols, microcontroller choices and capabilities, gateways, fog computing, networking, cloud computing, need and challenges for cryptography and compression, security issues, and low power/energy challenges. The listed topics are covered only to the extent required to understand the challenges and to the point that the role of a given topic in IoT solutions is comprehended. While briefly covering the technologies involved at the various hierarchal levels of IoT solutions, the course introduces other courses at GMU where students could build further expertise in the topics of interest. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: ECE 350 or ((ECE 301 or ECE 231 or ECE 331) and CS 222) or equivalent

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECE 510: *Real-Time Concepts.* 3 credits.
Presents design methodology, principles and practice for the development of real-time embedded systems and their application to robotics, mechatronics, sensing, signal processing, and control. Topics include system decomposition, multi-tasking, task communication and synchronization, system modeling, time analysis, principles of filter and controller implementation, 'fuzzy' engineering, and multi-microcontroller systems. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: ECE 450 or ECE 447 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECE 511: *Computer Architecture.* 3 credits.
Introduces the concepts of a processor microarchitecture, from a pipelined processing unit, through a superscalar, to a multicore multithreaded computing system. Topics include instruction set architecture, single cycle processor, MIPS pipeline processor, precise state, parallel processing, superscalars, memory and cache organization, branch prediction, multicore processors, memory consistency, multi- and many-core cache coherence, and heterogeneous computing. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: ECE 445 or CS 465 or permission of instructor

Registration Restrictions:

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECE 512: *Computer Architecture Security.* 3 credits.
This course focuses on recent advances in computer systems security, including both attacks and countermeasures. An emphasis will be placed on attacks that exploit hardware vulnerabilities and hardware and software protection from these attacks. Specific topics include memory corruption attacks, control flow attacks, return-oriented programming attacks and their variations, side-channel attacks, covert channels, trusted computing systems and secure architectures, malware detection techniques, oblivious memory, and operating system security. The course will also overview recent industry developments, including Intel's SGX, MPX and CET, ARM's TrustZone and AMD's SME and SEV technologies. Students are expected to read recent research papers in the area, present them in class, and participate in discussions. Students are also expected to complete a semester-long research project and take a final exam. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: ECE 445 or permission of instructor

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECE 513: *Applied Electromagnetic Theory.* 3 credits.
Maxwell's Equations, electromagnetic wave propagation, wave guides, transmission lines, radiation, and antennas. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: ECE 305 or equivalent.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECE 516: *Mobile Systems and Applications.* 3 credits.
A comprehensive study of modern mobile devices, with the special focus on smartphones and wearable devices. Topics include mobile operating systems, mobile device components, application development, human-computer interaction, data management, network systems, mobile intelligence, and mobile security. Lectures are enhanced and illustrated with several take-home, hands-on labs. A group-based, open-topic project involves specifying, developing, and presenting a medium complexity application using the Android operating system. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: CS 211 or permission of instructor

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECE 521: *Linear Systems and Control.* 3 credits.
Introduces linear systems theory and design of linear feedback control systems. Reviews linear algebra, state variables, state-space description of dynamic systems, analysis of continuous-time and discrete-time linear systems, controllability and observability of linear systems, and stability theory. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: ECE 421 or ME 432

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECE 526: *Neural Engineering.* 3 credits.
Provides an overview of topics in Neural Engineering. Topics covered range from sensory and motor prosthetic devices, stimulation of biological tissue, bioelectrodes and characterization techniques, brain-machine interfaces, and engineered devices to ameliorate neurodisorders. Prior knowledge in electrical or computer engineering disciplines required. Offered by Electrical & Comp. Engineering. May not be repeated for credit. Equivalent to BENG 525.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECE 527: *Learning From Data.* 3 credits.
This is an introductory course in machine learning and pattern recognition that covers basic theory, algorithms, and applications. Machine learning is the science of getting computers to act without being explicitly programmed. This course balances theory and practice, and covers the mathematical as well as the heuristic aspects. It provides a broad introduction to machine learning and pattern recognition. Topics include: (i) supervised learning (parametric/non-parametric algorithms, support vector machines, kernels, neural networks). (ii) Unsupervised learning (clustering, dimensionality reduction, recommender systems, autoencoders). (iii) Learning theory (bias/variance tradeoffs, VC theory, generalization). (iv) Ensemble methods (boosting and bagging, random forests). (v) Deep learning (deep belief networks, convolutional neural networks, deep autoencoders). The course will draw from numerous case studies and applications. Offered by Electrical & Comp. Engineering. May not be repeated for credit. Equivalent to DAEN 527.

Recommended Prerequisite: (MATH 203 and STAT 346) or equivalent

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECE 528: *Introduction to Random Processes in Electrical and Computer Engineering.* 3 credits.
Probability and random processes are fundamental to communications, control, signal processing, and computer networks. Provides basic theory and important applications. Topics include probability concepts and axioms; stationarity and ergodicity; random variables and their functions; vectors; expectation and variance; conditional expectation; moment-generating and characteristic functions; random processes such as white noise and Gaussian; autocorrelation and power spectral density; linear filtering of random processes, and basic ideas of estimation and detection. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: ECE 220 and STAT 346, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture, Recitation

Grading:
This course is graded on the Graduate Regular scale.

ECE 530: *Sensor Engineering.* 3 credits.
Presents the fundamentals of sensor characteristics and transfer functions, sensor circuits and interfacing, sensor noise, and protection methods. Studies of different methods used in sensing position, motion, acceleration, force, humidity, temperature, chemicals, etc. are developed, followed by an analysis of specific sensor designs. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECE 531: *Introduction to Wireless Communications and Networks.* 3 credits.
Presents the basics of modern wireless communications and wireless networking at the first-year graduate level. Topics include wireless signal design, channel characterization, receiver structure, multiple access technologies, cellular concepts, capacity enlargement, mobility management, and wireless/wireless interworking. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: ECE 460 or equivalent

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECE 535: *Digital Signal Processing.* 3 credits.
Representation analysis and design of digital signals and systems. Covers sampling and quantization, z-transform and discrete Fourier transform, digital filter realizations, design techniques for recursive and non-recursive filters, fast Fourier transform algorithms, and spectral

analysis. Additional topics may include adaptive filtering, homomorphic digital signal processing, digital interpolation and decimation. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: ECE 460 or permission of instructor

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECE 537: *Introduction to Digital Image Processing (DIP).* 3 credits.
First course in digital-image processing; introduces scanning systems, focal plane array detectors, data acquisition methods, display hardware, image preprocessing algorithms, feature extraction, and basic image processing methods. Semester-long image processing project includes utilizing modern image processing system prototyping software. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECE 538: *Medical Imaging.* 3 credits.
Provides an introduction to the physical, mathematical and engineering foundations of modem medical imaging systems, medical image processing and analysis methods. In addition, this course introduces engineering students to clinical applications of medical imaging. The emphasis is on diagnostic ultrasound and magnetic resonance imaging methods, although several other modalities are covered. The course also provides an overview of recent developments and future trends in the field of medical imaging, discusses some of the challenges and controversies, and involves hands-on experience applying the methods learned in class to real-world problems. Offered by Electrical & Comp. Engineering. May not be repeated for credit. Equivalent to BENG 538.

Recommended Prerequisite: ECE 220 or equivalent

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECE 542: *Computer Network Architectures and Protocols.* 3 credits.
Introduction to architectures and protocols of computer networks and concept of packet switching. Topics include ISO standard layer model, physical interfaces and protocols, data link control, multiaccess techniques, packet switching, routing and flow control, network topology, data communication subsystems, error control coding, local area network, satellite packet broadcasting, packet radio, interconnection of packet-switching networks, network security and privacy, and various examples of computer networks. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: STAT 344 or equivalent.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECE 545: *Digital System Design with VHDL.* 3 credits.
Introduction to the design of complex digital systems using hardware description languages. Emphasizes the design methodology based on the partitioning of a digital system into a datapath and control unit. Introduces a clear sequence of steps leading from specification to synthesizable, register transfer level (RTL), and fully verified HDL code. Covers VHDL for digital circuit design, including dataflow, structural, and behavioral coding styles. Introduces and illustrates the concepts of VHDL simulation, verification, synthesis, mapping, placing, routing, timing analysis and performance optimization. Requires semester long project devoted to the design of a complex digital system using VHDL as a hardware description language and FPGA as an implementation platform. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECE 550: *System Engineering Design.* 3 credits.
System engineering design methods are studied and practiced, including object-oriented and structured analysis based techniques. Design Description languages such as UML, SysML, IDEF0 and IDEF1x are introduced and used in carrying out complete system designs. Teams make presentations of their designs. Offered by Electrical & Comp. Engineering. May not be repeated for credit. Equivalent to SYST 520.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECE 552: *Big Data Technologies.* 3 credits.
Covers the principles of the Big Data ecosystem architecture and in-depth understating of selected Big Data technologies that are an important part of such a scalable ecosystem. Important topics covered in this course include Hadoop distributed file system (HDFS), along with the system requirements that drove the need for such distributed file system, MapReduce - a new computing paradigm that enables processing of massive amount of data stored in HDFS, new open-source analytical engines that rely on parallel and in-memory computations to improve the analytical processing time of the massive amount of data, concepts and rigors of machine learning and their implementation using Big Data technologies, functional programming, NoSQL technologies, and integration. The course also covers the implementation and instantiation of a cloud-based Big Data ecosystem that allows illustrating concepts introduced in this class. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: CS 112 Introduction to Computer Programming or equivalent

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECE 565: *Introduction to Optical Electronics.* 3 credits.
Introduces optoelectronic devices for generation, detection, and modulation of light. Topics include electro-optic modulators, gas, solid state and semiconductor lasers, photodetectors, and detector arrays. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: ECE 305 and 333.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECE 567: *Optical Fiber Communications.* 3 credits.
Studies components and integration of fiber-optic transmission systems. Topics include optical fibers, signal degradation, optical sources, power launching and coupling, photodetectors, receiver circuits, link analysis, and optical measurements. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: ECE 462 or TCOM 500 or permission of instructor

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECE 580: *Small Spacecraft Engineering.* 3 credits.
Comprehensive study of small spacecraft design, operations, bus, communications, computing hardware, software, sensors, power, attitude control, testing, and other topics needed for successful engineering of a spacecraft and its ground station. Review of ultra-small CubeSats, their hardware, software, and missions. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECE 584: *Semiconductor Device Fundamentals.* 3 credits.
Studies principals of operation of semiconductor devices based on solid state physics. Topics include band theory of solids, intrinsic and extrinsic semiconductor properties, pn junction diode, bipolar junction transistor, Schottky diode, metal insulator semiconductor junctions, field-effect transistors, and hetero-structures. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: ECE 430 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECE 586: *Digital Integrated Circuits.* 3 credits.
Studies design and analysis of digital integrated circuits, emphasizing CMOS technology. Reviews MOSFET operation and SPICE modeling. Covers analysis and design of basic inverter circuits, structure and operation of combinational and sequential logic gates, dynamic logic circuits, chip I/O circuits, and brief introduction to VLSI methodologies. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: (ECE 231 or ECE 331) and ECE 430 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECE 587: *Design of Analog Integrated Circuits.* 3 credits.
Studies design methodologies of CMOS-based analog integrated circuits. Topics include differential amplifiers, current sources, output stages, operational amplifiers, comparators, frequency response, noise, and computer-aided design. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: ECE 333 and ECE 430 or 433 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECE 590: *Selected Topics in Engineering.* 3 credits.
Selected topics from recent developments, and applications in various engineering disciplines. Designed to help professional engineering community keep abreast of current developments. Offered by Electrical & Comp. Engineering. May be repeated within the term for a maximum 15 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

600 Level Courses

ECE 611: *Advanced Computer Architecture.* 3 credits.
Qualitatively and quantitatively examines power, performance and security trade-offs in architecting computing systems. Explores three major components of modern general-purpose architectures: processors, memories, and networks. Enables students to understand how these components can be integrated to build complex multicore, manycore, and multithreaded architectures. Covers the architectural trade-offs in IoT, embedded, and high-performance processors. Topics include processor and system architecture in single core, multicore, multithreaded and heterogeneous architectures; memory architecture, network topology, routing, and flow control. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: ECE 511 or permission of instructor.

Registration Restrictions:

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECE 612: *Real-Time Embedded Systems.* 3 credits.
Study of real-time operating systems and device drivers for embedded computers. Emphasizes microprocessor systems and associated input device sampling strategies, including interrupt driven and polled I/O. Covers basic input/output operations, analog to digital conversion methods, I/O programming techniques and process, and communication control methodologies. Involves design project. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: ECE 511 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECE 615: *Software/Hardware Codesign.* 3 credits.
Introduces software/hardware codesign for modern all-programmable system on chip platforms. Covers profiling, design partitioning, interfacing, debugging using integrated logic analyzers, and optimizing performance and resource utilization. Demonstrates the development of hardware accelerators using existing intellectual property cores and establishing efficient communication between software and hardware parts of complex embedded systems. Introduces high-level synthesis for improved efficiency of the development process. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: ECE 511 and 545, or permission of instructor

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECE 616: *Advanced Mobile Systems and Applications.* 3 credits.
Advanced study of mobile systems and applications, with the focus on system architecture, computing paradigms, and optimization methods. Most lectures are dedicated to case studies based on the most influential research publications and best-known industry products. Special topics include the most cutting-edge applications, such as virtual and augmented reality, machine learning, and cloud computing. For each topic, the design concepts are presented from the perspective of the application performance and system design considerations. Lectures are enhanced with the comprehensive literature review and a group-based, semester-long project. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: ECE 516 or permission of instructor

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECE 617: *Distributed and Federated Learning.* 3 credits.
As compute resources inside of end devices, such as mobile phones, are becoming increasingly powerful, deep learning is moving from centralized data centers to clouds and end devices. Emerging techniques such as centralized distributed learning and emerging decentralized federated learning open up brand new computing paradigms to artificial intelligence. This course is designed to focus on distributed and federated learning techniques with an expected research-oriented depth and sufficient implementation practice. The course lectures cover cutting-edge algorithms and system implementations. They are enhanced with a comprehensive literature review and a group-based, semester-long project. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: ECE 527

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECE 618: *Hardware Accelerators for Machine Learning.* 3 credits.
This course covers the hardware design principles to deploy different machine learning algorithms. The emphasis is on understanding the fundamentals of machine learning and hardware architectures and determine plausible methods to bridge them. Topics include precision scaling, approximate computing, in-memory computing, architectural modifications, GPUs, and vector architectures, as well as recent EDA tools for AI such as Xilinx AI Vitis, Xilinx HLS, Tensorflow Lite, and Caffee. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: ((ECE 511 with minimum B- or CS 465 with minimum C) and (ECE 527 with minimum B- or CS 580 with minimum B- or CS 688 with minimum B-)) or permission of instructor

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECE 619: *Nonlinear Systems and Control.* 3 credits.
Includes motivating examples; analysis techniques include basic fixed-point theory, implicit function theorem, and dependence of trajectories on initial data and parameters. Also covers computational simulation techniques; stability theory including Lyapunov's direct method; nonlinear control systems of input-output and absolute stability; strong positive real transfer functions; feedback linearization of nonlinear systems; nonlinear canonical forms; nonlinear decoupling; sliding control; and applications to adaptive control, neural networks, and robotics. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: ECE 521 or equivalent

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECE 620: *Optimal Control Theory.* 3 credits.
Detailed treatment of optimal control theory and its applications. Topics include system dynamics and performance criteria, calculus of variations and Pontryagin's minimum principle, computational methods in optimal control, and applications of optimal control. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: ECE 521 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECE 621: *Systems Identification.* 3 credits.
Foundations of parameter estimation using the least squares method. Identification of static and discrete dynamic system models. Batch and recursive (online) approaches. Model order estimation. Persistent excitation requirements. The effect of noise on model accuracy. Nonlinear estimation methods: generalized least squares and maximum likelihood. Applications in control, diagnostics, and economy. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: ECE 521 and 528 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECE 622: *Kalman Filtering with Applications.* 3 credits.
Detailed treatment of Kalman Filtering Theory and its applications, including some aspects of stochastic control theory. Topics include state-space models with random inputs, optimum state estimation, filtering, prediction and smoothing of random signals with noisy measurements, all within the framework of Kalman filtering. Additional topics are nonlinear filtering problems, computational methods, and various applications such as global positioning system, tracking, system control, and others. Stochastic control problems include linear-quadratic-Gaussian problem and minimum-variance control. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: ECE 521 and 528, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECE 627: *Adaptive Control.* 3 credits.
Topics include identification algorithms, model reference adaptive control, self-tuning regulators, convergence, stability, robustness, averaging theory, singular perturbation, and intelligent learning schemes. Students are required to study literature and complete a course project. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: ECE 521 or equivalent

Registration Restrictions:

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECE 630: *Statistical Communication Theory.* 3 credits.
Introduces optimum receiver design in the additive white Gaussian noise environment. Topics include efficient signal set design, modulation techniques, matched filter, correlation detector, coherent and noncoherent detections, fading and diversity channels, random amplitude and phase, diversity techniques, performance bounds of communications, and waveform communications. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: ECE 528.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECE 631: *Software-Defined Radio.* 3 credits.
Design and implementation of the essential building blocks of a software-defined radio, including sampling, pulse shaping, modulation/demodulation, synchronization, equalization, and coding. Focus is on software implementation and integration of the building blocks in a software-defined radio platform. Other topics include software-defined radio architectures, application development on software radio platforms, and hardware acceleration for software-defined radio. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: ECE 531 or ECE 535 or permission of instructor

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECE 633: *Error Control Coding.* 3 credits.
Introduction to error control coding techniques, which enable the detection and correction of errors that arise in the transmission and storage of digital data. Provides the necessary background in discrete mathematics, algebra, and number theory. Topics include classical linear block codes, convolutional codes, and modern sparse-graph codes; hardware and software implementation of encoders and decoders; and applications of error control coding to modern and emerging technologies, such as contemporary and proposed wireless networking standards, quantum communications, quantum computing, post-quantum cryptography, physically unclonable functions, and secure distributed storage media. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: ECE 511 or ECE 528 or ECE 535 or ECE 542 or permission of instructor

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECE 635: *Adaptive Signal Processing.* 3 credits.
Introduces adaptive systems and adaptive signal processing. Topics include correlation functions and matrices; performance functions; search of minimum; steepest descent and Newton algorithms; least mean squares algorithm; noise perturbed search and misadjustment; sequential regression algorithm and convergence issues; recursive least squares algorithm and forgetting factor; frequency domain algorithms; adaptive equalization; pseudorandom binary sequences and system identification; adaptive interference cancellation; and adaptive beam forming and arrays. Simulates adaptive algorithms. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: ECE 528.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECE 636: *Advanced Digital Signal Processing.* 3 credits.
Theory and practice of advanced digital signal processing techniques. Topics may include efficient high-speed algorithms for convolution, correlation, orthogonal transforms, multirate processing of digital signals, multiresolution time-frequency and time-scale analysis of one- and two-

dimensional signals, and multitaper spectral estimation. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: ECE 528 and ECE 535

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECE 637: *Array Processing.* 3 credits.
Fundamentals of signal processing for sensor arrays, including conventional and adaptive beamformers, space-time random processes, beam pattern design, deterministic null-steering, sparse arrays, and robust algorithms. Applications include sonar, radar, and communications systems. Special emphasis on transferring intuition from discrete-time signal processing to narrowband array processing for uniform linear arrays. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: ECE 528 and ECE 535

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECE 639: *Satellite Communications.* 3 credits.
Comprehensive study of satellite communication systems. Topics include link budget and quality of service considerations, basics of information transmission, digital modulation and demodulation, channel coding and coded modulation, multiple access, networking services for voice, broadcasting and Internet access over satellites, payload and reliability issues, and technological applications. Understanding of satellite system architectures, propagation link characteristics, key communication techniques, power and bandwidth requirements, and various satellite communications systems and applications. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: ECE 528 or ECE 542 or ECE 580

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECE 640: *Small Satellite Development.* 3 credits.
Advanced topics in satellite development life cycle, mission planning, operational considerations, structure, bus architecture, and subsystems such as power, communications, on-board computing hardware and software. In-depth study of lessons learned from CubeSat development, testing, and operations in space, as well as recommendations for the development practice, mission assurance, and required legal and technical compliances. Development executed through group design meetings, take-home designs/assignments, and/or in-house fabrication and testing. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: ECE 580 or permission of instructor

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECE 642: *Design and Analysis of Computer Communication Networks.* 3 credits.
Introduces queuing theory. Other topics include concentrator design, multiplexing, capacity assignments, random access schemes, polling and probing techniques, topology design, flow control and routing, packet radio, protocol specification, and validation. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: ECE 542 and 528 or equivalent.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECE 643: *Network Switching and Routing.* 3 credits.
Fundamentals of switching and routing with application to communications networks, both wireline and wireless. Topics include concepts of space and time for switching and forwarding of data, scalability and performance, label swapping, algorithms for routing and path computation, constrained route optimization, traffic theory, control and signaling, and traffic engineering. The course also covers the concepts and issues underlying the design and implementation of the contemporary switched networks. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: ECE 528 and ECE 542.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECE 645: *Computer Arithmetic.* 3 credits.
Covers computer arithmetic as applied to the design of general-purpose microprocessors and application-specific integrated circuits for cryptography, coding, and digital signal processing. Focuses on efficient implementations of all basic arithmetic operations in three major domains: integers, real numbers, and elements of Galois Fields GF(2n). Illustrates tradeoffs among various hardware algorithms and architectures depending on primary optimization criteria, such as speed, area, and power consumption. Demonstrates the use of software implementations as a source of test vectors for verification of hardware implementations and for evaluating hardware versus software speed-up. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: ECE 545 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECE 646: *Applied Cryptography.* 3 credits.
Topics include need for security services in computer networks and digital devices, basic concepts of cryptology, modern symmetric ciphers, public key cryptography (RSA, elliptic curve cryptosystems, post-quantum cryptography), data integrity and authentication, digital signature schemes, key exchange and key management, standard protocols for secure mail, the web and electronic payments, security aspects of mobile communications, efficient software and hardware implementations of cryptographic primitives, attacks against implementations and relevant defenses, requirements for implementation and validation of cryptographic modules, and security engineering with cryptography. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: ECE 542 or CS 555 or CYSE 610 or INFS 612 or permission of instructor

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECE 648: *Digital Signal Processing Hardware Architectures.* 3 credits.
Addresses topics that include high-level DSP optimizations, such as pipelining, unfolding, and parallel processing; common DSP structures such as FFTs, filters, direct digital frequency synthesizers, and correlators; modeling of DSP algorithms in MATLAB and conversion of MATLAB models into fixed-point VHDL blocks; platform implementation issues: hardware vs. software, FPGA vs. ASIC, power, area, throughput, and applications of DSP hardware. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: ECE 535 and ECE 545 or equivalents or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECE 651: *Advanced Learning From Data.* 3 credits.
Review of machine learning basics to motivate deep learning networks. Examines various deep learning network architectures and models in detail, including deep forward networks, convolutional networks, recurrent networks, and autoencoders. Discusses the training and implementation of deep models, such as hyper-parameter tuning, regularization, and optimization. Introduction of deep reinforcement learning. Involves course projects with a focus on the survey of applications, research problems, and new advances. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: (ECE 527 or DAEN 527 or CS 688) and (MATH 203 and STAT 346 and CS 112) or equivalent

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECE 653: *Machine Learning Security and Privacy.* 3 credits.
Covers advanced topics in security and privacy of machine learning techniques, including differential privacy, data collection, adversarial machine learning, model watermarking, and formal verification. Students

are expected to complete projects on technical topics related to the scope of the course. They will also get hands-on experience with frameworks such as TensorFlow and Tensorflow Lite. The course will emphasize research skills, such as analyzing research papers, giving technical presentations, and writing summaries and reviews. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: ECE 527 (B-) or CS 688 (B-) or permission of instructor

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECE 660: *Space Systems Engineering.* 3 credits.
Overview of the scientific and engineering foundations of spacecraft systems and interaction among satellite subsystems. Topics include fundamentals on astrodynamics, power, communications, command and data handling, thermal management, attitude control, mechanical configuration, structures and launch systems. In addition to traditional instruction, a number of case studies and a team design project provide further breadth and exposure. Offered by Electrical & Comp. Engineering. May not be repeated for credit. Equivalent to SYST 682.

Recommended Prerequisite: ECE 580 or SYST 520

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECE 670: *Principles of Command, Control, Communications, Computing, and Intelligence (C4I).* 3 credits.
Provides broad introduction to fundamental principles of command, control, communication, computing, and intelligence (C4I). Applies principles, techniques to wide range of civilian and military situations. Discusses modeling, simulation of combat operations; studies sensing, fusion, and situation assessment processes. Derives optimal decision-making rules. Discusses concepts of C4I architectures and tools to evaluate and design systems such as queuing theory. Offered by Electrical & Comp. Engineering. May not be repeated for credit. Equivalent to SYST 680.

Recommended Prerequisite: ECE 528 or SYST 611 or OR 542, or equivalent.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECE 673: *Discrete Event Systems.* 3 credits.
Introduces modeling and analysis of discrete event dynamical systems. Course covers elements of discrete mathematics and then focuses on Petri Net models and their basic properties. Relation to other discrete event models of dynamical systems. Offered by Electrical & Comp. Engineering. May not be repeated for credit. Equivalent to SYST 620.

Recommended Prerequisite: ECE 521, or SYST 611 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECE 674: *Systems Architecture Design.* 3 credits.
Architecture design and representation and the methodologies used to obtain them. Approaches based on system engineering constructs such as object orientation and service oriented architectures are used to design architectures and then represent them in conformance with an architecture framework such as DoDAF. Executable models of the architecture are derived to be used for architecture evaluation. Examples from current practice are used. Offered by Electrical & Comp. Engineering. May not be repeated for credit. Equivalent to SYST 621.

Recommended Prerequisite: ECE 550.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECE 681: *VLSI Design for ASICs.* 3 credits.
Introduces VLSI design of application-specific integrated circuits (ASICs) from front-end to back-end using HDL and modern design automation software. Covers simulation, synthesis of digital circuits using standard cells, static timing analysis, formal verification, power analysis, test generation/fault simulation, and physical design including floor planning, placement, routing, and design rule checking. Addresses deep submicron CMOS scaling issues and other advanced topics. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: ECE 545.

Recommended Corequisite: ECE 586, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECE 682: *VLSI Test Concepts.* 3 credits.
Broad introduction to basic concepts, techniques, and tools of modern VLSI testing. Fundamentals of defect modeling, fault simulation, design for testability, built-in self-test techniques, and failure analysis. Test economics, physical defects and fault modeling, automated test pattern generation, fault simulation, design for test, built-in self test, memory test, PLD test, mixed-signal test, Iddq test, boundary scan and related standards, test synthesis, diagnosis and failure analysis, automated test equipment, embedded core test. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: ECE 586

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECE 684: *MOS Device Electronics.* 3 credits.
Study of Metal Oxide Semiconductor (MOS)-based device theory, characteristics, models, and limitations. Topics include MOS capacitor, MOSFETs, CMOS, charge coupled devices, scaling, hot carrier effects, latchup, radiation effects, and isolation techniques. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: ECE 584 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECE 685: *Nanoelectronics.* 3 credits.
Emphasizes the fundamental concepts and principles that govern the operation of nano-electronic devices (100 nm down to 1 nm.). Addresses basic device building blocks such as quantum dot (QD), single electron tunneling transistor (SETT), carbon nanotube (CNT), nanowire, etc. Considers the design and analysis of a variety of nano-devices ("quantum" or "mesoscopic" devices) and examine some notable applications. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: ECE 584

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECE 686: *Sensor Device Technology.* 3 credits.
Design and integration of essential sensor devices and arrays for intelligent wearable electronics and human-computer interactions. Study of the relevant electronics and semiconductor device principles, as well as various types of sensors, including optical, thermal, RF, electromechanical, chemical, inertia, and acceleration sensors. The focus is on the physical principles, device development, and advanced electronic characteristics of a variety of sensors. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: ECE 530 or ECE 584 or permission of instructor

Registration Restrictions:

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECE 687: *Radio Frequency Electronics.* 3 credits.
This course addresses the design of electronic building blocks for radio frequency (RF) microelectronic circuits. Topics include trade-offs in RF design, transceiver architectures, low-noise amplifiers, mixers, oscillators, frequency-synthesizers, phase-locked loops, and power amplifiers. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: ECE 587, 684, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECE 691: *CubeSat Design.* 1.5 credit.
First phase of a project course focused on design and early prototyping. Design and implementation of a project related to CubeSats, satellite communication ground and space systems, satellite bus modules, embedded hardware and software. Offered by Electrical & Comp. Engineering. Limited to two attempts.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Laboratory

Grading:
This course is graded on the Graduate Regular scale.

ECE 692: *CubeSat Engineering.* 1.5 credit.
Second phase of a project course dedicated to project implementation and testing. Design and implementation of a project related to CubeSats, satellite communication ground and space systems, satellite bus modules, embedded hardware and software. Offered by Electrical & Comp. Engineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisite: ECE 691[B-].
[B-] Requires minimum grade of B-.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Laboratory

Grading:
This course is graded on the Graduate Regular scale.

ECE 698: *Independent Reading and Research.* 1-3 credits.
Independent study under the supervision of a faculty member, resulting in an acceptable technical report. Notes: Requires written report. May be taken no more than twice for graduate credit. Offered by Electrical & Comp. Engineering. May be repeated within the degree for a maximum 3 credits.

Recommended Prerequisite: At least two core courses and permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Research

Grading:
This course is graded on the Graduate Regular scale.

ECE 699: *Advanced Topics in Electrical and Computer Engineering.* 1-6 credits.
Advanced topics of current interest in electrical and computer engineering. Topics chosen so they do not duplicate other courses in department. Active participation encouraged in form of writing and presenting papers in research areas. Offered by Electrical & Comp. Engineering. May be repeated within the term.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

700 Level Courses

ECE 701: *Research Experience in Electrical and Computer Engineering.* 3 credits.
Readings and research for early stage ECE PhD students under the direction of a faculty member. Research findings must be delivered in a

professionally prepared document and an oral presentation in formats consistent with the Research Qualifying Exam. Offered by Electrical and Computer Engineering. May be taken only once. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Enrollment is limited to students with a major in Electrical and Computer Engr.

Enrollment limited to students in a Doctor of Philosophy degree.

Schedule Type: Research

Grading:
This course is graded on the Graduate Regular scale.

ECE 721: *Nonlinear Systems.* 3 credits.
Includes motivating examples; analysis techniques include basic fixed-point theory, implicit function theorem, and dependence of trajectories on initial data and parameters. Also covers computational simulation techniques; stability theory including Lyapunov's direct method; nonlinear control systems of input-output and absolute stability; strong positive real transfer functions; feedback linearization of nonlinear systems; nonlinear canonical forms; nonlinear decoupling; sliding control; and applications to adaptive control, neural networks, and robotics. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: ECE 620 or ECE 621.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECE 722: *Kalman Filtering with Applications.* 3 credits.
Detailed treatment of Kalman Filtering Theory and its applications, including some aspects of stochastic control theory. Topics include state-space models with random inputs, optimum state estimation, filtering, prediction and smoothing of random signals with noisy measurements, all within the framework of Kalman filtering. Additional topics are nonlinear filtering problems, computational methods, and various applications such as global positioning system, tracking, system control, and others. Stochastic control problems include linear-quadratic-Gaussian problem and minimum-variance control. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: ECE 521 and 528 or equivalent, or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECE 728: *Random Processes in Electrical and Computer Engineering.* 3 credits.
Recommended for advanced master's and doctoral students. Provides background in random processes needed for pursuing graduate studies and research in statistical signal processing, communications, control, and computer networks. Covers probability spaces, random variables, Lebesque integration, conditional mean on a sigma field, convergence of random variables, limit and ergotic theorems, Markov processes, and Martingales. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: ECE 528 or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECE 731: *Digital Communications.* 3 credits.
Digital transmission of voice, video, and data signals. Covers signal digitization, pulse code modulation, delta modulation, low bit-rate coding, multiplexing, synchronization, intersymbol interference, adaptive equalization, frequency spreading, encryption, transmission codes, digital transmission using band-width compression techniques, and satellite communications. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: ECE 630 or equivalent.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECE 732: *Mobile Communication Systems.* 3 credits.
Topics include modeling of mobile communication channel, signal set and receiver design for mobile communication channel, access and mobility control, mobile network architectures, connection to fixed network, and signaling protocols for mobile communication systems. Examples of mobile communication systems are presented, including pan-European GSM, North American D-AMPS, and personal

communication systems. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: ECE 542 and 630.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECE 734: *Detection and Estimation Theory.* 3 credits.
Introduces detection and estimation theory with communication and radar and sonar applications. Topics include classical detection and estimation theory, detection of known signals in Gaussian noise, signal parameter and linear waveform estimation, and Wiener and Kalman filters. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: ECE 528.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECE 741: *Wireless Networks.* 3 credits.
Theoretical foundation and practice in design of wireless networks. Emphasizes mobility and teletraffic modeling aspects, and networking issues and state-of-the-art performance evaluation methods of radio and system infrastructure applicable to wireless cellular and local networks. Topics include analysis of mobility, handoff, control traffic loading, resource allocation techniques, multiaccess protocols, admission policy and call control, network infrastructure and multilayer configuration, wireless LANs, and packet data systems. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: ECE 642 or equivalent.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECE 742: *High-Speed Networks.* 3 credits.
Theories for design, analysis and evaluation of high-speed networks including scalability, performance, and issues related to local area, metropolitan, and wide area networks. Includes architecture, protocols, and applications of high-speed networks; performance modeling of high-speed networks; flow control and routing; design issues for high-speed switches, interfaces, and controllers; all optical networks and their architectures; examples of high-speed computer networks and Internet working; video, imaging, and multimedia applications; software issues, robustness, and applications; and selected topics in current research areas in high-speed computer networks. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: ECE 528 and 642, or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECE 746: *Advanced Applied Cryptography.* 3 credits.
Discusses complex cryptographic algorithms and their implementations in software and hardware. Provides mathematical background necessary to understand, implement, and break modern cryptoalgorithms. Covers implementations of cryptosystems using smart cards, network processors, and other platforms. Discusses side channel attacks against implementations of cryptography, including timing attacks, power analysis, fault analysis, cache attacks, etc. Introduces advanced topics, such as random and pseudorandom number generators, secret sharing, zero-knowledge, and quantum cryptography. Requires a semester-long project devoted to implementation of selected algorithms or protocols in software or hardware, and/or comparative analysis of various algorithms, protocols, or implementations. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: ECE 646 or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECE 747: *Cryptographic Engineering.* 3 credits.
Discusses efficient implementations of cryptographic algorithms and protocols in hardware and software, ranging from high-performance to low-power, as well as resistance to side-channel and fault attacks. Covers code breaking algorithms and practical implementations of side-channel attacks. Introduces research techniques. Requires semester-long project devoted to study of a cryptographic engineering problem, including a

comprehensive literature review, problem definition, and research plan. Notes: Course will be partially lecture style, partially seminar. Students will give hour long, in depth presentations on their research topics. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: ECE 646 or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

ECE 751: *Information Theory.* 3 credits.
Introduces information theory, which is mathematical theory of communication systems. Topics include measures of information such as entropy, relative entropy, and mutual information; Shannon-McMillan-Breiman theorem and applications to data compression; entropy rate and source coding theorem; Huffman, arithmetic and Lempel-Ziv codes; method of types, channel capacity, and channel-coding theorem; joint source-channel coding theorem; differential entropy; Gaussian channel; rate distortion theory; and vector quantization. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: ECE 528 or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ECE 795: *Engineering Seminar.* 0 credits.
Fulfills seminar requirement for MS in electrical and computer engineering programs. Invited speakers, faculty, and ECE graduate students lecture on current topics and research. Notes: Students must enroll in ECE 795 the final semester they file to graduate. Once the department verifies that the seminar requirement has been met, a grade of S (satisfactory) will be submitted. Students who have not met the seminar requirement in their final semester must continue to register for ECE 795 in subsequent semesters until the requirement is met. Offered by Electrical & Comp. Engineering. May be repeated within the degree.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Special scale.

ECE 797: *Scholarly Paper.* 0 credits.
Student must develop a rigorous, technical report (called Scholarly Paper) on a topic of current interest in Electrical and Computer Engineering and make an oral presentation of this report. Students fulfill this requirement through and individual project in a 600-level or above ECE graduate course. Offered by Electrical & Comp. Engineering. May be repeated within the degree.

Recommended Prerequisite: Completed 18 credit hours of graduate work.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Research

Grading:
This course is graded on the Graduate Special scale.

ECE 798: *Research Project.* 1-6 credits.
Student must complete a one-semester long research project on an ECE technical topic under the guidance of a faculty advisor, and write a research report that will be presented as a departmental seminar. Notes: No more than a combined total of 3 credits may be taken towards satisfying the master's degree, although students may register for more credits. Students may not count both ECE 799 and ECE 798 for master's degree. Offered by Electrical & Comp. Engineering. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Completed 18 credit hours of graduate work.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Thesis

Grading:
This course is graded on the Satisfactory/No Credit scale.

ECE 799: *Master's Thesis.* 1-6 credits.
Research project chosen and completed under guidance of graduate faculty member that results in technical report and oral defense acceptable to thesis committee of three faculty members. Offered by Electrical & Comp. Engineering. May be repeated within the degree.

Recommended Prerequisite: 9 graduate credits, and permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Thesis

Grading:
This course is graded on the Satisfactory/No Credit scale.

800 Level Courses

ECE 896: *Directed Reading and Research.* 1-6 credits.
Reading and research on a specific topic under the direction of a faculty member resulting in an acceptable technical report. Offered by Electrical and Computer Engineering. May be repeated within the degree for a maximum of 21 credits. Offered by Electrical & Comp. Engineering. May be repeated within the degree for a maximum 21 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Enrollment is limited to students with a major in Electrical and Computer Engr.

Enrollment limited to students in a Doctor of Philosophy degree.

Schedule Type: Research

Grading:
This course is graded on the Graduate Regular scale.

ECE 899: *Research Topics in ECE.* 3 credits.
Studies advanced research areas in Electrical and Computer Engineering within a course format. Students will develop specialized research skills, which will also involve the presentation of their own work, developed individually and within groups. This course may be repeated for credit if the research areas differ. Notes: This will be an irregularly scheduled course intended for advanced master's students who want to pursue a specific topic to more depth than a typical course offers at the master's level. It will prepare students to undertake their individual research topics when they move on to pursue a Ph.D. program, or enter a research environment in their chosen professional careers. Offered by Electrical & Comp. Engineering. May be repeated within the degree for a maximum 9 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: Completion of at least one 600 or 700 level course in the Research Topic area; and permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Research

Grading:
This course is graded on the Graduate Regular scale.

900 Level Courses

ECE 998: *Doctoral Dissertation Proposal.* 1-12 credits.
Work on research proposal that forms basis for doctoral dissertation. Notes: No more than 24 credits of ECE 998 and 999 may be applied to doctoral degree requirements. Offered by Electrical & Comp. Engineering. May be repeated within the degree.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

ECE 999: *Doctoral Dissertation.* 1-12 credits.
Formal record of commitment to doctoral dissertation research under direction of ECE faculty member. Notes: Students must complete minimum 12 credits of doctoral proposal (ECE 998) and doctoral dissertation research (ECE 999) Maximum of 24 credits of ECE 998 and 999 may be applied to degree. Students who choose to take less than 24 credits of ECE 998 and 999 may earn remaining credits from approved course work. Students cannot enroll in ECE 999 before research proposal accepted and approved by dissertation committee. Offered by Electrical & Comp. Engineering. May be repeated within the degree.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy.

Enrollment is limited to Graduate level students.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

Elementary Education (ELED)

200 Level Courses

ELED 242: *Foundations of Elementary Education.* 3 credits.
Examines the historical, philosophical, and sociological foundations of education as they relate to elementary schools, with a particular emphasis on teaching a culturally diverse population. Develops an understanding of the relationship between society and education. Offered by School of Education. Limited to two attempts.

Recommended Prerequisite: EDUC 200: Introduction to Teaching
EDUC 301: Introduction to Diverse Learners

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ELED 257: *Integrating Technology in PreK-6.* 3 credits.
Introduces technology as a tool for working with children across a range of contexts, including early childhood and elementary classrooms. Explores multiple approaches and strategies for technology use in diverse settings. Offered by School of Education. Limited to two attempts.

Mason Core: Info Tech & Computing

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ELED 258: *Children's Literature for Teaching in Diverse Settings.* 3 credits.
Introduces children's literature as a tool for working with children across a range of contexts, including early childhood and elementary classrooms. Explores multiple approaches and strategies for literature use in diverse settings with an eye towards format, genre, curricular connections, and overall utility. Offered by School of Education. Limited to three attempts.

Mason Core: Literature

Recommended Prerequisite: C or better in ENGH 101

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

300 Level Courses

ELED 305: *Foundations of Elementary Methods and Management.* 3 credits.
Introduces general methods of teaching and management in elementary schools with an emphasis on the intersection of the foundational principles of curriculum, instruction, assessment, and management with clinical/practical experiences to plan instruction for diverse learners. Note: This course has a required field component. Offered by School of Education. Limited to two attempts.

Registration Restrictions:
Enrollment is limited to students with a major in Elementary Education.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ELED 342: *Foundations of Elementary Education.* 3 credits.
Examines the historical, philosophical, and sociological foundations of education as they relate to elementary schools, with a particular emphasis on teaching a culturally diverse population. Develops an understanding of the relationship between society and education. Offered by School of Education. Limited to two attempts.

Recommended Prerequisite: EDUC 200: Introduction to Teaching EDUC 301: Introduction to Diverse Learners

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ELED 357: *Integrating Technology in PreK-6.* 3 credits.
Introduces technology as a tool for working with children across a range of contexts, including early childhood and elementary classrooms. Explores multiple approaches and strategies for technology use in diverse settings. Offered by School of Education. Limited to two attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ELED 390: *Clinical Experience: Theory to Practice Integration.* 1 credit.
Provides a supervised clinical experience and supporting seminar discussion for one full semester in an accredited professional development school. Engages students in observations and scaffolded management and instructional opportunities in a PK-6 classroom. This course has a required field component. Offered by School of Education. May be repeated within the degree for a maximum 3 credits.

Schedule Type: Fieldwork

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

ELED 401: *Classroom Management and Instructional Strategies for Diverse Learners.* 3 credits.
Examines classroom management techniques and instructional strategies for creating an inclusive community and designing and implementing engaging, effective instruction in diverse elementary classrooms. Explores the intersection of and application of management and instruction principles through clinical/practical experiences with diverse learners. Note: This course has a required field component. Offered by School of Education. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (ELED 305[C] or 305[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment limited to students in a Bach of Science in Education degree.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ELED 402: *Differentiating Elementary Methods and Management.* 3 credits.
Provides an introduction to differentiated instruction and management for children in grades PK#6. Emphasizes the assessment of learners, incorporation of varied instructional and management strategies to meet the needs of all learners. Offered by School of Education. Limited to two attempts.

Registration Restrictions:
Enrollment is limited to students with a major in Elementary Education.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Special scale.

ELED 410: *Emergent and Early Literacy.* 3 credits.
Provides research-based introduction to literacy teaching and learning for diverse early elementary children. Emphasizes oral and print-based language development; emergent and early literacy pedagogy. Introduces assessment and instruction of phonological awareness, phonics and word study, decoding, vocabulary, and comprehension. Offered by School of Education. Limited to two attempts.

Registration Restrictions:
Enrollment is limited to students with a major in Elementary Education.

Schedule Type: Lecture

Grading:

This course is graded on the Undergraduate Special scale.

ELED 411: *Reading Development, Processes, Assessment, and Pedagogy.* 3 credits.
Provides research-based introduction to literacy teaching and learning for elementary children. Emphasizes reading development and processes, reading assessment, and reading pedagogy. Addresses assessment and instruction of reading comprehension, fluency, vocabulary and word study, as well as specific reading disabilities. Investigates of appropriate use of children's literature in classrooms. Offered by School of Education. Limited to two attempts.

Recommended Prerequisite: ELED 410

Registration Restrictions:
Enrollment limited to students in a Bach of Science in Education degree.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ELED 412: *Writing Development, Processes and Pedagogy.* 3 credits.
Provides research-based introduction to literacy teaching and learning for elementary children. Emphasizes writing development; writing assessment; and writing instruction. Addresses writing with exceptional learners; digital literacy; and the creation of a comprehensive literacy instructional block. Offered by School of Education. Limited to two attempts.

Recommended Prerequisite: Must be taken in programmatic sequence; ELED 410 and ELED 411

Registration Restrictions:
Enrollment limited to students in a Bach of Science in Education degree.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ELED 420: *Arts Integration in Elem Ed.* 2 credits.
Introduces the value and practical application of integrating the arts into the curriculum. Discusses and develops basic skills in creative drama, puppetry, music, creative writing, art and movement. Offered by School of Education. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Special scale.

ELED 421: *STEM in the Elementary Classroom.* 3 credits.
Develops skills and abilities in integrated STEM teaching at the elementary level, applications of math, science and technology through engineering design, safety practices, and creation of integrated curricula. Examines STEM teaching based on contemporary theory, practice, and standards. Offered by School of Education. Limited to two attempts.

Registration Restrictions:
Enrollment is limited to students with a major in Elementary Education.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Special scale.

ELED 422: *Collaboration in PK-6 Inclusive School Settings.* 3 credits.
Examines knowledge, dispositions, and skills necessary for collaboration within inclusive elementary school environments. Explores communication and problem-solving skills necessary for working with a variety of school professionals. This course requires 15 hours of field experience. Offered by School of Education. Limited to two attempts.

Registration Restrictions:
Enrollment limited to students in a Bach of Science in Education degree.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ELED 443: *Children, Family, Culture, and Schools, 4-12 Year Olds.* 3 credits.
Examines child and family development and ways children, families, schools, and communities interrelate. Links children's developing physical, social, emotional, and cognitive abilities to planning curriculum and developing instructional strategies. Offered by School of Education. Limited to two attempts.

Recommended Prerequisite: EDUC 200, EDUC 301

Registration Restrictions:
Enrollment is limited to students with a major in Elementary Education.

Enrollment limited to students in a Bach of Science in Education degree.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ELED 444: *Curriculum and Methods of Teaching in Elementary Education.* 3 credits.
Introduces general methods of teaching and management in elementary schools with an emphasis on using the foundational principles of curriculum, instruction, assessment, and management to plan instruction for diverse learners. This course requires 15 hours of field observation. Offered by School of Education. Limited to two attempts.

Recommended Prerequisite: Must be taken in programmatic sequence.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ELED 445: *Differentiating Elementary Methods and Management.* 3 credits.
Provides an introduction to differentiated instruction and management for children in grades PK#6. Emphasizes the assessment of learners, incorporation of varied instructional and management strategies to meet the needs of all learners. This course requires 15 hours of field observation. Offered by School of Education. Limited to two attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ELED 452: *Mathematics Methods for the Elementary Classroom.* 3 credits.
Introduces methods for teaching all children topics in arithmetic, geometry, algebra, probability, and statistics in elementary grades. Focuses on using manipulatives and technologies to explore

mathematics and solve problems. Offered by School of Education. Limited to two attempts.

Registration Restrictions:
Enrollment is limited to students with a major in Elementary Education.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ELED 453: *Science Methods for the Elementary Classroom.* 3 credits.
Develops skills and abilities in science teaching methods, applications of technology, safety practices, and creation of integrated science curricula. Examines science teaching based on contemporary theory, practice, and standards. Notes: Requires field experience in public schools. Offered by School of Education. Limited to two attempts.

Registration Restrictions:
Enrollment is limited to students with a major in Elementary Education.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ELED 454: *Methods of Teaching Social Studies and Integrating Fine Arts in the Elementary Classroom.* 3 credits.
Focuses on the design and delivery of standards-based integrated curriculum centered on the social sciences. Includes integration of fine arts and examines the central role of the arts in learning. Note: This course requires 15 hours of field observation. Offered by School of Education. Limited to two attempts.

Registration Restrictions:
Enrollment is limited to students with a major in Elementary Education.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ELED 455: *Literacy Teaching and Learning in Diverse Elementary Classrooms I.* 3 credits.
Provides research-based introduction to literacy teaching and learning for children ages 4-12 years. Emphasizes language development; reading and writing processes; emergent literacy; culture, families, and literacy; and literacy integration in the curriculum. Offered by School of Education. Limited to two attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ELED 456: *Literacy Teaching and Learning in Diverse Elementary Classrooms II.* 3 credits.
Provides research-based introduction to literacy teaching and learning for PK-6 learners. Emphasizes literacy and language processes and development; connections among cultures, families, and literacy; and literacy integration in curriculum. Offered by School of Education. Limited to two attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ELED 459: *Research and Assessment in Elementary Education.* 3 credits.
Provides teacher candidates an understanding of research paradigms utilizing systematic evidence to improve practice and further skills in assessment of learning outcomes. Emphasizes linking research and practice, making instructional decisions based on systematically collected data. Offered by School of Education. Limited to two attempts.

Specialized Designation: Writing Intensive in Major

Registration Restrictions:
Required Prerequisite: ELED 490[*C].
[*] May be taken concurrently.
[C] Requires minimum grade of C.

Enrollment is limited to students with a major in Elementary Education.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ELED 480: *Practicum in Elementary Education.* 3 credits.
Provides a supervised clinical experience for one full semester in an accredited professional development school. Teacher Candidates engage in observations and scaffolded management and instruction opportunities under the guidance of PK-6 Advanced Mentor Teacher/ Mentor Teacher. Offered by School of Education. Limited to two attempts.

Registration Restrictions:
Enrollment is limited to students with a major in Elementary Education.

Schedule Type: Fieldwork

Grading:
This course is graded on the Satisfactory/No Credit scale.

ELED 490: *Internship in Elementary Education.* 3-9 credits.
Provides intensive supervised clinical experience for one full semester in an accredited professional development school. Requires observation, coteaching and teaching of lessons in PK-6 classrooms. Offered by School of Education. May be repeated within the degree for a maximum 9 credits.

Mason Core: Capstone

Recommended Corequisite: ELED 459

Registration Restrictions:
Required Prerequisite: ELED 480[C].
[C] Requires minimum grade of C.

Enrollment is limited to students with a major in Elementary Education.

Enrollment limited to students in a Bach of Science in Education or Post-Baccalaureate Certificate degrees.

Schedule Type: Internship

Grading:
This course is graded on the Satisfactory/No Credit scale.

ELED 491: *Internship Seminar in Elem Ed.* 1 credit.
Develops and refines skills as a critical, reflective practitioner with an explicit focus on effects of teacher candidates' actions on others. Offered by School of Education. Limited to three attempts.

Registration Restrictions:
Required Prerequisite: ELED 490[*C].
[*] May be taken concurrently.
[C] Requires minimum grade of C.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

500 Level Courses

ELED 542: *Foundations of Elementary Education.* 3 credits.
Examines the historical, philosophical, and sociological foundations of education as they relate to elementary schools, with a particular emphasis on teaching a culturally diverse population. Develops an understanding of the relationship between society and education. School-based field experience required. Offered by School of Education. Limited to two attempts. Equivalent to EDUC 542.

Recommended Prerequisite: Admission to the Elementary Education licensure program.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

ELED 543: *Children, Family, Culture, and Schools, ages 4-12 Years.* 3 credits.
Examines child and family development and ways children, families, schools, and communities interrelate. Links children's developing physical, social, emotional, and cognitive abilities to planning curriculum and developing instructional strategies. Notes: Requires school-based field experience. Offered by School of Education. May not be repeated for credit. Equivalent to EDUC 543.

Recommended Prerequisite: Admission to the Elementary Education licensure program.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

ELED 544: *Introduction to Elementary Methods and Management.* 3 credits.
Introduces general methods of teaching and management in elementary schools with an emphasis on using the foundational principles of curriculum, instruction, assessment, and management to plan instruction for diverse learners. Offered by School of Education. May not be repeated for credit. Equivalent to EDCI 544.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

ELED 545: *Differentiating Elementary Methods and Management.* 3 credits.
Provides an introduction to differentiated instruction and management for children in grades PK#6. Emphasizes the assessment of learners, incorporation of varied instructional and management strategies to meet the needs of all learners. This course requires 15 hours of field observation. Offered by School of Education. May not be repeated for credit. Equivalent to EDCI 545.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

ELED 552: *Mathematics Methods for the Elementary Classroom.* 3 credits.
Introduces methods for teaching topics in arithmetic, geometry, algebra, probability, and statistics in elementary grades. Focuses on using manipulatives and technologies to explore mathematics and solve problems. Notes: Requires field experience in public schools. Offered by School of Education. May not be repeated for credit. Equivalent to EDCI 552.

Recommended Prerequisite: Admission to the Elementary Education licensure program.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

ELED 553: *Science Methods for the Elementary Classroom.* 3 credits.
Develops skills and abilities in science teaching methods, applications of technology, safety practices, and creation of integrated science curricula. Examines science teaching based on contemporary theory, practice, and standards. Notes: Requires field experience in public schools. Offered by School of Education. May not be repeated for credit. Equivalent to EDCI 553.

Recommended Prerequisite: Admission to the Elementary Education licensure program.

Registration Restrictions:

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

ELED 554: *Methods of Teaching Social Studies and Integrating Fine Arts in the Elementary Classroom.* 3 credits.
Focuses on the design and delivery of standards-based integrated curriculum centered on the social sciences. Includes integration of fine arts and examines the central role of the arts in learning. Note: School-based field experience required. Offered by School of Education. May not be repeated for credit. Equivalent to EDCI 554.

Recommended Prerequisite: Admission into Elementary Education graduate program; must be taken in programmatic sequence.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

ELED 555: *Literacy Teaching and Learning in Diverse Elementary Classrooms I.* 3 credits.
Provides research-based introduction to literacy teaching and learning for ages 4-12 years. Emphasizes language development; reading and writing processes; emergent literacy; culture, families, and literacy; and literacy integration in the curriculum. Notes: School-based field experience required. Offered by School of Education. May not be repeated for credit. Equivalent to EDCI 555.

Recommended Prerequisite: Admission to the Elementary Education licensure program.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

ELED 556: *Literacy Teaching and Learning in Diverse Elementary Classrooms II.* 3 credits.
Provides research-based introduction to literacy teaching and learning for PK-6 learners. Emphasizes literacy and language processes and development; connections among cultures, families, and literacy; and literacy integration in curriculum. Note: School-based field experience required. Offered by School of Education. May not be repeated for credit. Equivalent to EDCI 556.

Recommended Prerequisite: Admission to the Elementary Education Licensure program.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

ELED 559: *Research and Assessment in Elementary Education.* 1-3 credits.
Provides an understanding of research paradigms utilizing systematic evidence to improve practice and further skills in assessment of learning outcomes. Emphasizes the linkage of research and practice and making instructional decisions based on systematically collected data. Offered by School of Education. May be repeated within the degree for a maximum 3 credits. Equivalent to EDCI 559.

Recommended Prerequisite: Capstone course for degree must be taken last in programmatic sequence.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

700 Level Courses

ELED 790: *Internship in Elementary Education.* 1-6 credits.
Provides intensive supervised clinical experience for one full semester in an accredited professional development school. Provides supervision for teacher candidates in a school placement setting that includes observations and seminar experiences. Offered by School of Education. May be repeated within the degree for a maximum 9 credits. Equivalent to EDCI 790, SEED 793, SEED 794, SEED 795.

Recommended Prerequisite: Admission to Elementary Education program; completion of licensure tests, endorsement requirements, and required coursework.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Graduate Special scale.

Engineering (ENGR)

100 Level Courses

ENGR 107: *Introduction to Engineering.* 2 credits.
Introduces engineering profession fundamentals and problem-solving. Topics include description of engineering disciplines, functions of the engineer, professionalism, ethics and registration, problem solving and representation of technical information, estimation and approximations,

and analysis and design. Offered by Electrical & Comp. Engineering. Limited to two attempts.

Registration Restrictions:
Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

300 Level Courses

ENGR 395: *Engineering Internship.* 0-3 credits.
Students will participate in experiential learning in an industrial setting. Students must identify work opportunity and seek advisor approval prior to registering. Offered by Electrical & Comp. Engineering. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Completion of at least 30 credit hours.

Schedule Type: Internship

Grading:
This course is graded on the Satisfactory/No Credit scale.

ENGR 396: *Engineering Co-Op I.* 0-3 credits.
1st Semester of a multi-semester co-operative education experience. Students will apply concepts and theories from the classroom to an industrial setting. Students must identify work opportunity and seek advisor approval prior to registering. Offered by Electrical & Comp. Engineering. Limited to two attempts.

Recommended Prerequisite: Completion of at least 30 credit hours.

Schedule Type: Lecture

Grading:
This course is graded on the Satisfactory/No Credit scale.

ENGR 397: *Engineering Co-Op II.* 0-3 credits.
Second Semester of a multi-semester co-operative education experience. Students will apply concepts and theories from the classroom to an industrial setting. Students must continue employment from ENGR 396 and seek advisor approval prior to registering. Offered by Electrical & Comp. Engineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisite: ENGR 396[C].
[C] Requires minimum grade of C.

Schedule Type: Internship

Grading:
This course is graded on the Satisfactory/No Credit scale.

ENGR 398: *Applied Engineering Abroad.* 3 credits.
Introduces students to applications of engineering processes outside USA. The students will gain hands-on project management, critical thinking, intercultural and career skills by exploring engineering aspects such as auto assembly, airliner manufacturing, metropolitan infrastructure, and bridge designs. By visiting technology museums, students will learn to appreciate the rich history of the country's technology and manufacturing. Offered by Electrical & Comp. Engineering. Limited to two attempts.

Mason Core: Global Understanding

Registration Restrictions:
Enrollment limited to students with a class of Junior, Senior Plus or Senior.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

ENGR 498: *Independent Study in Engineering.* 1-3 credits.
Directed self-study of special topics of current interest in ENGR. Notes: May be repeated if topics substantially different. Offered by Electrical & Comp. Engineering. May be repeated within the term for a maximum 6 credits.

Registration Restrictions:
Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

ENGR 499: *Special Topics in Engineering.* 0-4 credits.
Topics of special interest to undergraduates. Notes: May be repeated if topics substantially different. Offered by Electrical & Comp. Engineering. May be repeated within the term for a maximum 11 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

English (ENGH)

100 Level Courses

ENGH 100: *Composition for Multilingual Writers.* 4 credits.
Intensive practice in drafting, revising, and editing expository essays of some length and complexity. Studies logical, rhetorical, and linguistic structure of expository prose, with attention to particularly difficult aspects of the language for multilingual writers. Methods and conventions of preparing research papers. Notes: Students must attain minimum grade of C to fulfill degree requirements. Offered by English. Limited to three attempts. Equivalent to ENGH 101, ENGH 122.

Mason Core: Written Communication (lower)

Schedule Type: Lecture, Recitation

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 101: *Composition.* 3 credits.
Provides student writers with the skills and mindsets needed to effectively respond to a range of academic and public writing situations through particular attention to rhetorical flexibility and inquiry-based research. Students learn to engage in a process of discovery and

consider diverse perspectives before making a judgment, taking a stance, or proposing a solution. Students learn to analyze and respond to a range of rhetorical situations (writing in various genres for different audiences and purposes); develop strategies to critically read a range of non-fiction genres; engage in in-depth inquiry and writing processes; locate, evaluate, and synthesize source material to discover and answer complex questions; and reflect on what they are learning and how they are applying new knowledge, as well as on their research and writing processes. Offered by English. Limited to three attempts. Equivalent to ENGH 100, ENGH 122.

Mason Core: Written Communication (lower)

Specialized Designation: Mason Impact.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 121: *Enhanced Composition For Multilingual Writers of English I.* 3 credits.
Provides intensive practice in drafting, revising, and editing essays in common academic genres such as description, exposition, and analysis, with additional language support for building English fluency. Addresses logical, rhetorical, and linguistic structures of expository prose. This course is the first of a two-part course for students in the Undergraduate International Pathway Program. Offered by English. Limited to three attempts.

Specialized Designation: Mason Impact.

Recommended Prerequisite: Admission to the Undergraduate International Pathway Program for international students.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Special scale.

ENGH 122: *Enhanced Composition For Multilingual Writers of English II.* 3 credits.
Provides intensive practice in drafting, revising and editing essays in common academic genres such as argumentation and research based writing, with additional language support for building English fluency. Addresses logical, rhetorical, and linguistic structures of expository prose, and builds critical reading strategies. This course is the second of a two-part course for students in the Undergraduate International Pathway Program. Notes: Students must attain minimum grade of C to fulfill Mason Core degree requirement for written communication (lower level). Offered by English. Limited to three attempts. Equivalent to ENGH 100, ENGH 101.

Specialized Designation: Mason Impact.

Recommended Prerequisite: Satisfactory progress in ENGL 121/ ENGH 121.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Special scale.

200 Level Courses

ENGH 201: *Reading and Writing about Texts.* 3 credits.
Close analysis of literary texts, including but not limited to poetry, fiction, and drama. Emphasizes reading and writing exercises to develop basic interpretive skills. Examines figurative language, central ideas, relationship between structure and meaning, narrative point of view. Offered by English. Limited to three attempts.

Mason Core: Literature

Recommended Prerequisite: 3 credits of 100-level English.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 202: *Texts and Contexts.* 3 credits.
Studies literary texts within the framework of culture. Examines texts within such categories as history, gender, sexuality, religion, race, class, and nation. Notes: Builds on reading and writing skills taught in ENGH 101. Offered by English. May be repeated within the term.

Mason Core: Literature

Recommended Prerequisite: 3 credits of 100-level English.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 203: *Western Literary Tradition.* 3 credits.
Major works of Western literature in historical progression. Focuses on writers such as Homer, Sophocles, Euripides, Dante, Cervantes, Machiavelli, and Montaigne. Notes: All readings are in modern English. Courses build on reading and writing skills taught in ENGH 101. Offered by English. Limited to three attempts.

Mason Core: Literature

Recommended Prerequisite: 3 credits of 100-level English.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 204: *Western Literary Traditions.* 3 credits.
Major works of Western literature in historical progression. Covers writers such as Moliere, Mme. de Lafayette, Goethe, Ibsen, Flaubert, Dostoyevski, Tolstoy, Mann, Kafka, Borges, and Soyinka. All readngs are in modern English. Notes: Courses build on reading and writing skills taught in ENGH 101. Offered by English. Limited to three attempts.

Mason Core: Literature

Recommended Prerequisite: 3 credits of 100-level English.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

300 Level Courses

ENGH 300: *Cover to Cover.* 3 credits.
Introduction to various topics in English; many have an interdisciplinary emphasis. Appropriate for non-majors. Topic changes each time course is offered. Notes: May be repeated when topic is different. Offered by English. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: ENGL 101/ENGH 101

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 301: *The Fields of English.* 3 credits.
Introduces the fields of English studies, focusing on discipline-specific forms of practice within the concentrations in the major. Explores central concepts including reading, language, medium, text, author/producer. Maps histories and contexts of English as a discipline. Offered by English. Limited to three attempts.

Specialized Designation: Mason Impact.

Recommended Prerequisite: Satisfaction of University requirements in 100-level English and in Mason Core literature.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 302: *Advanced Composition.* 3 credits.
Intensive practice in writing and analyzing expository forms such as essay, article, proposal, and technical or scientific reports with emphasis on research related to student's major field. Notes: Students must attain minimum grade of C to fulfill degree requirements. Schedule of Classes designates particular sections of ENGH 302 in business, humanities, natural sciences and technology, and social sciences. Offered by English. Limited to three attempts.

Mason Core: Written Communication (upper)

Specialized Designation: Mason Impact.

Recommended Prerequisite: Completion of 45 credits.

Registration Restrictions:
Required Prerequisites: (ENGH 100[C], 100[XS], 101[C], 101[XS], U101, 122[C], 122[XS], ENGL 100[C], 101[C], U101, 122[C], HNRS 110[C], 110[XS], NCLC 203[C], INTS 203[C] or 203[XS]) and (ARAB 325[D], 325[XS], 325[XP], L325, CHIN 310[D], 310[XS], 310[XP], 311[D], 311[XS], 311[XP], 325[D], L325, 325[XS], 325[XP], 328[D], 328[XS], 328[XP], CLAS 250[D], U250, 250[XS], 250[XP], 260[D], 260[XS], 260[XP], 340[D], 340[XS], 340[XP], 350[D], 350[XS], 350[XP], 360[D], 360[XS], 360[XP], 380[D], 380[XS], 380[XP], ENGH 201[D], U201, 201[XS], 201[XP], 202[D], U202, 202[XS], 202[XP], 203[D], U203, 203[XS], 203[XP], 204[D], U204, 204[XS], 204[XP], FREN 325[D], L325, 325[XS], 325[XP], 329[D], 329[XS], 329[XP], FRLN 330[D], 330[XS], 330[XP], GERM 325[D], 325[XS], 325[XP], ITAL 320[D], 320[XS], 320[XP], 325[D], L325, 325[XS], 325[XP], JAPA 340[D], 340[XS], 340[XP], KORE 311[D], 311[XS], 311[XP], PHIL 253[D], 253[XS], 253[XP], RELI 235[D], 235[XS], 235[XP], U235, 333[D], 333[XS], 333[XP], RUSS 325[D], 325[XS], 325[XP], 326[D], 326[XS], 326[XP], 327[D], 327[XS], 327[XP], SPAN 325[D], L325, 325[XS], 325[XP], ENGH 2---, INTS 101[D], 101[XS], 101[XP], NCLC 101[D], HNRS 131[D], 131[XS], 131[XP], ELED 358[D], L358, 358[XS], 358[XP], HIST 334[D], 334[XS] or 334[XP]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.
[D] Requires minimum grade of D.
[XP] Requires minimum grade of XP.

Students with a class of Freshman may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 303: *Humanities College to Career.* 1 credit.
Focuses on career choices and effective self-presentation for soon-to-be graduating students with majors in the humanities. Explores how skills typically learned In humanities majors can be leveraged for a successful transition to post-graduation employment. Offered by English. Limited to three attempts. Equivalent to FRLN 309, HIST 385, PHIL 393, UNIV 420.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 304: *Topics: Literary Surveys.* 3 credits.
Advanced introduction to major movements and representative figures of two or more centuries or periods of American, British, European, or world literature. Notes: May be repeated when topic is different. Offered by English. May be repeated within the term for a maximum 6 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: Satisfaction of University requirements in 100-level English and in Mason Core literature.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 305: *Dimensions of Writing and Literature.* 3 credits.
Teaches students the conventions of writing in literary studies while emphasizing writing process. Develops interpretive skills for further study in the major though the teaching of in-depth close reading, intertextual analysis, and critical reading in scholarship. Offered by English. Limited to three attempts.

Specialized Designation: Mason Impact., Writing Intensive in Major

Recommended Prerequisite: Satisfaction of University requirements in 100-level English and in Mason Core literature.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 307: *English Grammar.* 3 credits.
Overview of grammatical structure of English including word classes, phrases, and complex sentences. English grammar analyzed using modern syntactic theory. Students engage in language description through problem solving. Offered by English. Limited to three attempts. Equivalent to LING 307.

Recommended Prerequisite: Satisfaction of University requirements in 100-level English and in Mason Core literature.

Schedule Type: Lecture, Recitation

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 308: *Theory and Inquiry.* 3 credits.
Investigates a problem or debate central to the discipline of English. Teaches students how to read, understand, and engage with theoretical texts. Notes: May be repeated for credit when topic is different. Offered by English. May be repeated within the term.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 309: *Topics in Literature.* 1-3 credits.
Studies literature by topics, such as women in literature, science fiction, and literature of the avant garde. Notes: Topic varies. May be repeated for credit when topic is different. Offered by English. May be repeated within the term.

Specialized Designation: Topic Varies

Recommended Prerequisite: Satisfaction of University requirements in 100-level English and in Mason Core literature.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 310: *Topics: Women and Literature.* 3 credits.
Explores experiences of women as both authors and subjects of imaginative literature. Notes: May be repeated when topic is different. Offered by English. May be repeated within the term for a maximum 6 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: Satisfaction of University requirements in 100-level English and in Mason Core literature.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 315: *Folklore and Folklife.* 3 credits.
Topics include folktales, personal narratives, legends, proverbs, jokes, folk songs, folk art and craft, and folk architecture. Considers ethnicity, community, family, festival, folklore in literature, and oral history. Discusses traditions in students' own lives. Offered by English. Limited to three attempts.

Mason Core: Arts

Recommended Prerequisite: Satisfaction of University requirements in 100-level English and in Mason Core literature.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 316: *Topics in Myth and Literature.* 3 credits.
Studies how traditional mythologies are reflected in English and American literature and other texts as themes, motifs, and patterns. Notes: May be repeated when topic is different. Offered by English. May be repeated within the term for a maximum 6 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: Satisfaction of University requirements in 100-level English and in Mason Core literature.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 318: *Introduction to Cultural Studies.* 3 credits.
Introduces interpretive practices associated with cultural studies. Offered by English. Limited to three attempts.

Recommended Prerequisite: Satisfaction of University requirements in 100-level English and in Mason Core literature.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 319: *Popular Culture.* 3 credits.
Emphasizes popular fiction and adaptation of popular prose genres to media that have strong verbal and visual elements. Relationship between verbal and nonverbal elements of media such as film, comics, and radio. Offered by English. May be repeated within the term for a maximum 6 credits.

Recommended Prerequisite: Satisfaction of University requirements in 100-level English and in Mason Core literature.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 320: *Literature of the Middle Ages.* 3 credits.
Selected English narrative, dramatic, and homiletic literature written between 1300 and 1500, exclusive of Chaucer. Offered by English. Limited to three attempts.

Recommended Prerequisite: Satisfaction of University requirements in 100-level English and in Mason Core literature.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 321: *English Poetry and Prose of the 16th Century.* 3 credits.
Poetry and prose of early Renaissance in England. Offered by English. Limited to three attempts.

Recommended Prerequisite: Satisfaction of University requirements in 100-level English and in Mason Core literature.

Schedule Type: Lecture

Grading:

This course is graded on the Undergraduate Regular scale.

ENGH 322: *Shakespeare.* 3 credits.
Introduction to Shakespeare's art. Offered by English. Limited to three attempts.

Recommended Prerequisite: Satisfaction of University requirements in 100-level English and in Mason Core literature.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 323: *Shakespeare: Special Topics.* 3 credits.
Study of one aspect of Shakespeare's art or critical issues surrounding it. Offered by English. May be repeated within the degree for a maximum 9 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: Satisfaction of University requirements 100-level English and in Mason Core literature.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 324: *English Renaissance Drama.* 3 credits.
Major dramas and dramatists of English Renaissance, such as Lyly, Marlowe, Jonson, Middleton, Webster, and Ford. Offered by English. Limited to three attempts.

Recommended Prerequisite: Satisfaction of University requirements in 100-level English and in Mason Core literature.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 325: *English Poetry and Prose of the 17th Century.* 3 credits.
English poetry and prose from 1603 to 1688, excluding Milton. Offered by English. Limited to three attempts.

Recommended Prerequisite: Satisfaction of University requirements in 100-level English and in Mason Core literature.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 330: *Augustan Age: 1660-1745.* 3 credits.
English literature from late 17th century to mid-18th century. Includes Dryden, Rochester, Behn, Defoe, Swift, Pope, and Montagu. Offered by English. Limited to three attempts.

Recommended Prerequisite: Satisfaction of University requirements in 100-level English and in Mason Core literature.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 331: *Age of Sensibility: 1745-1800.* 3 credits.
English literature of later 18th century, time of American and French Revolutions, including new developments in novel, drama, biography, and poetry. Includes Johnson, Boswell, Blake, Goldsmith, Sterne, Gray, Cowper, Burney, Godwin, and Wollstonecraft. Offered by English. Limited to three attempts.

Recommended Prerequisite: Satisfaction of University requirements in 100-level English and in Mason Core literature.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 332: *Restoration and 18th Century Drama.* 3 credits.
Restoration comedy of manners, sentimental comedy, and neoclassical and bourgeois tragedy. Theories of drama and conventions of staging. Includes writers such as Wycherley, Behn, Congreve, and Cowley. Offered by English. Limited to three attempts.

Recommended Prerequisite: Satisfaction of University requirements in 100-level English and in Mason Core literature.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 333: *British Novel of the 18th Century.* 3 credits.
English novel from its beginnings through turn of 19th century. Covers works by Behn, Defoe, Haywood, Richardson, Fielding, Sterne, Burney, Smollett, and Austen. Offered by English. Limited to three attempts.

Recommended Prerequisite: Satisfaction of University requirements in 100-level English and in Mason Core literature.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 334: *British Poetry of the Romantic Period.* 3 credits.
Works of major poets of Romantic period: Blake, Wordsworth, Coleridge, Byron, Shelley, and Keats. Offered by English. Limited to three attempts.

Recommended Prerequisite: Satisfaction of University requirements in 100-level English and in Mason Core literature.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 335: *Prose and Poetry of the Victorian Period.* 3 credits.
Poetry and nonfiction prose by such authors as Carlyle, Arnold, Tennyson, Elizabeth Barrett Browning, Robert Browning, Ruskin, Mill, and Wilde. Offered by English. Limited to three attempts.

Recommended Prerequisite: Satisfaction of University requirements in 100-level English and in Mason Core literature.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 336: *British Novel of the 19th Century.* 3 credits.
Works by Dickens, Thackeray, the Brontes, Eliot, Trollope, and Hardy. Offered by English. Limited to three attempts.

Recommended Prerequisite: Satisfaction of University requirements in 100-level English and in Mason Core literature.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 337: *British Poetry after 1900.* 3 credits.
Emphasizes Hardy, Yeats, Lawrence, Graves, Auden, Thomas, and Hughes. Fiction works employing poetic techniques, such as Joyce's Ulysses, may also be studied. Offered by English. Limited to three attempts.

Recommended Prerequisite: Satisfaction of University requirements in 100-level English and in Mason Core literature.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 338: *British Novel after 1900.* 3 credits.
Works by Conrad, Forster, Lawrence, Joyce, Woolf, Greene, Lessing, Spark, and Fowles. Offered by English. Limited to three attempts.

Recommended Prerequisite: Satisfaction of University requirements in 100-level English and in Mason Core literature.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 339: *British and Irish Drama after 1900.* 3 credits.
English or Irish drama from Yeats to the present. Plays by authors such as Yeats, Synge, O'Casey, Osborne, Wesker, Pinter, Friel, Churchill, and Gems. Offered by English. Limited to three attempts.

Recommended Prerequisite: Satisfaction of University requirements in 100-level English and in Mason Core literature.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 340: *Early American Literature.* 3 credits.
Works of first 200 years of American literature, including Edwards, Franklin, Irving, Cooper, and Bryant. Offered by English. Limited to three attempts.

Recommended Prerequisite: Satisfaction of University requirements in 100-level English and in Mason Core literature.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 341: *Literature of the American Renaissance.* 3 credits.
Major writers of American Renaissance (1830-1865), with emphasis on Emerson, Thoreau, Hawthorne, Melville, Whitman, Poe, Stowe, Douglass, and Dickinson. Offered by English. Limited to three attempts.

Recommended Prerequisite: Satisfaction of University requirements in 100-level English and in Mason Core literature.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 342: *Post-Civil War American Literature, 1865-1920.* 3 credits.
Study of American literature of the Post-Civil War period (1865-1920). A range of genres will be considered with emphasis on the historical contexts of literary production. Attention will be paid to the literary modes of realism, regionalism, naturalism, and modernism. Offered by English. Limited to three attempts.

Recommended Prerequisite: Satisfaction of University requirements in lower division composition and Mason Core literature

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 343: *Development of the American Novel to 1914.* 3 credits.
Major American novels of the pre-World War I period with emphasis on Brown, Cooper, Hawthorne, Melville, Twain, Howells, James, Crane, Dreiser, Norris, and others. Offered by English. Limited to three attempts.

Recommended Prerequisite: Satisfaction of University requirements in 100-level English and in Mason Core literature.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 344: *Development of the American Novel since 1914.* 3 credits.
Works by Fitzgerald, Hemingway, Faulkner, Dos Passos, Wolfe, Bellow, and Nabokov. Offered by English. Limited to three attempts.

Recommended Prerequisite: Satisfaction of University requirements in 100-level English and in Mason Core literature.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 345: *American Drama of the 20th Century.* 3 credits.
American drama of 20th century, with special attention to playwrights such as Glaspell, O'Neill, Miller, Williams, Fornes, and Albee. Offered by English. Limited to three attempts.

Recommended Prerequisite: Satisfaction of University requirements in 100-level English and in Mason Core literature.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 346: *American Poetry of the 20th Century.* 3 credits.
Emphasizes work of Robinson, Frost, Stevens, Williams, Pound, Crane, Eliot, and Lowell. May include work of fiction employing poetic techniques, such as Faulkner's The Sound and the Fury . Offered by English. Limited to three attempts.

Recommended Prerequisite: Satisfaction of University requirements in 100-level English and in Mason Core literature.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 348: *Beginnings of African American Literature Through 1865.* 3 credits.
Concentrating on such poets as Phillis Wheatley, Jupiter Hammon, Lucy Terry, and George Moses Horton, examines significant African American literary, social, and political texts produced through 1865. Special attention to narrative accounts of enslavement and freedom by Frederick Douglass, Harriet Jacobs, and Olaudah Equiano; political writings and orations of David Walker and Sojourner Truth; fiction of Harriet Wilson and William Wells Brown; and nonwritten cultural artifacts such as slave songs and spirituals. Offered by English. Limited to three attempts.

Recommended Prerequisite: Satisfaction of University requirements in 100-level English and in Mason Core literature.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 349: *African American Literature: Reconstruction to 1903.* 3 credits.
Emphasizes several major writers from Reconstruction to beginning of 20th century, concluding with W.E.B. DuBois's The Souls of Black Folk . Concentrating on evolution of African American fiction and poetry as well as political and social discourses on "race," explores how authors such as Frances E.W. Harper, Charles Chesnutt, Pauline Hopkins, Paul Laurence Dunbar, Anna Julia Cooper, Ida B. Wells-Barnett, Booker T. Washington, and DuBois shaped the foundation for 20th-century African American literary art and aesthetics. Offered by English. Limited to three attempts.

Recommended Prerequisite: Satisfaction of University requirements in 100-level English and in Mason Core literature.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 350: *African American Literature Through 1946.* 3 credits.
Focusing on fiction, poetry, drama, and autobiography, explores evolution of African American literature and aesthetics and major social, cultural, and historical movements such as the Harlem Renaissance of the 1920s and emergence of black naturalism, realism, and modernism in the 1930s-40s. Major authors include Zora Neale Hurston, Langston Hughes, Jessie Fauset, James Weldon Johnson, Jean Toomer, Nella Larsen, Margaret Walker, Chester Himes, Richard Wright, and Ann Petry. Offered by English. Limited to three attempts.

Recommended Prerequisite: Satisfaction of University requirements in 100-level English and in Mason Core literature.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 351: *Contemporary African American Literature.* 3 credits.
Encompassing array of genres and forms, examines black writing from mid-20th century to present. Engages textual, critical, political, and theoretical issues related to cardinal literary movements, such as Black Arts Movement of 1960s and Third Renaissance of 1980s-90s. Examines how musical forms such as blues, jazz, and rap shaped literary production. Major authors include Ralph Ellison, Gwendolyn Brooks, James Baldwin, Lorraine Hansberry, Amiri Baraka, Alice Walker, Ernest Gaines, Gloria Naylor, August Wilson, and Toni Morrison. Offered by English. Limited to three attempts.

Recommended Prerequisite: Satisfaction of University requirements in 100-level English and in Mason Core literature.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 352: *Topics in Ethnic American Literature.* 3 credits.
Studies particular ethnic American literatures. Focuses on literatures such as Asian American, Native American, Latino/a, Arab American, or Jewish American. Notes: May be repeated when topic (expressed by course subtitle and content) is different. Offered by English. May be repeated within the term for a maximum 6 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: Satisfaction of University requirements in 100-level English and in Mason Core literature.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 355: *Recent American Fiction.* 3 credits.
American short story writers and novelists from World War II to present, including Mailer, Barth, Cheever, Oates, Gass, Beattie, Updike, and Morrison. Offered by English. Limited to three attempts.

Recommended Prerequisite: Satisfaction of University requirements in 100-level English and in Mason Core literature.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 356: *Recent American Poetry.* 3 credits.
Major American poets from World War II to present, emphasizing Roethke, Brooks, Rich, Dickey, Lowell, Ammons, Kizer, Sexton, Clifton, Plath, and Piercy. Offered by English. Limited to three attempts.

Recommended Prerequisite: Satisfaction of University requirements in 100-level English and in Mason Core literature.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 360: *Continental Fiction, 1770-1880.* 3 credits.
Selected European novels in translation. Focuses on continental novel from 18th century to end of 19th century. Includes works of Balzac, Goethe, Gogol, Stendhal, Turgenev, Flaubert, Dostoievski, Tolstoy, and Chekhov. Offered by English. Limited to three attempts.

Recommended Prerequisite: Satisfaction of University requirements in 100-level English and in Mason Core literature.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 361: *Continental Fiction, 1880-1950.* 3 credits.
Offered in cooperation with the Department of Modern and Classical Languages. Focuses on continental novel from beginning of 20th century to present. Includes Proust, Mann, Gide, Kafka, Yourcenar, Beauvoir, Calvino, and Garcia Marquez. Attention to influence of this literature on novel in English. Offered by English. Limited to three attempts.

Recommended Prerequisite: Satisfaction of University requirements in 100-level English and in Mason Core literature.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 362: *Global Voices.* 3 credits.
Studies two cultures other than contemporary British or American culture through exploration of several textual forms such as written literature, oral literature, film, folklore, or popular culture. Specific cultures vary, but at least one is non- Western. Notes: May be repeated for credit when topic is different. Offered by English. May be repeated within the degree.

Mason Core: Global Understanding

Specialized Designation: Topic Varies

Recommended Prerequisite: Satisfaction of University requirements in 100-level English and in Mason Core literature.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 366: *The Idea of a World Literature.* 3 credits.
Examines history and current status of conceptions of world literature, considering such topics as non-European influences on Western literature, shifting horizons of comparative literature, rise of postcolonial literature, place of translation, and role of international institutions such as UNESCO and the Nobel Prize. Focuses on degree to which these initiatives have been successful in promoting global understanding of literary production. Offered by English. Limited to three attempts.

Mason Core: Global Understanding

Recommended Prerequisite: Satisfaction of University requirements in 100-level English and in Mason Core literature.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 367: *World Literatures in English.* 3 credits.
Study of selected topics, periods, genres, or authors in literature written in English, originating in Canada, Australia, New Zealand, South Asia, or Africa, for example. Notes: May be repeated when topic is different with permission of department. Offered by English. May be repeated within the term for a maximum 6 credits.

Recommended Prerequisite: Satisfaction of University requirements in 100-level English and in Mason Core literature.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 368: *Modern Drama.* 3 credits.
Representative plays of most influential European and American dramatists, with emphasis on dramatic styles such as realism, expressionism, epic, and existentialism. Studies Chekhov, Ibsen, Strindberg, Brecht, and Beckett. Offered by English. Limited to three attempts.

Recommended Prerequisite: Satisfaction of University requirements in 100-level English and in Mason Core literature.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 370: *Introduction to Documentary.* 3 credits.
Considers fundamental concepts of documentary form, style, and subject matter, ethical considerations, and theories of documentary. Includes close analysis of a series of representative film and television texts. Offered by English. Limited to three attempts.

Mason Core: Arts

Recommended Prerequisite: Satisfaction of University requirements in 100-level English and in Mason Core literature.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 371: *Television Studies.* 3 credits.
Learn to identify and analyze formal elements of television. Learn how to situate and evaluate television in their cultural and historical contexts, interpret specific texts, and understand the relationships among broadcasting and networks, citizenship, audiences, and the public sphere. Offered by English. Limited to three attempts.

Mason Core: Arts

Recommended Prerequisite: Satisfaction of University requirements in 100-level English and in Mason Core literature.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 372: *Introduction to Film.* 3 credits.
Introduces film medium as an art form. Offered by English. Limited to three attempts. Equivalent to ENGH 555.

Mason Core: Arts

Recommended Prerequisite: Satisfaction of University requirements in 100-level English and in Mason Core literature.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 375: *Web Authoring and Design.* 3 credits.
Provides a rhetorical foundation for web authoring and design in professional settings. Students will learn basic principles of writing for the web, information architecture, coding for accessibility, and usability testing. The production-oriented component of the course provides instruction in writing valid code and practice with web- and graphic-editing software tools. Offered by English. Limited to three attempts.

Recommended Prerequisite: Satisfaction of University requirements in 100-level English and in Mason Core literature.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 376: *Rhetoric and New Media.* 3 credits.
Critical reading of new media texts and creation of technology-enriched texts in variety of rhetorical genres. Instructs students in rhetoric of new media, whether produced as hypertext, multimedia, or interactive digital productions. Technology-enriched activities present complex textuality of words, images, word-as-image, and kinetic text. Offered by English. Limited to three attempts.

Recommended Prerequisite: Satisfaction of University requirements in 100-level English and in Mason Core literature.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 377: *Digital Creative Writing.* 3 credits.
Combined workshop and studio course in technological and aesthetic issues of reading and writing hypermedia texts with emphasis on poetry, fiction, creative nonfiction, mixed genre, drama, or performance. Explores how genre meets hypertext and hypermedia in original creative work. Includes techniques in authoring interactive hypermedia projects using digital media tools. Notes: May include reading assignments in hypertext and hypermedia theory. Offered by English. Limited to three attempts.

Recommended Prerequisite: ENGL 396/ENGH 396 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 380: *Introduction to Writing and Rhetoric.* 3 credits.
Introduces students to the field of writing studies, with a focus on definitions of writing and rhetoric and research methods applied to the study of writing from the perspective of multiple disciplines. Provides an overview of both historical and contemporary approaches to studying writing as object, process, practice, and occupation. Offered by English. Limited to three attempts.

Specialized Designation: Mason Impact.

Recommended Prerequisite: ENGL 302/ENGH 302 is recommended.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 382: *Writing Nonfiction Genres.* 3 credits.
Advanced practice in analyzing and writing nonfiction forms such as essay, profile, article, and technical or scientific report, depending on student's interests. Notes: Not to be taken concurrently with ENGH 399 or 486, and not to be taken by students who have taken ENGH 486. Not a remedial course. Offered by English. Limited to three attempts.

Recommended Prerequisite: Satisfaction of University requirements in 100-level English and in Mason Core literature.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 386: *Editing for Audience, Style, and Voice.* 3 credits.
Introduces editing as a textual and rhetorical practice. Addresses copyediting, stylistics, and design; revisions based on audience, purpose, and genre; multimedia editing; interactions between editors and authors. (Not a remedial course in fixing sentence errors.) Offered by English. Limited to three attempts.

Recommended Prerequisite: Satisfaction of University requirements in 100-level English and in Mason Core literature.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 388: *Professional and Technical Writing.* 3 credits.
Intensive study and practice in various forms of professional and technical writing, including proposals, reports, instructions, news releases, white papers, and correspondence. Emphasizes writing for variety of audiences, both lay and informed, and writing within various professional and organizational contexts. Offered by English. Limited to three attempts.

Recommended Prerequisite: ENGL 302/ENGH 302.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 389: *Peer Tutoring in Writing across the Disciplines.* 1 credit.
Experiential learning course in teaching of writing across disciplines. Students receive Writing Center training in theory and techniques of tutoring writing and work a minimum of 3 hours per week in Writing Center. Focus is on practical application of writing theory and pedagogy from course readings, development of tutoring skills, and self-reflection through journals and final paper. Notes: Students must submit two faculty recommendations and a sample of recent academic writing, and complete an interview with the director of the Writing Center. Offered by

English. May be repeated within the degree for a maximum 3 credits. Equivalent to CHSS 390.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 391: *Forms of Poetry.* 3 credits.
Intensive study of and practice in formal elements of poetry through analyzing models and weekly writing assignments. Depending upon specific instructor, can cover rhyme, meter, rhythm, lineation, stanza pattern, traditional and experimental forms, free verse and open-form composition, lyric, narrative, and dramatic modes. Offered by English. Limited to three attempts.

Recommended Prerequisite: ENGH 396.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 392: *Forms of Fiction.* 3 credits.
Intensive practice in the elements and forms of fiction, through analyzing models and completing weekly writing assignments. Covers short stories, short-shorts, longer narratives, and such elements as plot, narrative technique, dialogue, point of view, voice and style, along with tools such as evocation, description, and epiphany. Offered by English. Limited to three attempts.

Recommended Prerequisite: ENGH 396.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 393: *Forms of Nonfiction.* 3 credits.
Intensive study of and practice in various forms of nonfiction writing, through analyzing models and completing weekly writing assignments. Includes in-depth discussion and practice in such forms as biographies, documentaries, editorials, interviews, reports, reviews, and essays. Offered by English. Limited to three attempts.

Recommended Prerequisite: ENGH 396.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 396: *Introduction to Creative Writing.* 3 credits.
Assignments include writing exercises and original works of poetry and fiction. May also include drama or creative nonfiction. Includes reading assignments in covered genres, and may include oral presentations or in-class performance. Original student work read and discussed in class and conference with instructor. Offered by English. Limited to three attempts.

Mason Core: Arts

Recommended Prerequisite: Satisfaction of University requirements in 100-level English and in Mason Core literature.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 397: *Poetry Writing.* 3 credits.
Workshop in reading, writing poetry. Original student work read and discussed in class and conferences with instructor. Technical exercises in craft of poetry; may include reading assignments. Offered by English. Limited to three attempts.

Recommended Prerequisite: ENGL 396/ENGH 396 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 398: *Fiction Writing.* 3 credits.
Workshop course in reading and writing fiction. Original student work read and discussed in class and conferences with instructor. Includes technical exercises in craft of fiction; may include reading assignments. Offered by English. Limited to three attempts.

Recommended Prerequisite: ENGL 396/ENGH 396 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 399: *Creative Nonfiction Writing.* 3 credits.
Workshop in reading and writing of nonfiction that makes use of literary techniques normally thought of in context of fiction, such as evoking senses and use of dialog. Original student work read and discussed in class and conferences with instructor. Includes technical exercises in artful creating of nonfiction; may include reading assignments. Offered by English. Limited to three attempts.

Recommended Prerequisite: ENGL 309/ENGH 382 or ENGL 396/ ENGH 396, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

ENGH 400: *Honors Seminar.* 3 credits.
Emphasizes growth in awareness of literary scholarship as a discipline, providing opportunity for advanced study in literary and cultural criticism. Covers variety of topics, including consideration of a literary period, genre, author, work, theme, discourse, or critical theory. Offered by English. May be repeated within the term for a maximum 6 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: Open only to English department honors students.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 401: *RS: Honors Thesis Writing Seminar.* 3 credits.
Provides guidance in research methods to students writing an honor thesis as well as workshop for critiquing works in progress. May be taken concurrently with another approved course offered by English Department, in which case thesis work may substitute for some assigned work in second course by arrangement of both instructors. Offered by English. Limited to three attempts.

Mason Core: Capstone

Specialized Designation: Research/Scholarship Intensive

Recommended Prerequisite: Acceptance into English honors; permission of department and ENGH 400/ENGL 414 or ENGH 402/ENGL 416.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 402: *Honors Independent Study.* 1-3 credits.
Intensive writing course. Honors students concentrating in nonfiction writing and editing may use English 416 to replace English 414 as first course in honors program. Notes: Honors students concentrating in creative writing may use ENGH 402 to replace ENGH 401. Honors students concentrating in nonfiction writing who take ENGH 401 and complete a nonfiction thesis may use ENGH 402 in conjunction with an advanced course in nonfiction writing to replace ENGH 400. Offered by English. Limited to three attempts.

Recommended Prerequisite: Admission to honors program in English, and permission of instructor.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 408: *Topics in Criticism.* 3 credits.
Studies selected approach to literary criticism, as announced, with exercises in critical analysis. Includes new criticism, structuralism, psychoanalysis, and Marxism. Notes: May be repeated when topic is different with permission of department. Offered by English. May be repeated within the term.

Specialized Designation: Topic Varies

Recommended Prerequisite: Satisfaction of University requirements in 100-level English and in Mason Core literature.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 409: *Literary Modes.* 3 credits.
Theory and practice of such modes as tragedy, comedy, tragicomedy, romance, and satire, considered in separate semesters and drawn from variety of periods ranging from biblical times to present, with examples from drama, poetry, and fiction. Notes: May be repeated with permission of department. Offered by English. May be repeated within the term for a maximum 12 credits.

Recommended Prerequisite: Satisfaction of University requirements in 100-level English and in Mason Core literature.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 412: *Topics in Folklore Studies.* 3 credits.
Exploration of various aspects of folklore and folklife such as folklore and literature, folk arts, folk song, and material culture. Notes: May be repeated when topic is different with permission of department. Offered by English. May be repeated within the term.

Specialized Designation: Topic Varies

Recommended Prerequisite: Satisfaction of University requirements in 100-level English and in Mason Core literature.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 414: *Folklore and the Supernatural.* 3 credits.
Examines the role of supernatural phenomena in individuals' everyday lives. Introduces folkloristic approaches to the study of belief, paranormal experiences, and popular spirituality. Topics may include ghosts, spirit possession, superstitions, visions, near death experiences, dream interpretation, magic, the commodification of belief, and the supernatural and new media. Offered by English. Limited to three attempts.

Recommended Prerequisite: Satisfaction of University requirements in 100-level English and in Mason Core literature.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 415: *Folk Arts and Folk Artists.* 3 credits.
Examines the traditional arts of everyday life, such as festive foods, mementos and other objects of memory, textile arts, pottery, carving in wood and stone, roadside shrines, and more. Explores the folk aesthetics of group-based creativity through the lenses of biography, history, literature, and folklore studies. Considers traditional objects as narratives in material form. Examples drawn from multiple cultures as well as traditions in students' own lives. Offered by English. Limited to three attempts.

Recommended Prerequisite: Satisfaction of University requirements in 100-level English and in Mason Core literature.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 416: *Ethnicity and Migration in Folklore.* 3 credits.
Explores U.S. immigration trends and the historical basis for the concepts of ethnicity, identity, and immigration in folklore scholarship, literature, film, and popular media. The course explores at least three of the following ethnic groups: Latino, Asian, Jewish, European, Arab, or African. Offered by English. Limited to three attempts.

Recommended Prerequisite: Satisfaction of University requirements in 100-level English and in Mason Core literature.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 417: *RS: Topics in Folklore Research.* 3 credits.
Topic-based course in research methods. Students conduct advanced research in folklore studies using traditional and digital research tools and approaches. Notes: May be repeated when topic is different. Offered by English. May be repeated within the degree for a maximum 6 credits.

Mason Core: Capstone

Specialized Designation: Research/Scholarship Intensive, Topic Varies

Recommended Prerequisite: ENGH 305 (3 credit) and 85 credit hours earned.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 418: *Cultural Constructions of Sexualities.* 3 credits.
Introductory survey of cultural, literary, and theoretical constructions of sexuality that seek to complicate traditionally fixed categories of identity. Examines various representations of human sexuality, with particular attention to intersections with gender, race, ethnicity, nationality, and class. Offered by English. Limited to three attempts.

Recommended Prerequisite: Satisfaction of University requirements in 100-level English and in Mason Core literature.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 419: *Topics in Popular Literature.* 3 credits.
Studies specific topic or theme in popular literature. Notes: May be repeated when topic is different with permission of department. Offered by English. May be repeated within the term for a maximum 6 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: Satisfaction of University requirements in 100-level English and in Mason Core literature.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 421: *Topics in Medieval and Renaissance Literature.* 3 credits.
Studies selected topics, genres, themes or authors in medieval or Renaissance literature and culture. Notes: May be taken for credit by English or history majors. Specific topic may vary. Primary emphasis is literary or historical, depending on discipline of instructor. May consider relevant material from philosophy, theology, and art. May be repeated when topic is different. Offered by English. May be repeated within the degree for a maximum 6 credits. Equivalent to FRLN 431.

Specialized Designation: Mason Impact., Topic Varies

Recommended Prerequisite: Satisfaction of University requirements in 100-level English and in Mason Core literature.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 422: *Chaucer.* 3 credits.
Major works of Chaucer, with emphasis on The Canterbury Tales . Offered by English. Limited to three attempts.

Recommended Prerequisite: Satisfaction of University requirements in 100-level English and in Mason Core literature.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 428: *Milton.* 3 credits.
Milton's major poetic works, with emphasis on Paradise Lost . Offered by English. Limited to three attempts.

Recommended Prerequisite: Satisfaction of University requirements in 100-level English and in Mason Core literature.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 431: *Topics: British Literary Periods.* 3 credits.
In-depth study of selected period of British literature. In addition to literary examples, materials may be chosen from art, philosophy, or popular culture of the time. Notes: May be repeated when topic is different with permission of department. Offered by English. May be repeated within the term for a maximum 6 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: Satisfaction of University requirements in 100-level English and in Mason Core literature.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 432: *Topics: British Authors.* 3 credits.
Study of one or two major figures in British literature. Notes: May be repeated when topic is different with permission of department. Offered by English. May be repeated within the term for a maximum 6 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: Satisfaction of University requirements in 100-level English and in Mason Core literature.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 441: *Topics: American Authors.* 3 credits.
Study of one or two major figures in American literature. Notes: May be repeated when topic is different with permission of department. Offered by English. May be repeated within the term for a maximum 6 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: Satisfaction of University requirements in 100-level English and in Mason Core literature.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 442: *Topics: American Literary Periods.* 3 credits.
In-depth study of selected period of American literature. In addition to literary examples, materials may be chosen from art, philosophy, or popular culture of time. Notes: May be repeated when topic is different with permission of department. Offered by English. May be repeated within the term for a maximum 6 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: Satisfaction of University requirements in 100-level English and in Mason Core literature.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 451: *Science Fiction.* 3 credits.
Major works of science fiction in terms of mode, themes, and narrative techniques, especially role of hypothesis in science fiction. Focuses on novels, short stories from early 19th century to present. Offered by English. Limited to three attempts.

Recommended Prerequisite: Satisfaction of University requirements in 100-level English and in Mason Core literature.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 452: *Critical Study of Children's Literature.* 3 credits.
Examines the history and criticism of children's literature and the strategies used by authors of children's literature to address their audience. Selected readings range from Puritan to contemporary writing for children, as well as influential works in educational philosophy, such as those by Locke and Rousseau. Offered by English. Limited to three attempts.

Recommended Prerequisite: Satisfaction of University requirements in 100-level English and in Mason Core literature.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 453: *Topics in Fiction.* 3 credits.
Study of selected topics, periods, or authors. Notes: May be repeated when topic is different with permission of department. Offered by English. May be repeated within the term for a maximum 6 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: Satisfaction of University requirements in 100-level English and in Mason Core literature.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 454: *Topics in Poetry.* 3 credits.
Study of selected topics, periods, or poets. Notes: May be repeated when topic is different with permission of department. Offered by English. May be repeated within the term for a maximum 6 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: Satisfaction of University requirements in 100-level English and in Mason Core literature.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 455: *Topics in Drama.* 3 credits.
Studies selected topics, periods, or playwrights. Notes: May be repeated when topic is different with permission of department. Offered by English. May be repeated within the term for a maximum 6 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: Satisfaction of University requirements in 100-level English and in Mason Core literature.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 456: *Topics in Literary Nonfiction.* 3 credits.
Special studies in literary nonfiction by topic, such as the personal essay, New Journalism, the "nonfiction novel," the memoir, or historical traditions of literary nonfiction. Notes: May be repeated when topic is different. Offered by English. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: Satisfaction of University requirements in 100-level English and in Mason Core literature.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 458: *RS: Topics in Literary Research.* 3 credits.
Topic-based course in research methods. Students conduct advanced research in literary studies using traditional and digital research tools and approaches. Notes: May be repeated when the topic is different. Offered by English. May be repeated within the degree.

Mason Core: Capstone

Specialized Designation: Research/Scholarship Intensive, Topic Varies

Recommended Prerequisite: ENGH 305 (3 credit) and 85 credit hours earned.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 459: *Internship.* 1-3 credits.
Under supervision of a faculty director, students report and reflect on their work as interns at organizations of their choosing, usually in writing and/or editing positions. For 3 credits, students work on site at least 135 hours as specified in the agreement developed with the internship supervisor and approved by the faculty director. Notes: Contact the English Department one semester prior to enrollment. No more than 3 credits can be counted in concentration or English minor. May be repeated with permission of department. Offered by English. May be repeated within the term for a maximum 6 credits.

Recommended Prerequisite: Permission of internship director. 60 credits. English majors need 18 credits of English (3 credits of 100-level English course; 3-6 credits of 200-level English courses; 3 credits of ENGL302/ ENGH 302 and 6-9 credits of upper-level English courses). Non-English majors must meet the same requirements, except that they replace one upper-level English course with an upper-level course in their major.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 470: *RS: Topics in Film/Media History.* 3 credits.
Advanced studies of development of film language, both as cultural practice and medium for formal innovation. Topics might include studies of national cinemas, historical periods, genres, or individual directors. Notes: May be repeated when topic is different. Offered by English. May be repeated within the term for a maximum 6 credits.

Mason Core: Capstone

Specialized Designation: Research/Scholarship Intensive, Topic Varies

Recommended Prerequisite: ENGL 332/ENGH 372 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 472: *Topics in Film/Media Theory.* 3 credits.
Advanced studies of theories about various aspects of production, distribution, and reception of film-mediated experiences. Topics may include theories of spectator, semiotics, feminist film theory, theories of narrativity, structuralist film theory, or deconstruction. Notes: May be repeated when topic is different. Offered by English. May be repeated within the term for a maximum 6 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: ENGL 332/ENGH 372 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 474: *Topics in Film/Media Studies.* 3 credits.
American and foreign films selected by type, period, or director with emphasis varying from year to year. Required viewings, student discussion, and written critiques. Notes: May be repeated for a maximum of 6 credits with permission of department. Offered by English. May be repeated within the term for a maximum 6 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: ENGL 332/ENGH 372 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 483: *Technical Editing.* 3 credits.
Instruction in revising, editing, and preparing specialized writing for print production. Emphasizes methods of achieving clarity, accuracy, and completeness. Lecture and discussion on editing and printing techniques; practical exercise in revision, layout, and production. Offered by English. Limited to three attempts.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 484: *RS: Writing Ethnography.* 3 credits.
Study and practice of ethnographic writing. Students conduct ethnographic investigations and practice journal keeping, field note recording, interviewing, transcription, and interpretation. Includes introduction to current issues in ethnographic writing. Offered by English. Limited to three attempts.

Mason Core: Capstone

Specialized Designation: Research/Scholarship Intensive

Recommended Prerequisite: ENGH 302.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 485: *Document Design.* 3 credits.
Theory and practice of using computer programs to design and produce publications including brochures, fliers, newsletters, and small magazines. Includes readings, writing papers. and producing and editing copies and original publications. Offered by English. Limited to three attempts.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 486: *RS: Writing Nonfiction for Publication.* 3 credits.
Workshop course. Intensive practice in advanced nonfiction writing; emphasizes writing for publication. Occasional special topics sections in such forms as autobiography and scientific writing. Offered by English. Limited to three attempts.

Mason Core: Capstone

Specialized Designation: Research/Scholarship Intensive

Recommended Prerequisite: ENGL 309/ENGH 382 or ENGL 399/ ENGH 399 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 488: *Topics in Writing and Rhetoric.* 3 credits.
Advanced studies in rhetoric and writing. Introduces key rhetorical terminology and examines how texts construct meaning and how those meanings are determined within social contexts. Topics may include the relationship between rhetorics and poetics, rhetoric and new media, histories of rhetoric, global rhetorics, argument theory, discourse analysis, theories of technical communication, or advanced theories of composition and pedagogy. Notes: May be repeated when topic is different with permission of department. Offered by English. May be repeated within the degree for a maximum 9 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: Satisfaction of University requirements in 100-level English and in Mason Core literature.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 489: *Proposal Writing and Development.* 3 credits.
Provides foundation in the skills and knowledge required to effectively create proposals for various types of organizations. Emphasizes best practices in management, presentation, and research skills necessary to find funding, manage proposal efforts, and build relationships with funders. Reviews editing, concision, and technical writing skills required for proposal writers. Offered by English. Limited to three attempts.

Recommended Prerequisite: ENGH 302.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 492: *Advanced Fiction Writing Workshop.* 3 credits.
Workshop; intensive practice in creative writing and study of creative process. Intended for students already writing original creative work. Notes: Enrollment is controlled. Submit 8-10 pages of fiction to instructor for review. May be repeated with permission of instructor. Offered by English. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: ENGL 398/ENGH 398 and manuscript review.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 493: *Advanced Workshop in Nonfiction.* 3 credits.
Workshop in varieties of nonfiction, along with creative process and techniques such as research and interview methods. Includes reading and writing of essays, biographies, autobiographies, travel, journalism, etc. Notes: Registration is controlled. Submit 8-10 pages of nonfiction to instructor for review. Offered by English. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: ENGH 396, ENGH 399.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 494: *Advanced Poetry Writing Workshop.* 3 credits.
Intensive practice in the craft of poetry and study of the imagination in creative process. Intended for students already writing original poetry. Notes: Enrollment is controlled. Submit 8-10 pages of poetry to instructor for review. May be repeated with permission of instructor. Offered by English. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: ENGL 397/ENGH 397 and manuscript review.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 495: *Capstone and Thesis.* 3 credits.
Presentations of original work for critique by peers and faculty. Students synthesize what they have learned during prior work in the program through workshops for final revisions of manuscripts for the BFA portfolio. Students submit the revised manuscripts as their final submission for evaluation by faculty. Students receive guidance in research methods as they investigate the lives of writers and learn the procedures for such tasks as submitting original work for publication and applying for jobs. Offered by English. Limited to three attempts.

Mason Core: Capstone

Recommended Prerequisite: ENGH 396; ENGH 391, 392, or 393; ENGH 397, 398, and 399.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 497: *Topics in Creative Writing.* 3 credits.
Intensive practice in creative writing and study of creative process. Workshop course. Concentrates on specialized literary type other than short story or poetry such as playwriting, screenwriting, children's literature, travel literature, autobiography, gothic novel, or translation. Notes: For students already writing original creative work. Students must submit typed manuscript at least one week before registration. Offered by English. May be repeated within the term for a maximum 6 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: ENGL 396/ENGH 396 or equivalent and manuscript review. Enrollment is controlled. Contact instructor for manuscript guidelines.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ENGH 499: *Independent Study.* 1-6 credits.
Intensive study of particular author, genre, period, or critical or theoretical problem in literature or linguistics, to be conducted by student in close consultation with instructor. Student produces at least one substantial piece of written work during semester on research findings. Notes: May be repeated with approval of department. Offered by English. May be repeated within the term for a maximum 6 credits.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

500 Level Courses

ENGH 500: *Research in English Studies.* 3 credits.
Introduces research in English studies, including practice in library methods, writing critical bibliography, evaluating issues and problems, and surveying scholarly activities in department. Offered by English. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ENGH 501: *Introduction to Professional and Technical Writing.* 3 credits.
Provides historical and theoretical background in professional writing and editing in a seminar format. Explores professional writing's emergence as a field of scholarship and practice, emphasizes the relationships between rhetorical theories and practice, and introduces students to bibliographic research in the field. Offered by English. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ENGH 502: *Research Methods in Professional and Technical Writing.* 3 credits.
Introduces theory, methods, and ethics of conducting research in rhetoric and professional writing. Students learn to conduct and evaluate research that may include rhetorical analysis, discourse analysis, historical methods, ethnography, user-centered design, document and usability testing, and others. Offered by English. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

ENGH 503: *Theory and Practice of Editing.* 3 credits.
Instruction in revising, editing, and preparing specialized writing for printing. Emphasizes methods of achieving clarity, accuracy, and completeness. Lecture and discussion on editing and printing techniques; practical exercise in revision, layout, and production. Notes: May be repeated when topic is different. Offered by English. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ENGH 504: *Internship.* 1-6 credits.
Under supervision of a faculty director, students report and reflect on their work as interns at organizations of their choosing, usually in writing and/or editing positions. For 3 credits, students work on site at least 135 hours as specified in the agreement developed with the internship supervisor and approved by the faculty director. Notes: Contact the English Department one semester prior to enrollment. Offered by English. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Graduate Regular scale.

ENGH 505: *Document Design.* 3 credits.
Theory and practice of using computer programs to design and produce publications including brochures, fliers, newsletters, and small magazines. Includes readings, writing papers, and producing and editing copies and original publications. Offered by English. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ENGH 506: *Research for Narrative Writing.* 3 credits.
Combines study of basic research tools with field work and writing workshop experience. Helps students develop techniques and skills necessary for writing a research-dependent project of sufficient complexity to be of book or long essay length. Emphasis on finding story behind facts, using material from numerous sources. Offered by English. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

ENGH 507: *Web Authoring and Design.* 3 credits.
Provides a rhetorical foundation for web authoring and design in professional settings. Teaches basic principles of writing for the web, information architecture, coding for accessibility, and usability testing. Production-oriented component provides instruction in writing valid code and practice with web- and graphic-editing software tools. Offered by English. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ENGH 508: *Digital Rhetoric.* 3 credits.
Provides an examination of major works on digital rhetoric and digital media framed by contemporary rhetorical theories that inform the emergent field of digital rhetoric. Course work includes projects that engage in the design, analysis, and assessment of digital media. Offered by English. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

ENGH 509: *Proposal Writing and Development.* 3 credits.
Provides foundation in the skills and knowledge required to effectively create proposals for various types of organizations. Emphasizes best practices in management, presentation, and research skills necessary to find funding, manage proposal efforts, and build relationships with funders. Reviews editing, concision, and technical writing skills required for proposal writers. Offered by English. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

ENGH 511: *Graduate Literature Survey.* 3 credits.
Advanced survey of selected genres, periods, areas, styles, and theoretical issues in literature. Notes: Baccalaureate degree highly recommended. Offered by English. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: 15 credits of advanced undergraduate work and approval of the department. Baccalaureate degree highly recommended.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ENGH 513: *Topics in Literary and Cultural Studies.* 3 credits.
Intensive study of topics involving literary or other texts such as film, television, opera, and folklore. Notes: May be repeated with permission of department. Offered by English. May be repeated within the term for a maximum 6 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: 15 credits of advanced undergraduate English courses and permission of department; or baccalaureate degree.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ENGH 526: *Special Topics in the History and Criticism of Children's Literature.* 3 credits.
Focuses on the history and criticism of children's literature by concentrating on selected historical periods and literary modes such as "Golden Age" children's literature, contemporary fantastic and children's literature, or Romantic and Victorian children's literature. Notes: May be repeated with permission of instructor. Offered by English. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ENGH 551: *Introduction to Literary Theory.* 3 credits.
Introduction to selected critical theories pertinent to textual analysis. Offered by English. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ENGH 564: *Form of Poetry.* 3 credits.
Students seeking permission must submit typed manuscript of original poetry. Intensive study of and practice in formal elements of poetry through analyzing models and weekly or biweekly writing assignments. Intended for students already writing original poetry. Covers rhyme, meter, rhythm, lineation, stanza pattern, traditional and experimental forms, free verse and open-form composition, lyric, narrative, and dramatic modes. Notes: Other interested students should contact the English Department at (703) 993-1180. Offered by English. May not be repeated for credit.

Recommended Prerequisite: Admission to MFA concentration in poetry; ENGL 464/ENGH 494 or equivalent, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ENGH 565: *Forms of Nonfiction.* 3 credits.
Intensive study of and practice in various forms of nonfiction writing through analyzing models and weekly writing assignments. Includes biographies, documentaries, editorials, interviews, reports, reviews, and essays. Notes: Other interested graduate students should contact the English Department at (703) 993-2763. Offered by English. May not be repeated for credit.

Recommended Prerequisite: Admission to MFA concentration in nonfiction; ENGL 489/ENGH 486 or equivalent, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ENGH 566: *Forms of Fiction.* 3 credits.
Students seeking permission must submit typed manuscript of original fiction. Intensive practice in formal elements of fiction through analyzing models and weekly or biweekly writing assignments. Intended for students already writing original fiction. Covers description, narration, plot, dialogue, voice, point of view, style, epiphany, and antifiction techniques. Notes: Other interested graduate students should contact the English Department at (703) 993-1180. Offered by English. May not be repeated for credit.

Recommended Prerequisite: ENGL 458/ENGH 492 or equivalent or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Creative Writing.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ENGH 570: *Graduate Survey in Film and Media Studies.* 3 credits.
Advanced survey of topics in film and media including theories of production and the circulation of meanings in visual culture. Notes: May be repeated with permission of department. Offered by English. May be repeated within the degree for a maximum 9 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ENGH 590: *Topics in Folk Narrative.* 3 credits.
Explores types of folk narratives such as mythology, folktale, fairy tale, legend, family narrative, personal narrative. Focuses on tales from around the world. Considers aspects of storytelling such as storytelling as performance, storytelling as therapeutic modality, and storytelling during crises and conflicts. Notes: May be repeated when topic is different. Offered by English. May be repeated within the degree for a maximum 9 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ENGH 591: *Topics in Folklore Studies.* 3 credits.
Explores folklore and folklife topics such as folk narrative and story telling, folklore and literature, folksong, and folk arts. Notes: May be repeated when topic is different. Offered by English. May be repeated within the term for a maximum 12 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

600 Level Courses

ENGH 602: *Pedagogical Research.* 3 credits.
Introduces theories of and hands-on experiences for students interested in studying pedagogical practice, classroom environments, and learners in context. Methodologies include ethnography, case study, grounded theory, quasi-experimental, narrative analysis, Activity Theory, Archival Research, and Assessment. Students will examine the relationships between methodological frames, pedagogical context and theories of learning. Offered by English. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

ENGH 604: *Internship in Folklore.* 1-6 credits.
Unpaid, approved work-study positions at specific sites arranged by interested students and their advisor. Under supervision of faculty advisor, student works as intern with site supervisor in agency of student's choosing, given advisor's permission. Notes: For 3 credits, students work 120 hours on site and write 3,500 words, or equivalent, given contract with advisor. Contact English Department one semester prior to enrollment. Offered by English. May not be repeated for credit. Equivalent to FOLK 699.

Recommended Prerequisite: A course in folklore, which may be taken concurrently.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Graduate Regular scale.

ENGH 608: *Craft Seminars.* 3 credits.
Non-MFA students seeking permission must submit manuscript of original written work in appropriate genre. Various sections offer work in fiction, poetry, and nonfiction, each focusing in different ways on the practices and the craft development of writers. Numerous writing assignments mixed with reading followed by careful analytical and craft discussions. Notes: Assignments vary with genre and specific topic. May be taken concurrently with ENGH 564, 565, 566. Offered by English. May be repeated within the term for a maximum 15 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: Admission to MFA program or ENGL 464/ ENGH 494, ENGL 458/ENGH 492, ENGL 489/ENGH 486, or permission of instructor. Non-MFA students must submit manuscript for review prior to registration.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

ENGH 609: *Online Writing.* 3 credits.
Offers a craft seminar in writing for social media and online platforms. Students develop an online identity and presence, and compose work for public dissemination. Numerous writing assignments mixed with reading followed by careful analytical and craft discussions. Offered by English. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

ENGH 610: *Proseminar in Teaching the Reading of Literature.* 3 credits.
Methods of teaching literature. Includes study of methods of literary analysis, and ways of developing student responses to literature, with some classroom practice. Notes: Does not satisfy Virginia certification requirement in diagnostic or developmental reading. Offered by English. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

ENGH 611: *Studies in Rhetoric.* 3 credits.
Reading and discussion of several major texts that address patterns of discourse, communication, and other issues of rhetoric. Notes: Content varies. Recent offerings include 20th century rhetoric, collaborative writing, and computers and rhetoric. Offered by English. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ENGH 612: *Cultures of Professional Writing.* 3 credits.
Students work as ethnographers, studying selected sites where people write professionally, and analyzing ways production and reception of writing contribute to and result from local culture of each site. Lecture and workshop format. Offered by English. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ENGH 613: *Technical Communication.* 3 credits.
Intensive study of theory and practice of technical and scientific writing, with emphasis on writing for variety of audiences. Focuses on writing and evaluating formal reports, articles for lay and technical audiences, proposals, theses, manuals, and other forms of technical prose. Offered by English. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ENGH 614: *Internship in the Teaching of Writing.* 1-3 credits.
Internships provide experience working in a teaching program such as school or writing center. Under direction of faculty member, students must secure cooperation of on-site supervisor. Notes: Students work minimum 3 hours per week per credit to be awarded, keep a weekly reflective and analytical log, and communicate regularly with faculty director. Offered by English. May not be repeated for credit.

Registration Restrictions:

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Graduate Regular scale.

ENGH 615: *Proseminar in Composition Instruction.* 3 credits.
Methods of teaching expository writing. Includes consideration of planning courses, practice in teaching and grading papers, and study of recent developments in teaching writing. Offered by English. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

ENGH 616: *Nonfiction Writing Workshop.* 1-6 credits.
Intensive practice in craft of nonfiction and study of creative process. Intended for students already familiar with traditional and contemporary nonfiction, and already writing original nonfiction. Notes: At discretion of instructor, reading may be required. May be repeated for credit with permission of department. Offered by English. May be repeated within the degree.

Recommended Prerequisite: ENGL 565/ENGH 565 which may be taken concurrently, and permission of instructor, except for MFA students in the concentration.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ENGH 617: *Poetry Writing Workshop.* 1-6 credits.
Intensive practice in craft of poetry and study of creative process. Intended for students already familiar with traditional and contemporary poetic modes and already writing original poetry. Notes: At discretion of instructor, reading may be required. May be repeated for credit with permission of department. Registration is open only to students in the MFA program. Offered by English. May be repeated within the degree.

Recommended Prerequisite: ENGL 564/ENGH 564, which may be taken concurrently.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Creative Writing.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ENGH 618: *Fiction Writing Workshop.* 1-6 credits.
Intensive practice in craft of fiction and study of creative process. Intended for students already familiar with traditional and contemporary fiction and already writing original fiction. Notes: At discretion of instructor, reading may be required. May be repeated for credit with permission of department. Offered by English. May be repeated within the degree.

Recommended Prerequisite: ENGL 566/ENGH 566, which may be taken concurrently or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Creative Writing.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ENGH 619: *Special Topics in Writing.* 3 credits.
Workshop course. Intensive practice in creative writing and study of creative process. Concentrates on specialized literary type other than short story, such as essay, playwriting, film writing, children's literature, travel literature, autobiography, gothic novel, and translation. Notes: Intended for students already writing original creative work. Other interested graduate students should contact the English department at (703) 993-1180. May be repeated for credit with permission of department. Offered by English. May be repeated within the term for a maximum 30 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: Intended for students already writing original creative work.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Creative Writing.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ENGH 620: *Topics in Pedagogy.* 3 credits.
Offers advanced study of teaching practices in literature, composition, creative writing, linguistics, folklore, or film and media studies. Notes: May be repeated for credit when topic is different. Offered by English. May be repeated within the term for a maximum 12 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

ENGH 642: *Seminar in British Literature.* 3 credits.
Intensive study of a selected period, movement, or genre in British or world Anglophone literature. Offered by English. May be repeated within the degree for a maximum 24 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ENGH 644: *Seminar in American Literature.* 3 credits.
Intensive study of a selected period, movement, or genre in American literature. Offered by English. May be repeated within the degree for a maximum 24 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ENGH 646: *Seminar in Advanced Research.* 3 credits.
Intensive study using research methods associated with specific topics, archives, or databases. Notes: Topics vary. May be repeated when topic is different with permission of department. Offered by English. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

ENGH 661: *Seminar in African-American Literature.* 3 credits.
Intensive study of a period in African-American literature between 1800 and present with focus to be determined by instructor. Considers different genres including autobiography, fiction, drama, poetry, essays, and oral artifacts such as slave songs, spirituals, and hip-hop. Notes: May be repeated when topic is different with permission of department. Offered by English. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

ENGH 665: *Seminar in Global Culture.* 3 credits.
Examines various cultural texts such as literature, drama, film, and folklore in terms of transnational circulation or production and reception in locations around the world other than Britain and United States. Engages with issues arising from globalization of English and interplay of global cultures. Notes: Texts studied in English or English translation. May be repeated with permission of department. Offered by English. May be repeated within the term for a maximum 6 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

ENGH 670: *Seminar in Film and Media Studies.* 3 credits.
Advanced seminar in topics in visual representation including film, television, and video, and in theories of production and circulation of meanings in visual culture. Notes: May be repeated with permission of department. Offered by English. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ENGH 675: *Feminist Theory and Criticism.* 3 credits.
Presents historically based introduction to major debates within feminist theory and criticism. Stressing gender in literature and its interpretation, explores diverse collection of feminist interpretive practices. Offered by English. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

ENGH 676: *Introduction to Cultural Studies.* 3 credits.
Advanced introduction to theoretical practice known as cultural studies, with attention to role in textual studies. Part of interdisciplinary cultural studies PhD and MA in English programs. Offered by English. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ENGH 681: *Advanced Topics in Folklore Studies.* 3 credits.
Explores advanced folklore and folklife topics such as bodylore, sense of place, festival, folk drama, and folk narrative studies. Notes: May be repeated when topic is different. Offered by English. May be repeated within the degree for a maximum 12 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ENGH 684: *Proseminar in Poetry.* 3 credits.
For students working on independent reading and research in poetry. Designed for students preparing to take the MFA reading exam in poetry but open to others with comparable reading projects in poetry. Offered by English. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Satisfactory/No Credit scale.

ENGH 685: *Selected Topics, Movements, or Genres of Literature in English.* 3 credits.
Content varies. Notes: May be repeated with permission of department. Offered by English. May be repeated within the term for a maximum 12 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ENGH 689: *Advanced Proposal Writing.* 3 credits.
Introduces the federal contract and grants proposal process and provides an overview of the federal acquisition process, the capture and proposal management processes, and best practices for writing winning proposals in the federal arena. Students work individually and in teams to write and

manage proposals. Offered by English. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: ENGH 509.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

ENGH 690: *Special Topics in Writing and Rhetoric.* 3 credits.
Includes readings and discussion in a wide range of topics related to writing and rhetoric. May focus on a specific theory, method or practice in writing and rhetoric. Notes: May be repeated for credit when topic varies. Offered by English. May be repeated within the term for a maximum 12 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

ENGH 695: *Northern Virginia Writing Project Inservice Program.* 1-3 credits.
Offered at request of school division or other education agency to assist teachers in improving student writing and use of writing to learn. Notes: Content varies. May be repeated for credit with permission of department. Offered by English. May be repeated within the term.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ENGH 696: *Northern Virginia Writing Project Teacher/Research Seminar.* 3 credits.
Acquaints classroom teachers with current research on composing as well as methods of studying writing in school settings. Participants collect data and write up results of their research. Offered by English. May not be repeated for credit.

Recommended Prerequisite: ENGL 615/ENGH 615, ENGL 695/ENGH 695 the Northern Virginia Writing Project Summer Institute, or other course in the teaching of writing.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

ENGH 697: *Composition Theory.* 3 credits.
Acquaints classroom teachers with theory relating to writing and teaching composition. Focuses on explaining theories of participants, reading works of leading theorists, and developing statement describing implications of theoretical consistency in teaching writing. Offered by English. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ENGH 699: *Visiting Writers.* 1-3 credits.
Craft seminars, educational tours, independent studies, and special seminars dealing with selected topics in writing, linguistics, film, electronic media, and literature written in English. Notes: All tours are optional, and may be replaced by specified work conducted on campus. May be repeated for a maximum of 12 credits with permission of department, but no more than 6 credits of ENGH 699 may be applied to master's degree in English. No more than 3 credits of 699 may be applied to literature requirement for MFA degree. Offered by English. May be repeated within the term for a maximum 12 credits.

Recommended Prerequisite: Admission to MFA program or permission of department. Other interested graduate students should contact the English Department at (703) 993-1180.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Creative Writing.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

700 Level Courses

ENGH 702: *Research Methods in Rhetoric and Writing.* 3 credits.
Explores a variety of text-based and empirical approaches and methods for addressing questions and problems related to public rhetoric and writing programs. Seminar participants work through a complete research design and pilot study. Offered by English. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ENGH 705: *Literary Theory and Criticism.* 3 credits.
Major theories of literature and methods of analyzing and evaluating literary works. Notes: Topics vary. May be repeated when topic is different with permission of department. Offered by English. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ENGH 710: *Core Readings in Writing Studies.* 3 credits.
Provides students new to the PhD in Writing and Rhetoric with the opportunity to read widely in the fields of composition, professional writing, and public rhetoric. Students will examine and develop graduate-level reading practices, while exploring the main subfields of writing studies. Offered by English. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Satisfactory/No Credit scale.

ENGH 720: *Histories of Institutional Rhetorics.* 3 credits.
Examines the development of rhetorics within their historical and institutional contexts. Investigates rhetoric and rhetoricians across the development of oral rhetorics and the shift to written genres, the rise of scientific discourses, and the establishment of educational and bureaucratic organizations. Offered by English. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ENGH 722: *Composition Pedagogies and Programs in Context.* 3 credits.
Examines scholarship on pedagogy, curriculum design and assessment, faculty development, and program management related to the practice of teaching or training writers in an institutional setting: two- and four-year colleges, K-12 schools, and workplace training seminars. Offered by English. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ENGH 724: *Professional Writing Theory and Research.* 3 credits.
Examines current research in the field and the theories that inform it. Special emphasis is placed on workplace contexts and users in technological contexts. Course may include theories and methods such as activity theory, actor-network theory, complexity theory, cross-cultural rhetoric, digital rhetoric, discourse analysis, ethnography, genre theory, usability, and systems theory. Offered by English. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ENGH 726: *Rhetorical Theory and Public Spaces.* 3 credits.
Covers the major theories of public rhetoric and the public sphere; explores how rhetoric influences public perceptions; examines publics as a site of interpretive mediation. Offered by English. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ENGH 750: *Advanced Workshop in Poetry Writing.* 3 credits.
Intensive practice in craft of poetry for experienced writers. Notes: May be repeated for credit with permission of department. Offered by English. May be repeated within the degree.

Recommended Prerequisite: Admission to MFA concentration in poetry, ENGL 564/ENGH 564, and ENGL 617/ENGH 617.

Registration Restrictions:
Enrollment is limited to students with a major in Creative Writing.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ENGH 751: *Advanced Workshop in Fiction Writing.* 1-6 credits.
Intensive practice in craft of fiction for experienced writers. Notes: May be repeated for credit with permission of department. Offered by English. May be repeated within the degree.

Recommended Prerequisite: ENGL 566/ENGH 566, and ENGL 618/ ENGH 618.

Registration Restrictions:
Enrollment is limited to students with a major in Creative Writing.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ENGH 752: *Advanced Workshop in Nonfiction Writing.* 1-6 credits.
Intensive practice in craft of nonfiction for experienced writers. Notes: May be repeated for credit with permission of department. Offered by English. May be repeated within the degree.

Recommended Prerequisite: ENGL 565/ENGH 565 and ENGL 616/ ENGH 616.

Registration Restrictions:
Enrollment is limited to students with a major in Creative Writing.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

ENGH 790: *Projects in Literary Studies.* 3 credits.
Students complete a capstone project guided by instructor and a faculty consultant based on work produced in a previous graduate course. Class meetings focus on building skills in research, revision, and editing, discussing topics related to professionalization both in and out of academia, and revising work in a workshop environment. Students will produce a professional-quality article or similar final project. Offered by English. May not be repeated for credit.

Recommended Prerequisite: 21 credits in MA coursework including ENGH 500, permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Satisfactory/No Credit scale.

ENGH 797: *Projects in Professional Writing and Rhetoric.* 3 credits.
Students complete a capstone project guided by instructor and a faculty consultant. Reflecting on theories and methods learned in previous course work and applying them to a concrete rhetorical situation, students produce a professional-quality project for a primary audience located in the professional workplace or the discipline of rhetoric and professional writing. Offered by English. May be repeated within the term for a maximum 6 credits.

Recommended Prerequisite: 21 credits in MA coursework, including the core, theory, PWR and Writing requirements, or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Research

Grading:
This course is graded on the Satisfactory/No Credit scale.

ENGH 798: *Directed Reading and Research.* 1-6 credits.
Reading, research, and writing on specific project under direction of department member. Notes: Oral or written report required. For MA students: May be repeated for a maximum of 6 credits with permission of department. For MFA students: 12 credits may be applied to the MFA requirements but no more than 3 credits may count toward completing the literature requirement. Offered by English. May be repeated within the degree.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Thesis

Grading:
This course is graded on the Graduate Special scale.

ENGH 799: *Thesis.* 1-6 credits.
Students who take ENGH 798 to develop thesis topic and then elect thesis option receive 3 credits for ENGH 799 on completion of thesis. Students who do not take ENGH 798, or who take it to work on project unrelated to thesis, receive up to 6 credits for ENGH 799 on completion of thesis. Offered by English. May be repeated within the degree.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Thesis

Grading:
This course is graded on the Satisfactory/No Credit scale.

800 Level Courses

ENGH 820: *Studies in Rhetorical Theory and Practice.* 3 credits.
Offers advanced study of rhetorical theory, histories of rhetoric, key figures in rhetoric, or rhetorical methods. Notes: May be repeated for credit when topic is different. Offered by English. May be repeated within the degree for a maximum 12 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

ENGH 821: *Writing Program Design and Administration.* 3 credits.
Examines the theory and practice of writing program leadership. Investigates the principles that inform faculty support, curriculum development, program assessment, institutional alignment, and leadership approaches with regard to administering writing instruction. Offered by English. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

ENGH 822: *Studies in Composition.* 3 credits.
Offers advanced study of theoretical, practical, or pedagogical topics related to composition. Notes: May be repeated for credit when topic is different. Offered by English. May be repeated within the term for a maximum 12 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ENGH 824: *Studies in Professional Writing.* 3 credits.
Offers advanced study of theoretical, practical, or pedagogical topics related to professional writing and technical communication. Notes: May be repeated for credit when topic is different. Offered by English. May be repeated within the term for a maximum 12 credits.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ENGH 826: *Studies in Public Rhetorics.* 3 credits.
Offers advanced study of theoretical, practical, or pedagogical topics related to public rhetorics. Notes: May be repeated for credit when topic is different. Offered by English. May be repeated within the term for a maximum 12 credits.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ENGH 897: *Directed Research.* 1-3 credits.
Reading, research, and writing on a specific project under direction of faculty member. Offered by English. May be repeated within the degree for a maximum 9 credits.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Independent Study

Grading:
This course is graded on the Satisfactory/No Credit scale.

ENGH 898: *Qualifying Exams Seminar.* 1-3 credits.
Work on PhD qualifying exams. Offered by English. May be repeated within the degree for a maximum 9 credits.

Recommended Prerequisite: Completion of 36 credits in coursework in the writing and rhetoric PhD Program.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Independent Study

Grading:
This course is graded on the Satisfactory/No Credit scale.

900 Level Courses

ENGH 998: *Doctoral Dissertation Proposal.* 1-6 credits.
Work on research proposal that forms the basis for the doctoral dissertation. Offered by English. May be repeated within the degree for a maximum 12 credits.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

ENGH 999: *Doctoral Dissertation.* 1-12 credits.
Doctoral dissertation research and writing under direction of student's dissertation committee. Offered by English. May be repeated within the degree for a maximum 21 credits.

Recommended Prerequisite: ENGH 898.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy.

Enrollment is limited to Graduate level students.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

English for Academic Purposes (EAP)

000 Level Courses

EAP 097: *Verbal Preparation for the Graduate Record Examination.* 0 credits.
Prepares students in the International Graduate Pathways requiring the general Graduate Record Examination test for progression to take the computer adaptive version of the exam where the emphasis is placed primarily on the verbal section. This course primarily emphasizes the verbal portion of the exam along with test language and testing strategies; identifying common test-taking errors; and managing in test anxiety. Offered by INTO Mason. May be repeated within the degree for a maximum 0 credits. Equivalent to INYO 095, INYO 096, INYO 097.

Schedule Type: Seminar

Grading:
This course is graded on the Satisfactory/No Credit scale.

EAP 098: *Individualized Language Instruction.* 0 credits.
Individualized language instruction for Pathway students. Focus on reading, writing, listening, and speaking skills. Offered by INTO Mason. May be repeated within the degree for a maximum 4 credits.

Schedule Type: Independent Study

Grading:
This course is graded on the Satisfactory/No Credit scale.

EAP 099: *Individualized Language Instruction.* 0 credits.
Individualized language instruction for Pathway students. Focus on reading, writing, listening, and speaking skills. Offered by INTO Mason. May be repeated within the degree for a maximum 4 credits.

Schedule Type: Independent Study

Grading:
This course is graded on the Satisfactory/No Credit scale.

100 Level Courses

EAP 100: *Special Topics.* 0-8 credits.
EAP 100 is to be used as an incubator for special topics courses under development in the Undergraduate Pathway program at INTO Mason. EAP 100 will be used for the various content-based English Language Support courses that are paired with major or content courses required by Undergraduate Pathways students. Language support courses such as EAP 100 run concurrently with credit-bearing undergraduate content course. Offered by INTO Mason. May be repeated within the degree for a maximum 12 credits.

Specialized Designation: Topic Varies

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EAP 101: *Language Support for Fundamentals of Communication.* 1 credit.
Academic Language support course for Fundamentals of Communication. Focus on increasing students' comprehension and use of key grammatical structures, vocabulary, word forms, and reading/annotation strategies in oral speech and group discussions. Notes: Students must attain minimum grade of C to fulfill program requirements. Offered by INTO Mason. Limited to three attempts.

Recommended Corequisite: COMM 101

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EAP 102: *Language Support for American Cultures.* 1 credit.
Academic language support course for Undergraduate Pathways students taking American Cultures. Designed to increase students' ability to comprehend and respond to readings, discussions, and lectures related to American Cultures. Emphasizes the development of successful strategies for intrapersonal and small/large group communication activities, student familiarity with anthropological and sociological terminology and effective application of reading /annotating strategies. Also listed as PROV 102. Notes: Students must attain minimum grade of C to fulfill program requirements. Offered by INTO Mason. May be repeated within the degree for a maximum 3 credits.

Recommended Corequisite: PROV 105.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

EAP 103: *Language Support for Public Speaking.* 1 credit.
Academic language support course for Public Speaking. Focus on increasing students' comprehension and use of key grammatical structures, vocabulary, word forms, and reading/annotating strategies in oral speech. Notes: Students must attain minimum grade of C to fulfill program requirements. Offered by INTO Mason. May be repeated within the degree for a maximum 3 credits.

Recommended Corequisite: COMM 100.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

EAP 104: *Language Support World History.* 1 credit.
Academic language support course for Introduction to World History. Focus on increasing students' comprehension and use of key grammatical structures, vocabulary, word forms, and reading/annotating strategies in literacy/reading. Notes: Students must attain minimum grade of C to fulfill program requirements. Offered by INTO Mason. May be repeated within the degree for a maximum 3 credits.

Recommended Corequisite: HIST 125.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

EAP 107: *The Grammar of Academic Writing.* 3 credits.
This course is designed to improve students' understanding of written language and to provide mechanisms that allow students to take advantage of this flexible but structured form of communication. Providing this knowledge and these tools will improve students' abilities to identify and correct grammatical mistakes, write cohesive and coherent paragraphs, and condense essential information-necessary skills for effective academic writing. Offered by INTO Mason. May be repeated within the degree.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EAP 108: *Language Support for Business and Society.* 1 credit.
Academic language support course for Undergraduate Pathway students taking Business in American Society. This course is designed to increase students' ability to read and analyze qualitative and quantitative information, understand and use business terminology, and utilize oral English fluency and literacy practices/strategies in anticipation of group discussions, debates, and oral/written critiques of business-related current events. Also listed as PROV 108. Notes: Students must attain minimum grade of C to fulfill program requirements. Offered by INTO Mason. May be repeated within the degree for a maximum 3 credits.

Recommended Corequisite: BUS 100

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

EAP 109: *College Reading Skills.* 1 credit.
Academic reading support for Undergraduate Pathways students in specific pathways. Designed to increase students' ability to read, summarize, and analyze texts, including information graphics and visuals. Focuses on student comprehension and utilization of discipline-specific genres/terminology and effective literacy practices/strategies in anticipation of group discussions, reading research, and responding to writing assignments. Also listed as PROV 109. Notes: Students must attain minimum grade of C to fulfill program requirements. Offered by INTO Mason. May be repeated within the degree for a maximum 3 credits.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

EAP 110: *English Language, Composition & Academic Skills for Multilingual Students.* 6 credits.
EAP 110 is a composition course that integrates language instruction with composition instruction as a way of preparing multilingual undergraduate students to be successful academic writers across the curriculum. EAP 110 will focus on critical reading skills across multiple genres. This process will involve annotating, summarizing, and analyzing texts and will serve as the foundation for academic writing in the International Year One Program and beyond. Offered by INTO Mason. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Special scale.

EAP 111: *Language Support for Introduction to Information Technology.* 1 credit.
Academic language support for Undergraduate Pathways students taking Information Technology. Designed to increase students' IT literacy, including familiarity and accurate usage of terms related to digital devices, computer hardware, software, telecommunications, networking and multimedia. Supports students' oral and written academic English skills in anticipation of class lectures, textbook readings, individual assignments, and online discussion boards. Also listed as PROV 111. Notes: Students must attain minimum grade of C to fulfill program requirements. Offered by INTO Mason. May be repeated within the degree for a maximum 3 credits.

Recommended Corequisite: IT 101.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

EAP 112: *Language Support for Introduction to Computer Programming.* 1 credit.
Academic language support for Undergraduate Pathways students taking Computer Programming. This course is designed to increase students' ability to respond accurately to computer programming problems in English, understand and use programming terminology, and utilize oral English fluency and literacy practices/strategies in anticipation of class lectures, lab work, individual assignments, and online discussion boards. Also listed as PROV 112. Notes: Students must attain minimum grade of C to fulfill program requirements. Offered by INTO Mason. May be repeated within the degree for a maximum 3 credits.

Recommended Corequisite: CS 112.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

EAP 113: *Language Support for University Physics.* 1 credit.
Academic language support course for Undergraduate Pathways students taking program University Physics I. This course is designed to increase students' ability to respond accurately to physical problems in English, understand and use mathematical and physics terminology, and utilize oral English fluency and literacy practices/strategies in anticipation of class lectures, lab/recitation work, and online discussion boards. Also listed as PROV 113. Notes: Students must attain minimum grade of C to fulfill requirements. Offered by INTO Mason. May be repeated within the degree for a maximum 3 credits.

Recommended Corequisite: PHYS 160 and PHYS 161.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

EAP 114: *Language Support for General Chemistry I.* 1 credit.
Academic language support for Undergraduate Pathways students taking General Chemistry I. This course is designed to increase students' ability to read and comprehend qualitative and quantitative information, understand and use general science and chemistry-related terminology, set-up and solve numerical problems in English, and take notes from oral lectures and textbook chapters. Also listed as PROV 114. Notes: Students

must attain minimum grade of C to fulfill requirements. Offered by INTO Mason. May be repeated within the degree for a maximum 3 credits.

Recommended Corequisite: CHEM 211.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

EAP 115: *Language Support for Introductory Geology I.* 1 credit.
Academic language support for Undergraduate Pathways students taking Introductory Geology I. This course is designed to increase students' ability to read and comprehend qualitative and quantitative information in English, understand and use general science and geology-related terminology, take notes from oral lectures and textbook chapters, and participate in group discussions. Also listed as PROV 115. Notes: Students must attain minimum grade of C to fulfill program requirements. Offered by INTO Mason. May be repeated within the degree for a maximum 3 credits.

Recommended Corequisite: GEOL 101.

Schedule Type: Seminar

Grading:
This course is graded on the Satisfactory/No Credit scale.

EAP 120: *Linguistics Capstone.* 0 credits.
Required to complete all standard undergraduate pathways. Provides students with opportunity to demonstrate mastery of English language skills in reading, writing, speaking, listening, grammar and/or vocabulary. Builds on work in language support classes. Includes language assessment, feedback on skills, and review of post-program support. Required during second semester of the Undergraduate Pathways program. Also listed as PROV 120. Notes: A passing grade of "S" confirms the student's English language proficiency is sufficient for degree-seeking study. Offered by INTO Mason. May be repeated within the degree for a maximum 0 credits.

Schedule Type: Seminar

Grading:
This course is graded on the Satisfactory/No Credit scale.

400 Level Courses

EAP 403: *Interpersonal Communication for International Students.* 2 credits.
This 8-week course requires that students use intensive practice in oral communication contexts typical at American universities to build knowledge and skills for informal interpersonal communication settings with faculty, peers, and students, and skills needed for formal presentations, class discussion, and tutoring. Readings and assignments cover research on first impression management; informative and explanatory communication; conveying emotional support; and listening, and narrative skill. Offered by INTO Mason. Limited to two attempts. Equivalent to EAP 503, PROV 503.

Recommended Prerequisite: Completion of undergraduate degree at a university outside of the US.

Recommended Corequisite: Admission to INTO Mason pathway program or with permission of INTO Mason.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

EAP 404: *Advanced English for Academic Purposes in Reading and Writing.* 2 credits.
This 8-week course is designed for graduate international students who are studying abroad in the U.S., emphasizing advanced skill development in graduate-level English for Academic Purposes for reading and writing within their disciplines. Utilizing a multimodal and interactive format, students will complete guided and independent research papers as well as read, discuss and write about excerpts from college texts and academic journals. Notes: In as much as possible, materials for the course will be discipline specific and individualized course goals will be determined by the needs of the students and their cultural experiences. Offered by INTO Mason. Limited to two attempts. Equivalent to EAP 504.

Recommended Prerequisite: Completion of undergraduate degree at a university outside of the US.

Recommended Corequisite: Admission to INTO Mason pathway program or with permission of INTO Mason.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

EAP 405: *Special Topics in Advanced English for Academic Purposes.* 1-6 credits.
This special topics course is tailored to international students who received their undergraduate degrees outside the United States. The course provides intensive practice and individualized feedback in advanced communication methods appropriate at the graduate level. Offered by INTO Mason. May be repeated within the term for a maximum 6 credits. Equivalent to EAP 505.

Specialized Designation: Topic Varies

Recommended Prerequisite: Completion of undergraduate degree at a university outside of the US.

Recommended Corequisite: Admission to INTO Mason pathway program or with permission of INTO Mason.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

500 Level Courses

EAP 503: *Interpersonal Communication for International Students: Practicum and Theory.* 2 credits.
The course requires that students use intensive practice in oral communication contexts typical at universities to build knowledge and skills for informal interpersonal communication settings with faculty, peers, and students, and skills needed for formal presentations, class discussion, and tutoring. Readings & assignments cover research on first impression management; informative and explanatory communication; conveying emotional support; listening, and narrative skill. Offered by INTO Mason. May not be repeated for credit. Equivalent to EAP 403.

Recommended Prerequisite: Completion of undergraduate degree at a university outside of the US.

Registration Restrictions:

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EAP 504: *Advanced English for Academic Purposes Reading and Writing.* 2 credits.
This 8-week course is designed for graduate international students who are studying abroad, emphasizing advanced skill development in graduate-level English for Academic Purposes for reading and writing within their disciplines. Utilizing a multimodal and interactive format, students will complete guided and independent research papers as well as read, discuss and write about excerpts from college texts and academic journals. Notes: In as much as possible, materials for the course will be discipline specific and individualized course goals will be determined by the needs of the students and their cultural experiences. Offered by INTO Mason. May not be repeated for credit. Equivalent to EAP 404.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to English Language, Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EAP 505: *Special Topics in Advanced English for Academic Purposes.* 2 credits.
This special topics course is tailored to international students who received their undergraduate degrees outside the United States. The course provides intensive practice and individualized feedback in advanced communication methods appropriate at the graduate level. Offered by INTO Mason. May not be repeated for credit.

Specialized Designation: Topic Varies

Recommended Prerequisite: Completion of undergraduate degree at a university outside of the US.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the INTO Mason college.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

EAP 506: *Graduate Communication in the Disciplines I.* 4 credits.
Students develop strategies for completing research-based writing and presentations in their field and review rhetorical structures and organizational strategies common to US scholarly communications generally and in their particular field. Students will practice strategies at the sentence and discourse levels to increase the clarity, precision, and appropriateness of their communication skills. Group instruction will be supplemented by one-on-one conferencing. Offered by INTO Mason. May not be repeated for credit.

Recommended Prerequisite: Completion of undergraduate degree at a university outside of the US.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to English Language, Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the INTO Mason college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EAP 507: *Graduate Communication in the Disciplines II.* 3-4 credits.
The second course in a series that helps students develop strategies for completing research-based writing and presentations in their field. Students will review rhetorical structures and organizational strategies common to US scholarly communications generally and in their particular field. Students will also practice strategies at sentence and discourse levels to increase the clarity, precision, and appropriateness of their communication skills. Offered by INTO Mason. May not be repeated for credit.

Recommended Prerequisite: EAP 506.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the INTO Mason college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EAP 508: *Graduate Communication in the Disciplines III.* 4 credits.
Students develop strategies for completing research-based writing and presentations in their field. Students will review rhetorical structures and organizational strategies common to US academic scholarly communications generally and in their particular field. Students will also review and practice strategies at the sentence and discourse levels

to increase the clarity, precision and appropriateness of their oral and written communication skills. Group instruction will be supplemented by one-on-one conferencing as students complete a major graduate-level project. Notes: This course may not count towards academic degree requirements at the graduate level without permission from the academic dean/director. Offered by INTO Mason. May not be repeated for credit.

Recommended Prerequisite: Completion of undergraduate degree at a university outside the United States.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EAP 510: *Linguistic Capstone.* 0 credits.
Course builds on work in language support classes throughout the program and enables students to demonstrate acceptable mastery of their academic English language skills in reading, writing, speaking, listening, grammar, and vocabulary. Students take proficiency assessment receive feedback on skills, and review post-program language support resources. Offered by INTO Mason. May not be repeated for credit.

Recommended Prerequisite: Standard pathway students must have completed first semester of program, or at least 9 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Satisfactory/No Credit scale.

Environmental Science and Policy (EVPP)

100 Level Courses

EVPP 108: *Ecosphere - Introduction to Environmental Science I-Lecture.* 3 credits.
This course studies components and interactions that make up natural systems of our home planet. It teaches basic concepts in biological, chemical, physical, and earth sciences in integrated format with lecture, laboratory, and field exercises. Note: EVPP 108 and 109 can be used to fulfill a 4-credit lab science requirement. Offered by Environmental Science & Policy. Limited to three attempts.

Mason Core: Natural Science with Lab, Natural Science Overview

Specialized Designation: Green Leaf Related Course

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EVPP 109: *Ecosphere- Introduction to Environmental Science I- Lab.* 1 credit.
This course studies components and interactions that make up natural systems of our home planet. It teaches basic concepts in biological, chemical, physical, and earth sciences in a laboratory format. Note: EVPP 108 and 109 can be used to fulfill a 4-credit lab science requirement. Offered by Environmental Science & Policy. Limited to three attempts.

Mason Core: Natural Science with Lab

Specialized Designation: Green Leaf Related Course

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

EVPP 112: *Ecosphere: Introduction to Environmental Science II-Lecture.* 3 credits.
Studies components and interactions that make up natural systems of our home planet. Teaches basic concepts in biological, chemical, physical, and Earth sciences in lecture format, focusing on major environmental issues from a scientific perspective. Note: EVPP 112 and 113 can be used to fulfill a 4-credit lab science requirement. Offered by Environmental Science & Policy. Limited to three attempts.

Mason Core: Natural Science with Lab, Natural Science Overview

Specialized Designation: Green Leaf Related Course

Recommended Prerequisite: EVPP 113 (may be taken concurrently)

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EVPP 113: *Ecosphere: Introduction to Environmental Science II–Lab.* 1 credit.
Studies components and interactions that make up natural systems of our home planet. Teaches basic concepts in biological, chemical, physical, and Earth sciences in a hands-on laboratory format, focusing on major environmental issues from a scientific perspective. Note: EVPP 112 and 113 can be used to fulfill a 4-credit lab science requirement. Offered by Environmental Science & Policy. Limited to three attempts.

Mason Core: Natural Science with Lab

Specialized Designation: Green Leaf Related Course

Recommended Prerequisite: EVPP 112

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

200 Level Courses

EVPP 201: *Environment and You: Issues for the Twenty-First Century.* 3 credits.
Introduces broad aspects of human-environmental interactions in the contemporary world. Topics range broadly from global populations and wastewater treatment to environmental law, and genetic engineering. Includes both science and science policy of the environment. Offered by Environmental Science & Policy. Limited to three attempts.

Mason Core: Natural Science Overview, Encore: Sustainability

Specialized Designation: Green Leaf Related Course

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EVPP 210: *Environmental Biology: Molecules and Cells.* 4 credits.
This course provides environmental science majors with the cellular foundation required for subsequent courses in the BS curriculum with a focus on how biological systems respond to environmental threats. The course emphasizes the connection between cellular processes and a healthy environment, and how this relationship is jeopardized by a variety of chemical and physical environmental perturbations. Offered by Environmental Science & Policy. Limited to three attempts.

Recommended Corequisite: CHEM 211.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

300 Level Courses

EVPP 301: *Environmental Science: Biological Diversity and Ecosystems.* 4 credits.
This course provides environmental science majors with the necessary background in biological diversity and ecological science required for subsequent courses in the BS curriculum. The course reviews the diversity of life on earth and the structure and functioning of ecosystems and populations. Offered by Environmental Science & Policy. Limited to three attempts.

Recommended Prerequisite: Permission of instructor.

Registration Restrictions:
Required Prerequisites: EVPP 210[C] or 210[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EVPP 302: *Environmental Science: Biomes and Human Dimensions.* 4 credits.
This course provides environmental science majors with the necessary background in biomes and human dimensions required for subsequent courses in the BS curriculum. The course reviews the functioning of aquatic and terrestrial biomes and human interactions with and impacts on the environment. Offered by Environmental Science & Policy. Limited to three attempts.

Recommended Prerequisite: Permission of instructor.

Registration Restrictions:
Required Prerequisites: EVPP 301[C] or 301[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EVPP 305: *Environmental Microbiology Essentials.* 3 credits.
Provides understanding of microbes and their function as a vital part of an environmental education. The role of microbes is central to many environmental issues such as climate change, biodegradation of toxics, wastewater treatment and drinking water contamination. Course provides an introduction to the breadth of microbiology including essential information for students studying environmental problems and their solution. Notes: Laboratory section (EVPP 306) is a corequisite unless previously completed. Offered by Environmental Science & Policy. Limited to three attempts.

Recommended Prerequisite: EVPP 210 and 30 credit hours, or permission of instructor;

Recommended Corequisite: EVPP 306.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EVPP 306: *Environmental Microbiology Essentials Laboratory.* 1 credit.
Laboratory study of environmental microbiology. Course provides an introduction to the microbiological techniques for students studying environmental problems and their solution. Examples include microbiology of natural ecosystems (e.g., Potomac River), bacteria in fresh and estuarine waters and sediments, Indicator organisms (e.g., coliform bacteria), molecular identification of unknown bacteria from nature, and visualization of bacteria in their natural habitat. Notes: Lecture section (EVPP 305) is a corequisite. Offered by Environmental Science & Policy. Limited to three attempts.

Recommended Prerequisite: EVPP 210 and 30 credit hours, or permission of instructor.

Recommended Corequisite: EVPP 305.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

EVPP 309: *Introduction to Oceanography.* 3 credits.
Introduction to chemical, biological, and geological aspects of oceanic environment. May include field trips. Offered by Environmental Science & Policy. Limited to three attempts. Equivalent to BIOL 309, GEOL 309.

Recommended Prerequisite: Two of the following lab sciences courses are required for a total of 8 credits: [GEOL 101 or 102], [EVPP 108 and 109 or 112 and 113 or 210], CHEM 211 and 213, [BIOL 103 or 213], [PHYS 160 and 161 or 243 and 244].

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EVPP 318: *Conservation Biology.* 3 credits.
Introduces science used to identify species in need of conservation, and techniques to manage and protect organisms. Notes: Cannot be taken with Smithsonian Seminar (off campus classes). CONS 401, CONS 411. Offered by Environmental Science & Policy. Limited to three attempts. Equivalent to BIOL 318.

Recommended Prerequisite: BIOL 308 or BIOL 310, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EVPP 322: *Business and Sustainability.* 3 credits.
Examines the types of approaches businesses can take to take to respond to sustainability concerns, Designed to prepare students for assisting organizations to incorporate sustainability considerations into their strategic decision-making. Notes: Students from multiple disciplines (business, social sciences, natural sciences, humanities, education, etc.) can participate in the class without having had previous courses in management. Offered by Environmental Science & Policy. Limited to three attempts. Equivalent to INTS 332.

Specialized Designation: Green Leaf Focused Course

Recommended Prerequisite: 30 credit hours, recommend EVPP 361/ GOVT 361 Introduction to Environmental Policy

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EVPP 326: *Animal Physiology.* 3 credits.
This course will examine animal physiology across different levels of biological organization, from molecules to cells to whole organisms, and will highlight the diversity of physiological mechanisms across different groups of animals. Emphasis will be placed on how ecology and evolution shape the physiology of organisms as well as how physiology forms the basis for how animals interact with their environment. This course will cover all the major physiological systems in animals (e.g., circulatory system) as well as how these systems are integrated to perform ecological functions (e.g., flight). Finally, emphasis will be placed on the effects of environmental change on animal function, and how animals may respond physiologically to such changes. Offered by Environmental Science & Policy. Limited to three attempts.

Recommended Prerequisite: (BIOL 213 or U213), or EVPP 210, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EVPP 336: *Human Dimensions of the Environment.* 3 credits.
Overview of current knowledge regarding human and environment interactions and human ecology. Topics include basic theoretical and conceptual issues, relationship between social and biological sciences, human causes and consequences of environmental change, and contemporary perspectives on environmental issues. Offered by Environmental Science & Policy. Limited to three attempts.

Specialized Designation: Green Leaf Related Course

Recommended Prerequisite: One of either EVPP 108 and 109; or EVPP 112 and 113; or GEOL 101; or SOCI 101; or ANTH 114; or 60 credits.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EVPP 337: *Environmental Policy Making in Developing Countries.* 3 credits.
Overview of environmental policy process in developing countries around the world. Major focus on understanding distinctive problems and dynamics of environmental policy making in poor countries to generate better policy decisions and management. Offered by Environmental Science & Policy. Limited to three attempts.

Specialized Designation: Green Leaf Related Course, Writing Intensive in Major

Recommended Prerequisite: 60 credits.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EVPP 338: *Economics of Environmental Policy.* 3 credits.
Introduction to environmental, resource, and ecological economics for non-economist undergraduates. Covers basic theories of scarce resource allocation and examines conditions under which market allocations are efficient and sustainable. Includes graphical and verbal presentation of theory. Offered by Environmental Science & Policy. Limited to three attempts.

Specialized Designation: Green Leaf Focused Course

Recommended Prerequisite: ECON 100 or ECON 103 or ECON 105 or ECON 110, or permission from instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EVPP 350: *Freshwater Ecosystems.* 4 credits.
Studies physical, chemical, and biological processes in lakes, streams, and wetlands. Lectures, field trips, and lab exercises teach physical and chemical aspects of aquatic systems and life cycles, and adaptations of aquatic organisms. Offered by Environmental Science & Policy. Limited to three attempts. Equivalent to BIOL 350.

Recommended Prerequisite: CHEM 211/ 213 and CHEM 212/214 or CHEM 155/156 and BIOL 308 or EVPP 301.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EVPP 355: *Ecological Engineering and Ecosystem Restoration.* 4 credits.
Provides definition, classification, and practice of ecological engineering and ecosystem restoration. Describes general system ecology, ecosystem restoration (i.e., wetland and river systems), and the use of

natural processes to provide ecosystem services to society. Provides students with a systems-oriented perspective on designing and managing ecosystems. Students will study principles in designing field ecological studies, ecological models, ecological engineering, and explore practices in sustainable ecological design by carrying out a hands-on experimental design project with the field wetland mesocosm on the Mason campus. One field trip is required part of the course. Offered by Environmental Science & Policy. Limited to three attempts.

Specialized Designation: Green Leaf Focused Course

Recommended Prerequisite: CHEM 211 and EVPP 301 or BIOL 308; or permission of instructor.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EVPP 361: *Introduction to Environmental Policy.* 3 credits.
Environmental politics and policymaking since the 1970s. Primary focus on United States, with some discussion of global issues. Examines policy strategies and outcomes, ethical and economic debates, political controversies, lawmaking and enforcement, and role of key players. Offered by Environmental Science & Policy. Limited to three attempts. Equivalent to GOVT 361.

Specialized Designation: Green Leaf Focused Course

Recommended Prerequisite: 30 credits.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EVPP 362: *Intermediate Environmental Policy.* 3 credits.
Examines environmental issues building on learning objectives from EVPP 361. Focuses on environmental and policy issues in the US and internationally, exploring the politics of nature and the interaction of environmental science and politics and resulting controversy. Risk and uncertainty loom large in most environmental issues. "Natural" disasters as well as direct "man-made" problems will be covered. Offered by Environmental Science & Policy. Limited to three attempts. Equivalent to GOVT 362.

Specialized Designation: Green Leaf Focused Course

Recommended Prerequisite: EVPP 361 or GOVT 361 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EVPP 363: *Coastal Morphology and Processes.* 4 credits.
Studies global coastal geomorphology and processes with emphasis on U.S. Atlantic and gulf coasts. Topics include plate tectonics; sea-level changes; sediment supply; impact of waves, tides, and storms; and human activities. Lectures and extended weekend field trips to mid-Atlantic coast. Offered by Environmental Science & Policy. Limited to three attempts. Equivalent to GEOL 363.

Recommended Prerequisite: BIOL/EVPP/GEOL 309 or GEOL 317; or 9 credits in geography, including GGS 309.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EVPP 377: *Applied Ecology.* 3 credits.
Introduces ecosystem concepts and applications to natural and managed ecosystems. Offered by Environmental Science & Policy. Limited to three attempts. Equivalent to BIOL 377.

Recommended Prerequisite: 60 credits including 8 credits of biology, geology, or chemistry, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EVPP 378: *RS: Ecological Sustainability.* 4 credits.
Introduces the concepts and applications of several important topics relating to ecological sustainability. Focuses on the role of soils in maintaining and managing environmental quality. Teaches students how to understand and interpret scientific data presented in various types of literature covering ecological sustainability. Offered by Environmental Science & Policy. Limited to three attempts. Equivalent to BIOL 379.

Mason Core: Capstone

Specialized Designation: Green Leaf Focused Course, Research/ Scholarship Intensive

Recommended Prerequisite: BIOL 308 or permission of instructor.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EVPP 381: *Nature and Culture in Global Wetlands.* 4 credits.
A study of internationally important wetland ecosystems of varying types (i.e., Ramsar wetlands). Emphasizes the link between nature and culture of wetlands in different global regions and focuses on understanding its critical role in the conservation and wise use of global wetlands. The course aims to train the next generation of higher education in the field of eco-cultural literacy and resilience of global wetlands. It provides students with an opportunity to learn about the environmental history and the changes in the ecology of global wetland ecosystems over the decades of human impacts. The course covers different types of wetland systems and their services to and relationship with humanity. The course includes field trips to local wetlands and nature centers, and one final field trip to a Ramsar wetland - a wetland of an international importance. Offered by Environmental Science & Policy. May not be repeated for credit.

Mason Core: Global Understanding

Recommended Prerequisite: EVPP 108 or BIOL 103, or permission of instructor.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EVPP 395: *Undergraduate Research in Environmental Science and Policy.* 1-3 credits.
Original research project. May involve field and lab study, computer modeling and analysis, or other original research as appropriate. Research formulated and completed under instructor's guidance. Notes: Culminates in final report. Offered by Environmental Science & Policy. May be repeated within the degree for a maximum 10 credits.

Recommended Prerequisite: 45 credits and at least two upper level science lab courses.

Schedule Type: Research

Grading:
This course is graded on the Undergraduate Regular scale.

EVPP 396: *Directed Topic in Environmental Science and Policy.* 1-4 credits.
Study of topics not available in fixed-topics courses. May involve readings, lectures, lab assignments, and tutorials as jointly agreed on by student and instructor. Notes: Culminates in term paper, final exam, or both. Offered by Environmental Science & Policy. May be repeated within the degree for a maximum 8 credits.

Recommended Prerequisite: 45 credits.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

EVPP 401: *Integrated Environmental Assessment.* 3 credits.
Presents strategic planning at the regional level, and focuses on the methods, format, and content of a Strategic Environmental Assessment (SEA), also referred to as a programmatic environmental impact statement (PEIS). Students will conduct research and develop their own SEA for Shenandoah National Park (NP). Offered by Environmental Science & Policy. Limited to three attempts.

Recommended Prerequisite: 60 credit hours completed.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EVPP 402: *Applied and Industrial Microbiology.* 3 credits.
Biology of microorganisms of ecological and industrial significance. Includes food production, spoilage and preservation, fermentation technology, waste disposal, water purification, biodeterioration, and decomposition. Offered by Environmental Science & Policy. Limited to three attempts. Equivalent to BIOL 402.

Recommended Prerequisite: BIOL 213, 305, 306 or EVPP 210, 305, 306, CHEM 211 and CHEM 213; CHEM 212 and CHEM 214, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EVPP 408: *Mushrooms, Molds and Society.* 3 credits.
Provides a modern, comprehensive knowledge of fungal biology including classification, phylogeny, structure, physiology/metabolism, growth and development, genetics, industrial applications including biotechnology, ecological roles including pathogenic interactions with plants, animals, and man. Offered by Environmental Science & Policy. Limited to three attempts. Equivalent to BIOL 408.

Recommended Prerequisite: EVPP 108 and 109 and 112 and 113 or EVPP 210 or BIOL 213.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EVPP 409: *Medical Mycology.* 3 credits.
Provides the student with current knowledge of both the medical and microbiological aspects of fungal diseases in humans, including the etiologic agents, geographic distribution, epidemiology, transmission, determinants of pathogenicity, laboratory detection, and therapy associated with the major human mycoses. Offered by Environmental Science & Policy. Limited to three attempts. Equivalent to BIOL 409.

Recommended Prerequisite: EVPP 108 and 109 and 112 and 113; or EVPP 210; or BIOL 213.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EVPP 413: *Histotechniques.* 3 credits.
Introduces theory and methods for the preparation of tissue samples from animal or plant specimens for examination with light or electron microscopy. Offered by Environmental Science & Policy. Limited to three attempts.

Recommended Prerequisite: EVPP 210 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EVPP 419: *Marine Mammal Biology and Conservation.* 3 credits.
Covers the evolution, biology, ecology, and behavior of marine mammals from polar bears and sea otters to whales and dolphins. Marine mammal conservation and policy is also a major component of the course; several lecture sessions are devoted to the issue of whaling, threats to marine mammal populations, and recent conservation issues such as marine mammals and noise pollution. The course also includes a number of guest lectures from a variety of international marine mammal experts. Offered by Environmental Science & Policy. Limited to three attempts. Equivalent to BIOL 454, EVPP 519.

Recommended Prerequisite: BIOL/EVPP/GEOL 309 or BIOL/EVPP 449; and 60 credit hours.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EVPP 420: *Marine Mammal Biology and Conservation Field Course.* 1 credit.
This course provides laboratory, seminar sessions and field work to accompany EVPP 419-001 - marine mammal biology and conservation. Field work includes several day-long boat trips. The field course may take

place in the US or abroad. Offered by Environmental Science & Policy. Limited to three attempts. Equivalent to BIOL 455.

Recommended Prerequisite: EVPP 419 or BIOL 454, concurrent enrollment is permitted.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

EVPP 421: *Marine Conservation.* 3 credits.
Provides an overview of threats to the marine environment, and discusses the scientific, socioeconomic, and political issues behind marine conservation. Covers categories of marine pollutants (chemical, biological, and physical contaminants) and their impacts on the marine ecosystem, as well as impacts on humans (health, social, and economic), threats to key marine species (e.g., coral, sharks, turtles, and marine mammals) and initiatives and laws developed to reduce these threats. Scientific and socioeconomic problems that hinder sustainable fisheries management and the science and policy behind the global warming debate are also discussed. Provides an overview of marine environmental law and policy issues related to marine conservation policy. Offered by Environmental Science & Policy. Limited to three attempts. Equivalent to BIOL 450.

Specialized Designation: Green Leaf Focused Course

Recommended Prerequisite: BIOL/EVPP/GEOL 309.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EVPP 423: *Beekeeping and Sustainability.* 3 credits.
Lectures and hands-on field experiences examining beekeeping as a tool for sustainable development. Also, they will examine the social impact and implications of beekeeping around the world, and explore its current place in the modern socio-economic structure. Offered by Environmental Science & Policy. Limited to three attempts.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EVPP 427: *Conservation Medicine.* 3 credits.
Presents the trans-disciplinary discipline of conservation medicine, the study of relationships between organism and ecosystem health and environmental conditions. Topics include infectious and noninfectious diseases, pathogens, processes, and impacts on human, biotic, and ecosystem health, and how to address the consequences of diseases to populations and ecological communities. Notes: This course will co-meet with EVPP 527. Undergraduate students in this course will have separate (shorter) reading and writing assignments and will be graded according to a different rubric than the graduate students. Offered by Environmental Science & Policy. Limited to three attempts. Equivalent to BIOL 427.

Recommended Prerequisite: 60 credits and BIOL 213 or BIOL/EVPP 305/306 and BIOL 308 OR EVPP 301, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EVPP 429: *Environmental Science Communication.* 3 credits.
Communicating environmental science is inherently challenging whether in academia, the public policy realm, or to the general public. The aim of this course is to expose students to the multiple ways environmental science can be communicated. Such exposure will be made both through a theoretical approach by examining science communication literature, as well as through practical, hands-on activities and assignments. Offered by Environmental Science & Policy. Limited to three attempts.

Recommended Prerequisite: Completion of 60 credit hours.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EVPP 430: *Fundamentals of Environmental Geographic Information Systems.* 3 credits.
Provides the basic knowledge to explore complex environmental data sets and relationships among biological, ecological, physical and anthropogenic variables using geographic information systems. Using spatial mapping and exploration tools students will be capable of independent analysis of complex environment. Notes: Previous knowledge of fundamentals of geography, coordinate systems and map projections is an asset. Knowledge of operating systems, text editor and spreadsheet is required. Offered by Environmental Science & Policy. Limited to three attempts.

Recommended Prerequisite: EVPP 108 and 109 and 112 and 113; or EVPP 210 and IT 103; or CDS 130 and 60 credit hours; or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EVPP 432: *Energy Policy.* 3 credits.
Overview of economic, political, and technological aspects of energy policy development. Students will examine various energy sources in the context of national and global considerations regarding electricity generation, efficiency and conservation, energy economics, and climate change. Updated yearly. The course may include one field trip. Offered by Environmental Science & Policy. Limited to three attempts.

Specialized Designation: Green Leaf Focused Course

Recommended Prerequisite: 60 credits and EVPP 361/GOVT 361, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EVPP 434: *Food-Energy-Water Nexus.* 3 credits.
Examines resilience and sustainability challenges that involve the food, energy water nexus, as well as innovative solutions to these challenges. Discussions bridge multiple disciplines, considering the technological, economic, and institutional dimensions of the nexus in various places around the globe at local and national scales. Offered by Environmental Science & Policy. Limited to two attempts.

Recommended Prerequisite: One environmental social science course and 60 credits.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EVPP 436: *The Human Dimensions of Global Climate Change.* 3 credits.
Social science investigation of humans' role(s) in global climate change, including diversity of ecological, cultural and policy issues. Focuses on current science, causes and responses, human rights and social justice, vulnerability of marginalized populations, relevant issues associated with communication and behavior change, place of policy, and the multiple existing and potential roles of academic action. Discussion format. Offered by Environmental Science & Policy. Limited to three attempts.

Recommended Prerequisite: EVPP 336, CLIM 101 and 60 credits, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EVPP 437: *Orinthology.* 4 credits.
Study of evolution, systematics, phsiology, ecology and behavior of birds, emphasizing field work. Offered by Environmental Science & Policy. Limited to three attempts. Equivalent to BIOL 437.

Recommended Prerequisite: BIOL 308 or EVPP 301 or equivalent or permission of instructor.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EVPP 438: *Mammalogy.* 4 credits.
Study of evolution, systematics, physiology, ecology and behavior of mammals, emphasizing field work. Offered by Environmental Science & Policy. Limited to three attempts. Equivalent to BIOL 438.

Recommended Prerequisite: BIOL 308 or EVPP 301 or equivalent or permission of instructor.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EVPP 439: *Herpetology.* 4 credits.
Study of evolution, systematics, physiology, ecology and behavior of reptiles, emphasizing field work. Offered by Environmental Science & Policy. Limited to three attempts. Equivalent to BIOL 439.

Recommended Prerequisite: BIOL 308 or EVPP 301 or equivalent or permission of instructor.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EVPP 440: *Field Environmental Science.* 0-4 credits.
Directed field studies emphasizing ecology and behavior. Topics vary but include design of field manipulations, data collection and analysis, and introduction to organisms of study site. Notes: Students bear cost of required field trips. May be repeated with permission of Environmental Science and Policy. Offered by Environmental Science & Policy. May be repeated within the term for a maximum 9 credits. Equivalent to BIOL 440.

Recommended Prerequisite: EVPP 301 or permission of instructor.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

EVPP 442: *Urban Ecosystems and Processes.* 4 credits.
Provides an overview of the challenges and opportunities that urban environments present to the plants and animals inhabiting cities and the ways that those organisms and entire ecosystems respond. Includes ecosystem ecology for engineered ecosystems, along with reviews of urban metabolism, energy budgets, water cycles, and soil ecology. Students design and conduct a small-scale green infrastructure experiment/project on campus. Offered by Environmental Science & Policy. Limited to three attempts. Equivalent to BIOL 442.

Recommended Corequisite: Prereqs: CHEM 211 and CHEM 213; MATH 113 or equivalent; BIOL 308 or EVPP 301; PHYS 243 or permission of instructor.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EVPP 445: *Principles of Environmental Toxicology.* 3 credits.
Explores basic principles of toxicology with an emphasis on the environment. Includes the history and scope of the field; absorption, distribution, metabolism and excretion of toxicants; mechanisms of toxic action; genetic toxicology; ecotoxicology as well as specific examples important toxicants. Introduces regulatory toxicology and human and ecological risk assessment. Offered by Environmental Science & Policy. Limited to three attempts.

Recommended Prerequisite: EVPP 210; or EVPP 108 and 109 and EVPP 112 and 113 and CHEM 211 and CHEM 212 and 60 credit hours; or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EVPP 449: *Marine Ecology.* 3 credits.
Plants and animals of marine environments and physical and chemical conditions that affect their existence. Offered by Environmental Science & Policy. Limited to three attempts. Equivalent to BIOL 449.

Recommended Prerequisite: BIOL 308 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EVPP 451: *Fungi and Ecosystems.* 3 credits.
Considers impact of fungi on ecosystems in terms of effects on biogeochemical cycling, primary and secondary production, and regulating community structure and populations of individual species

through activities as symbionts and parasites. Offered by Environmental Science & Policy. Limited to three attempts.

Recommended Prerequisite: EVPP 301 or BIOL 308 or EVPP/BIOL 305/306; or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EVPP 456: *Aquatic Invertebrate Ecology.* 4 credits.
Through lecture, field collections, and laboratory study, students will understand phylogeny, physiology, life histories, behaviors, trophic importance, adaptations, conservation significance and response to global environmental change of aquatic invertebrates. Students will identify invertebrates using appropriate literature and methods and use proper curation to preserve them. Students will become familiar with methods for measuring aquatic invertebrate density, biomass, and diversity. Offered by Environmental Science & Policy. Limited to two attempts.

Recommended Prerequisite: BIOL 308 or EVPP 301 or permission of instructor

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EVPP 460: *Infectious Diseases of Wildlife.* 3 credits.
During this course, infectious diseases of wildlife will be examined with emphasis on causes and mechanisms, pathobiology, ecology and epidemiology and population significance. We will explore methods of diagnosis, control, prevention and outbreak investigation as they apply to management and conservation of wildlife populations. Also, diseases crossing species barriers will be examined. Note: Course will co-meet with BIOL 560/EVPP 560. Graduate students In this course will be graded according to a different rubric than the undergraduate stlldents. Offered by Environmental Science & Policy. Limited to three attempts. Equivalent to BIOL 460.

Recommended Prerequisite: 60 credits plus BIOL 308 or EVPP 301 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EVPP 465: *Coral Reef Ecology, Health, and Conservation.* 3 credits.
Students will learn about organisms that comprise and inhabit coral reefs and examine how environmental and anthropogenic stressors affect coral reef ecosystems and human society. Current and potential reef restoration solutions will be discussed. Students will engage in open dialogue on reef conservation-related topics including coral health and disease, fishing practices, and policy at the state, federal, and international levels. Offered by Environmental Science & Policy. Limited to three attempts.

Recommended Prerequisite: Permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EVPP 466: *Coral Reef Ecology, Health, and Conservation Lab/Field Experience.* 1 credit.
Students will learn to identify different species of corals, fishes, and other reef organisms in the classroom and in the field. Students will be introduced to scientific field methods, including how to make and record observations while diving/snorkeling. Students will deploy these survey methods in the field to collect and analyze data on coral reef ecosystems. Offered by Environmental Science & Policy. May be repeated within the degree for a maximum 1 credits.

Recommended Prerequisite: Permission of instructor

Recommended Corequisite: EVPP 465, if not taken previously.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

EVPP 472: *Tools and Techniques for International Development.* 3 credits.
Systematic and comprehensive understanding of key concepts and skills essential to effective project management in international developinent. The skill set learned is oriented towards a 'how-to-do/functional' approach that can be applied to projects on environment, poverty reduction, green growth, health, climate change adaptation and mitigation, social development and more. Notes: This course wlll co-meet with EVPP 572. Graduate students in this course wm be graded according to a different rubric than the undergraduate students. Offered by Environmental Science & Policy. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EVPP 475: *Global Biodiversity Governance.* 3 credits.
Study global biodiversity governance from a political/policy science perspective. Regime and governance literature, and empirical examples including intergovernmental policy, such as biodiversity-related climate change policy (REDD+), and certification standards, such as the Forest Sterwardship Council (RSC), will be examined, with guest lecturers and a simulation of an intergovernmental negotiation. Designated a Green Leaf Course. Notes: This course will co-meet with EVPP 575. Undergraduate students in this course will be graded according to a different rubric than the graduate students. Offered by Environmental Science & Policy. Limited to three attempts.

Specialized Designation: Green Leaf Focused Course

Recommended Prerequisite: One (environmental) social science course.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EVPP 480: *Sustainability in Action.* 4 credits.
Provide students with valuable and tangible experience in practical aspects of realizing sustainability goals and to transfer theory into practice. Allows students to engage in real-world, sustainability-related projects that provide benefits for a target community. Identify and attempt to solve a sustainability-related problem or address a sustainability-related need in a specific target community. Notes: Capstone course for the Sustainability Minor see Environmental Science

and Policy department listing for details. Offered by Environmental Science & Policy. Limited to three attempts.

Mason Core: Encore: Sustainability, Synthesis

Specialized Designation: Green Leaf Focused Course, Mason Impact.

Recommended Prerequisite: Completed or concurrent enrollment in all other required Mason Core courses; completion of 60 credits

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

EVPP 490: *Special Topics in Environmental Science and Policy.* 0-4 credits.
Studies selected topics in environmental science and policy using lectures, guest lectures, student presentations, or laboratory exercises. Notes: Topics vary, but each offering has coherent syllabus. May be repeated for credit if topics are significantly different. Offered by Environmental Science & Policy. May be repeated within the term for a maximum 8 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: 60 credits and permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EVPP 491: *Special Topics Lab.* 1-2 credits.
Explores selected in environmental science and policy using laboratory exercises. Offered by Environmental Science & Policy. May be repeated within the term for a maximum 4 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: 60 credits or permission of instructor

Recommended Corequisite: EVPP 490

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

EVPP 494: *Internship.* 1-3 credits.
Involves off-campus, professional student work with approved agencies, institutions, non-profits, or businesses. Work must produce one or more academic products such as: comprehensive report, departmental presentation, poster, or article. At least one substantive piece of work will be assessed for each internship credit being undertaken. Scope of work, credits, and academic product(s) are determined in consultation with the internship instructor. Notes: Credit will be assigned based on the number of hours participating in the internship each week: 1 Credit = 4-6 hours/week, 2 Credits= 8-12 hours/week, 3 Credits= 12-18 hours/week. Offered by Environmental Science & Policy. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: 60 credits and permission of instructor.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

EVPP 495: *Undergraduate Seminar in Environmental Science.* 1 credit.
Seminars on selected topics in environmental science, using lectures, guest lectures, student presentations, and discussions of current literature. Note: Topics vary. Offered by Environmental Science & Policy. May be repeated within the degree for a maximum 3 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: EVPP 112 and 113 or EVPP 201 or EVPP 302

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

500 Level Courses

EVPP 503: *Field Mapping Techniques.* 3 credits.
Basic techniques for collecting, recording, and plotting spatial field data, including topographic maps, compass, transit, alidade, and global positioning systems. Field work and field-based research project. Offered by Environmental Science & Policy. May not be repeated for credit. Equivalent to GEOL 506, GEOL 553.

Recommended Prerequisite: MATH 105 or equivalent, EVSC 110, GGS 102, or GEOL 101 or equivalent.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory

Grading:
This course is graded on the Graduate Regular scale.

EVPP 505: *Selected Topics in Environmental Science.* 0-4 credits.
Topic depends on instructor's specialty. Offered by Environmental Science & Policy. May be repeated within the term for a maximum 9 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: A course in Geology or Ecology, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EVPP 506: *Science of the Environment I.* 3 credits.
Environmental science is explored in this 2-semester sequence providing the foundation in chemistry (I) and biology (II) required for graduate students with social sciences backgrounds seeking a degree and career in environmental science and policy. Notes: For graduate students entering the Environmental Science and Policy or other programs. Not available to students with undergraduate degrees in the natural sciences. This course is in addition to all other degree requirements. Offered by Environmental Science & Policy. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EVPP 507: *Science of the Environment II.* 3 credits.
Environmental science is explored in this 2-semester sequence providing the foundation in chemistry (I) and biology (II) required for graduate students with social sciences backgrounds seeking a degree and career in environmental science and policy. Notes: For graduate students entering the Environmental Science and Policy or other programs. Not available to students with undergraduate degrees in the natural sciences. This course is in addition to all other degree requirements. Offered by Environmental Science & Policy. May not be repeated for credit.

Recommended Prerequisite: EVPP 506 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EVPP 515: *Molecular Environmental Biology I.* 3 credits.
Introduces molecular environmental biology covering basic concepts of molecular biology, molecular evolution, and bioinformatics, and application to problems in molecular and environmental biology. Offered by Environmental Science & Policy. May not be repeated for credit.

Recommended Prerequisite: Introductory biology and genetics or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EVPP 518: *Conservation Biology.* 3 credits.
Introduction to the science used to identify species in need of conservation, and techniques to manage and protect organisms. Offered by Environmental Science & Policy. May not be repeated for credit.

Recommended Prerequisite: Course in Ecology.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EVPP 519: *Marine Mammal Biology and Conservation.* 3 credits.
Covers the evolution, biology, ecology, and behavior of marine mammals from polar bears and sea otters to whales and dolphins. Marine mammal conservation and policy is also a major component of the course; several lecture sessions are devoted to the issue of whaling, threats to marine mammal populations, and recent conservation issues such as marine mammals and noise pollution. The course also includes a number of guest lectures from a variety of international marine mammal experts. Offered by Environmental Science & Policy. May not be repeated for credit. Equivalent to EVPP 419.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EVPP 520: *Marine Mammal Biology and Conservation Field Course.* 1 credit.
This course provides laboratory, seminar sessions and field work to accompany EVPP 519-001 marine mammal biology and conservation. Field work includes several day-long boat trips. The field course may take place in the US or abroad, including in Scotland at the University (of London) Marine Biological Station, which is equipped with boats and laboratories. Offered by Environmental Science & Policy. May not be repeated for credit.

Recommended Corequisite: EVPP 519.

Registration Restrictions:

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

EVPP 521: *Marine Conservation.* 3 credits.
Provides an overview of threats to the marine environment, and discusses the scientific, socioeconomic, and political issues behind marine conservation. Covers categories of marine pollutants (chemical, biological, and physical contaminants) and their impacts on the marine ecosystem, as well as impacts on humans (health, social, and economic), threats to key marine species (e.g., coral, sharks, turtles, and marine mammals) and initiatives and laws developed to reduce these threats. Scientific and socioeconomic problems that hinder sustainable fisheries management and the science and policy behind the global warming debate are also discussed. Provides an overview of marine environmental law and policy issues related to marine conservation policy. Offered by Environmental Science & Policy. May not be repeated for credit.

Specialized Designation: Green Leaf Focused Course

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EVPP 524: *Introduction to Environmental and Resource Economics.* 3 credits.
Introduces theory of external costs and benefits, public goods, natural resource management, and benefit and cost analysis for noneconomists. Lecture-discussion format with student presentations and participation. Analytical problems set, short writing assignments, and exams. Offered by Environmental Science & Policy. May not be repeated for credit. Equivalent to GGS 524.

Recommended Prerequisite: Basic algebra skills.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EVPP 525: *Economics of Human/Environment Interactions.* 3 credits.
Advanced topics in environmental, natural resource, and ecological economics for noneconomist. Emphasizes sustainability, intergenerational equity, and economic-ecological feedbacks. Offered by Environmental Science & Policy. May not be repeated for credit. Equivalent to GGS 525.

Specialized Designation: Green Leaf Focused Course

Recommended Prerequisite: EVPP 524/GGS 524 or equivalent.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EVPP 527: *Conservation Medicine.* 3 credits.
Presents the trans-disciplinary discipline of conservation medicine, the study of relationships between organism and ecosystem health and environmental conditions. Topics include infectious and noninfectious diseases, pathogens, processes, and impacts on human, biotic, and ecosystem health, and how to address the consequences of diseases to populations and ecological communities. Offered by Environmental Science & Policy. May not be repeated for credit. Equivalent to BIOL 527.

Recommended Prerequisite: Courses in microbiology, ecology, or conservation, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EVPP 529: *Environmental Science Communication.* 3 credits.
Communicating environmental science is inherently challenging whether in academia, the public policy realm, or to the general public. The aim of this course is to expose students to the multiple ways environmental science can be communicated. Such exposure will be made both through a theoretical approach by examining science communication literature, as well as through practical, hands-on activities and assignments. Offered by Environmental Science & Policy. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EVPP 531: *Land-use Modeling Techniques and Applications.* 3 credits.
Surveys literature on spatially explicit empirical models of land-use change. Offers hands-on experience developing and running simple models. Includes statistical models, mathematical programming models, cellular automata, agent-based models, and integrated models. Offered by Environmental Science & Policy. May not be repeated for credit. Equivalent to GGS 531.

Recommended Prerequisite: GGS 550 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EVPP 532: *Animal Behavior.* 3 credits.
Ecological aspects of animal behavior. Offered by Environmental Science & Policy. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EVPP 533: *Energy Policy.* 3 credits.
Discusses resource options in the context of 3E's: energy security, environment, and economics. Examines how these considerations apply to 3 P's developed by Jennifer Sklarew: priorities, politics, and process. Examines sustainability and environmental angles of resources, reasons for specific nations' policy choices, and possibilities for future energy policies. Considers how energy policies can create cooperation and conflict domestically and internationally. Offered by Environmental Science & Policy. May not be repeated for credit.

Specialized Designation: Green Leaf Focused Course

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EVPP 534: *Food-Energy-Water Nexus.* 3 credits.
This course examines resilience and sustainability challenges involving the food, energy water (FEW) nexus, along with innovative solutions to them. Discussions bridge multiple disciplines, considering the technological, economic, and institutional dimensions of the nexus in various places around the globe at local and national scales. Building on these existing empirical cases, students will add their own analysis of a FEW challenge in a place they select. Offered by Environmental Science & Policy. May not be repeated for credit.

Recommended Prerequisite: One environmental social science course (e.g., policy or economics), or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EVPP 536: *The Diversity of Fishes.* 3 credits.
This course delves into the biology and ecology of fishes. Subjects of this class include fish anatomy, taxonomy, evolution, habitat adaptations, community dynamics, and ecosystem interactions. The course will also touch on human impacts on fishes, and conservation. Offered by Environmental Science & Policy. May not be repeated for credit.

Recommended Prerequisite: Course in ecology or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EVPP 537: *Ornithology.* 4 credits.
Study of evolution, systematics, physiology, ecology, and behavior of birds, emphasizing field work. Offered by Environmental Science & Policy. May not be repeated for credit.

Recommended Prerequisite: Course in ecology or equivalent.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Graduate Regular scale.

EVPP 538: *Mammalogy.* 4 credits.
Study of evolution, systematics, physiology, ecology, and behavior of mammals, emphasizing fieldwork. Offered by Environmental Science & Policy. May not be repeated for credit. Equivalent to BIOL 538.

Recommended Prerequisite: BIOL 303 and BIOL 307 or permission of the instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Graduate Regular scale.

EVPP 539: *Herpetology.* 4 credits.
Study of evolution, systematics, physiology, ecology, and behavior of amphibians and reptiles, emphasizing field work. Offered by Environmental Science & Policy. May not be repeated for credit.

Recommended Prerequisite: Course in ecology or equivalent.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Graduate Regular scale.

EVPP 542: *Urban Ecosystems & Processes.* 3 credits.
Provides an overview of the challenges and opportunities that urban environments present to the plants and animals inhabiting cities and the ways that those organisms and entire ecosystems respond. Includes ecosystem ecology for engineered ecosystems, along with reviews of urban metabolism, energy budgets, water cycles, and soil ecology. Students design and conduct a small-scale green infrastructure experiment/project on campus. Offered by Environmental Science & Policy. May not be repeated for credit.

Recommended Prerequisite: CHEM 211, MATH 113 or equivalent, BIOL 308 or EVPP 302, PHYS 243 or equivalent, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EVPP 543: *Tropical Ecosystems.* 4 credits.
Terrestrial, aquatic, and marine ecosystems in the tropics, emphasizing plant communities, plant-animal interactions, and role of humans in tropics.Notes: Requires field trip to tropics as part of lab. Offered by Environmental Science & Policy. May not be repeated for credit. Equivalent to BIOL 543.

Recommended Prerequisite: A course in ecology and permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Graduate Regular scale.

EVPP 544: *Urban Ecosystems and Processes-Lab/Fields.* 1 credit.
The course describes general ecosystem ecology for engineered ecosystems along with review on urban metabolisms of energy, water, soil, and foods with cultural and historical context. Especially, the course focuses on urban water and soil issues that are critical in urban ecosystem functioning involving streams, rivers, and wetlands. The course also aims to review and discuss numerous cases of urban coupled natural and human (social) processes and their relationship with design elements that can be incorporated into creating functional urban landscape (e.g., green infrastructure). The course will engage students in studying up-to-date information on green infrastructure implementation and applications through field trips. The course provides students with an introduction of systemic, interdisciplinary approach on designing and managing urban ecosystems. The course will involve field/design work on a specific theme for each semester it gets taught. Offered by Environmental Science & Policy. May not be repeated for credit.

Recommended Prerequisite: CHEM 211, MATH 113 or equivalent, BIOL 308 or EVPP 302, PHYS 243 or EVPP 542 or equivalent; or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory

Grading:
This course is graded on the Graduate Regular scale.

EVPP 545: *Principles of Environmental Toxicology.* 3 credits.
Explores basic principles of toxicology with an emphasis on the environment, including the history and scope of the field; absorption, distribution, metabolism, and excretion of toxicants; mechanisms of toxic action; genetic toxicology; and ecotoxicology, as well as specific examples of important toxicants. Introduces regulatory toxicolog and human and ecological risk assessment. Offered by Environmental Science & Policy. May not be repeated for credit.

Recommended Prerequisite: Courses in ecology, physiology and chemistry; or permission of instructor

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EVPP 549: *Marine Ecology.* 3 credits.
Presents the Ecology of Marine Ecosystems including from the intertidal zone to the deep sea, and from coral reefs to seagrass beds and polar seas. Overviews the evolutionary characteristics and ecological processes and community structure of species and their habitats; and special problems that confront marine organisms due to anthropogenic change. Offered by Environmental Science & Policy. May not be repeated for credit.

Recommended Prerequisite: EVPP or BIOL 308 and BIOL/EVPP/GEOL 309 (or the equivalent), or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EVPP 550: *Waterscape Ecology and Management.* 3 credits.
Studies physical, chemical, and biological components of freshwater ecosystems with emphasis on streams, rivers, and lakes; links between watersheds and freshwater ecosystems; and impact of human management. Offered by Environmental Science & Policy. May not be repeated for credit. Equivalent to BIOL 550.

Recommended Prerequisite: A course in chemistry and a course in ecology.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EVPP 551: *Fungi and Ecosystems.* 3 credits.
Considers impact of fungi on ecosystems in terms of effects on biogeochemical cycling, primary and secondary production, and regulating community structure and populations of individual species through activities as symbionts and parasites. Offered by Environmental Science & Policy. May not be repeated for credit. Equivalent to BIOL 559.

Recommended Prerequisite: BIOL 304 and/or a course in microbiology or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EVPP 555: *Lab in Waterscape Ecology.* 1 credit.
Field and laboratory approaches to freshwater ecology with emphasis on study design, sampling methods, laboratory and data analysis, and report writing. Offered by Environmental Science & Policy. May not be repeated for credit. Equivalent to BIOL 555.

Recommended Prerequisite: EVPP 550 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory

Grading:
This course is graded on the Graduate Regular scale.

EVPP 556: *Aquatic Invertebrate Ecology.* 4 credits.
Through lecture, field collections, and laboratory study, students will understand phylogeny, physiology, life histories, behaviors, trophic importance, adaptations, conservation significance and response to global environmental change of aquatic invertebrates. Students will identify invertebrates using appropriate literature and methods and use proper curation to preserve them. Students will become familiar with methods for measuring aquatic invertebrate density, biomass, and diversity. Offered by Environmental Science & Policy. May not be repeated for credit.

Registration Restrictions:

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Graduate Regular scale.

EVPP 560: *Infectious Diseases of Wildlife.* 3 credits.
Examines infectious diseases of wildlife with emphasis on causes and mechanisms, pathobiology, ecology and epidemiology and population significance. Explores methods of diagnosis, control, prevention and outbreak investigation as they apply to management and conseration of wildlife populations. Also, diseases crossing species barriers will be examined. Note: Course will co-meet with BIOL 460/EVPP 460. Offered by Environmental Science & Policy. May not be repeated for credit. Equivalent to BIOL 560.

Recommended Prerequisite: Courses on evolution, ecology, zoology, and conservation biology or permission of the instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EVPP 563: *Coastal Morphology and Processes.* 4 credits.
Studies global coastal geomorphology and processes, emphasizing U.S. Atlantic and gulf coasts. Topics include plate tectonics; sea-level changes; sediment supply; impact of waves, tides, storms; and human activities. Lecture, extended weekend field trips to mid-Atlantic coast. Offered by Environmental Science & Policy. May not be repeated for credit. Equivalent to GEOL 563.

Recommended Prerequisite: Course in Geology, Oceanography, Marine Science, or Physical Geography; or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Graduate Regular scale.

EVPP 572: *Tools and Techniques for International Development.* 3 credits.
Systemic and comprehensive understanding of key concepts and skills essential to effective project management in international development. The skill set learned is oriented towards a 'how-to: do/functional' approach that can be applied to projects on environment, poverty reduction, green growth, health, climate change adaptation and mitigation, social development and more. Offered by Environmental Science & Policy. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EVPP 575: *Global Biodiversity Governance.* 3 credits.
Study global biodiversity governance from a political/policy science perspective. Regime and governance literature, and empirical examples including intergovernmental policy, such as biodiversity-related climate change policy (REDD+), and certification standards, such as the Forest Stewardship Council (FSC), will be examined, with guest lecturers and a simulation of an inter governmental negotiation. Designated a Green Leaf Course. Offered by Environmental Science & Policy. May not be repeated for credit.

Specialized Designation: Green Leaf Focused Course

Recommended Prerequisite: One (environmental) social science course.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EVPP 577: *Biogeochemistry: A Global Perspective.* 3 credits.
Structure and function of ecosystems, their interactions as components of landscapes, and contributions to the global environment. Emphasizes biogeochemical cycles of natural, disturbed, and managed ecosystems, and integration at landscape and global level as related to current ecological problems such as transfer of nonpoint source pollutants, atmospheric deposition, stratospheric ozone depletion, and global change. Offered by Environmental Science & Policy. May not be repeated for credit.

Recommended Prerequisite: A course in ecology and a course in chemistry, or Permission of Instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EVPP 581: *Estuarine and Coastal Ecology.* 3 credits.
Emphasizes marine biology of estuarine and coastal habitats of Chesapeake Bay region, and factors affecting distribution and abundance of organisms. Offered by Environmental Science & Policy. May not be repeated for credit. Equivalent to BIOL 581.

Recommended Prerequisite: Course in ecology and permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EVPP 582: *Estuarine and Coastal Ecology Laboratory.* 1 credit.
Provides training in field measurement of physical and chemical parameters, and collection and identification of local organisms. Emphasizes the practice of ecological field research. Offered by Environmental Science & Policy. May not be repeated for credit. Equivalent to BIOL 582.

Recommended Corequisite: EVPP/BIOL 581.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory

Grading:
This course is graded on the Graduate Regular scale.

600 Level Courses

EVPP 607: *Fundamentals of Ecology.* 3 credits.
Overview of concepts in physiological, population, community, ecosystem, biogeographical and human ecology. Notes: Restricted to graduate students with little or no background in ecology. Students who have taken BIOL 307 or the equivalent elsewhere are ineligible for this course. Offered by Environmental Science & Policy. May not be repeated for credit. Equivalent to BIOL 607.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EVPP 608: *Introduction to Environmental Social Science.* 3 credits.
The course Environmental Social Science - ESS - aims to provide insight into the some of the most relevant social sciences and social scientific perspectives for studying environmental issues. The course introduces students to different social scientific disciplines. They will also learn about different social scientific theoretical perspectives and concepts, which they will apply in a research project. Designated a Green Leaf Course. Offered by Environmental Science & Policy. May not be repeated for credit.

Specialized Designation: Green Leaf Focused Course

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EVPP 610: *Bioremediation: Theory and Applications.* 3 credits.
Provides basis for understanding proper application of bioremedial technologies to treatment of hazardous wastes. Includes evaluation of data to determine successful treatment. Offered by Environmental Science & Policy. May not be repeated for credit. Equivalent to BIOL 610.

Recommended Prerequisite: Course in microbiology and either organic chemistry or biochemistry or Permission of Instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EVPP 615: *Molecular Environmental Biology II.* 4 credits.
Applied course covering theory and methodology of molecular environmental biology, including analysis of selected case studies in conservation biology of macro-organisms, molecular systematics, and microbial ecology. Offered by Environmental Science & Policy. May not be repeated for credit.

Recommended Prerequisite: EVPP 515 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Graduate Regular scale.

EVPP 619: *The Challenge of Biodiversity.* 3 credits.
The Challenge of Biodiversity examines the science and policy of biodiversity conservation, through case studies, current events, guest speakers, class discussion, reading and assignments. Emphasis is placed on problem solving, communication skills and critical thinking. Offered by Environmental Science & Policy. May not be repeated for credit.

Recommended Prerequisite: 6 credit hours of graduate course work or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EVPP 620: *Development of U.S. Environmental Policies.* 3 credits.
Examines nature and historical development of environmental policy in the United States, including consideration of social, political, economic and environmental factors, and ways it is expressed and implemented. Also considers sustainability and emerging issues. Offered by Environmental Science & Policy. May not be repeated for credit.

Specialized Designation: Green Leaf Focused Course

Recommended Prerequisite: 8 graduate credits including graduate course in policy process and course in ecology; or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EVPP 621: *Overview of Biodiversity Conservation.* 3 credits.
Lectures, reading assignments, class discussions, and orally presented and written case studies to explore what biodiversity is, why it is important, how conservation has evolved, and status today. Offered by Environmental Science & Policy. May not be repeated for credit.

Recommended Prerequisite: 8 credits of graduate environmental policy and/or science, including ecology, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EVPP 622: *Management of Wild Living Resources.* 3 credits.
Examines management of different types of wild living resources: animal and plant, aquatic and terrestrial. Reviews status of resources, analyzes factors that have led to present situation, and considers what may be required to achieve effective and sustainable management. Offered by Environmental Science & Policy. May not be repeated for credit.

Specialized Designation: Green Leaf Focused Course

Recommended Prerequisite: 8 graduate credits of ecology or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EVPP 623: *Translating Environmental Policy into Action.* 3 credits.
Guest lecturers, class discussions, written and orally presented case studies, and assigned reading to identify and analyze factors involved in moving from science and policy to concrete action. Provides understanding of basic principles, skills, and strategies. Offered by Environmental Science & Policy. May not be repeated for credit.

Recommended Prerequisite: 8 credits of graduate environmental policy and/or science, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EVPP 626: *Environment and Development in Asia.* 3 credits.
Examine environment and development in selected countries of South, Southeast, and East Asia. Reviews relationship between environment and development, considers background and history leading up to the present, and considers requirements to achieve more effective and sustainable results. Offered by Environmental Science & Policy. May not be repeated for credit.

Specialized Designation: Green Leaf Focused Course

Recommended Prerequisite: A course in policy process, a course in international development and a course in ecology, or Permission of Instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EVPP 627: *Environmental Policy in Latin America.* 3 credits.
Examine environmental policy in Latin America. Reviews evolution of environmental policy and relationship between environment and development, considers background and history leading up to the present, and considers requirements to achieve more effective and sustainable results. Offered by Environmental Science & Policy. May not be repeated for credit.

Specialized Designation: Green Leaf Focused Course

Recommended Prerequisite: 8 graduate credits in policy process, international development, and ecology; or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EVPP 628: *Environment and Development in Africa.* 3 credits.
Examine environment and development in sub-Saharan Africa. Reviews relationship between environment and development, considers background and history leading up to present, and considers requirements to achieve more effective and sustainable results. Offered by Environmental Science & Policy. May not be repeated for credit.

Specialized Designation: Green Leaf Focused Course

Recommended Prerequisite: 8 graduate credits in policy process, international development, and ecology; or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EVPP 630: *Methods and Logic of Social Inquiry.* 3 credits.
Emphasizes gathering, interpretation, and evaluation of scientific evidence. Develops critical thinking skills and covers logic of scientific inquiry, including various data collection methods such as experiments, observational research, and Q methodology. Offered by Environmental Science & Policy. May not be repeated for credit.

Recommended Prerequisite: An undergraduate course in statistics and research methods or Permission of Instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EVPP 631: *Spatial Agent-based Models of Human-Environment Interactions.* 3 credits.
Discusses key challenges in spatial modeling of human-environment interactions. Reviews agent-based modeling applications in urban and rural interactions, agriculture, forestry, and other areas. Hands-on development of simple ABM models, and investigation of links between GIS and ABM. Offered by Environmental Science & Policy. May not be repeated for credit. Equivalent to GGS 631.

Recommended Prerequisite: EVPP 531 or CSS 600 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EVPP 632: *Qualitative Research Methods for Environmental Scientists.* 3 credits.
Course engages questions of qualitative research methods for scientists conducting human-environment research. Focuses on tools to investigate the human-environment nexis, including community-based conservation and management research and decolonizing methodologies. Students discuss and practice 'triangulation'-- the integration of qualitative and quantitative methods-- a necessary skill for environmental/human-environment research. Offered by Environmental Science & Policy. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EVPP 635: *Environment and Society.* 3 credits.
Human-environment interactions in human ecology perspective, historical basis of human environmental impact, indigenous and nonindigenous worldviews in context of modernization, environmental degradation and globalization, and contemporary policy and research initiatives geared toward resilience and sustainability. Discussion format. Offered by Environmental Science & Policy. May not be repeated for credit.

Specialized Designation: Green Leaf Focused Course

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EVPP 636: *Gender, Race, and the Natural World.* 3 credits.
Advanced study of links among gender, race, and nature using social-psychological framework, original sources, and seminar and discussion. Analyzes ideologies that underpin the interlocking narratives of gender, race, and nature, and examines role of science in producing these ideologies. Offered by Environmental Science & Policy. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EVPP 637: *Human Dimensions of Climate Change.* 3 credits.
Examines human dimensions of climate change, biodiversity loss, ozone depletion, and related anthropogenic alterations of biosphere. Offered by Environmental Science & Policy. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EVPP 638: *Corporate Environmental Management and Policy.* 3 credits.
Provides understanding of how environmental issues interact with business strategy decisions. Emphasizes learning about proactive win-win environmental management strategies being implemented by world's leading firms, and shows how government policies and regulations can be designed to simultaneously promote higher environmental protection and competitiveness. Combines mini lectures, participatory discussions. Offered by Environmental Science & Policy. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EVPP 641: *Environmental Science and Public Policy.* 3 credits.
Effects of human activities on environment. Considers airborne, waterborne, and solid waste contaminants with respect to sources, control, and effect on ecosystems and humans. Focus is on scientific and technical aspects of environmental contamination. Includes discussion of science policy related to these topics. Offered by Environmental Science & Policy. May not be repeated for credit.

Recommended Prerequisite: A course in Ecology or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EVPP 642: *Environmental Policy.* 3 credits.
In-depth examination of U.S. efforts since 1970 to mitigate pollution of air, land, and water. Addresses issues of global concern, including biodiversity loss, ozone depletion, and climate change. Offered by Environmental Science & Policy. May not be repeated for credit. Equivalent to PUAD 642.

Specialized Designation: Green Leaf Focused Course

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EVPP 643: *Microbial Ecology.* 4 credits.
Studies relationships between microorganisms and their natural environment, and methodology for observing the microbes in nature and the biochemistry of environmental systems. Includes discussion of the role of microbes both in creating and removing toxic threats in the environment. Laboratory component includes field sampling/analyses and laboratory isolation and identification of microbes as well as measurement of their physiological activities. Offered by Environmental Science & Policy. May not be repeated for credit. Equivalent to BIOL 643.

Recommended Prerequisite: A course in microbiology or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Graduate Regular scale.

EVPP 645: *Freshwater Ecology.* 3 credits.
Studies biotic and abiotic interactions that affect structure and composition of freshwater ecosystems. Emphasizes research literature. Offered by Environmental Science & Policy. May not be repeated for credit.

Recommended Prerequisite: EVPP 550 or Permission of Instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EVPP 646: *Wetland Ecology and Management.* 3 credits.
Emphasizes structure, functions, and ecological processes of created and natural wetlands from an ecosystem perspective. Students will be expected to develop an understanding of hydrologic, physicochemical, and ecological aspects of wetlands and the management of these systems through in-class and field/lab works. Each student is required to carry out an individual research project that involves field and lab works, and write a research paper. Offered by Environmental Science & Policy. May not be repeated for credit.

Recommended Prerequisite: BIOL 307 or EVPP 377, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EVPP 647: *Wetland Ecology Lab and Field.* 1 credit.
Use laboratory and field work to study the structure and function of wetland ecosystems. Offered by Environmental Science & Policy. May not be repeated for credit.

Recommended Prerequisite: EVPP 646 (formerly EVPP 644).

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory

Grading:
This course is graded on the Graduate Regular scale.

EVPP 648: *Population Ecology.* 3 credits.
Surveys ecological models and theory. Topics include population growth and regulation, competition, predator-prey, herbivore-plant, and parasite-host interactions, mutualism, and metapopulation ecology. Offered

by Environmental Science & Policy. May not be repeated for credit. Equivalent to BIOL 648.

Recommended Prerequisite: A Course in ecology or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EVPP 650: *Ecosystem Analysis and Modeling.* 4 credits.
Introduces principles, history, and methodologies of systems ecology, emphasizing development and simulation of ecological models for natural resource/ecosystem management, conceptual and symbolic models, and simulation techniques on microcomputers. Offered by Environmental Science & Policy. May not be repeated for credit. Equivalent to BIOL 650.

Recommended Prerequisite: A course in ecology or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Graduate Regular scale.

EVPP 651: *Multivariate Data Analysis for Ecology and Environmental Science.* 3 credits.
Provides graduate students in ecology and environmental science with tools needed to analyze multivariate data sets. Topics include classification and ordination. Offered by Environmental Science & Policy. May not be repeated for credit.

Recommended Prerequisite: EVPP 607 or equivalent.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EVPP 652: *The Hydrosphere.* 3 credits.
Components and transfer processes within hydrosphere, which consists of aqueous envelope of Earth including oceans, lakes, rivers; snow, ice, glaciers, soil, moisture, ground water, and atmospheric water vapor. Offered by Environmental Science & Policy. May not be repeated for credit. Equivalent to GGS 656.

Recommended Prerequisite: 2 semesters of calculus and partial differential equations.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EVPP 670: *Environmental Law.* 3 credits.
Studies environmental laws such as the National Environmental Policy Act, and regulatory issues such as the Clean Water and Clean Air Acts. Emphasizes critical evaluation of alternatives to unresolved issues in environmental policies. Offered by Environmental Science & Policy. May not be repeated for credit.

Recommended Prerequisite: Course in Ecology, Environmental Biology, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EVPP 675: *Environmental Planning and Administration.* 3 credits.
Examines interaction of man and ecological systems; causes of damage or deterioration in environment; content, oversights, and externalities in management decision processes that affect environment and effectiveness of plan implementation; means of assessing environmental impact; and administrative approaches for minimizing environmental impact. Offered by Environmental Science & Policy. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EVPP 677: *Applied Ecology and Ecosystem Management.* 3 credits.
Uses ecological principles to manage natural resources. Emphasizes hierarchical levels of organization within ecological systems, and management of ecosystems to conserve biodiversity, natural resources, and environment. Offered by Environmental Science & Policy. May not be repeated for credit.

Recommended Prerequisite: BIOL 607 or EVPP 607 or equivalent.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EVPP 682: *Principles of Environmental Conflict.* 3 credits.
Explores the nature and characteristics of environmental conflict and efforts to manage, resolve or transform it. Students will develop a capacity to assess the strengths and weaknesses of environmental conflict resolution processes while learning about best practices for preventing, preparing for, and addressing environmental conflict. Offered by Environmental Science & Policy. May not be repeated for credit. Equivalent to CONF 682.

Recommended Prerequisite: EVPP 607, CONF 501, and CONF 502, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EVPP 683: *Environmental Conflict Resolution: Situation Assessment, Process Design and Best Practices.* 3 credits.
This course explores best practices for managing, resolving, and transforming environmental conflict using environmental conflict resolution (ECR) processes. Nature and dynamics of environmental disputes, methods for assessing conflict situations, and methods for conducting various forms of ECR processes will be covered in the context of selected case studies with emphasis on student involvement. Offered by Environmental Science & Policy. May not be repeated for credit. Equivalent to CONF 683.

Recommended Prerequisite: EVPP 682 or CONF 682, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EVPP 684: *Environmental Conflict Resolution and Collaboration: Leadership Practicum/Capstone.* 3 credits.
This course is the capstone course for the Graduate Certificate in Environmental Conflict Resolution and Collaboration. Under supervision of the instructor, students will undertake an assessment of an active environmental conflict and recommend a range of processes that promote identified goals for preferred conflict outcomes. Offered by Environmental Science & Policy. May not be repeated for credit.

Recommended Prerequisite: EVPP 682 or CONF 682, and EVPP 683 or CONF 683.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EVPP 692: *Master's Seminar in Environmental Science and Public Policy.* 1 credit.
Explores selected topics in environmental science and public policy using lectures, guest lectures, student presentations, and discussions of current literature. Notes: Topics vary. Offered by Environmental Science & Policy. May be repeated within the term for a maximum 4 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

EVPP 693: *Directed Studies in Environmental Science and Public Policy.* 1-4 credits.
Studies topic not otherwise available in graduate program. May involve reading assignments, tutorials, lectures, papers, presentations, and lab or field study determined in consultation with instructor. Notes: Short study plan required. May not be used to fulfill explicit undergraduate prerequisites for graduate work. Offered by Environmental Science & Policy. May be repeated within the term for a maximum 8 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Research

Grading:
This course is graded on the Graduate Special scale.

700 Level Courses

EVPP 730: *Environmental Policy Research in Practice.* 3 credits.
Course is designed for students interested in social science-oriented environmental research. Student learn how to ground their research ideas in social science theory, develop a central research question and construct original research hypotheses that are grounded in social science literature. They also hone their peer reviewing skills by assessing other students' research and offering constructive commentary. Offered by Environmental Science & Policy. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: 12 credit hours of graduate course work at Mason or approval of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

EVPP 738: *Sustainable Enterprise Theory.* 3 credits.
This course is designed to critically evaluate the scholarly research related to sustainable enterprise. The class provides an overview of the major theories, research designs, and methodologies associated with this emerging research domain. Students apply these theories to develop social science research proposals for empirical investigation. Offered by Environmental Science & Policy. May not be repeated for credit.

Recommended Prerequisite: EVPP 638 Corporate Environmental Management and Policy, equivalent class, or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EVPP 741: *Advanced Topics in Environmental Science and Public Policy.* 0-4 credits.
Studies selected advanced topics in environmental science and public policy. Lectures, guest lectures, student presentations, laboratory exercises. Notes: Topics vary; each offering has coherent theme. May be repeated for credit if topics significantly differ. Offered by Environmental Science & Policy. May be repeated within the term for a maximum 10 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: Eight hours of graduate coursework in Environmental Science and Public Policy, or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EVPP 745: *Environmental Toxicology.* 3 credits.
Studies nature, distribution, and interaction of toxic chemicals released into environment. Topics include acute, subchronic, and chronic toxicity testing; uptake, distribution and metabolism of toxins as well as their distribution in the environment. Emphasizes effects on nonhuman biota, detection and fate of chemicals, and includes discussion of implications for government regulation. Offered by Environmental Science & Policy. May not be repeated for credit. Equivalent to BIOL 745.

Recommended Prerequisite: EVPP 445 or EVPP 545 or equivalent; or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EVPP 792: *Seminar in Earth Systems Science.* 2 credits.
Seminar for Earth systems science graduate students with background in major systems. Capstone experience. Seminars presented by faculty and students. Notes: Topics vary from semester to semester. Offered by Environmental Science & Policy. May not be repeated for credit. Equivalent to GGS 792.

Recommended Prerequisite: 15 graduate credits and courses on the atmosphere, hydrosphere, and lithosphere.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:

This course is graded on the Graduate Regular scale.

EVPP 793: *Research in Environmental Science and Public Policy.* 1-3 credits.
Library, laboratory, or field investigation under supervision of instructor. Notes: Short proposal required. Offered by Environmental Science & Policy. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: 8 graduate credits in EVPP and Permission of Instructor and Chair.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Research

Grading:
This course is graded on the Graduate Special scale.

EVPP 797: *Master's Thesis Proposal.* 1-3 credits.
Work on research proposal that forms basis for a master's thesis. Offered by Environmental Science & Policy. May be repeated within the degree for a maximum 3 credits.

Recommended Prerequisite: 12 credits and permission of major professor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Research

Grading:
This course is graded on the Graduate Special scale.

EVPP 798: *Master's Research Project in Environmental Science and Public Policy.* 1-3 credits.
Experimental, observational, literature-based, or theoretical research project chosen and completed under guidance of faculty member. Proposal required before enrollment. Comprehensive report acceptable to student's committee required for completion. Notes: Students taking EVPP 798 may receive no more than 6 credits for both EVPP 793 and EVPP 798. Offered by Environmental Science & Policy. May be repeated within the degree for a maximum 3 credits.

Recommended Prerequisite: Approved project proposal and permission of instructor and Chair.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Thesis

Grading:
This course is graded on the Graduate Special scale.

EVPP 799: *Master's Thesis in Environmental Science and Public Policy.* 1-6 credits.
Experimental, observational, or theoretical research under instructor's supervision that culminates in production of thesis. Thesis work should be potentially publishable. Notes: No more than 6 credits of EVPP 793 and EVPP 799 may be applied to master's degree. Offered by Environmental Science & Policy. May be repeated within the degree.

Recommended Prerequisite: Approved thesis proposal and permission of instructor and Chair.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Thesis

Grading:
This course is graded on the Satisfactory/No Credit scale.

800 Level Courses

EVPP 894: *Supervised Internship.* 3-12 credits.
Training in application of ecological skills to environmental management and policy under supervision of a qualified environmental scientist at governmental agency, consulting firm, industry, or other acceptable organization. Offered by Environmental Science & Policy. May be repeated within the degree for a maximum 12 credits.

Recommended Prerequisite: Permission of student's doctoral committee, graduate program director and department chair.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Internship

Grading:
This course is graded on the Graduate Special scale.

900 Level Courses

EVPP 991: *Advanced Seminar in Environmental Science.* 2 credits.
Topics generally address interface between environmental science and public policy. Offered by Environmental Science & Policy. May be repeated within the term.

Recommended Prerequisite: 8 hours of Ecology or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

EVPP 998: *Doctoral Dissertation Proposal.* 1-6 credits.
Work on research proposal that forms basis for a doctoral dissertation. Offered by Environmental Science & Policy. May be repeated within the degree.

Recommended Prerequisite: Admission to doctoral candidacy.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

EVPP 999: *Doctoral Dissertation Research.* 1-12 credits.
Research on basic or applied problem in environmental science and public policy. Offered by Environmental Science & Policy. May be repeated within the degree.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy.

Enrollment is limited to Graduate level students.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

Executive MBA (EMBA)

600 Level Courses

EMBA 603: *Managerial Economics.* 3 credits.
Develops and applies economic analysis tools in managerial decision situations. Focuses on economic analysis to understand firm's competitive environment. Offered by School of Business. May not be repeated for credit. Equivalent to MSF 603.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Enrollment is limited to students with a major in Executive MBA.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

EMBA 612: *Managing Costs and Evaluating Performance.* 1-3 credits.
Focuses on developing accounting information for use by managers in planning and control activities. Examines traditional and emerging cost-management systems. Special emphasis on information for decision-making, operational control, and performance evaluation. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Enrollment is limited to students with a major in Executive MBA.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

EMBA 613: *Financial Accounting.* 3 credits.
Develops framework of concepts and procedures essential for interpreting general-purpose financial statements and internal managerial accounting reports. Emphasizes understanding basic concepts and applying selected procedures to problem-solving situations. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Enrollment is limited to students with a major in Executive MBA.

Enrollment is limited to Graduate or Undergraduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

EMBA 623: *Marketing.* 3 credits.
Develops market-based knowledge and skills for effective marketing strategy design, implementation, and evaluation. Develops ability to make marketing decisions in wide variety of institutional and competitive situations. Addresses the importance of companies being market-driven and customer-focused. Emphasis on case studies, team work, and projects. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Enrollment is limited to students with a major in Executive MBA.

Enrollment is limited to Graduate or Undergraduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

EMBA 633: *Statistics for Business Decision Making.* 3 credits.
Applies statistical methods in analyzing problems in business decision-making. Topics include descriptive statistics, probability distributions, estimation and hypothesis testing, and linear regression. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Enrollment is limited to students with a major in Executive MBA.

Enrollment is limited to Graduate or Undergraduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

EMBA 638: *Services and Operations Management.* 3 credits.
Integrates theory and practice of operations management with mathematical modeling and quantitative techniques of management science. Addresses range of operations management issues, including technology and strategy decisions, systems design issues, project operations, quality control, and inventory planning. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Enrollment is limited to students with a major in Executive MBA.

Enrollment is limited to Graduate or Undergraduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

EMBA 641: *Building the High-Performing Team.* 0-3 credits.
Develops the knowledge and skills needed for creating powerful, high-performance teams within and among organizational units. Strategies are offered for alignment of goals, building conditions for coordinated action, generating innovation, and resolving breakdowns. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Enrollment is limited to students with a major in Executive MBA.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Satisfactory/No Credit scale.

EMBA 643: *Managerial Finance.* 3 credits.
Introduces theories of finance and their application to the formulation of business policy. Topics include internal financial analysis, financial forecasting, valuation, risk and return analysis, capital allocation, and capital structure. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Enrollment is limited to students with a major in Executive MBA.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

EMBA 653: *Organizational Behavior and Teams.* 3 credits.
Examines development, theories, and practice of management within organizations. Emphasizes human behavior and how it influences organizational effectiveness. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Enrollment is limited to students with a major in Executive MBA.

Enrollment is limited to Graduate or Undergraduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

EMBA 660: *Management of Information Technology.* 3 credits.
Examines computer-based information technologies and their interrelation with management processes, especially problem-solving and decision-making at individual, work group, and organization levels. Topics include management information system life cycle, with emphasis on manager's perspective, and modeling and analysis to support decision-making. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Enrollment is limited to students with a major in Executive MBA.

Enrollment is limited to Graduate or Undergraduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

EMBA 678: *Business Strategy.* 3 credits.
Integrates business strategy and policy with functional knowledge developed in other courses and business practice. Issues include formulation of strategy, industry analysis, building core competencies, and strategy implementation. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Enrollment is limited to students with a major in Executive MBA.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

EMBA 696: *Directed Studies in Executive MBA.* 1-3 credits.
Approval by faculty member and program director required prior to registration. Studies specialized topics in business not otherwise available in the curriculum. Offered by School of Business. May be repeated within the degree for a maximum 3 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Enrollment is limited to students with a major in Executive MBA.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Regular scale.

EMBA 697: *Special Topics in Executive MBA.* 1-3 credits.
Sections established as necessary to focus on various topical issues that emerge in practice of executive business administration. Offered by School of Business. May be repeated within the term for a maximum 6 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Enrollment is limited to students with a major in Executive MBA.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

700 Level Courses

EMBA 703: *Financial Markets.* 0-3 credits.
Explores the relationships between financial markets and their impact on corporate financial decision making. Considers cross-market interrelationships, including how financial markets respond by creating financial instruments to meet the varying financial requirements of business firms. The course includes a domestic financial residency in New York that focuses on contemporary developments in these markets. Offered by School of Business. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Enrollment is limited to students with a major in Executive MBA.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

EMBA 718: *Strategic Leadership in National Security Firms.* 3 credits.
Focuses on the essential elements of successful organizational change. Emphasis on understanding the forces for change, as well as developing skills to manage a successful change process. Gives a deeper understanding of organizational leadership and an increased ability to be a successful leader. Incorporates and integrates theory, research, and application, with the ultimate goal of providing the student with practical information about leadership. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to students with a major in Executive MBA.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EMBA 729: *Critical Infrastructure Protection and Resilience.* 3 credits.
Course provides an introduction to the policy, strategy, and practical application of critical infrastructure security and resilience from an all-hazards perspective. It describes the strategic context presented by the 21st century risk environment, and discusses the challenges and opportunities associated with the following: public-private partnerships; information-sharing; risk analysis and prioritization; risk mitigation and management; performance measurement; incident management; and addressing future risks. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to students with a major in Executive MBA.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

EMBA 730: *Assessing and Managing Risk to Critical Infrastructure Systems.* 1-3 credits.
Course provides an introduction to the policy, strategy, and practical application of an all-hazards risk assessment and management in the context of critical infrastructure security and resilience. Course promotes subject matter understanding, critical discussion of analytic approaches, and proficiency in communicating information on risk methodologies and their' utilization in oral and written form. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:

Enrollment is limited to students with a major in Executive MBA.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EMBA 731: *Partnering and Information Sharing for Critical Infrastructure Security and Resilience.* 1-3 credits.
Course provides an overview of partnerships and information sharing within the homeland security enterprise with a focus on the collaboration and information products, processes, and systems necessary to protect and enhance the resilience of the Nation's critical infrastructure. Course is designed to promote subject-matter understanding, critical analysis of issues, and insight into senior leader decision-making in both the government and private sectors. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to students with a major in Executive MBA.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EMBA 732: *Critical Infrastructure Security and Resilience and Cybersecurity.* 1-3 credits.
Provides introduction to policy, strategy, and operational environment of cyberspace in context of critical infrastructure security and resilience mission area. Course includes discussion of cybersecurity challenges presented by 21st century risk environment, and opportunities and challenges associated with cyber risk analysis and prioritization; risk mitigation and management; government-private cybersecurity partnerships and information-sharing; attack alert and response; and addressing future cyber risks. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to students with a major in Executive MBA.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EMBA 733: *Advanced Topics in Critical Infrastructure Protection.* 1-3 credits.
Course provides an advanced focus on critical infrastructure security and resilience policy, strategy, planning, and incident management operations in an all-hazards context. In terms of the audience, this course assumes a base level of student knowledge and practical experience in the critical infrastructure security and resilience field. Offered by School of Business. May not be repeated for credit.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment is limited to students with a major in Executive MBA.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EMBA 734: *Critical Infrastructure Protection Residency.* 3 credits.
This course takes the concepts from previous Critical Infrastructure Protection track courses and provides an opportunity to see these concepts in a "field environment." The course will engage with decision makers to learn how they operate profit generating firms in the critical infrastructure sectors while addressing considerations of security and resilience. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to students with a major in EMBA - Distance Learning or Executive MBA.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EMBA 735: *Systems Thinking and Dynamics.* 1-3 credits.
Enables students to develop, express, improve, and validate holistic mental models of problems. In doing so, they will build a foundation for better decision making leading to improved business performance. The main strength of the systems-thinking approach is its emphasis on long-term strategic outcomes as opposed to short-term tactical ones. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to students with a major in Executive MBA.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EMBA 740: *Global Issues for National Security Firms.* 3 credits.
The seminar topics would incorporate student and industry partner feedback and consultation by the Program Director and Academic Director with the GPC and Area Chairs. Possible topics include: European Union, Global Social Entrepreneurship, Emerging Markets and Product

Development. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to students with a major in EMBA - Distance Learning or Executive MBA.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Special scale.

EMBA 741: *The Business of National Security.* 3 credits.
The seminar topics would incorporate student and industry partner feedback and consultation by the Program Director and Academic Director with the GPC and Area Chairs. Possible topics include: National Defense Commercial Strategy, Competing Internationally in National Defense Sector, Small Business and National Defense. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to students with a major in EMBA - Distance Learning or Executive MBA.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Special scale.

EMBA 742: *Advanced Topics in Global Business.* 1.5 credit.
The course discusses current issues in globalization and the ramifications of globalization on business strategy; comparatively reviews emerging markets and development in Asia, Africa, and Latin America and in financial services, healthcare, and eGovernment; considers the role of ICT and mobiles in international development; and reviews the role and development of institutions and significance for business in emerging markets. Offered by School of Business. May not be repeated for credit.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment is limited to students with a major in EMBA - Distance Learning or Executive MBA.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EMBA 743: *Growth Strategies for National Security Firms.* 3 credits.
Students will be provided an in-depth look at the strategy side of the National Security industry and will learn how security business position and re-position themselves in this changing market place. The process that firms go through to determine their overall strategy will be explored. Offered by School of Business. May not be repeated for credit.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment is limited to students with a major in EMBA - Distance Learning or Executive MBA.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

EMBA 750: *Capstone Project: Part 1.* 1.5 credit.
Lab-based course provides action learning experience that integrates course content from throughout the EMBA program. Students work in teams to develop solutions to organizational challenges and opportunities. They select a project,evaluate the strategic issues for their assigned clients, design a solution, and present results to an executive panel. Depending on the nature of the issue and faculty requests, team presentations of results include one or more of the following sections: an analysis of the situation; recommendations including changes in goals and organizational design; a plan of action integrating marketing, human resource development, organizational design, finance, and operations; an implementation plan using theories of communication and change management, to include the business case and a business plan. Students are expected to draw upon coursework from multiple disciplines in completing this project. Offered twice in spring semester for a total of 3 credit hours. Offered by School of Business. May be repeated within the degree for a maximum 3 credits.

Registration Restrictions:
Enrollment is limited to students with a major in Executive MBA.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

EMBA 751: *Corporate Global Strategy.* 1.5-3 credits.
Examines issues in strategy for firms operating in multiple markets or businesses, including diversification, portfolio approaches to corporate strategy, mergers and acquisitions, corporate alliances and joint ventures, restructuring, and coordinating multibusiness corporations. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

EMBA 754: *Capstone Project: Part 2.* 1.5 credit.
Students will work in teams to develop solutions to complex organizational challenges and opportunities. The Capstone project is divided into two parts with regard to course work. In Part II, students will evaluate the strategic issues for their client based upon interviews, outside primary and secondary research, and industry analysis. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to students with a major in EMBA - Distance Learning or Executive MBA.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EMBA 755: *Special Topics in Management.* 1-6 credits.
In-depth examination of advanced topics in management. Offered by School of Business. May be repeated within the term for a maximum 6 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment is limited to students with a major in Executive MBA.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

EMBA 790: *National Security Residency.* 3 credits.
Develops National Security perspective through seminars led by professors and high-level managers; briefings by officials of government and other policy-making organizations. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to students with a major in Executive MBA.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Satisfactory/No Credit scale.

EMBA 795: *Global Residency.* 0-3 credits.
Develops global perspective through seminars led by professors and high-level managers; briefings by officials of government and other policy-making organizations; and site visits to production and distribution facilities, research centers, IT units, and other corporate offices. Offered by School of Business. May be repeated within the term for a maximum 6 credits.

Registration Restrictions:
Enrollment is limited to students with a major in Executive MBA.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

Exercise, Fitness, and Health Promotion (EFHP)

500 Level Courses

EFHP 500: *Workshop in Exercise, Fitness, and Health Promotion.* 1-3 credits.
Provides concentrated full-time workshops, weekend seminars, and workshops on selected topics in exercise, fitness, and health promotion. Notes: No more than 6 credits may be applied for degree credit. Offered by School of Kinesiology. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EFHP 520: *Medical Terminology of Health Professionals.* 3 credits.
Analyzes foundation of scientific and medical vocabulary including prefixes, suffices and stems used to form compound words for health professionals. Offered by School of Kinesiology. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EFHP 522: *Functional Anatomy for Health and Wellness Practitioners.* 3 credits.
Promotes familiarity and proficiency with anatomy of neuromuscular and musculoskeletal systems, which relate directly to sports related injuries. Offered by School of Kinesiology. May not be repeated for credit.

Recommended Prerequisite: BIOL 124, 125 (or equivalent)

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EFHP 526: *Prevention, Recognition, and Management of Fitness Related Injuries.* 3 credits.
Promotes familiarity and proficiency with assessment and physical examination of sports-related injuries. Offered by School of Kinesiology. May not be repeated for credit.

Recommended Prerequisite: BIOL 124, 125 (or equivalent).

Recommended Corequisite: EFHP 522.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EFHP 598: *Special Topics.* 1-6 credits.
Focuses on projects related to exercise, fitness, or health promotion. Offered by School of Kinesiology. May be repeated within the term.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EFHP 599: *Independent Study EFHP.* 1-3 credits.
Studies problem areas in exercise, fitness, and health promotion research, theory, or practice under direction of faculty member. May be repeated. No more than 3 credits may be earned. Offered by School of Kinesiology. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Regular scale.

600 Level Courses

EFHP 605: *History of American Sport, Exercise, and Physical Culture.* 3 credits.
Role of sport and physical education in Europe and its impact on developments in America. Offered by School of Kinesiology. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EFHP 610: *Advanced Exercise Physiology.* 3 credits.
Lecture, demonstration, and seminar experiences in applying research findings to understanding physiological function and effects of exercise on people. Offered by School of Kinesiology. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EFHP 611: *Movement and Fitness Assessment.* 3 credits.
Covers common movement and fitness assessments that can be used to develop an individualized exercise program for various populations. Offered by School of Kinesiology. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EFHP 612: *Scientific Foundation of Applied Kinesiology.* 3 credits.
An integrated study of human anatomy, physiology, chemistry, and microbiology, presenting a complete picture of how the body functions and the diseases and disorders that cause the body to malfunction. Offered by School of Kinesiology. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EFHP 613: *Advanced Applied Biomechanics.* 3 credits.
Examines kinetic and kinematic concepts and how they apply to the qualitative and quantitative assessment of human movement. Discusses advanced applied motion analysis techniques. Offered by School of Kinesiology. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EFHP 614: *Advanced Exercise Nutrition.* 3 credits.
Advanced study of nutrition's relation to physical activity, exercise, and sports. Reviews biochemical, physiological, and behavioral aspects of nutrition in promoting health, fitness, and sports performance. Focuses on nutrient needs during life cycle stages. Offered by School of Kinesiology. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EFHP 615: *Epidemiology and Environmental Health.* 3 credits.
Principles, methods, and application of epidemiology. Reviews behavioral, psychological, social, and environmental risks to disease distribution. Focuses on lifestyle, exercise patterns, and environmental factors to health and disease conditions. Offered by School of Kinesiology. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EFHP 616: *Motor Behavior and Development.* 3 credits.
Human motor behavior development and theory with application to evaluation of skill acquisition. Offered by School of Kinesiology. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EFHP 617: *Corrective and Preventative Exercise Techniques.* 3 credits.
Explores content related to evidence-based exercise interventions to correct and prevent common movement dysfunctions and/or injuries in a variety of healthy populations. Offered by School of Kinesiology. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to students with a major in Kinesiology.

Enrollment limited to students in a Graduate Certificate degree.

Schedule Type: Lecture

Grading:

This course is graded on the Graduate Regular scale.

EFHP 618: *Exercise and Sport Psychology.* 3 credits.
Covers psychological and social-psychological antecedents and consequences of exercise, physical activity, and sports participation. Emphasizes theory and research on personality, motivation, arousal, cognition, attributions, attitudes, self-efficacy, leadership effectiveness, and group dynamics. Offered by School of Kinesiology. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EFHP 620: *Research Methods for Applied Kinesiology.* 3 credits.
Introduction to the techniques of research generally employed in the fields of exercise science and health. Offered by School of Kinesiology. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EFHP 621: *Statistical Methods for Applied Kinesiology.* 3 credits.
Introduction to practical and applied aspects of both descriptive and applied aspects of both descriptive and inferential statistics in exercise science and health. Offered by School of Kinesiology. May not be repeated for credit.

Recommended Prerequisite: MATH 102, STAT 250.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EFHP 630: *Exercise, Health, and Fitness Program Development.* 3 credits.
Covers exercise and health program development related to fitness and health of adult populations. Notes: Provides 3 to 6 hours of field experience. Offered by School of Kinesiology. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EFHP 640: *Principles of Strength and Conditioning.* 3 credits.
Analyzes exercise techniques, training program designs, organization and administration, and testing and evaluation using scientific principles of strength and conditioning. Offered by School of Kinesiology. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EFHP 650: *Scientific Principles of Motor Learning.* 3 credits.
Biomechanical analysis and application of scientific principles of movement to instructing sport skills in physical education and sport programs. Offered by School of Kinesiology. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EFHP 660: *Management of Exercise, Fitness, and Health Promotion Organizations.* 3 credits.
Advanced study in management and administration of organizations dedicated to human development and improvement of quality of life. Covers application of theories and practices of management and behavioral sciences, fiscal management, marketing, and evaluation

research. Offered by School of Kinesiology. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EFHP 680: *Ethical Issues in Exercise, Fitness, and Health Promotion.* 3 credits.
Covers formulation of coherent framework for ascertaining good, right, and just; and for assessing evidence and reason underlying positions and arguments. Examines ethical issues in exercise, fitness, and health promotion. Offered by School of Kinesiology. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EFHP 690: *Scientific Communications Seminar.* 1-3 credits.
Studies and applies written and verbal communication skills in reading, analyzing, writing, and distributing scientific information in Applied Kinesiology. Offered by School of Kinesiology. May be repeated within the degree for a maximum 4 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

700 Level Courses

EFHP 730: *Motor Learning.* 3 credits.
Appraisal of motor learning theories and an analysis of motor skill development including the roles of information processing, practice, feedback, and motivation. Offered by School of Kinesiology. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EFHP 794: *Tactical Athlete Field Practicum.* 3 credits.
Emphasizes developing professional skills, applying knowledge to provide exercise interventions to clients at the practicum site and delivering educational content in Tactical Athlete settings. Offered by School of Kinesiology. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students in a Graduate Certificate degree.

Schedule Type: Internship

Grading:
This course is graded on the Satisfactory/No Credit scale.

EFHP 798: *Project.* 1-3 credits.
Addresses an applied exercise, fitness, and health promotion issue under supervision of graduate faculty member. Offered by School of Kinesiology. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Thesis

Grading:
This course is graded on the Satisfactory/No Credit scale.

EFHP 799: *Thesis.* 1-6 credits.
Explores exercise, fitness, and health promotion problem using appropriate research methodology and under supervision of graduate faculty member. Offered by School of Kinesiology. May be repeated within the degree.

Recommended Prerequisite: Completion of all coursework.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Thesis

Grading:
This course is graded on the Satisfactory/No Credit scale.

800 Level Courses

EFHP 810: *Neuromuscular Responses to Exercise.* 3 credits.
Provides an in-depth study of the muscular systems of the human body and how these systems are altered in response to acute and chronic physical activity. Offered by School of Kinesiology. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EFHP 811: *Motor Learning and Control.* 3 credits.
Examines motor learning theories and analyzes motor skill development including the roles of information processing, practice, feedback, and motivation. Offered by School of Kinesiology. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EFHP 813: *Musculoskeletal Biomechanics in Human Movement.* 3 credits.
Advanced study of the biomechanical analysis of the musculoskeletal system, including collecting, interpreting, and modeling biomechanical data. Offered by School of Kinesiology. May not be repeated for credit.

Recommended Prerequisite: Graduate Standing or Permission of Instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EFHP 815: *Measurement Techniques and Instrumentation.* 3 credits.
Explores the application and implementation of conventional measurement techniques and instrumentation to collect data in Exercise, Fitness, and Health Promotion. Offered by School of Kinesiology. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EFHP 820: *Careers in the Academy Seminar.* 3 credits.
Examines careers in the academy in a seminar format including faculty role, institutional fit, and the higher education academic job search (including developing cover letters and job portfolio outlines); introduces teaching, research, and service expectations at higher education institutions to help prepare for future academic careers. Offered by School of Kinesiology. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

EFHP 825: *Data Analytics in Exercise, Fitness, and Health Promotion.* 3 credits.
Examines data processing, analysis and interpretation using software applications common in Exercise, Fitness and Health Promotion. Offered by School of Kinesiology. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EFHP 840: *Doctoral Seminar in Exercise, Fitness, and Health Promotion.* 3 credits.
Examines problem areas in Exercise, Fitness, and Health Promotion research, theory, or practice using a combination of self-directed, guided learning, and critical peer reviews in a seminar format. Offered by School of Kinesiology. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

EFHP 860: *Critical Perspectives in Exercise, Fitness, and Health Promotion.* 3 credits.
Critically examines current topics in Exercise, Fitness and Health Promotion, and Applied Kinesiology. Offered by School of Kinesiology. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

EFHP 880: *Grant Writing.* 3 credits.
Provides an overview of grants and contracts; examines federal and non-federal proposal development guidelines; emphasizes National Institutes of Health (NIH) research grant mechanisms as a 'gold standard'. Offered by School of Kinesiology. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

Film and Video Studies (FAVS)

100 Level Courses

FAVS 110: *Reading and Making Media.* 3 credits.
This course provides the foundations for students to become critical, anti-racist consumers and savvy, ethical producers of digital, visual, and audio media. Students will learn to identify and analyze formal elements of films, television, commercials, and user-generated content (such as YouTube videos and gifs). At the same time, students will develop technical aspects of media production, including videography, sound recording, and video/sound editing. Offered by Coll Visual & Performing Arts. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

200 Level Courses

FAVS 204: *Ways of Seeing: Perception, Form and Film.* 3 credits.
Explore how the way we see determines the images we make. The course traces connections between 17th century oil painting and 21st century post-modern film, and examines the effects of filmic sound, video diaries, and diasporic filmmaking. Offered by Coll Visual & Performing Arts. Limited to three attempts.

Mason Core: Arts

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

FAVS 225: *Introduction to World Cinema.* 3 credits.
This course explores the development of world cinema from its beginnings in the late nineteenth century to the 1990s. The course will enable students to comprehend the evolution of the history and language of cinema in order to connect the art of filmmaking with the "outside forces" (i.e., the economic institutions, key figures, historical events and social issues) that profoundly shape and influence it. Offered by Coll Visual & Performing Arts. Limited to three attempts.

Mason Core: Arts

Schedule Type: Lecture, Recitation

Grading:
This course is graded on the Undergraduate Regular scale.

FAVS 250: *Business of Film and Television.* 3 credits.
This course provides an overview of the film & television industry from a business perspective. Students learn basic filmed entertainment business practices and protocol, including film financing, copyright & trademark, anti-trust, trademark, IP licensing, Agents & Managers, Entertainment Unions & Guilds, film distribution, and marketing techniques. Offered by Coll Visual & Performing Arts. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

FAVS 255: *Video Production for Film.* 3 credits.
This course is a hands-on methods course in video production for film. Through practice, reading, film viewing and discussions, you will be introduced to the art and activity of digital filmmaking across film genres. Students must complete reading, writing, and production assignments that justify and plan for their creative choices. Handouts describing projects, expectations and evaluative criteria will be provided. Offered by Coll Visual & Performing Arts. Limited to three attempts.

Registration Restrictions:
Enrollment is limited to students with a major, minor, or concentration in Animation or Film and Video Studies.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

FAVS 260: *Video Editing for Film.* 3 credits.
This course will instruct on the theories and technical expertise pertaining to video editing by utilizing various video editing software. The course will combine lectures, discussions, and demonstrations with hands on projects. Offered by Coll Visual & Performing Arts. Limited to three attempts.

Recommended Prerequisite: FAVS 255 or COMM 208

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

FAVS 280: *Writing for the Moving Image.* 3 credits.
This course is an introduction to writing for the moving image through lecture, discussion, and critiques of exercises and written works. By the end of the semester, each student will have produced a variety of analyses and/or blueprints for creative moving image projects including short fiction, commercial advertisement, scripted television, collaborative fiction, short non-fiction reality programming. and other forms. Offered by Coll Visual & Performing Arts. Limited to three attempts.

Mason Core: Arts

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

300 Level Courses

FAVS 300: *Global Horror Film.* 3 credits.
Taking an historical approach through various national and international cinemas, the course begins with horror film's literary and theatrical origins and traces its development into a modern (and postmodern) form of universal storytelling. Offered by Coll Visual & Performing Arts. Limited to three attempts.

Mason Core: Global Understanding

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

FAVS 304: *Ways of Thinking: Film, TV, and Beyond.* 3 credits.
We analyze formal elements of fiction films/videos, documentaries, and TV, and develop analytical writing skills, with an emphasis on

collaboration. We consider the choices and processes of filmic storytelling, understanding film in multiple contexts, including production and distribution industries, political, cultural, and commercial systems. Offered by Coll Visual & Performing Arts. Limited to three attempts. Equivalent to ENGH 373.

Specialized Designation: Writing Intensive in Major

Recommended Prerequisite: ENGH 302 or HNRS 360 or HNRS 361

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

FAVS 311: *Producing I.* 3 credits.
Provides students with the basics of film producing. Students gain creative, business, and legal skills needed to develop, produce and sell an independent, commercially viable motion picture film. Students engage with writing treatments, script breakdown, pitching, budgeting, creating shooting schedules, financing, hiring and managing cast and crew, and other areas in producing. Offered by Coll Visual & Performing Arts. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (FAVS 250[C] or 250[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major in Film and Video Studies.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

FAVS 312: *Film Lab.* 3 credits.
A hands-on producing class where students take roles as producers, assistant directors, location managers, script supervisors, production and costume designers, casting assistants, etc. in the development, pre-production, and production of a scripted short film. The course moves from development through production in an apprentice style environment with a seasoned director. This gives students "real-world" experience in independent film production. Offered by Coll Visual & Performing Arts. May be repeated within the degree for a maximum 9 credits.

Registration Restrictions:
Required Prerequisites: ((FAVS 311[C] or 311[XS]) and (FAVS 255[C] or 255[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

FAVS 320: *Afrofuturism and Their Kin.* 3 credits.
This course is an introduction to the cinematic genre of Afrofuturism, or Black#Speculative#culture, also exploring the sub-genre lenses of Black horror and fantasy. Reading science fiction, horror, fantasy, and other imaginative narrative tropes, we'll consider how the myriad societal fears regarding race intersect with#violence. We'll engage philosophies around horror that analyze tensions between#conjurings#of 'monstrosities' and the ways#in which racial identity is constructed and consumed.##As these artists re-envision the#Black diasporic past, present, and future, they present alternative#visions of the futures of blackness. Offered by Coll Visual & Performing Arts. Limited to three attempts.

Mason Core: Global Understanding

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

FAVS 331: *Cinematography.* 3 credits.
This course aims to recreate a professional camera department environment. By the end of the course, students should be able to understand and perform the function of first assistant cameraperson or second assistant cameraperson on a camera crew. Students will understand the history, function, art, craft, and science of cinematography. Offered by Coll Visual & Performing Arts. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (FAVS 204[C] or 204[XS]) and (FAVS 255[C] or 255[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major in Film and Video Studies.

Schedule Type: Lecture, Recitation

Grading:
This course is graded on the Undergraduate Regular scale.

FAVS 333: *Sound Editing and Recording.* 3 credits.
This course instructs students on the theories, techniques and technologies pertaining to recording audio in the field and studio and to audio editing and mixing for film and video. The course will be lecture based with practical lab and field exercises applying concepts and equipment presented during the lecture. Offered by Coll Visual & Performing Arts. Limited to three attempts.

Recommended Prerequisite: FAVS 204 and FAVS 255 or permission of instructor

Registration Restrictions:
Enrollment is limited to students with a major, minor, or concentration in Film and Video Studies.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

FAVS 352: *Ethics of Film and Video.* 3 credits.
An examination of ethical issues associated with image production and consumption. Topics include the technological development of the film apparatus, privacy, the pursuit of objectivity, excess, consent, and representing others. All issues highlight the increasingly sophisticated and powerful role of film and media authorship. Students will develop a more complex view of the ethics of screen representation (both fiction and nonfiction) and be encouraged to take stock of the ethics of their own media literacy. Offered by Coll Visual & Performing Arts. Limited to three attempts.

Mason Core: Synthesis

Recommended Prerequisite: Completion or concurrent enrollment in all other required Mason Core courses and completion of 21 credits within the Film program.

Registration Restrictions:
Required Prerequisites: ((ENGH 302[C], 302[XS], HNRS 360[C], 360[XS], 361[C] or 361[XS]) and (FAVS 250[C] or 250[XS]) and (FAVS 255[C] or 255[XS]) and (FAVS 280[C] or 280[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major in Film and Video Studies.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

FAVS 356: *Film Marketing.* 3 credits.
Provides students with a variety of film and television marketing business strategies and creative skills, including publicity, press kits, advertising, trailers, poster design, film credits, box art, branding, licensing & merchandising, and distribution. As aspiring media entrepreneurs, students learn to professionally manage their careers whether in low-budget independent film or Hollywood blockbuster tracks via self-promotion & publicity. Offered by Coll Visual & Performing Arts. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (FAVS 250[C] or 250[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

FAVS 365: *Documentary Filmmaking.* 3 credits.
An introduction to documentary filmmaking in which each student makes a short digital documentary, from concept development to finished piece. The class covers essential technical skills, emerging styles of nonfiction film, and documentary storytelling techniques. Offered by Coll Visual & Performing Arts. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (FAVS 250[C] or 250[XS]) and (FAVS 280[C] or 280[XS]) and (FAVS 255[C] or 255[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major in Film and Video Studies.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

FAVS 366: *Video Production for Social Change.* 3 credits.
This course reflects a professional production environment where student teams, under the instructor's supervision, produce effective pieces for local community based non-profit organizations. Students will learn the business of working with a real-world nonprofit client and storytelling skills that advance the client mission. Beginning with the discovery process, students will engage the client in assessing their needs and goals for producing a video. They will develop a creative concept/strategy, a budget, and a statement of work/contract. Small teams will then produce their client project as they learn the storytelling strategies that engage by connecting with an audience. Offered by Coll Visual & Performing Arts. Limited to three attempts.

Recommended Prerequisite: FAVS 280, FAVS 331, and FAVS 333

Registration Restrictions:
Required Prerequisites: FAVS 255[C] or 255[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

FAVS 375: *Fiction Film Directing.* 3 credits.
This course examines techniques for directing fiction films. Students study the directorial approaches of a variety of directors by viewing and critiquing classic films. Students learn about the director's role in each stage of film production. Students shoot, direct and edit fictional scenes and sequences intended to develop and convey the beginnings of the authorial signatures. Notes: Intended for Film and Video Studies majors only. Offered by Coll Visual & Performing Arts. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: ((FAVS 250[C] or 250[XS]) and (FAVS 280[C] or 280[XS]) and (FAVS 255[C] or 255[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

FAVS 377: *Interactive Storytelling for Social Change.* 3 credits.
Students study the craft of interactive and transmedia storytelling while producing media projects for impact and action. Transmedia is a way of telling stories across media platforms, for both fiction and non-fiction. This allows creators to engage television and film audiences for greater impact. Students will study interactivity as a readily used marketing tool in the film and television industry. Offered by Coll Visual & Performing Arts. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (FAVS 255[C] or 255[XS]) and (FAVS 280[C] or 280[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

FAVS 378: *Web Series.* 3 credits.
A production course that explores the creative and logistical process of creating a fiction series for the web. Production techniques for web series will be explored, including permissions, contracts, and budgets for web development. The course will consider and study successful web series and explore contemporary discussions and professional organizations centered on web series. Offered by Coll Visual & Performing Arts. Limited to three attempts.

Registration Restrictions:

Required Prerequisites: ((FAVS 250[C] or 250[XS]) and (FAVS 280[C] or 280[XS]) and (FAVS 255[C] or 255[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major in Film and Video Studies.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

FAVS 380: *TV Writing.* 3 credits.
Students learn about the profession of writing scripted television. Examines the principles and processes of development for television drama and other genres and programming categories. Students become acquainted with the expectations and responsibilities of staff and freelance writing. Develops skills in writing for the small screen(s) by practicing established techniques and identifying contemporary trends. Offered by Coll Visual & Performing Arts. Limited to three attempts.

Specialized Designation: Writing Intensive in Major

Registration Restrictions:
Required Prerequisites: FAVS 280[C] or 280[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

FAVS 399: *Special Topics in Film and Video Studies.* 1-3 credits.
In-depth presentation and exploration of topical studies. Notes: Subject matter varies. May be repeated when taken under different topics. Offered by Coll Visual & Performing Arts. May be repeated within the term for a maximum 12 credits.

Specialized Designation: Topic Varies

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

FAVS 400: *Career Development Seminar.* 3 credits.
This course prepares students for a career in the film and video industry beyond the university. Students complete a professionally reviewed resume, cover letter, and experience a formalized interview. Students prepare a written grant proposal and pitch a film project with professional advisors. This class fosters development of a professional online presence and strengthens students' communication techniques in public speaking. Offered by Coll Visual & Performing Arts. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Required Prerequisites: FAVS 352[C], 352[XS], ENGH 302[C], 302[XS], HNRS 360[C], 360[XS], 361[C] or 361[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Junior, Senior Plus or Senior.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

FAVS 431: *Advanced Cinematography.* 3 credits.
Builds on the foundation of FAVS 331 and explores advanced techniques in lighting and in post-production (color correction). Where cinematography focuses on cinematography from the perspective of film (celluloid), Advanced Cinematography explores digital cinematography, its advantages and limitations. Offered by Coll Visual & Performing Arts. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: FAVS 331[C] or 331[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major in Film and Video Studies.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

FAVS 433: *Advanced Sound.* 3 credits.
Students will learn about advanced fundamental theory, tools, and techniques needed to create and/or implement sound for film. We will utilize the industry standard software Pro Tools. Students will learn nonlinear sound editing, digital audio processing, frequency manipulation, synthesized sound techniques and mixing. We will focus on the power of sound and the contributions it can make not only in enhancing the visuals of a film but in contributing to telling the story within itself. Offered by Coll Visual & Performing Arts. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: FAVS 333[C] or 333[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Audio Production or Film and Video Studies.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

FAVS 450: *Internship in Film and Video Studies.* 3 credits.
On-the-job training in film and video studies through approved fieldwork study programs. Internships are arranged and supervised by the FAVS director. Notes: Required for all FAVS majors. Offered by Coll Visual & Performing Arts. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: 75 credits, 15 credits in core/elective FAVS courses, and permission of the Internship Coordinator.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

FAVS 455: *Studio and Field Productions Practicum.* 3 credits.
Practical knowledge in studio and field productions. Students complete a minimum 150 hours of work as assistants to engineers, producers,

directors, and organizers of video production facilities on campus. Offered by Coll Visual & Performing Arts. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: COMM 355 and permission of instructor.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

FAVS 460: *Advanced Video Editing.* 3 credits.
This course will instruct students on the theories, techniques and technologies pertaining to video editing for fiction and documentary films, as well as commercials. The course will combine lectures, discussions, and demonstrations with hands on projects. Offered by Coll Visual & Performing Arts. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: FAVS 260[C] or 260[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

FAVS 475: *Advanced Fiction Directing.* 3 credits.
Focuses on casting and directing actors, working with production designers, assistant directors, and visual and aural storytelling on an individually directed project. Teaches students how to direct the shooting, production and editing of a fiction film or webisode which further develops their authorial signature. Offered by Coll Visual & Performing Arts. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (FAVS 375[C], L375[C] or 375[XS]) and (FAVS 260[C], 260[XS], 460[XS] or 460[C]) and (FAVS 280[C] or 280[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

FAVS 483: *Feature-Length Scriptwriting.* 3 credits.
This course is an introduction to the development and analysis of feature length screenplays. The approach combines lecture, discussion, screening and presentation of student work. By the end of the semester, each student should have a complete first draft of an original screenplay. Students will also complete story reports and coverage reports of screenplays by other writers. Offered by Coll Visual & Performing Arts. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: FAVS 380[C] or 380[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

FAVS 490: *Independent Study.* 1-6 credits.
Independent research on specific project under direction of selected faculty member. Offered by Coll Visual & Performing Arts. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Enrollment is limited to students with a major in Film and Video Studies.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

FAVS 496: *Advanced Visual Storytelling.* 3 credits.
A culminating capstone seminar devoted to analyzing and synthesizing knowledge and skills gained through undergraduate course work in the screenwriting concentration, resulting in substantial individualized writing projects. Offered by Coll Visual & Performing Arts. Limited to three attempts.

Mason Core: Capstone

Specialized Designation: Writing Intensive in Major

Recommended Prerequisite: FAVS 204, FAVS 250, FAVS 255, and FAVS 280.

Registration Restrictions:
Required Prerequisites: FAVS 483[C] or 483[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Senior Plus or Senior.

Enrollment is limited to students with a major in Film and Video Studies.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

FAVS 497: *Senior Film Practicum.* 3 credits.
A senior capstone course for students in the Production/Post-Production and Producing concentration. Students put their areas of focus (cinematography, editing, sound design, producing, etc.) into practice. Students play a key role in film projects directed by other students throughout the semester. This course includes a written/research component. Offered by Coll Visual & Performing Arts. Limited to three attempts.

Mason Core: Capstone

Recommended Prerequisite: FAVS 255 and FAVS 280

Registration Restrictions:
Required Prerequisites: FAVS 460[C], 460[XS], 431[C], 431[XS], 433[C], 433[XS], 311[C] or 311[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Junior, Senior Plus or Senior.

Enrollment is limited to students with a major in Film and Video Studies.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

FAVS 498: *Development for Senior Project.* 3 credits.
An introduction to the Directing and Producing capstone sequence. In this course, directors and producers engage with the creative process of researching and developing material in film and video for their senior projects. A senior project in Directing and Producing is constituted by a short fiction or documentary film, webseries episode(s) or parallel film project with a running time of 15 minutes or less. Offered by Coll Visual & Performing Arts. Limited to three attempts.

Specialized Designation: Writing Intensive in Major

Registration Restrictions:
Required Prerequisites: ((FAVS 250[C] or 250[XS]) and (FAVS 255[C] or 255[XS]) and (FAVS 280[C] or 280[XS]) and (FAVS 260[C], 260[XS], 460[C] or 460[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Junior, Senior Plus or Senior.

Enrollment is limited to students with a major in Film and Video Studies.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

FAVS 499: *Senior Project.* 3 credits.
Culminating capstone course in producing and directing that results in the completion of a senior project and related written and visual promotional materials. A senior project in Directing and Producing is constituted by a short fiction or documentary film, webseries episode(s) or parallel film project with a running time of 15 minutes or less. Offered by Coll Visual & Performing Arts. Limited to three attempts.

Mason Core: Capstone

Registration Restrictions:
Required Prerequisites: FAVS 498[C] or 498[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major in Film and Video Studies.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

500 Level Courses

FAVS 535: *Sound and Lighting.* 3 credits.
This course will instruct students on the theories, techniques, and technologies pertaining to recording audio and lighting scenes in both field and studio video productions. The course will be lecture based with practical lab styled exercises reinforcing topics presented during lecture. Offered by Coll Visual & Performing Arts. May not be repeated for credit.

Recommended Prerequisite: Admission to the MAIS in Film and Video Studies or permission of instructor.

Registration Restrictions:

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

FAVS 550: *Internship.* 3 credits.
On-the-job training in film and video studies through approved fieldwork study programs. Internships are arranged and supervised by the FAVS director. Offered by Coll Visual & Performing Arts. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Graduate Regular scale.

FAVS 565: *Documentary Filmmaking.* 3 credits.
A documentary filmmaking workshop in which each student makes a short digital documentary, from concept development to finished piece. The class covers essential technical skills, emerging styles of nonfiction film, and documentary storytelling techniques. Offered by Coll Visual & Performing Arts. May not be repeated for credit.

Recommended Prerequisite: Admission to the MAIS in Film and Video Studies or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

FAVS 570: *Screenwriting.* 3 credits.
Screenwriting course emphasizing student development in screenplay form, structure, and storytelling with emphasis on craft, character, and story culminating in a screenplay. Offered by Coll Visual & Performing Arts. May not be repeated for credit.

Recommended Prerequisite: Undergraduate degree or equivalent, or permission of instructor.

Registration Restrictions:

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

FAVS 575: *Fiction Film Directing.* 3 credits.
This course examines techniques for directing fiction films. Students study the directorial approaches of a variety of directors by viewing and critiquing classic films. Students learn about the director's role in each stage of film production. Students shoot, direct and edit fictional scenes and sequences intended to develop and convey the beginnings of the authorial signatures. Offered by Coll Visual & Performing Arts. May not be repeated for credit.

Recommended Prerequisite: Admission to the MAIS in Film and Video Studies or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

FAVS 590: *Independent Study.* 1-6 credits.
Independent research on specific project under direction of selected faculty member. Offered by Coll Visual & Performing Arts. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Undergraduate degree or equivalent or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Regular scale.

FAVS 597: *Independent Production.* 1-3 credits.
Media or creative production activities under direction of faculty member. Requires completed production; written report, oral exam may be required. Offered by Coll Visual & Performing Arts. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Regular scale.

FAVS 599: *Special Topics.* 1-6 credits.
In-depth presentation and exploration of topical studies. Notes: Subject matter varies. May be repeated when taken under different topics. Offered by Coll Visual & Performing Arts. May be repeated within the term for a maximum 9 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: Undergraduate degree or equivalent, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

Finance (FNAN)

300 Level Courses

FNAN 300: *Personal Finance.* 3 credits.
Emphasis is on understanding the importance of developing financial goals and how financial decisions affect those goals throughout their lifetime. In addition, students will develop their own financial goals along with a financial plan that would enable them to meet those goals. This course may be taken for regular grading or S/NC. Students must notify instructor which option they want. FNAN 300 may be taken for general elective credit by School of Business students. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Special scale.

FNAN 303: *Financial Management.* 3 credits.
Introduction to the fundamental concepts, principles, and analytical tools in finance. Topics covered include time value of money, security valuation, capital budgeting, risk and return analysis, and cost of capital. Notes: School of Business students will not be permitted to make more than three attempts to achieve a C or higher in FNAN 303. The third attempt requires School of Business academic advisor approval. Those who

do not successfully complete this course within three attempts will be terminated from their major and will not be eligible to receive a degree from the School of Business. For more information see the Termination from the Major section under Academic Policies. The final exam for FNAN 303 may be scheduled to take place for all sections at the same time during the final exam period. Accommodations will be made for exam and religious conflicts and for certain official university-sponsored activities. Offered by School of Business. Limited to two attempts.

Recommended Prerequisite: BUS 103 and BUS 200.

Registration Restrictions:
Required Prerequisites: (ACCT 203[C], 203[XS], 204[C], 204[XS], U203 or U204) and (BUS 210[C], 210[XS] or U210) and (MATH 108[C], 108[XS], 113[C], 113[XS], 114[C], 114[XS], HNRT 225[C], 225[XS], MATH U108, U113, U114 or HNRT U225).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the terminated from BU major attribute may **not** enroll.

Schedule Type: Lecture, Recitation

Grading:
This course is graded on the Undergraduate Regular scale.

FNAN 311: *Principles of Investment.* 3 credits.
Introduces analysis of the valuation of equity and debt securities given modern capital market theory. Includes discussion of portfolio analysis as related to valuation of securities. Notes: Lecture, discussion, and computer-assisted research. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (FNAN 301[B-] or L301) or (FNAN 303[B-] or L303).
[B-] Requires minimum grade of B-.

Students with a class of Freshman may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take FNAN crses, Ineligible to take FPWM crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

FNAN 321: *Financial Institutions.* 3 credits.
Discusses basic objectives of financial institutions in light of industry structure and regulatory environment, and decision variables that management should concentrate on to achieve objectives. Includes role of financial institutions in allocation of funds in financial markets. Notes: Lecture, discussion, and computer-assisted research. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (FNAN 301[B-] or L301) or (FNAN 303[B-] or L303).
[B-] Requires minimum grade of B-.

Students with a class of Freshman may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take FNAN crses, Ineligible to take FPWM crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

FNAN 341: *Introduction to Firm Valuation.* 3 credits.
Examines techniques for analyzing, understanding, and applying financial information in decision situations. Topics include financial statement analysis, development of financial models, and financial planning and forecasting. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (FNAN 301[B-] or L301) or (FNAN 303[B-] or L303).
[B-] Requires minimum grade of B-.

Non-Degree level students may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

FNAN 351: *Principles of Real Estate.* 3 credits.
Studies dimensions and specialties involved in public control and private development, sale, finance, and management of real estate. Includes land planning, land-use control, appraisal, finance, brokerage, property management, and investment. Notes: Lecture, discussion, and computer-assisted research. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (FNAN 301[C] or L301) or FNAN 303[C], 303[XS] or L303.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take FNAN crses, Ineligible to take FPWM crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

FNAN 390: *Introduction to Financial Planning and Wealth Management.* 3 credits.
This course provides an introduction to the financial planning process for students interested in a career in financial planning and wealth management. Course topics include education, insurance, and retirement planning. The course also will cover professional responsibilities and regulations governing the financial services industry. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Registration Restrictions:

Required Prerequisites: (FNAN 303[B-] or L303) and ((ACCT 303[C], 303[XS] or L303) or (ACCT 330[C], 330[XS] or L330)).
[B-] Requires minimum grade of B-.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman may **not** enroll.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Students with the Ineligible to take FNAN crses, Ineligible to take FPWM crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

FNAN 401: *Advanced Financial Management.* 3 credits.
Analyzes decision-making in firm, emphasizing conceptual structure of problems and using advanced analytic techniques. Topics include current asset management, capital budgeting and structure, dividend policy, long-term financing, mergers, and corporate planning models. Notes: Lecture, discussion, and case analysis. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (FNAN 301[B-] or L301) or (FNAN 303[B-] or L303).
[B-] Requires minimum grade of B-.

Students with a class of Freshman or Sophomore may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take FNAN crses, Ineligible to take FPWM crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

FNAN 411: *Investment Analysis and Portfolio Management.* 3 credits.
Analyzes modern techniques of portfolio management including evaluating standards for selecting individual securities to include or delete from portfolios. Presents risk-return analysis for portfolios and portfolio performance measures. Lecture, discussion, computer assisted research. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (FNAN 311[C], 311[XS] or L311).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman or Sophomore may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take BUSA crses, Ineligible to take FNAN crses, Ineligible to take FPWM crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

FNAN 412: *Futures and Options Markets.* 3 credits.
Introduces options, commodity, and financial futures markets as they function to provide pricing mechanisms and alternative investment vehicles. Lecture, discussion, and computer-assisted research. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (FNAN 311[C], 311[XS] or L311).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman or Sophomore may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take FNAN crses, Ineligible to take FPWM crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

FNAN 421: *Money and Capital Markets.* 3 credits.
Discussion of how financial markets are organized, their role in the allocation of funds to various market segments, and interaction between markets. Topics include aggregate flow of funds analysis; and money, government, corporate, and mortgage markets. Lecture, discussion, and computer assisted research. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (FNAN 321[C], 321[XS] or L321).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman or Sophomore may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take FNAN crses, Ineligible to take FPWM crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

FNAN 430: *Empirical Methods in Finance.* 3 credits.
Examines statistical and econometric techniques used in analyzing financial data and developing financial models. Combines development of understanding of fundamental concepts with applications. Includes extensive use of standard software. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Recommended Prerequisite: BS degree status.

Registration Restrictions:
Required Prerequisites: (FNAN 311[C], 311[XS], 321[C] or 321[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the Ineligible to take BUSA crses, Ineligible to take FNAN crses, Ineligible to take FPWM crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

FNAN 431: *Venture Capital and Private Financing of Startups.* 3 credits.
This course focuses on how venture capitalists arrange the financing for a company; what they look for in a business plan; how they value a business; and how they structure the terms of an agreement. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: FNAN 301[B-] or 303[B-].
[B-] Requires minimum grade of B-.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take FNAN crses, Ineligible to take FPWM crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

FNAN 432: *Fixed-Income Securities.* 3 credits.
Focuses on analysis of fixed-income securities, including corporate and government bonds, mortgage-backed securities, and derivatives. Major topics include institutional features of fixed-income securities markets, valuation, analysis of risks, and portfolio management decisions. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Recommended Prerequisite: BS degree status.

Registration Restrictions:
Required Prerequisites: (FNAN 311[C] or 311[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take FNAN crses, Ineligible to take FPWM crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

FNAN 436: *Probability Methods for Finance.* 3 credits.
This course focuses on the development and use of probability models for analyzing risks and financial decisions. Emphasis is on Monte Carto simulation modeling, linear programming, and decision analysis of complex problems in corporate finance and in investment analysis. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (FNAN 301[C], L301[C], 303[C], 303[XS] or L303[C]) and (OM 210[C], BUS 210[C] or 210[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the Ineligible to take BUSA crses, Ineligible to take FNAN crses, Ineligible to take FPWM crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

FNAN 440: *International Financial Management.* 3 credits.
Introduces management of contemporary firm's international financial operations. Topics include foreign exchange risk, political risk, returns and risks of international projects, international money and capital markets, financial accounting, capital structure, and cost of capital. Lecture, discussion, readings, and problems. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: FNAN 301[B-] or 303[B-].
[B-] Requires minimum grade of B-.

Students with a class of Freshman or Sophomore may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take FNAN crses, Ineligible to take FPWM crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

FNAN 441: *Advanced Topics in Firm Valuation.* 3 credits.
Course will focus on complex valuation techniques and build on the knowledge and skills developed in FNAN 341. Course will cover: research and value companies of different sizes, value private equity, mezzanine financing, develop advance discounted cash flow models, and other relevant topics. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: FNAN 341[C], 341[XS] or 302[C].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the Ineligible to take FNAN crses, Ineligible to take FPWM crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

FNAN 444: *Sustainable and ESG Investments.* 3 credits.
The course is an introductory resource for students who aim to be investment advisors, financial planners or other financial professionals who want to learn the basics of sustainable, responsible and impact investment. The course covers the implementation of environmental, social, and governance (ESG) data into security analysis, discusses the latest trends and research, and explains how to communicate your

expertise in sustainable and impact investment. Offered by School of Business. Limited to two attempts.

Registration Restrictions:
Required Prerequisite: FNAN 303[B-].
[B-] Requires minimum grade of B-.

Students with a class of Freshman or Sophomore may **not** enroll.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Students with the Ineligible to take BUSA crses, Ineligible to take FNAN crses, Ineligible to take FPWM crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

FNAN 451: *Real Estate Finance.* 3 credits.
Studies mechanisms of real estate finance, sources of funds, loan contracts, principles of mortgage risk analysis, and secondary mortgage markets. Develops analytical skills including using microcomputer and appropriate software. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (FNAN 351[C], 351[XS] or L351).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman or Sophomore may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take FNAN crses, Ineligible to take FPWM crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

FNAN 454: *Real Estate Development.* 3 credits.
Examines commercial real estate development process and principles plus actual residential, office, retail, and industrial projects. Includes financial analytical techniques to investigate project feasibility, density, financing viability, cash flows, and valuation. Emphasis placed on real-world, entrepreneurial, decision-making skills for developing commercial real estate. Lecture, discussion, project analysis. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (FNAN 351[C], 351[XS] or L351).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the Ineligible to take FNAN crses, Ineligible to take FPWM crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

FNAN 462: *Honors Seminar in Finance.* 3 credits.
Provides an in-depth study and analysis of contemporary developments and topics of interest in finance. Topics and format will vary. Enrollment is limited and competitive. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Registration Restrictions:
Enrollment limited to students with a class of Senior Plus or Senior.

Enrollment is limited to students with a major in Finance.

Non-Degree or Washington Consortium level students may **not** enroll.

Students with the Ineligible to take FNAN crses, Ineligible to take FPWM crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

FNAN 472: *Fintech and Blockchain in Finance.* 3 credits.
As the underlying technology that enables decentralized peer-to-peer currencies such as Bitcoin, blockchain has been touted as a revolutionary innovation to fundamentally change many aspects of business. How does blockchain actually work? How could it be applied to different business scenarios? Is blockchain truly the "next big thing" or just another hyped up buzz word? In this course, we'll conduct an objective investigation into the current status of blockchain development, and have an open dialog around its future promises. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: FNAN 301[B-] or 303[B-].
[B-] Requires minimum grade of B-.

Students with the Ineligible to take FNAN crses, Ineligible to take FPWM crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

FNAN 477: *Student Managed Investment Fund.* 3 credits.
Provide each student with real world and hands-on experience in security analysis and portfolio construction through the management of the GMU Student Managed Investment Fund. Participants will collectively make investment decisions of the fund, the overall portfolio composition, and will employ various financial models used to assess sector, industry and individual security strength/weakness in their decision-making. Students will be required to perform the necessary quantitative and qualitative work, Bloomberg analysis, and present their research to all other fund members/faculty each semester. Security selection will be based on a diversified equity portfolio approach seeking to enhance risk-adjusted returns versus commonly used market benchmarks. Faculty and professional mentors will train students in the application of fundamental analysis and security selection through several lecture/workshop sessions. Increased interaction with the DC area investment community. Offered by School of Business. Limited to two attempts.

Specialized Designation: Entrepreneurship, Writing Intensive in Major

Registration Restrictions:
Required Prerequisites: FNAN 311[B-] or 341[B-].

B- Requires minimum grade of B-.

Students with the Ineligible to take FNAN crses, Ineligible to take FPWM crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

FNAN 483: *Ethical and Professional Standards in Finance.* 3 credits.
This course is a complete study of the Code of Ethics and Standards of Professional Conduct. The material focuses on all ethical issues that may arise in the financial industry and will include: duties to clients, integrity of capital markets, professionalism with clients, duties to employers, investment analysis, conflicts of interest, and duties as a CFA/CFP charter member. Offered by School of Business. Limited to two attempts.

Registration Restrictions:
Required Prerequisite: FNAN 303B-.
B- Requires minimum grade of B-.

Students with a class of Freshman or Sophomore may **not** enroll.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Students with the Ineligible to take BUSA crses, Ineligible to take FNAN crses, Ineligible to take FPWM crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

FNAN 488: *Applied Equity Research.* 1 credit.
Students develop and apply equity research skills in a companion class to the Chartered Financial Analyst (CFA) Institute Research Challenge, a competition between university-sponsored teams that assume the role of research analysts by researching a designated publicly traded company, preparing a written report on that selected company, and then presenting their findings to a panel of judges. Enrollment is limited and requires permission from the instructor. Offered by School of Business. May be repeated within the degree for a maximum 3 credits.

Recommended Prerequisite: Permission of the Instructor

Registration Restrictions:
Students with the Ineligible to take FNAN crses, Ineligible to take FPWM crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

FNAN 491: *Special Topics in Finance.* 3 credits.
Advanced study of special topics in finance. Offered by School of Business. May be repeated within the degree for a maximum 9 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Required Prerequisites: (FNAN 301C or L301) or (FNAN 303C or 303XS).
C Requires minimum grade of C.

XS Requires minimum grade of XS.

Students with a class of Freshman or Sophomore may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take FNAN crses, Ineligible to take FPWM crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

FNAN 492: *Internship in Finance.* 3 credits.
Opportunity to gain practical, professional experience in conjunction with academic development. An internship is an important part of academic and career preparation. May be used as elective credit, but may not be repeated. Notes: No more than 6 credits of School of Business internship coursework (BUS 492 or FNAN 492) can be applied towards a student's 120 (BU) degree applicable credits. Students must receive departmental approval in order to register for this course; please contact the School of Business Office of Career Services for internal eligibility requirements. Offered by School of Business. May be repeated within the degree for a maximum 6 credits. Equivalent to ACCT 492, BUS 492, MGMT 492, MIS 492, MKTG 492, OM 492, OSCM 492.

Recommended Prerequisite: 75 credit hours

Registration Restrictions:
Required Prerequisites: FNAN 301B- or 303B-.
B- Requires minimum grade of B-.

Students with a class of Freshman or Sophomore may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take FNAN crses, Ineligible to take FPWM crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

FNAN 493: *Financial Planning and Wealth Management Capstone.* 3 credits.
Financial planners need unique skills and knowledge to successfully serve clients. Students will learn the cognition and decision-making of clients and planners, the techniques to facilitate effective counsel, and the planners' professional responsibilities including those of the CFP(c) Board. Students will apply their knowledge through a collaboration with an employer or a financial planning clinic in which they will create a financial plan for an actual client. A third attempt will require academic advisor approval. Offered by School of Business. May be repeated within the degree for a maximum 6 credits. Equivalent to ACCT 493.

Specialized Designation: Writing Intensive in Major

Recommended Corequisite: FNAN 411

Registration Restrictions:
Required Prerequisites: (ACCT 390C, 390XS, FNAN 390XS or 390C) and ((FNAN 311C or 311XS) and (ACCT 351C or 351XS)).
C Requires minimum grade of C.
XS Requires minimum grade of XS.

Enrollment limited to students with a class of Senior Plus or Senior.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take BUSA crses, Ineligible to take FNAN crses, Ineligible to take FPWM crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

FNAN 498: *RS: Contemporary Topics in Finance.* 3 credits.
Course focuses on contemporary topics in finance and will be writing Intensive. Possible topics include: financial institutions, asset pricing, valuation and capital markets, 2008 crisis and the Federal Reserve/ Treasury's intervention, emerging economies and exchange rate conversion, stability of the European Union and its currency. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Specialized Designation: Research/Scholarship Intensive, Writing Intensive in Major

Registration Restrictions:
Required Prerequisites: FNAN 341[C], 341[XS], 311[C], 311[XS], 321[C], 321[XS], 401[C] or 401[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take FNAN crses, Ineligible to take FPWM crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

FNAN 499: *Independent Study.* 1-3 credits.
May be repeated to a maximum of 6 credits if topics vary. Degree status. Research and analysis of selected problems or topics in finance. Notes: Must be arranged with instructor and approved in writing by associate dean for undergraduate programs before registration. Written report required. May be repeated if topics vary. Offered by School of Business. May be repeated within the term for a maximum 6 credits.

Recommended Prerequisite: Finance majors with at least 9 upper-level credit hours.

Registration Restrictions:
Students with a class of Freshman or Sophomore may **not** enroll.

Students with the Ineligible to take FNAN crses, Ineligible to take FPWM crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

Folklore Studies (FOLK)

500 Level Courses

FOLK 501: *Advanced Introduction to Folklore and Folklife.* 3 credits.
Graduate-level introduction to folklore studies. Covers core concepts in folklore such as text, tradition, performance, aesthetics, group, and identity. Surveys major folklore genres. Offered by English. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

FOLK 510: *Folklore and Ethnographic Research Methods.* 3 credits.
Introduces ethnographic fieldwork in folklore. Topics include identifying subjects of study, developing research strategies, initiating fieldwork, establishing rapport, reflexivity, representation, technology, and library and archival research. Offered by English. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

FOLK 550: *Topics in Public and Applied Folklore.* 3 credits.
Explores topics in public and applied folklore, such as cultural documentation, public programming, museums and material culture, festival management, and public humanities. Offered by English. May be repeated within the term for a maximum 9 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

FOLK 560: *Topics in Genre and Theory.* 3 credits.
Explores topics related to folklore genres and theory such as folk narrative, folklore and the supernatural, performance theory, gender and sexuality, bodylore, and sense of place. Offered by English. May be repeated within the term for a maximum 9 credits.

Specialized Designation: Topic Varies

Registration Restrictions:

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

FOLK 570: *Topics in Regional Folklore Studies.* 3 credits.
Explores topics in regional folklore studies such as folklore in Latin America, Africa, the Middle East and Central Asia, China/East Asia, and regional cultures in the U.S. Offered by English. May be repeated within the term for a maximum 9 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

600 Level Courses

FOLK 601: *Folklore Theory and History.* 3 credits.
Overview of the history and theory of folklore studies. Covers theories and approaches central to the practice of folklore. Extends into contemporary approaches to folklore study and collection. Offered by English. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

FOLK 690: *Field School for Cultural Documentation.* 3 credits.
In-depth training in ethnographic field research and fieldwork practicum. Offered by English. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

FOLK 699: *Internship.* 1-3 credits.
Unpaid, approved work-study positions at specific sites arranged by interested students and their advisor. Under supervision of faculty advisor, student works as intern with site supervisor in agency of student's choosing, given advisor's permission. Offered by English. May be repeated within the term for a maximum 3 credits. Equivalent to ENGH 604.

Recommended Prerequisite: A course in folklore, which may be taken concurrently.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Graduate Regular scale.

700 Level Courses

FOLK 790: *Project.* 3 credits.
Students complete a capstone project guided by instructor and a faculty consultant based on work produced in a previous graduate courses. Class meetings focus on building skills in research, revision, and editing, discussing topics related to professionalization both in and out of academia, and revising work in a workshop environment. Offered by English. May not be repeated for credit.

Recommended Prerequisite: 21 credits in MA coursework including FOLK 501, permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Satisfactory/No Credit scale.

FOLK 799: *Thesis.* 3 credits.
Original research endeavor related to student's work in MA program. Offered by English. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Thesis

Grading:
This course is graded on the Satisfactory/No Credit scale.

Foreign Language (FRLN)

300 Level Courses

FRLN 309: *Humanities College to Career.* 1 credit.
Focuses on career choices and effective self-presentation for soon-to-be graduating students with majors in the humanities. Explores how skills typically learned in humanities majors can be leveraged for a successful transition to post-graduation employment. Offered by Modern & Classical

Languages. Limited to three attempts. Equivalent to ENGH 303, HIST 385, PHIL 393, UNIV 420.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

FRLN 330: *Topics in World Literature.* 3 credits.
Major works of world literature with varying perspectives and topics, such as specific cultures, histories, myths, or music and the arts, as represented in literature. Notes: May be repeated when topic differs with permission of department. Offered by Modern & Classical Languages. May be repeated within the term for a maximum 9 credits.

Mason Core: Literature

Specialized Designation: Topic Varies

Recommended Prerequisite: ENGL 101/ENGH 101 and 45 credits or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

FRLN 331: *Contexts for Global Cinema.* 3 credits.
Major works of world cinema with varying perspectives and topics, such as specific genres, periods, schools. Notes: Coursework in English. May be repeated when topic is different with permission of department. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 9 credits.

Mason Core: Global Understanding

Specialized Designation: Topic Varies

Recommended Prerequisite: ENGH 101 or permission of instructor.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

FRLN 380: *Topics in the Sociopolitics of Language.* 3 credits.
Addresses relationship between language and other social and cultural systems (macro sociolinguistics), and critical study of people's ideas about language (language ideology). Utilizes comparative approach to explore ways people use language to perform and communicate various social identities and categories; how and why people attach social meanings and values to particular ways of using language; development of official and unofficial language policies; and impact of language policies. Notes: May be repeated when topic is different. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: ENGL 101/ENGH 101 and 45 credits, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

FRLN 385: *Multilingualism, Identity, and Power.* 3 credits.
Study of individual and societal aspects of multilingualism including language choice, linguistic maintenance and shift, code-switching, language planning, educational policy, and representations of multilingualism. Interdisciplinary approach emphasizes the social and political aspects of multilingualism, as well as the relationship of language to cultural, ethnoracial, and national identities and categories. Offered by Modern & Classical Languages. Limited to three attempts.

Mason Core: Synthesis

Recommended Prerequisite: Completion or concurrent enrollment in all other required Mason Core courses.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

FRLN 430: *Topics in Comparative World Literatures.* 3 credits.
Explores comparative studies of a topic through literary works written in at least two different languages. All material provided in translation. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

FRLN 431: *Medieval Intellectual Topics.* 3 credits.
Focuses on topic in intellectual history of Middle Ages. Emphasizes literary or historical, depending on discipline of instructor. Relevant material may be drawn from philosophy, theology, and art. Notes: May be taken for credit by English or history majors. Offered by Modern & Classical Languages. Limited to three attempts. Equivalent to ENGH 421.

Specialized Designation: Topic Varies

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

FRLN 490: *Internship in Foreign Language Studies.* 1-6 credits.
Qualified students work with schools, social service programs, government agencies, interest groups, museums, or corporations locally or abroad. Specific arrangements must be made with, and approved by, a faculty member of the specific language program during semester prior to enrollment. For each credit, student works on site at least 45 hours. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 6 credits.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

500 Level Courses

FRLN 510: *Bibliography and Research in Foreign Languages and Literature.* 3 credits.
Use of basic bibliographical tools and methodologies for scholarly research in French, German, and Spanish. Taught in cooperation with university library staff. Offered by Modern & Classical Languages. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

FRLN 525: *Literary Translation.* 3 credits.
Critical approach and analysis of diverse texts such as poetry, drama, essay, and novel excerpts. Offered by Modern & Classical Languages. May not be repeated for credit.

Recommended Prerequisite: Graduate standing or permission of department and advanced coursework in literary translation.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

FRLN 530: *Topics in Comparative World Literatures.* 3 credits.
Explores comparative studies of a topic through literary works and/or other cultural production (cinema, pop culture, etc.) from at least two different language traditions. All material provided in translation. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

FRLN 550: *Special Topics.* 3 credits.
Themes, periods, or genres vary from semester to semester. Focuses on topics that incorporate one or more languages taught in department, but instruction is in English. Notes: May be repeated with permission of department. Offered by Modern & Classical Languages. May be repeated within the term.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

FRLN 551: *Special Topics.* 3 credits.
Themes, periods, or genres vary from semester to semester. Focuses on topics that incorporate one or more languages taught in department, but instruction is in English. Notes: May be repeated with permission of department. Offered by Modern & Classical Languages. May be repeated within the degree.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

FRLN 565: *Theory of Translation.* 3 credits.
Lectures on nature, function of translating process. Evaluates theories of translation with respect to text typology. Critiques selected translations from target languages to English and vice versa. Offered by Modern & Classical Languages. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

FRLN 572: *Integrating Technology into Language Learning.* 3 credits.
Explores pedagogical and theoretical basis for integrating interactive technologies into language learning programs, and examines potential for learning, teaching, testing, and research. Includes hands-on analysis

and evaluation of materials. Notes: Prior experience with technology not required. Offered by Modern & Classical Languages. May not be repeated for credit.

Recommended Prerequisite: Graduate standing or permission of department, language teaching methods course, and language teaching experience.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

FRLN 573: *Basic Issues in Language Pedagogy.* 3 credits.
Explores major issues controversial in language pedagogy. Topics include communicative competence as pedagogical goal, role of explicit grammar teaching, proficiency movement, cultural authenticity, student-centered learning, and technology. Offered by Modern & Classical Languages. May not be repeated for credit.

Recommended Prerequisite: Graduate standing or permission of department, language teaching methods course, and language teaching experience.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

FRLN 575: *Heritage Language Education.* 3 credits.
Overview of the field of heritage language education, Including consideration of the linguistic and sociocultural characteristics of heritage language students, empirical research on heritage language education, and a range of instructional approaches, including critical pedagogy. Offered by Modern & Classical Languages. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

FRLN 590: *Internship and Seminar in Translation.* 3 credits.
Internships are nonpaying, work-study positions that focus on the practice of translation. Qualified students placed with area institutions, interest groups, agencies, or corporations. Notes: Placement depends on availability of positions. Offered by Modern & Classical Languages. May not be repeated for credit.

Recommended Corequisite: Internships are nonpaying, work-study positions that focus on the practice of translation. Qualified students are placed with area institutions, interest groups, agencies or corporations. Requires admission to the translation certification program. Please contact Dr. Cordero in the department. Individualized Section Form required.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Graduate Regular scale.

600 Level Courses

FRLN 600: *Workshop in Foreign Languages.* 1-6 credits.
In-service workshops, tours, and seminars on selected topics in literature, language, bilingualism, culture, methodology. Notes: May not be applied toward MA in foreign languages without permission of department. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

FRLN 620: *Literary Theory and Criticism.* 3 credits.
Studies nature of literary work, and analyzes contemporary critical approaches to literature. Notes: May not be taken for credit by students who previously received credit for FRLN 615. Offered by Modern & Classical Languages. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

FRLN 650: *The Teaching of Culture in Foreign Language Programs.* 3 credits.
Purpose and methods of study of culture, with emphasis on strategies and techniques for teaching culture in foreign language programs. Offered by Modern & Classical Languages. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

FRLN 660: *Approaches to the Study of Language.* 3 credits.
Linguistics and its relationship to other disciplines, including study of generative grammar with syntactic problems drawn from commonly taught foreign languages. Offered by Modern & Classical Languages. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

FRLN 670: *Topics in Language Learning and Teaching.* 3 credits.
Provides in-depth examination of a particular topic in language learning and teaching. Includes consideration of language acquisition and/or educational research as well as pedagogical implications and practice. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 9 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

Forensic Science (FRSC)

100 Level Courses

FRSC 101: *Principles of Forensic Science.* 3 credits.
The forensic sciences encompass the skills and expertise of individuals from a multitude of scientific disciplines to assist in the investigation of cases of legal significance. This course is designed to provide the student with a broad introduction to the methods and techniques utilized by today's forensic professionals. We will explore the application of the physical, medical, natural and engineering sciences to specialized legal contexts, investigation of a crime scene, the role of law enforcement crime labs, and other important issues relating to forensic investigations. Offered by College of Science. Limited to three attempts.

Mason Core: Natural Science Overview

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

200 Level Courses

FRSC 200: *Survey of Forensic Science.* 3 credits.
This course will familiarize students with the basic principles, professional practice, quality assurance, and quality control measures employed in the practice of forensic science in the American system of justice. An introduction to topics including the nature of evidence and the law, crime scene investigations, serology, DNA analysis, bloodstain pattern, trace evidence, microscopy, forensic pathology, anthropology, odontology and entomology/ Offered by College of Science. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

FRSC 201: *Introduction to Criminalistics.* 3 credits.
This course will provide an overview of the field of criminalistics, with a focus on the recognition, collection, preservation, and analysis of physical evidence. During the course, the student will be introduced to topics such as fingerprints, question documents, firearms, drugs of abuse, explosives and arson to prepare them for additional, more in-depth classes in criminalistics/forensic science. Offered by College of Science. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

300 Level Courses

FRSC 302: *Forensic Trace Analysis.* 3 credits.
This course will provide an overview of the field of forensic science with specific emphasis on areas of trace and biological evidence, including topics such as the analysis of hair, soil, glass, paint, and other trace material. A laboratory component provides an introduction to microscopy which assists students master the foundation tools used in analyzing forensic trace evidence. Offered by College of Science. Limited to three attempts.

Specialized Designation: Writing Intensive in Major

Registration Restrictions:
Required Prerequisites: (FRSC 200[C] or 200[XS]) and (FRSC 201[C] or 201[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

FRSC 303: *Forensic Evidence and Ethics.* 3 credits.
This course will acquaint the student with the application of scientific methods and the interaction it may have with legal principles. It will prepare the student for future applications of forensic science with its role in the administration of justice, courtroom testimony, and the ethical rules and duties under codes of professional conduct and practice. Offered by College of Science. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: ((FRSC 200[C] or 200[XS]) and (CRIM 100[C] or 100[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

FRSC 304: *Forensic Chemistry.* 3 credits.
Introduction to the chemical principles and methods used in the application of forensics toward the elucidation of criminal activity and to support litigation. Students will be learning the fundamentals of statistics (QA/QC), chromatography (GC and LC). and instrumentation (microscopy, FTLR, and MS) that wilt enable forensics analysis of trace evidence relating to: drugs, explosives, toxicology, arson, firearms, volatiles, and hair/fibers. Offered by College of Science. Limited to three attempts.

Specialized Designation: Writing Intensive in Major

Registration Restrictions:
Required Prerequisites: (FRSC 200[C] or 200[XS]) and (FRSC 201[C] or 201[XS]) and (CHEM 211[C] or 211[XS]) and (CHEM 213[C] or 213[XS]) and (CHEM 212[C] or 212[XS]) and (CHEM 214[C] or 214[XS]) and (CHEM 313[C] or 313[XS]) and (CHEM 315[C] or 315[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

FRSC 305: *Forensic Chemistry Laboratory.* 1 credit.
This course will correlate laboratory exercises to the theoretical and investigative principles of forensic chemistry. The laboratory experiments and activities have been designed to expand on and support the material taught in the lecture section of the Forensic Chemistry course (FRSC 304). Students will have hands-on experience with basic forensic chemistry procedures and commonly used laboratory instrumentation. This laboratory course will enable students to explore the use of presumptive testing, controlled substance analysis, blood alcohol measurements, explosive residue analysis, ignitable liquid residue analysis, and chemical enhancement techniques used at crime scenes and in investigative procedures. The students will have hands-on experience using TLC, GC, GC/MS, and FTIR instrumentation and they will learn the fundamentals of how they operate and how to interpret the data generated by these systems. Offered by College of Science. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: ((FRSC 200[C] or 200[XS]) and (FRSC 201[C] or 201[XS]) and (FRSC 304[*C] or 304[XS]) and (CHEM 211[C] or 211[XS]) and (CHEM 212[C] or 212[XS]) and (CHEM 213[C] or 213[XS]) and (CHEM 214[C] or 214[XS]) and (CHEM 313[C] or 313[XS]) and (CHEM 315[C] or 315[XS])).
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

FRSC 325: *Molecular Biology.* 3 credits.
This course will cover the structure and function of genes. Students will study nucleic acid structure and the mechanics of replication, repair, transcription, and translation in bacteria, archaea, and eukaryotes. A central goal is understanding gene expression and regulation at all levels, and the structure-function relationships of nucleic acids and proteins. Critical experiments will be examined to learn how our current understandings have developed from experimental results. Techniques in molecular biology will be examined in lecture as necessary to understand experiments and concepts. The course will also cover protein structure and function- especially protein interactions with nucleic acids- and post-translational events that effect the functional output of genes. The course will also pursue a selection of topics which varies from year to year but all impact on interpretation of forensic DNA evidence. Offered by College of Science. Limited to three attempts.

Recommended Corequisite: FRSC 326

Registration Restrictions:
Required Prerequisites: (BIOL 213[C] or 213[XS]) and (BIOL 214[C], 214[XS], STAT 250[C] or 250[XS]) and (BIOL 311[C] or 311[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

FRSC 326: *Molecular Biology Laboratory.* 1 credit.
This laboratory course will cover basic laboratory methods in molecular biology. The emphasis will be on existing and emerging techniques utilized in forensic DNA laboratories. Techniques will include, extraction, quantitation, STR typing, and SNP microarray genotyping. Offered by College of Science. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (BIOL 213[C] or 213[XS]) and (BIOL 214[C], 214[XS], STAT 250[C] or 250[XS]) and (BIOL 311[C] or 311[XS]) and (FRSC 325[*C] or 325[*XS]).
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

FRSC 401: *Crime Scene Investigations.* 3 credits.
This course provides the scientific principles of crime scene investigations by applying the basic knowledge of proper documentation, collection and preservation of physical evidence. Proper crime scene protocols and evidence processing techniques will be performed in areas such as, forensic photography, sketching, blood stain pattern analysis, trajectory, skeletal remains, and fingerprinting. Offered by College of Science. Limited to three attempts.

Recommended Prerequisite: Completion of 90 credits

Registration Restrictions:
Required Prerequisites: (FRSC 200[C] or 200[XS]) and (FRSC 201[C] or 201[XS]) and (FRSC 303[C] or 303[XS]) and (FRSC 302[C] or 302[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major in Forensic Science.

Enrollment limited to students in the SC-BS-FRSC program.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

FRSC 404: *Advanced Instrumentation in Forensic Chemistry.* 4 credits.
This course will introduce advanced themes of forensic science and the application of analytical chemistry using state-of-the-art instrumentation hardware and software platforms. Students will perform hands-on experiments using instruments that are commonly found at the federal level and in more advanced state crime laboratories. The students will be exposed to widely used concepts in the advanced forensic analysis of drugs of abuse, toxicology, arson, inks, paints, polymers, and explosives. In addition, the operational concepts of commonly used analytical instrumentation such as GC-MS, FTIR, and TQMS will be taught, demonstrated, and used by the students. More advanced instrumentation will also be introduced in the course that may include: LC/MS, LC-MS/MS, QE+ with ESI and API front ends, high resolution mass measurements, MALDI-TOF, and advanced portable instruments. Offered by College of Science. Limited to three attempts.

Recommended Prerequisite: FRSC 303 or Permission of Instructor

Registration Restrictions:
Required Prerequisites: (CHEM 314[C] or 314[XS]) and (CHEM 318[C] or 318[XS]) and (CHEM 321[C] or 321[XS]) and (MATH 114[C] or 114[XS]) and (STAT 250[C], 250[XS], BIOL 214[C] or 214[XS]) and (FRSC 304[C] or 304[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

FRSC 405: *Independent Research Methods.* 3 credits.
This course is designed to allow students to complete an approved independent forensic science research project under the guidance of a faculty mentor. A formal research proposal will be prepared and submitted. In addition to conferring with the instructor regularly regarding the process of their research, students will also be introduced to research and writing methods througout the course. Offered by College of Science. Limited to three attempts.

Recommended Prerequisite: Completion of 90 credits or permission of instructor.

Registration Restrictions:
Enrollment limited to students in the SC-BS-FRSC program.

Schedule Type: Research

Grading:
This course is graded on the Undergraduate Regular scale.

FRSC 406: *Forensic Internship.* 3 credits.
This course is designed to allow students the opportunity to enhance their academic coursework with field work either at an approved agency or under the guidance of an approved faculty mentor that will substantially correlate with a discipline of forensic science. For successful completion, the student must complete a minimum of 135 hours of work. Offered by College of Science. Limited to three attempts.

Recommended Prerequisite: Completion of 60 credits or permission of instructor.

Registration Restrictions:
Enrollment limited to students in the SC-BS-FRSC program.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

FRSC 415: *Selected Topics in Forensic Science.* 1-3 credits.
Topics vary according to instructor's specialty. Note: If multiple courses are taken, topics must be different. Offered by College of Science. May be repeated within the term for a maximum 6 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: Permission of instructor

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

FRSC 418: *Analytical Thinking and Violent Crime Profiling.* 3 credits.
This is a course on Analytical Thinking in the context of Criminal Investigative Analysis (CIA) from a forensic, and behavioral perspective. CIA is commonly referred to as Profiling. CIA is the behavioral interpretation of a violent crime scene, or series of scenes through the lens of multiple crime scene behaviors. During the course, concepts of Criminal Investigative Analysis will be discussed including such topics: victimology, offender risk Level, method of victim access, crime scene planning, the presence and absence of forensic evidence, offender motivation, body disposal, anthropological perspectives etc. Subject matter experts will make presentations on a variety of topics relevant to CIA. A wide variety of cases will be discussed including, both criminal and terrorism cases, and current cases that are being discussed in the media. Offered by College of Science. Limited to three attempts.

Recommended Prerequisite: Permission of Instructor. Eligibility for registration will be determined by the following: a minimum of 30 credits completed in the Natural Sciences Core and 19 credits completed in the Forensic Science Core. Student shall have consistent high achieving marks in the major with a minimum of a 3.4 major GPA.

Registration Restrictions:
Enrollment is limited to students with a major in Forensic Science.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

FRSC 420: *Forensic Toxicology.* 3 credits.
Examines toxic substances and their effects on human cellular and organ systems. The course focuses on human physiological concepts, the human enzymatic detoxification processes, methodologies for identifying toxins, and specific toxic analytes. Offered by College of Science. Limited to three attempts.

Recommended Prerequisite: Completion of Forensic Science Foundation courses

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

FRSC 450: *Practical Forensic Skeletal Biology.* 3 credits.
Practical forensic skeletal biology is the application of human skeletal biology that includes all aspects of musculoskeletal anatomy, physiology, and changes due to pathogens as it applies in a medico-legal context. It also includes in-depth knowledge of bone as a source of cellular regeneration for normal repair as well as highly specialized knowledge of surface anatomy, including all aspects of human growth and development. Actual cases in combination with hands-on practical experiences in the classroom and at our outdoor training facility will examine how modern forensic science examines human thanatobiomes, apeneumones, volatile organic compounds, modern survey techniques to determine the postmortem fate of human remains. Offered by College of Science. Limited to three attempts.

Recommended Prerequisite: At least 60 credit hours.

Registration Restrictions:
Required Prerequisites: ((FRSC 200[C] or 200[XS]) and (FRSC 201[C] or 201[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

FRSC 460: *Forensic DNA Analysis.* 3 credits.
This course will provide an understanding of body fluid identification and molecular biology testing methodologies as applied to the analysis of forensic samples. The process of forensic DNA analysis will be covered in depth. Current topics in forensic DNA analysis will be reviewed including population genetics, validation, quality assurance, the CODIS database, Y-STRs, mitochondrial DNA testing, SNPs and contem ora research. Offered by College of Science. Limited to three attempts.

Recommended Corequisite: FRSC 461

Registration Restrictions:
Required Prerequisites: (FRSC 200[C] or 200[XS]) and (FRSC 201[C] or 201[XS]) and (BIOL 213[C] or 213[XS]) and (BIOL 311[C] or 311[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

FRSC 461: *Forensic DNA Analysis Laboratory.* 1 credit.
This laboratory course will present the most common serological and DNA laboratory techniques associated with forensic casework as taught in the lecture section of the Forensic DNA Analysis course. Students will have hands-on experience with basic forensic DNA procedures including the examination and identification of bodily fluid stains, DNA extraction, quantitation, PCR amplification, genotyping, and interpretation. Offered by College of Science. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (FRSC 200[C] or 200[XS]) and (FRSC 201[C] or 201[XS]) and (BIOL 213[C] or 213[XS]) and (BIOL 311[C] or 311[XS]) and (FRSC 460[*C] or 460[XS]).
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

FRSC 470: *Forensic Genomics.* 4 credits.
This course will cover advanced principles and methods related to DNA typing in a forensic context. The course will review the current applications of DNA typing, and then address emerging methods and technological advances. The focus of the course will be on methods and techniques involved in Investigative Genetic Genealogy. A second focus of the course will be on how to properly interpret these data. Particular emphasis will be placed on how these emerging methods can advance the field of forensic DNA typing and lead to new capabilities in human identification. Students will gain an understanding of the capabilities and limitations of these emerging areas within forensic science, covering how they build on current practices. Data review and analysis from forensic DNA results will be included in the course. Offered by College of Science. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (BIOL 213[C] or 213[XS]) and (BIOL 214[C], 214[XS], STAT 250[C] or 250[XS]) and (BIOL 311[C] or 311[XS]) and (FRSC 460[C] or 460[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

FRSC 499: *Comprehensive Examination.* 0 credits.
The comprehensive examination ensures that the student is prepared to engage in an entry level forensic profession, in advanced forensic training or a graduate program. Students are required to pass this examination

prior to graduation. Offered by College of Science. May be repeated within the degree.

Registration Restrictions:
Required Prerequisites: ((FRSC 200[C] or 200[XS]) and (FRSC 201[C] or 201[XS]) and (FRSC 302[C] or 302[XS]) and (FRSC 303[C] or 303[XS]) and (FRSC 304[*C] or 304[XS]) and (FRSC 401[*C] or 401[XS]) and (FRSC 460[*C] or 460[XS])).
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment limited to students in the SC-BS-FRSC program.

Schedule Type: Independent Study

Grading:
This course is graded on the Satisfactory/No Credit scale.

500 Level Courses

FRSC 500: *Introduction to Forensic Science.* 3 credits.
This course will provide an overview of the foundation and history of forensic science. During the course, the various disciplines and specialties within forensic science will be discussed such as biology, chemistry, toxicology, microscopy, odontology, and anthropology. Additionally, the different types of physical evidence and instrumentation encountered in the field will be reviewed. Topics within ethics and quality assurance are also discussed. Offered by College of Science. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

FRSC 510: *Basic Crime Analysis.* 3 credits.
This course examines the role of the crime scene investigator, search, seizure and related legal issues; crime scene documentation (note taking, photography, sketching, and measurements); processing of latents and 2-D and 3-D impressions; collection, packaging and preservation of physical evidence. Offered by College of Science. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

FRSC 511: *Advanced Crime Scene Analysis.* 3 credits.
Advanced Crime Scene Analysis is designed to build on concepts introduced in FRSC 510 (Basic Crime Scene Analysis), and to provide an enhanced foundation in the field of criminalistics for those students who are interested in learning the application of science to solving crimes. Offered by College of Science. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (FRSC 510[B-] or 510[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

FRSC 512: *Physical Evidence Laboratory.* 3 credits.
This is a series of practical laboratory exercises that introduces the student to the analysis of physical evidence including the examination of pattern and trace evidence such as hairs, tool marks, firearms evidence, and shoe prints; processing of fingerprints using various chemicals, powders, and alternate light sources. Offered by College of Science. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (FRSC 510[B-] or 510[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory

Grading:
This course is graded on the Graduate Regular scale.

FRSC 513: *Forensic Photography.* 3 credits.
This series of lecture and practical photography exercises introduces the student to photographic crime scene documentation techniques including concepts of controlling exposure, lighting, focus, and composition as it relates to matters of a forensic nature; photographic documentation of criminal artifacts including fluorescent fingerprints and Blue Star treated blood stains. Offered by College of Science. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

FRSC 514: *Survey of Forensic Chemistry, Biology, and DNA Analysis.* 3 credits.
This course will provide an overview of the history, theory and principles of the various processes of Forensic Biology and Chemistry analysis, including quality assurance. General applications of chemistry analysis as applied to forensic evidence will be covered, as well as, the biology and genetics of DNA and the typing systems used in Forensic DNA analysis. The technology and instrumentation used in forensic chemistry analysis and the analysis of biological fluids and DNA will also be covered. Offered by College of Science. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

FRSC 515: *Selected Topics in Forensic Science.* 1-3 credits.
Topics vary with instructor's specialty. Offered by College of Science. May be repeated within the term for a maximum 21 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

FRSC 516: *Forensic Drone Photography.* 3 credits.
This course explores the rapidly expanding use of Unmanned Aerial Systems (UAS) or Unmanned Aerial Vehicle (UAV) also referred to as a drone to assist forensic investigators to document scenes. These capture platforms allow the user to document events using both video and photographs from a vantage point not easily obtained. The data collected can then be further extracted to form maps and models of the scene. Students in this course will first be taught the knowledge and skills necessary to apply for a FAA Part 107 Commercial Drone (UAS) license. Next, they will develop their piloting skills to capture data through a series of lectures and practical problems typically found by forensic investigators. Finally, a survey of legal requirements for drone use and procedures to follow to seek authorizations to fly in certain areas. Offered by College of Science. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

FRSC 517: *Questioned Document Examination.* 3 credits.
Theory and principles of handwriting and printing processes, paper manufacture and fiber analysis, fracture match comparison, ink analysis, and indented writing examinations; methods of examining questioned documents. Offered by College of Science. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

FRSC 518: *Analytical Thinking & Violent Crime Profiling.* 3 credits.
This is a course on Analytical Thinking in the context of Criminal Investigative Analysis (CIA) from a forensic, and behavioral perspective. CIA is commonly referred to as Profiling. CIA is the behavioral interpretation of a violent crime scene, or series of scenes through the lens of multiple crime scene behaviors. During the course, concepts of Criminal Investigative Analysis will be discussed including such topics: victimology, offender risk Level, method of victim access, crime scene planning, the presence and absence of forensic evidence, offender motivation, body disposal, anthropological perspectives etc. Subject matter experts will make presentations on a variety of topics relevant to CIA. A wide variety of cases will be discussed including, both criminal and terrorism cases, and current cases that are being discussed in the media. Offered by College of Science. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

FRSC 520: *Toxicology.* 3 credits.
Forensic Toxicology examines the adverse effects of alcohol, drugs and other chemicals on the human body. A lecture style course integrating pharmacology, toxicology and analytical chemistry to understand how

the principles of toxicology are applied to the legal system. Offered by College of Science. May not be repeated for credit.

Recommended Prerequisite: Advanced level undergraduate course in Chemistry, Biology or Biochemistry or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

FRSC 525: *Molecular Biology.* 3 credits.
This course will cover the structure and function of genes. Students will study nucleic acid structure and the mechanics of replication, repair, transcription, and translation in bacteria, archaea, and eukaryotes. A central goal is understanding gene expression and regulation at all levels, and the structure-function relationships of nucleic acids and proteins. Critical experiments will be examined to learn how our current understandings have developed from experimental results. Techniques in molecular biology will be examined in lecture as necessary to understand experiments and concepts. The course will also cover protein structure and function- especially protein interactions with nucleic acids- and post-translational events that effect the functional output of genes. The course will also pursue a selection of topics which varies from year to year but all impact on interpretation of forensic DNA evidence. Offered by College of Science. May not be repeated for credit.

Recommended Prerequisite: The successful completion of coursework in topics covering Cell Biology, Statistics, and Genetics.

Recommended Corequisite: FRSC 526

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

FRSC 526: *Molecular Biology Laboratory.* 1 credit.
This laboratory course will cover basic laboratory methods in molecular biology. The emphasis will be on existing and emerging techniques utilized in forensic DNA laboratories. Techniques will include, extraction, quantitation, STR typing, and SNP microarray genotyping. Offered by College of Science. May not be repeated for credit.

Recommended Prerequisite: The successful completion of coursework in topics covering Cell Biology, Statistics, and Genetics

Registration Restrictions:
Required Prerequisites: FRSC 525[*B] or 525[*XS].
[*] May be taken concurrently.
[B] Requires minimum grade of B.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory

Grading:
This course is graded on the Graduate Regular scale.

FRSC 530: *Law and Forensic Science.* 3 credits.
A detailed examination and analysis of the law affecting forensic science across the discipline range. Special emphasis is given to the laws affecting evidence, courtroom procedure, ethics, and professional responsibilities of the forensic expert. Offered by College of Science. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

FRSC 540: *Advanced Forensic Chemistry.* 3 credits.
The principles of forensic chemistry will be addressed in this course, including analytical chemistry, instrumental methods of analysis, sample handling, drug chemistry and toxicology. Offered by College of Science. May not be repeated for credit.

Recommended Prerequisite: Undergraduate degree in chemistry or biology. The student must have a good understanding of general Chemistry including polarity and acid/base chemistry. A student should have taken Organic Chemistry, and be able to identify functional groups and other chemistry structures that make up a molecule. Any exposure to instrumental techniques such as gas chromatography, mass spectrometry and infrared spectroscopy are helpful.

Registration Restrictions:
Required Prerequisites: ((FRSC 541[*B-] or 541[XS]) and (FRSC 514[B-] or 514[XS])).
[*] May be taken concurrently.
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a concentration in Forensic Chemistry Analysis.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

FRSC 541: *Forensic Chemistry Laboratory.* 1 credit.
This course will familiarize students with chemical knowledge gained from experimental observations and studies in the laboratory. Students will examine, test and establish for themselves the forensic chemistry discussed in the lecture courses. Note: The successful passing of a Virginia Department of Forensic Science background check is required prior to gaining access to this laboratory course. Offered by College of Science. May not be repeated for credit.

Recommended Prerequisite: Undergraduate degree in chemistry or biology. The student must have a good understanding of general Chemistry including polarity and acid/base chemistry. A student should have taken Organic Chemistry, and be able to identify functional groups and other chemistry structures that make up a molecule. Any exposure to instrumental techniques such as gas chromatography, mass spectrometry and infrared spectroscopy are helpful.

Registration Restrictions:
Required Prerequisites: FRSC 540[*B-] or 540[*XS].
[*] May be taken concurrently.
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a concentration in Forensic Chemistry Analysis.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory

Grading:
This course is graded on the Graduate Regular scale.

FRSC 550: *Issues in Forensic Anthropology.* 3 credits.
This course examines issues related to the recovery and analysis of human skeletal remains in a medicolegal context. Topics include detection and mapping approaches for human remains, assessment of biological information from the skeleton (such as sex, ancestry, age, and stature), and the analysis of skeletal trauma. Offered by College of Science. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

FRSC 560: *Advanced Forensic DNA Sciences.* 3 credits.
This is a seminar style course providing an overview of the history, theory and principles of the various processes of Forensic DNA analysis. The biology and genetics of DNA and the typing systems used in Forensic DNA will be reviewed. The technology used in the analysis of DNA, including data analysis, interpretation, CODIS database and statistical applications will also be covered. Offered by College of Science. May not be repeated for credit.

Recommended Prerequisite: Undergraduate coursework in molecular and/or cell biology, as well as genetics, prior to taking this course or permission of instructor.

Registration Restrictions:
Required Prerequisites: ((FRSC 561[*B-] or 561[XS]) and (FRSC 514[B-] or 514[XS])).
[*] May be taken concurrently.
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a concentration in Forensic Biology Analysis.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

FRSC 561: *Forensic DNA Laboratory.* 1 credit.
This laboratory course will provide comprehensive coverage of the various types of DNA testing currently used in forensic biology laboratories. Students will have hands-on experience with the analytical equipment employed and the techniques used for human identification in forensic casework, such as, DNA extraction, quantitation, PCR amplification, genotyping, and interpretation. Note: The successful passing of a Virginia Department of Forensic Science background check is required prior to gaining access to this laboratory course. Offered by College of Science. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: FRSC 560[*B-] or 560[*XS].
[*] May be taken concurrently.
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a concentration in Forensic Biology Analysis.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory

Grading:
This course is graded on the Graduate Regular scale.

FRSC 570: *Trace and Physical Evidence Concepts.* 3 credits.
Prepares students to evaluate physical evidence through the use of microscopic, chemical, and instrumental means. The course will emphasis the scientific procedures used to identify the evidence, the analysis of data generated during the identification phase, and the inductive reasoning process which allows the forensic scientist to draw conclusions based on the evidence at hand. Offered by College of Science. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

FRSC 580: *Facial Reconstruction.* 3 credits.
This course begins with an introduction to methods used in image analysis, and the methods of facial reconstruction. The course will then explore modern techniques applied to several areas of forensic imaging. Advance topics in forensic sculpturing, 3D imagery, and post-mortem imagery will be explored. Offered by College of Science. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

FRSC 590: *Medicolegal Death Investigation and Pathology.* 3 credits.
Introduction to the pathology and physiology of the human body with an emphasis on scientific and medical terminology, in addition to the various techniques used in medicolegal death investigation. Discussion of death scene analysis, autopsy procedures, and unidentified remains. Overview of the role of the medical examiner's office within the United States and an introduction to the forensic investigation of sudden and unexpected deaths, including homicides, suicides, accidents, accidental deaths, and various traumatic deaths. Offered by College of Science. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (FRSC 510[B-] or 510[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

600 Level Courses

FRSC 600: *Forensics Seminar.* 1 credit.
Presentations are made about selected topics in law enforcement, homeland security and forensic science presented by professionals working in the field and forensic science research presented by GMU graduate students. Students must also write an article, not to exceed four pages, chosen by the students from a set of recent, peer-reviewed scientific journals established by the instructor. Students will analyze the scientific method used in the article and critique the research performed. Notes: Students enrolled in the forensic science MS program must attend at least 80% of the seminars. Offered by College of Science. May be repeated within the degree for a maximum 3 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

FRSC 610: *Forensic Research Project.* 1-4 credits.
This course is a two semester course required for all graduate students prior to graduation. The first semester course consists of a 1.0 Credit Course where the students select a research topic and a qualified research advisor (faculty member or affiliated forensic science professional). The second semester course is a 3.0 Credit Course where the students perform their research, write their research paper and make a presentation of their research project to GMU Forensic Science Faculty members. Offered by College of Science. May be repeated within the degree for a maximum 4 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Forensic Science.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Research

Grading:
This course is graded on the Graduate Special scale.

FRSC 620: *Face and Biometric Pattern Analysis.* 3 credits.
This course will familiarize students with the basic principles and uses of biometrics for automated searches and comparisons by forensic

examiners. This course will review the basics of face, fingerprints, iris, and speaker recognition. Students should gain an understanding of how automated systems and forensic examiners perform recognition. Students will also learn the capabilities and limitations of biometric recognition. Offered by College of Science. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

FRSC 630: *Fingerprint Identification.* 3 credits.
This course will cover the exploration of the techniques and methods of identification, capture and analysis of fingerprint evidence, including consideration of the fundamentals of fingerprint patterns, classification formulas and extensions, techniques for taking good fingerprints, problems in fingerprinting, preparation of fingerprint charts for court testimony, and practical exercises for capturing fingerprints. Offered by College of Science. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

FRSC 640: *Legal, Privacy and Ethical Issues in Identity Analysis.* 3 credits.
This course will review basic policies and doctrinal guidance related to the applications of biological, physical, chemical, and medical sciences to questions of evidence and law. In doing so, students should gain a basic understanding of the high level policies, protocols, standards, privacy, civil liberties, and doctrine related to the forensic sciences as they are practiced relating to identity analysis. Offered by College of Science. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

FRSC 650: *Identity Analysis Applications.* 3 credits.
This course will review the basics of biometrics and how the various biometric modalities can be used to aid in identification and identity verification. The course will also focus on how biometrics and forensics are used, or can be used, in various applications from military uses, intelligence/counter-terrorism, border and immigrations control and in support of state development. Offered by College of Science. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

FRSC 670: *Forensic Genomics.* 4 credits.
This course will cover advanced principles and methods related to DNA typing in a forensic context. The course will review the current applications of DNA typing, and then address emerging methods and technological advances. The focus of the course will be on methods and techniques involved in Investigative Genetic Genealogy. A second focus of the course will be on how to properly interpret these data. Particular emphasis will be placed on how these emerging methods can advance the field of forensic DNA typing and lead to new capabilities in human identification. Students will gain an understanding of the capabilities and limitations of these emerging areas within forensic science, covering how they build on current practices. Data review and analysis from forensic DNA results will be included in the course. Offered by College of Science. May not be repeated for credit.

Recommended Prerequisite: The successful completion of coursework in topics of Cell Biology, Statistics, Genetics, and Forensic DNA Analysis.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

FRSC 690: *Capstone - Moot Court & Expert Testimony.* 3 credits.
In this course, students will learn and practice how to incorporate forensic science theory, research, analysis, writing and speaking skills into a life like moot court experience. They will learn how and why forensic science evidence is admitted into court proceedings, and their role in the admission of evidence. Topics will include Federal and state rules of evidence; admission of forensic science testimony into criminal and civil cases; the process of being qualified as an expert witness, including the Voir dire Process; The role and responsibility of expert witnesses; Developing an Expert Witness Curriculum CV, and trial preparation; Proper laboratory and CSI report development and writing for presentation in court, and developing proper speaking skills for

courtroom testimony. Offered by College of Science. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: ((FRSC 500[B-] or 500[XS]) and (FRSC 510[B-] or 510[XS]) and (FRSC 530[B-] or 530[XS])).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

FRSC 699: *Comprehensive Examination.* 0 credits.
The comprehensive examination ensures that the student is prepared to engage in a forensic profession. Students are required to pass this examination prior to graduation. Offered by College of Science. May be repeated within the degree.

Registration Restrictions:
Required Prerequisites: ((FRSC 500[B-] or 500[XS]) and (FRSC 510[B-] or 510[XS]) and (FRSC 530[B-] or 530[XS])).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Satisfactory/No Credit scale.

700 Level Courses

FRSC 790: *Internship in Forensic Science.* 1-3 credits.
On the job experience for graduate students in industry, government laboratories, investigative units, or approved study programs with forensic science employers. Students work in observational, experimental, or theoretical research, and prepare weekly journals, as well as midpoint and final evaluations completed by the employer. The student is responsible for applying to and obtaining the internship prior to registering for this course. Offered by College of Science. May be repeated within the term for a maximum 6 credits.

Registration Restrictions:
Enrollment is limited to students with a major in Forensics or Forensic Science.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Graduate Regular scale.

FRSC 799: *Master's Thesis.* 1-6 credits.
Project chosen and completed under guidance of graduate faculty member. Comprehensive report (thesis) acceptable to student's advisory committee is required. Offered by College of Science. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Thesis

Grading:
This course is graded on the Satisfactory/No Credit scale.

French (FREN)

100 Level Courses

FREN 101: *Elementary French I.* 3 credits.
For students with no knowledge of French. Introduces elements of grammar, vocabulary, oral skills, listening comprehension, and reading. Notes: Students may not receive credit for FREN 101 and FREN 110. Offered by Modern & Classical Languages. Limited to three attempts. Equivalent to FREN 110.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in French

FREN 102: *Elementary French II.* 3 credits.
Continuation of FREN 101. Notes: Students may not receive credit for FREN 102 and FREN 110. Offered by Modern & Classical Languages. Limited to three attempts. Equivalent to FREN 110, FREN 115.

Recommended Prerequisite: FREN 101, appropriate placement score, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in French

FREN 110: *Elementary French.* 6 credits.
Introduces elements of grammar, vocabulary, oral skills, listening comprehension, and reading. Notes: Students may not receive credit for FREN 110 and FREN 101, 102. Offered by Modern & Classical Languages. Limited to three attempts. Equivalent to FREN 101, FREN 102, FREN 115.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in French

FREN 115: *Review of Elementary French.* 3 credits.
Reviews elements of French for students who have studied French previously. Notes: Students may not receive credit for FREN 115 and

FREN 102, or 110. Offered by Modern & Classical Languages. Limited to three attempts. Equivalent to FREN 102, FREN 110.

Recommended Prerequisite: Appropriate placement score, or permission of department.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in French

200 Level Courses

FREN 201: *Intermediate French I.* 3 credits.
Further development of skills in listening, speaking, reading, and writing. Notes: FREN 201 and 202 must be taken in sequence. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: FREN 102 or FREN 110, appropriate placement score, or permission of department.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in French

FREN 202: *Intermediate French II.* 3 credits.
Applies language skills to reading, composition, and class discussion. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: FREN 201, appropriate placement score, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Fulfills Frgn Lng requirment, Taught in French

300 Level Courses

FREN 300: *Study Tour in France.* 1-6 credits.
Directed study tour of cultural and literary points of interest in France. Briefing sessions and reading selection given before the trip. Notes: All papers and exams required for credit are due by end of summer session. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: FREN 202, appropriate placement score, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in French

FREN 309: *Reading and Writing Skills Development.* 3 credits.
Development of ability to write on topics of current interest. Readings provide examples of each topic and necessary vocabulary for compositions. Introduces reading strategies and provides practice in reading of different kinds of texts. Offered by Modern & Classical Languages. Limited to three attempts.

Specialized Designation: Writing Intensive in Major

Recommended Prerequisite: FREN 202 or equivalent; appropriate placement score; or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in French

FREN 310: *Oral Proficiency in French.* 3 credits.
Develops conversational proficiency in French with attention to various specific communicative strategies and functions. Practice in pronunciation and diction based on systematic study of sound system of French. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: FREN 202, appropriate placement score, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in French

FREN 320: *Contemporary Tour de France.* 3 credits.
Examines contemporary social, political, economic, cultural trends in France. Covers domestic and international topics such as debates around French identity, migration and civil rights, political parties, the media, family life, work-related issues, participation in international organizations and involvement with former colonies and overseas regions. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: FREN 309 or permission of the instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in French

FREN 325: *Major French Writers (Topic Varies).* 3 credits.
Studies works of major French writers. Writers to be studied vary. Notes: May be repeated for credit with permission of department. Offered by Modern & Classical Languages. Limited to three attempts.

Mason Core: Literature

Specialized Designation: Topic Varies

Recommended Prerequisite: ENGL 101/ENGH 101 or equivalent or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

FREN 329: *Problems of Western Civilization in French Literature.* 3 credits.
Basic philosophical, moral, social, and political dilemmas reflected in literature of major French writers. Notes: May be repeated for credit with

permission of department. Offered by Modern & Classical Languages. Limited to three attempts.

Mason Core: Literature

Recommended Prerequisite: ENGL 101/ENGH 101 or equivalent or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

FREN 340: *Francophone Identities.* 3 credits.
Provides opportunity to learn about richness, variety, and complexity of francophone world through study of literature, culture, social life, and identities of various francophone regions including Caribbean, Africa, Quebec, and Indochina. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: FREN 309, appropriate placement score, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in French

FREN 357: *Introduction to Translation.* 3 credits.
French to English, English to French translations, of texts from current periodicals and newspapers in various fields. Notes: Recommended for students who wish to improve language skills. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: FREN 309, appropriate placement score, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in French

FREN 370: *French Civilization, Culture, and Literature: Ancient Gaul to 1789.* 3 credits.
Examines history, civilization (daily life, politics, science, philosophy, religion), culture (architecture, art, music, dance), and literature of France from Ancient Gaul to the eve of the French Revolution. Studies development of French nation and its people through written texts, visual arts, and music. Offered by Modern & Classical Languages. Limited to three attempts. Equivalent to FREN 371, FREN 380.

Recommended Prerequisite: FREN 309 or permission of the instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in French

FREN 371: *French Civilization, Culture, and Literature: 1789 to the Present.* 3 credits.
Examines history, civilization (daily life, politics, science, philosophy, religion), culture (architecture, art, music, dance), and literature of France from French Revolution of 1789 to present. Studies development of French nation and its people through written texts, visual arts, and music. Offered by Modern & Classical Languages. Limited to three attempts. Equivalent to FREN 370, FREN 380.

Recommended Prerequisite: FREN 309 or permission of the instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in French

FREN 380: *The Making of Modern France.* 3 credits.
Examines history, culture, and literature of France from the Renaissance to the present. Studies development of French nation and its people through written texts and the arts. Offered by Modern & Classical Languages. Limited to two attempts. Equivalent to FREN 370, FREN 371.

Recommended Prerequisite: FREN 309 or permission of the instructor

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in French

FREN 381: *Introduction to Literary Analysis.* 3 credits.
Structured approach to reading and analysis of French literary texts. Offered by Modern & Classical Languages. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in French

FREN 385: *Introduction to French Linguistics.* 3 credits.
Introduction to the linguistic analysis of the French language, including its sound system (phonetics, phonology), its rules of word formation (morphology) and sentence structure (syntax), its system of word meaning (semantics), its history and origin (historical linguistics), and its variation as a function of social and regional factors (sociolinguistics). Includes discussion of theoretical issues and cross-linguistic comparisons involving French. Offered by Modern & Classical Languages. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in French

FREN 390: *French for the Professions: Fashion, Food, and Finance.* 3 credits.
Introduces the terminology and the culture of business, hospitality, and fashion in the French-speaking world. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: Grade of C or better in FREN 309.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in French

FREN 391: *French for the Business World.* 3 credits.
Studies written and oral styles of communication in commercial, governmental and non-governmental settings. Satisfies needs of students preparing for work in multinational business and foreign service. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: 15 hours of FREN or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in French

400 Level Courses

FREN 400: *Study Abroad in France or Francophone Region.* 1-6 credits.
2 to 4 week programs in France or the Francophone world with language, culture and literature courses, local visits and excursions. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: 15 credits of French at the 300 level or permission of instructor.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in French

FREN 415: *Topics in Medieval French Literature and Culture.* 3 credits.
Analyzes a selection of important literary texts (chanson, novel, poetry, short story) and authors in their historical and cultural contexts: geste, feudalism, socio-political and religious (in)stability. Notes: May be repeated for credit when topic is different. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: 15 credits of French at the 300 level or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in French

FREN 416: *Topics in Renaissance French Literature and Culture.* 3 credits.
Analyzes a selection of important literary texts (novel, short story, poetry, and theater) and authors in their historical and cultural contexts: humanism, reformation, codification of language and birth of nation-state. Notes: May be repeated for credit when topic is different. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: 15 credits of French at the 300 level or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in French

FREN 417: *Topics in Seventeenth-Century French Literature and Culture.* 3 credits.
Analyzes a selection of important literary texts (novel, short story, poetry, and theater) and authors in their historical and cultural contexts: baroque, classicism, social and philosophical essays, satirical plays. Notes:
May be repeated for credit when topic is different. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: 15 credits of French at the 300 level or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in French

FREN 418: *Topics in Eighteenth-Century French Literature and Culture.* 3 credits.
Analyzes a selection of important literary texts (novel, short story, poetry, and theater) and authors in their historical and cultural contexts: enlightenment, social, political and philosophical trends and issues, pre-romanticism. Notes: May be repeated for credit when topic is different. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: 15 credits of French at the 300 level or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in French

FREN 419: *Topics in Nineteenth-Century French Literature and Culture.* 3 credits.
Analyzes a selection of important literary texts (novel, short story, poetry, and theater) and authors in their historical and cultural contexts: pre-Romanticism; Romanticism; Realism; Symbolism; Naturalism. Notes:
May be repeated for credit when topic is different. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: 15 credits of French at the 300 level or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in French

FREN 420: *Topics in Twentieth and Twenty-First-Century French Literature and Culture.* 3 credits.
Analyzes a selection of important literary texts (novel, short story, poetry, and theater) and authors in their historical and cultural contexts: surrealists, existentialists, new novelists, feminists, etc. Notes: May be repeated for credit when topic is different. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: 15 credits of French at 300 level or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in French

FREN 450: *Special Topics Related to French Literature and Culture.* 3 credits.
Analyzes selected texts, authors, movements, and issues within a comparative historical and cultural context over two or more centuries or with an interdisciplinary approach. Notes: May be repeated for credit when topic is different. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: 15 credits of French at the 300 level or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in French

FREN 451: *Topics in Sub-Saharan Francophone Literature and Culture.* 3 credits.
Analyzes a selection of literary texts (novel, short story, poetry, and/or theater) and authors in their historical and cultural contexts: Negritude, (post)colonialism, new African voices within and beyond the continent. Notes: May be repeated when topic is different. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies, Non-Western Culture

Recommended Prerequisite: 15 credits of French at the 300 level or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in French

FREN 453: *Topics in North African Francophone Literature and Culture.* 3 credits.
Analyzes a selection of literary texts (novel, short story, poetry, and/or theater) and authors in their historical and cultural contexts with a focus on the construction of identity: Maghreb in pre and (post)colonial era, recent ideological trends in writing. Notes: May be repeated for credit with permission of instructor. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: 15 credits of French at the 300 level or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in French

FREN 454: *Topics in Caribbean Francophone Literature and Culture.* 3 credits.
Analyzes a selection of important literary texts (novel, short story, poetry, and/or theater) and authors in their historical and cultural contexts: the construction of identity through and beyond Negritude, Antillanit&#xfffd;Creolite, and migration. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies, Non-Western Culture

Recommended Prerequisite: 15 credits of French at the 300 level or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in French

FREN 455: *Special Topics related to Francophone Literature and Culture.* 3 credits.
Analyzes a selection of important literary texts (novel, short story, poetry, and/or theater) and authors in their historical and cultural contexts: gender studies, migration and identity-building, ethno-social tensions, political strife, religious conflicts throughout the francophone world. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in French

FREN 457: *Topics in Quebec and French-Canadian Literature and Culture.* 3 credits.
Analyzes representative literary texts (novel, short story, poetry, and/or theater) and authors in their historical and cultural contexts. Emphasizes contemporary works. Notes: May be repeated for credit when topic is different. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: 15 credits of French at the 300 level or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in French

FREN 460: *Advanced Oral and Written Expression.* 3 credits.
Intensive course designed to help students obtain fluency in oral and written French. Develops conversational skills and mastery of vocabulary through class discussions, oral and written reports, debates and presentations on current topics and events linked to the French and Francophone world. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: 15 credits of French, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in French

FREN 462: *Stylistics.* 3 credits.
Describes and analyzes the variability of forms and styles and the more complex aspects of the French language. Develops writing skills through readings, discussions, and compositions. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: 15 credits of French at the 300 level or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in French

FREN 463: *History of the French Language.* 3 credits.
Diachronic study of the French language from the 9th to the 20th century, with a focus on morphology, syntax and lexicon changes. Close study of various texts (prose, poetry, political writing, theater and short stories.) in the light of their socio-historical contexts. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: 15 credits of French at the 300 level or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in French

FREN 464: *Advanced Translation.* 3 credits.
Analyzes theories and methods of translation, with a focus on translation practice (French to English and English to French) of a varied selection of texts (periodicals, short stories, novel excerpts, newspaper articles, etc.). Notes: May be repeated for credit when topic is different. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: 15 credits of French at the 300 level or permission of the instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in French

FREN 465: *Special Topics related to the French language.* 3 credits.
Content varies: diachronic or synchronic study of the French language or one of its aspects; sociolinguistics; language teaching methodology; etc. Notes: May be repeated for credit when topic is different. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: 15 credits of French at the 300 level or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in French

FREN 467: *Special Topics related to French and Francophone Literature and Culture.* 3 credits.
Analyzes selected texts, authors, movements, and issues within comparative historical and cultural contexts as related to France and to various francophone regions of the world or with an interdisciplinary approach. Notes: May be repeated for credit when topic is different. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: 15 credits of French at the 300 level or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in French

FREN 470: *French and Francophone Cinema.* 3 credits.
Analyzes topics such as the early days of French cinema, la nouvelle vague, women film directors, Quebecois, African and Caribbean films, selected by type, period or director. Notes: May be repeated with permission of department or film studies advisor. Offered by Modern &

Classical Languages. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: 15 credits of French at the 300 level or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in French

FREN 475: *Grammatical Analysis.* 3 credits.
Study of characteristic features of contemporary French. Examines spoken and written French, including syntactic analysis, distributional analysis, and generative-transformational grammar. Emphasis on problem areas for American learner. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: 15 credits of French at the 300 level or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in French

FREN 490: *Independent Study.* 1-3 credits.
Research and analysis of selected problem in literature or linguistics in consultation with department member. Notes: Only 6 credits of independent study may be applied to fulfilling requirements in concentration. Offered by Modern & Classical Languages. Limited to three attempts.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in French

FREN 491: *Independent Study.* 1-3 credits.
Research and analysis of selected problem in literature or linguistics in consultation with department member. Notes: Only 6 credits of independent study may be applied to fulfilling requirements in concentration. Offered by Modern & Classical Languages. Limited to three attempts.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in French

FREN 497: *Senior Honors Tutorial.* 3 credits.
Students who meet these requirements admitted to candidacy after submitting letter of application to departmental Honors Committee in second half of junior year. Also requires faculty recommendation and interview by Honors Committee. First semester involves weekly meetings with faculty member to discuss readings from comprehensive list prepared by French faculty. Second semester requires independent research and completion of honors essay under supervision of French faculty member. Offered by Modern & Classical Languages. Limited to three attempts.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in French

FREN 498: *Senior Honors Tutorial.* 3 credits.
Students who meet these requirements admitted to candidacy after submitting letter of application to departmental Honors Committee in second half of junior year. Also requires faculty recommendation and interview by Honors Committee. First semester involves weekly meetings with faculty member to discuss readings from comprehensive list prepared by French faculty. Second semester requires independent research and completion of honors essay under supervision of French faculty member. Offered by Modern & Classical Languages. Limited to three attempts.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in French

500 Level Courses

FREN 500: *Study Abroad in France or Francophone Region.* 1-6 credits.
2 to 4-week programs in France or the Francophone world with language, culture and literature courses, local visits and excursions. Advanced critical research and writing required. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Research

Grading:
This course is graded on the Graduate Regular scale.

FREN 515: *Topics in Medieval French Literature and Culture.* 3 credits.
Analyzes a selection of important literary texts (chanson, novel, poetry, short story) and authors in their historical and cultural contexts: geste, feudalism, socio-political and religious (in)stability. Advanced critical research and writing required. Notes: Coursework in French. May be repeated when topic is different. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

Additional Course Details: Taught in French

FREN 516: *Topics in Renaissance French Literature and Culture.* 3 credits.
Analyzes a selection of important literary texts (novel, short story, poetry, and theater) and authors in their historical and cultural contexts: humanism, reformation, and codification of language and birth of nation-state. Advanced critical research and writing required. Notes: May be repeated for credit when topic is different. Offered by Modern & Classical Languages. May be repeated within the term for a maximum 6 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

FREN 517: *Topics in Seventeenth-Century French Literature and Culture.* 3 credits.
Analyzes a selection of important literary texts (novel, short story, poetry, and/or theater) and authors in their historical and cultural contexts: enlightenment, social, political and philosophical trends and issues, pre-romanticism. Advanced critical research and writing required. Notes: Content varies. May be repeated for credit. Coursework in French. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

Additional Course Details: Taught in French

FREN 518: *Topics in Eighteenth-Century French Literature and Culture.* 3 credits.
Analyzes a selection of important literary texts (novel, short story, poetry, and/or theater) and authors in their historical and cultural contexts: enlightenment, social, political and philosophical trends and issues, pre-romanticism. Advanced critical research and writing required. Notes: Content varies. Coursework in French. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

Additional Course Details: Taught in French

FREN 519: *Topics in Nineteenth-Century French Literature and Culture.* 3 credits.
Analyzes a selection of important literary texts (novel, short story, poetry, and/or theater) and authors in their historical and cultural contexts: pre-Romanticism; Romanticism; Realism; Symbolism; Naturalism. Advanced critical research and writing required. Notes: Content varies. Coursework in French. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

Additional Course Details: Taught in French

FREN 520: *Topics in Twentieth and Twenty-First-Century French Literature and Culture.* 3 credits.
Analyzes a selection of important literary texts (novel, short story, poetry, and/or theater) and authors in their historical and cultural contexts: surrealists, existentialists, new novelists, feminists, etc. Advanced critical research and writing required. Notes: May be repeated for credit when topic is different. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

FREN 550: *Special Topics.* 3 credits.
Specialized topics relating to French culture and literature. Notes: Content varies. May be repeated for credit. Coursework in French. Offered by Modern & Classical Languages. May be repeated within the term.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

Additional Course Details: Taught in French

FREN 551: *Topics in Francophone Sub-Saharan Literature and Culture.* 3 credits.
Analyzes a selection of important literary texts (novel, short story, poetry, and/or theater) and authors in their historical and cultural contexts: Negritude, (post)colonialism, new African voices within and beyond the continent. Advanced critical research and writing required. Notes: May be repeated for credit when topic is different. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

FREN 553: *Topics in North African Francophone Literature and Culture.* 3 credits.
Analyzes a selection of literary texts (novel, short story, poetry, and/or theater) and authors in their historical and cultural contexts with a focus on the construction of identity: Maghreb in pre and (post)colonial era, recent ideological trends in writing. Advanced critical research and writing required. Notes: May be repeated for credit when topic is different. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

FREN 554: *Topics in Francophone Caribbean Literature and Culture.* 3 credits.
Analyzes a selection of important literary texts (novel, short story, poetry, and/or theater) and authors in their historical and cultural contexts: the construction of identity through and beyond Negritude, Antillanite, Creolite, and migration. Advanced critical research and writing required. Notes: May be repeated for credit when topic is different. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

FREN 555: *Special Topics related to Francophone Literature and Culture.* 3 credits.
Analyzes a selection of important literary texts (novel, short story, poetry, and/or theater) and authors in their historical and cultural contexts: gender studies, migration and identity-building, ethno-social tensions, political strife, religious conflicts throughout the francophone world . Advanced critical research and writing required. Notes: May be repeated for credit when topic is different. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

FREN 557: *Topics in Quebec and French-Canadian Literature and Culture.* 3 credits.
Analyzes representative literary texts (novel, short story, poetry, and/or theater) and authors in their historical and cultural contexts. Emphasizes contemporary works. Advanced critical research and writing required. Notes: May be repeated for credit when topic is different. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

FREN 561: *Linguistic Structure of Modern French.* 3 credits.
Analyzes phonology, morphology, and syntax of modern standard French, through a close study of selected texts (newspaper articles, short stories, novel excerpts, informal correspondence). Advanced critical research and writing required. Offered by Modern & Classical Languages. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

FREN 562: *Stylistics.* 3 credits.
Describes and analyzes the variability of forms and styles and the more complex aspects of the French language. Develops writing skills through readings, discussions, and compositions. Advanced critical research and writing. Offered by Modern & Classical Languages. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

FREN 563: *History of the French Language.* 3 credits.
Analyzes a selection of literary texts (novel, short story, poetry, and/or theater) and authors in their historical and cultural contexts with a focus on the construction of identity: Maghreb in pre and (post)colonial era, recent ideological trends in writing. Advanced critical research and writing required. Offered by Modern & Classical Languages. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

FREN 564: *Advanced Translation.* 3 credits.
Analyzes theories and methods of translation, with a focus on translation practice (French to English and English to French) of a varied selection of texts (periodicals, short stories, novel excerpts, newspaper articles, etc.) Advanced critical research and writing required. Notes: Translations from French to English and English to French. Offered by Modern & Classical Languages. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

FREN 565: *Special Topics Related to the French Language.* 3 credits.
Content varies: diachronic or synchronic study of the French language or one of its aspects; sociolinguistics; language teaching methodology; etc. Advanced critical research and writing required. Notes: May be repeated for credit when topic is different. Offered by Modern & Classical Languages. May be repeated within the term for a maximum 6 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

FREN 567: *Special Topics related to French and Francophone Literature and Culture.* 3 credits.
Explores issues related to the francophone world. Emphasis on comparative issues, not geographical areas. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: 15 credits of French at the 300 level or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

FREN 570: *French and Francophone Cinema.* 3 credits.
Topics such as early days of French cinema, a nouvelle vague, women film directors, Quebecois, African and Caribbean films, selected by type, period or director. Advanced critical research and writing required. Viewing of films outside of class time. Notes: May be repeated for credit when topic is different. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

FREN 575: *Grammatical Analysis.* 3 credits.
Analyzes selected texts, authors, movements, and issues within comparative historical and cultural contexts as related to France and to various francophone regions of the world or with an interdisciplinary approach. Advanced critical research and writing required. Offered by Modern & Classical Languages. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

700 Level Courses

FREN 798: *Directed Reading and Thesis Research.* 3 credits.
Reading and research for thesis under direction of a faculty member. Notes: Open to degree students who desire to work on independent study with a faculty mentor or who have completed at least 24 credits and have been approved by the French Graduate Faculty to conduct research for a M.A. thesis. See Modern Classical Languages Graduate Student Handbook for complete explanation of the thesis option. Offered by Modern & Classical Languages. May not be repeated for credit.

Recommended Prerequisite: Degree students who desire to work on independent study with a faculty mentor or who have completed at least 24 credits and have been approved by the French Graduate Faculty to conduct research for a M.A. thesis.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Thesis

Grading:
This course is graded on the Graduate Special scale.

FREN 799: *Thesis.* 1-6 credits.
Research on approved thesis topic under direction of thesis committee. Notes: Students must register for a minimum of 3 credits in the first semester of 799 and maintain continuous enrollment in 799 while writing and submitting the thesis. Offered by Modern & Classical Languages. May be repeated within the degree.

Recommended Prerequisite: FREN 798 and approval of director.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Thesis

Grading:
This course is graded on the Satisfactory/No Credit scale.

Geography and Geoinformation Science (GGS)

100 Level Courses

GGS 101: *Major World Regions.* 3 credits.
Patterns, problems, and prospects of the world's principal human-geographic regions. Emphasizes areal differentiation and role of geographic differences in interpreting current world scene. Offered by Geography/Geoinformation Sci. Limited to three attempts.

Mason Core: Global Understanding

Specialized Designation: Non-Western Culture

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GGS 102: *Physical Geography.* 3 credits.
Interrelated processes affecting global distribution and character of climate, soils, vegetation, hydrology, and landforms. Includes elements of mapping. Offered by Geography/Geoinformation Sci. Limited to three attempts.

Mason Core: Natural Science Overview, Encore: Sustainability

Specialized Designation: Green Leaf Related Course

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GGS 103: *Human Geography.* 3 credits.
Overview of major ideas and approaches to studying spatial aspects of human social and behavioral systems. Surveys distribution and movement of human populations, characteristics and distribution of cultural mosaics, patterns of economic interdependence, and study of forces of cooperation and conflict among people from global perspective. Offered by Geography/Geoinformation Sci. Limited to three attempts.

Mason Core: Social/Behavioral Sciences, Encore: Sustainability

Specialized Designation: Green Leaf Related Course

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GGS 110: *Introduction to Geoinformation Technologies.* 3 credits.
This course introduces students to basic geoinformation technology concepts and applications. Students learn about and apply spatial data collection analytic tools and methods, including geographic information systems, and web-based map developments. Lectures examine social trends, ethical issues including privacy state of the art technological research and developments of geoinformation technologies in industry, government, education, and everyday life. Offered by Geography/Geoinformation Sci. Limited to three attempts.

Specialized Designation: Mason Impact.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GGS 121: *Dynamic Atmosphere and Hydrosphere.* 4 credits.
Systematic study of weather, climate, energy, and hydrologic systems viewed from a geospatial and global perspective. Studies the spatial distribution and relationships of the Earth's climate and hydrologic systems to other Earth systems, as well as the processes driving and changing them, including energy, climate, weather, and water resources. Offered by Geography/Geoinformation Sci. Limited to three attempts.

Mason Core: Natural Science with Lab, Encore: Sustainability

Specialized Designation: Green Leaf Related Course

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GGS 122: *Dynamic Geosphere and Ecosphere.* 4 credits.
Systematic study of biogeography and soils, viewed from a geographic, or spatial, perspective. We will study the spatial distribution and relationships of Earth's biomes and soils systems to other Earth systems, and the processes driving them, including energy, climate, nutrients, chemistry, and moisture. Cannot be combined for credit with EVPP 110 or EVPP 111. Offered by Geography/Geoinformation Sci. Limited to three attempts.

Specialized Designation: Green Leaf Related Course

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

200 Level Courses

GGS 210: *Introduction to Spatial Computing.* 3 credits.
This course introduces students to Geo-Spatial Data Analysis. Students will learn the basic techniques for data collection and storage, data processing and data mining using location data. Students will work with geospatial objects, such as points, lines and polygons and get hands-on experience in processing spatial data. Basic geometric algorithms for point-in-polygon tests and line-segment intersection tests will be presented. Techniques for spatial navigation, such as shortest path algorithm in free space and in spatial networks will be discussed. Technical challenges such as storing, reading and parsing geospatial will be highlighted and students will conduct geo-spatial data analysis in teams. To analyze data, this course will give an introduction to data analysis concepts including regression, clustering and classification of data. In addition, awareness will be raised for spatial privacy threats, and possible risks associated with uncontrolled publishing of location based data. Offered by Geography/Geoinformation Sci. Limited to three attempts. Equivalent to GGS 366.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

300 Level Courses

GGS 300: *Quantitative Methods for Geographical Analysis.* 3 credits.
Comprehensive introduction to quantitative methods in spatial analysis, with emphasis on solving geographical research problems. Topics include nature of spatial data; collection of spatial data; preparation of spatial data for mapping, geographic information systems, and statistical analysis; descriptive spatial statistics; areal sampling theory and methods; probability theory and distributions; hypothesis testing; correlation and regression; and areal and point pattern spatial statistics. Offered by Geography/Geoinformation Sci. Limited to three attempts.

Specialized Designation: Mason Impact.

Recommended Prerequisite: 30 credits, including GGS 102 and 103 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GGS 301: *Political Geography.* 3 credits.
Distribution and effects of power on landscape, particularly on national and global scales. Offered by Geography/Geoinformation Sci. Limited to three attempts.

Mason Core: Social/Behavioral Sciences

Recommended Prerequisite: 30 credits

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GGS 302: *Global Environmental Hazards.* 3 credits.
Introduces applications of observational and modeling techniques to natural hazards and the threat they pose to the world, as well as a general introduction to global climate change and its effect on regional and local scales. Examples include topics of interest to different countries and regions of the world, such as earthquakes, sand and dust storms, slope failures, volcanoes, land slides, droughts and desertification, floods, hurricanes and typhoons, severe weather, wild fires (U.S., Indonesia, Africa, S. America), sea-level rise, and tsunamis. Covers Earth system science topics related to the above hazards and their coupling with anthropogenic hazards as well as how societies respond to natural disasters and mitigation. Offered by Geography/Geoinformation Sci. Limited to three attempts.

Specialized Designation: Green Leaf Related Course

Recommended Prerequisite: 30 hours and undergraduate status

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GGS 303: *Geography of Resource Conservation.* 3 credits.
Provides analysis of world resources distribution, conservation, and preservation; and problems resulting from their natural occurrence and utilization. Uses knowledge from physical and social sciences to develop complex and sophisticated understanding of issues surrounding natural resource exploitation and management, conservation, and preservation. Offered by Geography/Geoinformation Sci. Limited to three attempts.

Mason Core: Encore: Sustainability, Synthesis

Specialized Designation: Green Leaf Related Course

Recommended Prerequisite: 30 credits, and completion or concurrent enrollment in all other required Mason Core courses.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GGS 304: *Population Geography.* 3 credits.
Spatial distribution of population, its causes and effects, and changing patterns resulting from population mobility. Emphasizes spatial characteristics of variables such as age, sex, race, education, and income. Offered by Geography/Geoinformation Sci. Limited to three attempts.

Mason Core: Encore: Sustainability, Synthesis

Specialized Designation: Green Leaf Related Course

Recommended Prerequisite: 30 credits and completion of or concurrent enrollment in all Mason Core requirements.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GGS 305: *Economic Geography.* 3 credits.
Analyzes pattern of distribution of world economic activity, spatial economics behind this pattern, and influence of distribution on other spatial systems. Offered by Geography/Geoinformation Sci. Limited to three attempts.

Recommended Prerequisite: 30 credits

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GGS 306: *Urban Geography.* 3 credits.
Structure and internal differentiation of cities. Variety of perspectives on nature of cities, and opportunities for intensive use of space. Urban problems and alternatives in their spatial context. Offered by Geography/Geoinformation Sci. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GGS 307: *Geographic Approaches for Sustainable Development.* 3 credits.
Sustainability lies at the intersection of the environment, society, and economics. This course explores the concepts of sustainable development at different geographical scales (local, national and international). We examine the applications, indicators, measurement tools of sustainable development for analysis and decision making in support of environmentally sustainable development from a geographic perspective. Case studies and problem-solving exercises will be used to stimulate learning and provide practical experience in addressing sustainable development issues. Offered by Geography/Geoinformation Sci. Limited to three attempts.

Specialized Designation: Green Leaf Focused Course

Recommended Prerequisite: GGS 102 or GGS 121 or GGS 122 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GGS 308: *Field Mapping Techniques.* 3 credits.
Basic techniques for collecting and recording spatial field data, including topographic maps, compass, transit, alidade, and geographic positioning systems. Includes field work. Offered by Geography/Geoinformation Sci. Limited to three attempts.

Recommended Prerequisite: MATH 105, GGS 102 or GEOL 101, and 30 credits.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

GGS 309: *Introduction to Weather and Climate.* 3 credits.
Foundations and elements of weather and climate from an Earth system perspective; analysis of spatial and temporal distribution of weather and climate controls as bases of global climate change and geographical variation. Monitoring weather and climate with satellite remote sensing and in situ data products. Offered by Geography/Geoinformation Sci. Limited to three attempts.

Recommended Prerequisite: GGS 102, 121, or equivalent, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GGS 310: *Cartographic Design.* 3 credits.
Focused on the creation and application of maps, with an emphasis on thematic mapping. Includes fundamental mapping principles (projection, scale, generalization, symbolization), spatial data selection and acquisition, and effective design choices for geospatial communication, utilizing mapping software and digital outputs. Offered by Geography/Geoinformation Sci. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GGS 311: *Geographic Information Systems.* 3 credits.
Fundamental concepts and theories for appropriate use of geographic information systems (GIS). Topics include social and cultural contexts of the use of geographic information, sources of digital geospatial data, and methods of input, storage, display, and processing of spatial data for geographic analysis using GIS. Lectures, hands-on exercises familiarize students with current technology. Offered by Geography/Geoinformation Sci. Limited to three attempts.

Specialized Designation: Mason Impact.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GGS 312: *Physical Climatology.* 3 credits.
Quantitative description of nature and theory of the climate system, dynamics of atmosphere-ocean-land surface, internal interactions and response to external forcing, description of the climate record and simple climate models. Offered by Geography/Geoinformation Sci. Limited to three attempts. Equivalent to CLIM 312.

Specialized Designation: Green Leaf Related Course

Recommended Prerequisite: 30 hours; and GGS 121, MATH 113, PHYS 243-244, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GGS 314: *Severe and Extreme Weather.* 3 credits.
Behavior of weather events ranging from small scale (e.g., thunderstorms and tornadoes) to mesoscale (e.g., fronts and hurricanes). Introduces the dynamical and physical processes, atmospheric boundary layer processes, and coupling between different spatial scales that create and shape severe and localized weather events. Offered by Geography/Geoinformation Sci. Limited to three attempts. Equivalent to CLIM 314.

Specialized Designation: Green Leaf Related Course

Recommended Prerequisite: MATH 113 or equivalent; CLIM/PHYS 111/112 or EOS 121 or GGS 121.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GGS 315: *Geography of the United States.* 3 credits.
Diversity of US physical and cultural landscapes. Offered by Geography/Geoinformation Sci. Limited to three attempts.

Recommended Prerequisite: 6 credits of geography or American Studies, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GGS 316: *Geography of Latin America.* 3 credits.
Regional survey of physical resources, populations, cultural characteristics, and economic activities in Latin America. Offered by Geography/Geoinformation Sci. Limited to three attempts.

Specialized Designation: Non-Western Culture

Recommended Prerequisite: 6 credits of Geography or Latin American Studies, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GGS 317: *Geography of China.* 3 credits.
Survey the physical, resources, environmental and population characteristics of China, and its urban, economic, and transportation systems development from a geographical perspective. Offered by Geography/Geoinformation Sci. Limited to three attempts.

Mason Core: Global Understanding

Specialized Designation: Non-Western Culture

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GGS 319: *Air Pollution.* 3 credits.
Description of major types of air pollution and introduction to how their characteristics are influenced by interaction with the atmosphere. Topics include sources and distribution of pollution from local to global scales, effects of radiation and wind on pollution, modeling of plume dispersion

and pollution effects on climate. Offered by Geography/Geoinformation Sci. Limited to three attempts.

Specialized Designation: Green Leaf Related Course

Recommended Prerequisite: CLIM 111 or GGS 121.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GGS 320: *Geography of Europe.* 3 credits.
Environmental, economic, social, and political factors influencing regional structure of Europe. Offered by Geography/Geoinformation Sci. Limited to three attempts.

Recommended Prerequisite: 6 credits of Geography or European Studies, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GGS 321: *Biogeography.* 3 credits.
A survey of the relationship between distribution of plants and animals on the earth surface and the physical geography and environmental characteristics. Offered by Geography/Geoinformation Sci. Limited to three attempts. Equivalent to BIOL 374.

Recommended Prerequisite: GGS 122 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GGS 322: *Issues in Global Change.* 3 credits.
Provides the basis for evaluating existing and emerging issues in the environmental sciences at the regional and global scale, using interdisciplinary scientific principles. Combines activities designed to provide an understanding of the following: first principles underlying regional/global issues in the environmental sciences, with attention to links among the disciplines of atmospheric sciences, biology, ecology, hydrology, oceanography, geology, human health, toxicology, and mathematical modeling; concepts of systems control, feedbacks, modeling, and hierarchical scales (spatial and temporal); role of retrospective analyses in developing a scientifically sound basis for evaluation and analysis; and studies of specific issues of interest on a regional to global scale. Offered by Geography/Geoinformation Sci. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Green Leaf Related Course

Recommended Prerequisite: GGS 121, GGS 122, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GGS 325: *Geography of North Africa and the Middle East.* 3 credits.
Environmental, economic, and social factors of differentiation of regional structure and distribution of resources in North African and Middle Eastern countries. Offered by Geography/Geoinformation Sci. Limited to three attempts.

Specialized Designation: Non-Western Culture

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GGS 326: *Geography of Eastern Europe and Russia.* 3 credits.
A regional study of Eastern Europe and European Russia in terms of population patterns, economic activities, urbanization, planning and politics, migration, religion, landscape, and physical geographic features. Offered by Geography/Geoinformation Sci. Limited to three attempts.

Recommended Prerequisite: 6 credits of geography or Russian studies, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GGS 330: *Geography of the Soviet Succession States.* 3 credits.
Analyzes geographic factors involved in history, economic development, and geopolitical situation of the former Soviet Union. Offered by Geography/Geoinformation Sci. Limited to three attempts.

Specialized Designation: Non-Western Culture

Recommended Prerequisite: 6 credits of geography or Russian studies, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GGS 333: *Issues in Regional Geography.* 3 credits.
Geographical study of particular region or relevant regional issue. Offered by Geography/Geoinformation Sci. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: 30 credits.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GGS 340: *Health Geography.* 3 credits.
Spatial approaches to the study of health and disease. Topics include disease ecology and diffusion, and geographic perspectives on improving health care delivery. Offered by Geography/Geoinformation Sci. Limited to three attempts.

Recommended Prerequisite: Course in statistics.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GGS 344: *Military Geography.* 3 credits.
The geographical study of warfare. Investigations on the effects of physical and cultural geographic features on military operations

with focus on the scale of operation and usage of maps. Offered by Geography/Geoinformation Sci. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GGS 354: *Data Analysis and Global Change Detection Techniques.* 3 credits.
Introduces basic time series methods, especially those used in detecting trends and randomness in time series data. Various data related to global changes on different temporal and spatial scales will be identified, and the relevant analysis methods will be used to those data so that students can detect or confirm changing trends or lack of them in data. Other topics such as data formats, data visualization, and data mining may also be included based on the background of the student body. Offered by Geography/Geoinformation Sci. Limited to three attempts.

Recommended Prerequisite: IT 104, STAT 250, or permission of instructor

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GGS 357: *Urban Planning.* 3 credits.
Reviews spatial, policy, and administration principles that guide urban planning activities in the United States. Outlines differences between theory and practice and provides tools, methods, and perspectives commonly incorporated into practice of urban planning and policy analysis. Offered by Geography/Geoinformation Sci. Limited to three attempts. Equivalent to GOVT 357.

Recommended Prerequisite: 30 credits

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GGS 366: *Spatial Computing.* 3 credits.
Comprehensive introduction to spatial computing using modern computing environments with emphasis on programming and problem solving. Introduces students to modern programming practices using both paradigms of imperative and object-oriented programming. Topics include 1) working with geospatial objects, such as points, lines and polygons; 2) hands-on experience in processing spatial data; 3) solving classic spatial computing problems, such as point-in-polygon tests and line segment intersection tests efficiently; 4) techniques for spatial navigation, such as shortest path algorithms spatial networks; 5) technical challenges such as storing, reading and parsing geospatial data. Tutorials and instruction assume no prior programming experience in Python or other programming languages. Offered by Geography/Geoinformation Sci. Limited to three attempts. Equivalent to GGS 210.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GGS 379: *Remote Sensing.* 3 credits.
Foundations of remote sensing, and of processing, analyzing, and using remotely sensed data for monitoring the earth. Introduces key concepts in electromagnetic radiation, passive (panchromatic, multi-, and hyper-spectral) and active (microwave and Lidar) sensor systems, and methods for information extraction, including image interpretation and analysis, measurement and rectification, classification, and digital image processing. Offered by Geography/Geoinformation Sci. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GGS 380: *Geography of Virginia.* 3 credits.
Natural and cultural forces of Virginia. Studies regional makeup and analysis of human and environmental characteristics. Offered by Geography/Geoinformation Sci. Limited to three attempts.

Recommended Prerequisite: 30 credits

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GGS 384: *Special Topics in Geospatial Intelligence.* 3 credits.
Selected topics concerning human activity on earth derived from the exploitation and analysis of imagery and geospatial information that describes, assesses, and visually depicts physical features and geographically referenced activities on the Earth. Offered by Geography/Geoinformation Sci. May be repeated within the term.

Specialized Designation: Topic Varies

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GGS 398: *Selected Topics in Global Change.* 3 credits.
Covers selected topics in global change not covered in fixed-content global change courses. Notes: Content varies and is determined by instructor. Offered by Geography/Geoinformation Sci. May be repeated within the term.

Specialized Designation: Topic Varies

Recommended Prerequisite: 30 credits or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GGS 399: *Select Topics in GGS.* 3 credits.
Content varies; determined by instructor. Offered by Geography/Geoinformation Sci. May be repeated within the term for a maximum 12 credits.

Specialized Designation: Topic Varies, Non-Western Culture

Recommended Prerequisite: 30 credits.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

GGS 400: *Colloquium in Geoinformation Science.* 1 credit.
Presentations in specific research areas of Geography and Geoinformation Science by faculty and staff, Mason faculty in related programs, and professional visitors. Offered by Geography/Geoinformation Sci. Limited to three attempts.

Recommended Prerequisite: 60 credits or permission of instructor.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

GGS 410: *Introduction to Hyperspectral Imaging.* 3 credits.
Introduction to quantitative measurements by remote-sensing methods covering quantitative spectroscopy, spectral and thermal signatures, atmospheric physics, and the electromagnetic spectrum. Emphasis on the scientific principles involved and the transition of the technology to real-world applications. The requisite materials to begin to understand hyperspectral imaging (HSI) technology and its many civil and military applications are presented. Covers necessary mathematics used in the analysis of n-dimensional data. Topics include hyperspectral concepts, data collection systems, data processing techniques, case studies, and U.S. national policy issues. Data processing techniques include N-dimensional space, scatterplots, spectral angle mapping, spectral mixture analysis, spectral matching, and other techniques. Applications and case studies include environmental, medical, agricultural, and military. Includes ground, airborne, and spaceborne hyperspectral systems. Offered by Geography/Geoinformation Sci. Limited to three attempts.

Recommended Prerequisite: PHYS 243-244, 245-246, MATH 113 and 114, GGS 353, GGS 416 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GGS 411: *Geovisualization.* 3 credits.
Cartography course focused on thematic map design, with an objective to produce a portfolio of well-designed, professional grade maps. Theoretical concepts and principles will be introduced using practical examples and written assignments. Offered by Geography/Geoinformation Sci. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: GGS 310[C] or 310[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GGS 412: *Air Photography Interpretation.* 3 credits.
Methods and techniques of interpreting and using information contained in aerial photography, including applications to various aspects of physical and cultural landscape. Offered by Geography/Geoinformation Sci. Limited to three attempts.

Recommended Prerequisite: 60 credits and GGS 102 or 103, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GGS 415: *Seminar in Geographic Thought and Methodology.* 3 credits.
Focused on the trajectories and presentation of geographic thought, geographic research techniques, and methods of analysis. Students produce original research that engages current scholarship. Offered by Geography/Geoinformation Sci. Limited to three attempts.

Specialized Designation: Writing Intensive in Major

Registration Restrictions:
Required Prerequisites: GGS 300[C] or 300[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman or Sophomore may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GGS 416: *Satellite Image Analysis.* 3 credits.
Examines methods and techniques of interpreting and using information obtained by non-photographic remote sensing systems, with particular emphasis on space-borne platforms. Includes analysis of imagery for both physical and cultural environments. Offered by Geography/Geoinformation Sci. Limited to three attempts.

Recommended Prerequisite: 60 credits and GGS 412, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GGS 422: *Drone Remote Sensing.* 3 credits.
An advanced remote sensing course that focuses on the fundamentals of collecting and processing drone-based sensor data for various scientific applications. Explores the principles involved in drone-based photogrammetry, 3D reconstruction, multi-spectral and LiDAR sensing, whilst providing hands-on experience with drone mission planning, data acquisition and data processing. Offered by Geography/Geoinformation Sci. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: GGS 379[C], 379[XS], 416[C] or 416[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GGS 426: *Physical Fundamentals of Remote Sensing.* 3 credits.
An introduction to fundamental physical principles of remote sensing as applied to Earth science. Focus on the physical and mathematical principles underlying satellite remote sensing techniques. Topics include radiometric information, satellite orbits, atmospheric corrections, data records, and in situ measurements. Current and planned satellite instruments, particularly those operated by NASA, NOAA, and USGS,

are utilized. Offered by Geography/Geoinformation Sci. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GGS 429: *Remote Sensing of the Environment and Earth System.* 3 credits.
Theory and methods for remote sensing features and phenomenon comprising the Earth system. Topics include surface and atmospheric information retrieval, radiation budgets, atmospheric gas detection, mapping the cryosphere, measurements of vegetation and biomass, soil moisture, and precipitation. Focus on satellite-based systems, with applications to both passive and active sensor systems. Offered by Geography/Geoinformation Sci. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: GGS 379[C], 379[XS], 416[C] or 416[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GGS 456: *Introduction to Atmospheric Radiation.* 3 credits.
Helps students learn about the fundamental aspects of atmospheric radiation. The goal is to understand their essential roles in advanced remote sensing, atmospheric sciences and global and environmental change. It will provide a foundation for and will be beneficial to students in taking advanced courses in those areas. Offered by Geography/Geoinformation Sci. Limited to three attempts. Equivalent to CLIM 456.

Recommended Prerequisite: GGS 353/GGS 309 and a course in physics, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GGS 462: *Web-based Geographic Information Systems.* 3 credits.
Managing geospatial data is at the core of an emerging Billion-Dollar industry. This course will provide the students with the knowledge to manage and query geospalial data using relational database management systems and how to build Javascript-based Web mapping applications on top of a database to communicate and interact with the data. Offered by Geography/Geoinformation Sci. Limited to three attempts.

Recommended Prerequisite: GGS 311

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GGS 463: *RS: GIS Analysis and Application.* 3 credits.
Explores existing and potential capabilities of geographic information systems in conducting spatial analysis and modeling. Topics include spatial data acquisition and advanced spatial analytical techniques. Major purpose of course is to extend fundamental theories and concepts in GIS so students are able to conduct research with and on GIS. Offered by Geography/Geoinformation Sci. Limited to three attempts.

Specialized Designation: Research/Scholarship Intensive

Registration Restrictions:
Required Prerequisites: (GGS 300[C], 300[XS], L300 or 300T) and (GGS 311[C], 311[XS], 311T or L311).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GGS 470: *Special Topics in Geographic Techniques.* 3 credits.
Content varies in the subject of Geographic Techniques. Offered by Geography/Geoinformation Sci. May be repeated within the term for a maximum 12 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: GGS 110.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GGS 480: *GGS Internship.* 1-3 credits.
Approved study programs with specific employers. Notes: Credit determined by department. Contact department one semester before enrollment. Offered by Geography/Geoinformation Sci. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Open only to authorized GGS majors with 90 credits and GPA of 2.50 or higher in GGS courses.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

GGS 490: *Practicum in Geographical Applications.* 1-3 credits.
Application of geographical research tools and techniques in conjunction with faculty instruction and research. Individualized sections taught by arrangement with full-time faculty. Offered by Geography/Geoinformation Sci. May be repeated within the degree for a maximum 3 credits.

Recommended Prerequisite: Authorized GGS majors with 90 credits.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

GGS 495: *GGS Senior Research Project.* 3 credits.
Applications of research tools and techniques on specific GGS topics, in conjunction with faculty instruction and research. Individualized sections taught by arrangement with full-time faculty. Offered by Geography/Geoinformation Sci. Limited to three attempts.

Recommended Prerequisite: 90 credit hours, authorized major.

Schedule Type: Research

Grading:
This course is graded on the Undergraduate Regular scale.

GGS 499: *GGS Independent Study.* 1-3 credits.
Individual study of selected area of geography. Notes: Requires directed research paper. May be repeated with permission of the department. Offered by Geography/Geoinformation Sci. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Open only to authorized GGS majors with 90 credits and GPA of 2.50 or higher.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

500 Level Courses

GGS 501: *Geography and Geoinformation Science Distance Education Orientation.* 1 credit.
Describes study structure and basic expectations (In terms of time commitment, expectations, technical Issues and communication) for distance education courses in the Geography and Geoinformation Science department. Notes: The course is self-paced, enabling students to proceed at their own speed. Offered by Geography/Geoinformation Sci. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Satisfactory/No Credit scale.

GGS 505: *Transportation Geography.* 3 credits.
Structure, principles, location, and development of world transportation. Critical role of transportation in moving people, goods, and ideas at international, national, regional, and urban levels. Offered by Geography/Geoinformation Sci. May not be repeated for credit.

Recommended Prerequisite: 6 credits of geography

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GGS 507: *Geographic Approaches for Sustainable Development.* 3 credits.
Sustainability lies at the intersection of the environment, society and economics. This course explores the concepts of sustainable development at different geographical scales (local, national and international). We examine the applications, indicators, measurement tools of sustainable development for analysis and decision making in support of environmentally sustainable development from a geographic perspective. Case studies and problem-solving exercises will be used to stimulate learning and provide practical experience in addressing sustainable development issues. Offered by Geography/Geoinformation Sci. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GGS 516: *Geography of Latin America.* 3 credits.
Regional survey of physical resources, populations, cultural characteristics, and economic activities in Latin America. Offered by Geography/Geoinformation Sci. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GGS 517: *Geography of China.* 3 credits.
Survey the physical, resources, environmental and population characteristics of China, and its urban, economic, and transportation systems development from a geographical perspective. Offered by Geography/Geoinformation Sci. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GGS 518: *Geography of North Africa and the Middle East.* 3 credits.
Environmental, economic, and social factors of differentiation of regional structure and distribution of resources in North African and Middle Eastern countries. Offered by Geography/Geoinformation Sci. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GGS 520: *Geography for Teachers.* 3 credits.
Emphasizes problems and techniques in teaching geography; and current developments in research, methodology, and philosophy in the discipline. Offered by Geography/Geoinformation Sci. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GGS 524: *Introduction to Environmental and Resource Economics.* 3 credits.
Introduces theory of external costs and benefits, public goods, natural resource management, and benefit and cost analysis for noneconomists. Lecture-discussion format with student presentations and participation. Analytical problem set, short writing assignments, and exams. Offered by Geography/Geoinformation Sci. May not be repeated for credit. Equivalent to EVPP 524.

Recommended Prerequisite: Basic algebra skills.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GGS 525: *Economics of Human/Environment Interactions.* 3 credits.
Advanced topics in environmental, natural resource, and ecological economics for noneconomist. Emphasizes sustainability, intergenerational equity, and economic-ecological feedbacks. Offered by Geography/Geoinformation Sci. May not be repeated for credit. Equivalent to ECON 895, EVPP 525.

Specialized Designation: Green Leaf Focused Course

Recommended Prerequisite: EVPP 524/GGS 524 or equivalent

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GGS 526: *Geography of Eastern Europe and Russia.* 3 credits.
A regional study of Eastern Europe and European Russia in terms of population patterns, economic activities, urbanization, planning and politics, migration, religion, landscape, and physical geographic features. Offered by Geography/Geoinformation Sci. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GGS 531: *Land-Use Modeling Techniques and Applications.* 3 credits.
Survey of literature on spatially explicit empirical models of land-use change. Hands-on experience developing and running simple models. Techniques covered include statistical models, mathematical programming models, cellular automata, agent-based models, and integrated models. Offered by Geography/Geoinformation Sci. May not be repeated for credit. Equivalent to EVPP 531.

Recommended Prerequisite: GGS 550, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GGS 533: *Issues in Regional Geography.* 1-6 credits.
Geographical study of particular region or relevant regional issue. Notes: Content varies. May be repeated with permission of the department. Offered by Geography/Geoinformation Sci. May be repeated within the term for a maximum 12 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GGS 540: *Health Geography.* 3 credits.
Spatial approaches to study of health and disease. Topics include disease ecology and diffusion, and geographic perspectives on improving health care delivery. Offered by Geography/Geoinformation Sci. May not be repeated for credit.

Recommended Prerequisite: Course in statistics.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GGS 544: *Military Geography.* 3 credits.
The geographical study of warfare. Investigations on the effects of physical and cultural geographic features on military operations with focus on the scale of operation and usage of maps. Offered by Geography/Geoinformation Sci. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GGS 550: *Geospatial Science Fundamentals.* 3 credits.
Introduces geospatial sciences, emphasizing concepts and theories of cartography, remote sensing, air photo interpretation, Global Positioning Systems, spatial data structures, and geographic information systems. Lectures accompanied by hands-on exercises. Notes: Only available for students without previous course work in cartography. Offered by Geography/Geoinformation Sci. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GGS 551: *Cartographic Design.* 3 credits.
Focused on the creation and application of maps, with an emphasis on thematic mapping. Includes fundamental mapping principles (projection, scale, generalization, symbolization), spatial data selection and acquisition, and effective design choices for geospatial communication, utilizing mapping software and digital outputs.Additionally considers cartographic research and the usage of spatial data analysis in research contexts. Offered by Geography/Geoinformation Sci. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GGS 553: *Geographic Information Systems.* 3 credits.
Fundamental concepts and theories for appropriate use of geographic information systems (GIS). Topics include social and cultural contexts of the use of geographic information, sources of digital geospatial data, and methods of input, storage, display, and processing of spatial data for geographic analysis using GIS. Lectures, hands-on exercises familiarize students with current technology. Additional focus on published scholarship and current research in the field. Offered by Geography/Geoinformation Sci. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GGS 554: *History of Cartography.* 3 credits.
History of cartographic portrayal of Earth from ancient times through 19th century, emphasizing interrelation of human culture, technological development, and geographical knowledge as reflected in maps. Offered by Geography/Geoinformation Sci. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:

This course is graded on the Graduate Regular scale.

GGS 560: *Quantitative Methods.* 3 credits.
Survey of quantitative methods commonly used in geographic research. Emphasizes spatial analysis techniques. Offered by Geography/Geoinformation Sci. May not be repeated for credit.

Recommended Prerequisite: Previous course work in statistics, or GGS 310 or 550.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GGS 562: *Photogrammetry.* 3 credits.
Treatment of photogrammetric problems, including least squares adjustments, image coordination refinements, collinearity equation, resection, relative orientation, and analytic aerotriangulation. Offered by Geography/Geoinformation Sci. May not be repeated for credit.

Recommended Prerequisite: GGS 412, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GGS 563: *Advanced Geographic Information Systems.* 3 credits.
Discusses advanced GIS concepts including spatial data structure, spatial analysis, programming data fusion, Internet components, and spatial database management. Hands-on activities demonstrate concepts and specific applications in both cultural and physical geography. Offered by Geography/Geoinformation Sci. May not be repeated for credit.

Recommended Prerequisite: GGS 553 or equivalent.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GGS 579: *Remote Sensing.* 3 credits.
Examines use of various types and combinations of electromagnetic energy to obtain spatial information. Concentrates on nonphotographic and spaceborne remote sensing platforms and sensors. Examines essential operational parameters for existing and future systems and strategies for visual extraction of features. Offered by Geography/Geoinformation Sci. May not be repeated for credit.

Recommended Prerequisite: GGS 412, or GGS 550, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GGS 581: *World Food and Population.* 3 credits.
Topics include maldistribution of population, regional disparities in growth rates and income distribution, food production, and world hunger. Discusses population policies, with emphasis on Third World countries. Offered by Geography/Geoinformation Sci. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GGS 590: *Selected Topics in Geography.* 1-3 credits.
Analyzes topics of immediate interest. Notes: Content varies. Offered by Geography/Geoinformation Sci. May be repeated within the term for a maximum 12 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

600 Level Courses

GGS 605: *Systematic Applications of GIS.* 3 credits.
Provides those working with spatially referenced data the technical skills to use GIS to conduct spatial analyses on socioeconomic phenomena related to labor, retail, and real estate markets. Introduces and emphasizes the development of technical and methodological skills to understand the potential and the pitfalls of using GIS for spatial analyses of socioeconomic phenomena. Offered by Geography/Geoinformation Sci. May be repeated within the term.

Recommended Prerequisite: GGS 553

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GGS 615: *Economic Geography.* 3 credits.
Analyzes pattern of distribution of world economic activity, spatial economics behind this pattern, and influence of distribution on other spatial systems. Offered by Geography/Geoinformation Sci. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GGS 622: *Drone Remote Sensing.* 3 credits.
An advanced remote sensing course that focuses on the fundamentals of collecting and processing drone-based sensor data for various scientific applications. Explores the principles involved in drone-based photogrammetry, 3D reconstruction, multi-spectral and LiDAR sensing, whilst providing hands-on experience with drone mission planning, data acquisition and data processing. Offered by Geography/Geoinformation Sci. May not be repeated for credit.

Recommended Prerequisite: GGS 579 or permission of instructor

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GGS 626: *Physical Fundamentals of Remote Sensing.* 3 credits.
An introduction to fundamental physical principles of remote sensing as applied to Earth science. Focus on the physical and mathematical principles underlying satellite remote sensing techniques. Topics include radiometric information, satellite orbits, atmospheric corrections, data records, and in situ measurements. Current and planned satellite instruments, particularly those operated by NASA, NOAA, and USGS, are utilized. Offered by Geography/Geoinformation Sci. May not be repeated for credit.

Recommended Prerequisite: GGS 579

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GGS 629: *Remote Sensing of the Environment and Earth System.* 3 credits.
Theory and methods for remote sensing features and phenomenon comprising the Earth system. Topics include surface and atmospheric information retrieval, radiation budgets, atmospheric gas detection, mapping the cryosphere, measurements of vegetation and biomass, soil moisture, and precipitation. Focus on satellite-based systems, with applications to both passive and active sensor systems. Offered by Geography/Geoinformation Sci. May not be repeated for credit.

Recommended Prerequisite: GGS 579

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GGS 631: *Spatial Agent-Based Models of Human-Environment Interactions.* 3 credits.
Discusses key challenges in spatial modeling of human-environment interactions. Reviews agent-based modeling applications in urban and rural interactions, agriculture, forestry, and other areas. Hands-on development of simple ABM models and investigation of linkages between GIS and ABM. Offered by Geography/Geoinformation Sci. May not be repeated for credit. Equivalent to EVPP 631.

Recommended Prerequisite: GGS 531 or CSS 600, or permission or instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GGS 644: *Fundamentals and Interpretation of Imaging Radar.* 3 credits.
Provides understanding of components, functionality, and use of radar remote sensing for acquiring spatial information. Concentrates on operational systems. Includes hands-on assignments. Offered by Geography/Geoinformation Sci. May not be repeated for credit.

Recommended Prerequisite: GGS 579, or other basic course in remote sensing.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GGS 650: *Introduction to GIS Algorithms and Programming.* 3 credits.
Introduction to programming methods and their application to Geographic Information Systems, including the fundamentals of object-oriented programming and GIS-specific data structures and algorithms. Employs an object-oriented language such as Visual Basic.Net, and existing freeware and commercial GIS libraries. Topics covered include variables, arrays, control structures, objects and classes, raster and vector data structures, spatial algorithms, and spatial indexing methods. Offered by Geography/Geoinformation Sci. May not be repeated for credit.

Recommended Prerequisite: GGS 553 or equivalent introductory GIS course, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GGS 653: *GIS Analysis and Application.* 3 credits.
Explores existing and potential capabilities of geographic information systems in conducting spatial analysis and modeling. Topics include spatial data acquisition and advanced spatial analytical techniques. Major purpose of course is to extend fundamental theories and concepts in GIS so students are able to conduct research with and on GIS. Additionally includes elements on scholarly publication and engagement. Offered by Geography/Geoinformation Sci. May not be repeated for credit.

Recommended Corequisite: C or better in GGS 311 OR B- or better in GGS 553

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GGS 655: *Geovisualization.* 3 credits.
Cartography course focused on thematic map design, with an objective to produce a portfolio of well-designed, professional grade maps. Theoretical concepts and principles will be introduced using practical examples and written assignments. Includes theoretical concepts and applications of interactivity and animation, and research on map design and analytic cartography. Offered by Geography/Geoinformation Sci. May not be repeated for credit.

Recommended Prerequisite: B- or better in GGS 550, GGS 551, or permission of instructor

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GGS 656: *The Hydrosphere.* 3 credits.
Covers components and transfer processes in hydrosphere, which consists of aqueous envelope of Earth including oceans, lakes, rivers, snow, ice, glaciers, soil moisture, ground water, and atmospheric water vapor. Offered by Geography/Geoinformation Sci. May not be repeated for credit. Equivalent to EVPP 652.

Recommended Prerequisite: Two semesters of calculus, partial differential equation recommended; or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GGS 657: *The Lithosphere.* 3 credits.
Global-scale overview of lithosphere; the solid nonliving Earth, its materials, cycles, plate tectonic and geomorphic processes; and history, including interactions with and history of hydrosphere, atmosphere and biosphere, and methods of analysis. Offered by Geography/Geoinformation Sci. May not be repeated for credit. Equivalent to GEOL 601.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GGS 658: *Terrain Mapping.* 3 credits.
Covers fundamental methods of digitally representing terrain data, major technologies, and programs for generating terrain data; methods for quantifying terrain error and assessing terrain data quality; and a variety of applications. Offered by Geography/Geoinformation Sci. May not be repeated for credit.

Recommended Prerequisite: GGS 553 or equivalent, or permission or instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GGS 660: *Automated Cartography.* 3 credits.
Survey of algorithms and techniques to generalize information on maps and in geographic information systems. Covers simplified representation of geographic objects, surfaces, and thematic information. Includes GIS programming component. Offered by Geography/Geoinformation Sci. May not be repeated for credit.

Recommended Prerequisite: GGS 650 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GGS 661: *Map Projections and Coordinate Systems.* 3 credits.
Covers development of various map projections and coordinate systems, property analysis, distortions, and applications. Offered by Geography/Geoinformation Sci. May not be repeated for credit.

Recommended Prerequisite: GGS 310 or 550

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GGS 664: *Spatial Data Structures.* 3 credits.
Studies spatial data structures and their application in digital cartography, geographic information systems, and image-processing systems. Examines raster and vector data structures, and attribution schemes and topological models. Includes data transformation, information loss, data quality, and the role of metadata. Offered by Geography/Geoinformation Sci. May not be repeated for credit.

Recommended Prerequisite: B or better in GGS 560.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GGS 670: *Introduction to Atmosphere and Weather.* 3 credits.
Applies climatic concepts to natural and human-modified environments, and analyzes climatic change. Offered by Geography/Geoinformation Sci. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:

This course is graded on the Graduate Regular scale.

GGS 671: *Algorithms and Modeling in GIS.* 3 credits.
Examines several fundamental GIS algorithms based upon computational geometry and computer graphics. Also discusses issues in modeling features of different dimensions and surfaces in GIS. Significant programming expected. Offered by Geography/Geoinformation Sci. May not be repeated for credit.

Recommended Prerequisite: B or better of GGS 560.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GGS 674: *Environmental Impact Analysis.* 3 credits.
Scientific and administrative processes involved in environmental impact analysis and environmental impact statements. Offered by Geography/Geoinformation Sci. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GGS 675: *Location Science.* 3 credits.
This course presents the theory and practice of Location Science - the study of the optimal or near optimal spatial location or allocation of facilities, routes, personnel, or other assets. A variety of algorithms and heuristics for location problems is presented. Lectures and both in-class and take-home exercises reinforce students' mastery of the techniques and understanding of advanced theoretical issues. Offered by Geography/Geoinformation Sci. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GGS 680: *Earth Image Processing.* 3 credits.
Focuses on how geoinformation technologies, including GIS, RS, and GPS, and spatial analytical techniques can be integrated to address various situations in environmental risk assessment, monitoring, and planning. Offered by Geography/Geoinformation Sci. May not be repeated for credit.

Recommended Prerequisite: GGS 416 or GGS 579 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GGS 681: *Social Media Analysis.* 3 credits.
The course covers theory, principles, and analytical techniques in geospatial analysis of social media, including data collection, location-based and cyberspace social network analysis, content analysis, and geovisualization of such data. Examples of applications in various domains are used to demonstrate and explore the use of social media analysis. Offered by Geography/Geoinformation Sci. May not be repeated for credit.

Recommended Prerequisite: GGS 550 or GGS 553 or permission of the instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GGS 684: *Selected Topics in Geospatial Intelligence.* 3 credits.
Covers topics relevant to geospatial intelligence, especially addressing emerging trends, focused intelligence applications, and relevant technological advances, not covered by existing courses. Sample topics addressed in this course include geosensor networks, landmine detection using remote sensing techniques, the use of unmanned aerial vehicles in geospatial intelligence, and the use of virtual reality techniques for geospatial information modeling and analyst training. Offered by Geography/Geoinformation Sci. May not be repeated for credit.

Specialized Designation: Topic Varies

Recommended Prerequisite: Students must be admitted to the Geospatial Intelligence Certificate program or have permission from the program's academic director.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GGS 685: *Capstone Course in Geoinformatics.* 3 credits.
This course is intended to provide a capstone experience for graduate students by synthesizing knowledge and experience that they acquired in earlier coursework to address a complex geospatial intelligence problem. The course requires analytical, collaborative, and communication skills. Offered by Geography/Geoinformation Sci. May not be repeated for credit.

Recommended Prerequisite: 12 credits in the geospatial intelligence certificate program or permission of program coordinator.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GGS 689: *Seminar in Geographic Thought and Methodology.* 3 credits.
Focused on the trajectories and presentation of geographic thought, geographic research techniques, and methods of analysis. Students produce original research that engages current scholarship. Additional content focuses on disciplinary breadth and depth in relation to the student's research interest. Offered by Geography/Geoinformation Sci. May not be repeated for credit.

Recommended Corequisite: GGS 300 or GGS 560

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

GGS 692: *Web-based Geographic Information Systems.* 3 credits.
Management of geospatial data by means of a database system. Communication of geospatial data over the Internet using browser-based interfaces. Offered by Geography/Geoinformation Sci. May not be repeated for credit.

Recommended Prerequisite: GGS 550 or equivalent, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GGS 695: *Geography and Geoinformation Science Graduate Internship.* 1-6 credits.
Approved study programs with specific employers. Students and employer supervisors must demonstrate relevancy of study program to degree requirements. Offered by Geography/Geoinformation Sci. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Graduate Regular scale.

GGS 698: *Directed Readings and Research.* 1-3 credits.
Reading and research on specific topic under direction of faculty member. Notes: Written report required; oral exam and report may be required. Offered by Geography/Geoinformation Sci. May be repeated within the term for a maximum 12 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

700 Level Courses

GGS 700: *Comprehensive Exam.* 1 credit.
Preparation and completion for the comprehensive exam within the GGS department. Instructor should be the chair of the examination committee. The exam committee will specify exam content. Offered by Geography/

Geoinformation Sci. May be repeated within the degree for a maximum 12 credits.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Special scale.

GGS 704: *Spatial Demography.* 3 credits.
Intermediate-level, population geography course discussing demographic concepts and spatial dimensions of population. Features various indices, measures, and models commonly used in human geography. Offered by Geography/Geoinformation Sci. May not be repeated for credit.

Recommended Prerequisite: Prior courses in quantitative methods and GIS recommended.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GGS 721: *Biogeography.* 3 credits.
Provides broad understanding of how physical geography and environment influence spatial and temporal distribution of plants and animals on Earth's surface. Offered by Geography/Geoinformation Sci. May not be repeated for credit.

Recommended Prerequisite: Courses in ecology, chemistry, and geology.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GGS 740: *Hyperspectral Imaging Systems.* 3 credits.
Provides requisite materials to understand hyperspectral imaging technology and its many civilian and military applications. Emphasizes scientific principles involved and technology application to real-world imaging systems. Topics include hyperspectral concepts and system tradeoffs; data collection systems; calibration techniques; data processing techniques and software; classification methods; and case studies. Data processing techniques include N-dimensional space, scatterplots, spectral angle mapping, spectral mixture analysis, spectral matching, and mixture tuned matched filtering. Discusses ground, airborne, and spaceborne hyperspectral remote sensing systems. Offered by Geography/Geoinformation Sci. May not be repeated for credit.

Recommended Prerequisite: CSI 660 or equivalent, or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GGS 754: *Earth Science Data and Advanced Data Analysis.* 3 credits.
Covers accessing and applying Earth observations and remote-sensing data for Earth system science research and applications. Major topics are data formats, analysis and visualization tools, advanced data analysis methods, and data applications. Also covers combining innovative information technology techniques and Earth science data to set up online data centers for accessing data through the web. Offered by Geography/Geoinformation Sci. May not be repeated for credit. Equivalent to CSI 754.

Recommended Prerequisite: GGS 579 or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GGS 756: *Physical Principles of Remote Sensing.* 3 credits.
Emphasizes fundamental physical and mathematical principles of remote sensing. Also provides overview of the current Earth Observation System as well as the National Polar-Orbiting Operational Environmental Satellite Systems (NPOESS), and NPOESS Preparatory Project missions. Offered by Geography/Geoinformation Sci. May not be repeated for credit.

Recommended Prerequisite: GGS 753 or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GGS 759: *Topics in Earth Systems Science.* 1-6 credits.
Covers selected topics in Earth systems and global changes not covered in fixed-content Earth systems and global changes courses. Offered by Geography/Geoinformation Sci. May not be repeated for credit.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GGS 760: *Advanced Topics in Remote Sensing.* 3 credits.
Content varies in the area of remote sensing. Offered by Geography/Geoinformation Sci. May be repeated within the term for a maximum 12 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: GGS 579 or GGS 680.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GGS 772: *Cloud Geographic Information Systems.* 3 credits.
Examines different aspects of science and technology in the context of distributed GIS. Includes general concepts, architecture, component design and development, and system integration as well as other advanced topics, including interoperability and agent-based GIS. Offered by Geography/Geoinformation Sci. May not be repeated for credit.

Recommended Prerequisite: Introductory course in GIS and some programming experience, or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GGS 773: *Interoperability of Geographic Information Systems.* 3 credits.
Advanced course addressing theories, standards, and implementations of web-based interoperable geographic information systems for online data and information services. Reviews international standards, including OGC, and associated tools for interoperability. Offered by Geography/Geoinformation Sci. May not be repeated for credit.

Recommended Prerequisite: GGS 754 and GGS 553, or a course in GIS.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GGS 777: *Remote Sensing Natural Hazards.* 3 credits.
Provides an overview of major natural hazards, their governing dynamics and remote-sensing techniques used to study, forecast, and mitigate hazards. Offered by Geography/Geoinformation Sci. May not be repeated for credit.

Recommended Prerequisite: GGS 579 or GGS 680; or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GGS 787: *Scientific Data Mining for Geoinformatics.* 3 credits.
Covers specialized data mining algorithms, geoscience data models, and data information systems. Emphasis on domain-specific data mining algorithms suitable for spatial data and spatio-temporal data with geoscience and geoinformatics applications. Introduces real geoscience data mining applications in detailed applications. Offered by Geography/Geoinformation Sci. May not be repeated for credit.

Recommended Prerequisite: Competency in programming at the level of CSI 601-607 or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GGS 791: *Advanced Spatial Statistics.* 3 credits.
Advanced course focusing on analyzing georeferenced or spatial data represented as points or polygons. Addresses higher moments, point pattern analyses, and interpolations of points to surfaces. Includes spatial regression. Offered by Geography/Geoinformation Sci. May not be repeated for credit.

Recommended Prerequisite: GGS 560 or STAT 535/554, or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GGS 792: *Seminar in Earth Systems Science.* 2 credits.
Capstone experience. Seminars presented by faculty and students. Offered by Geography/Geoinformation Sci. May not be repeated for credit. Equivalent to EVPP 792.

Recommended Prerequisite: 15 Graduate Credits including CSI 655, GGS 656, and GGS 657, or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:

This course is graded on the Graduate Regular scale.

GGS 795: *Seminar in Regional Analysis.* 3 credits.
Analyzes and synthesizes physical and cultural elements of geography in selected region. Should be taken near end of master's degree program. Provides opportunity to apply selective knowledge gained in previous systematic courses to specific region. Offered by Geography/Geoinformation Sci. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

GGS 798: *Master's Research Project.* 1-6 credits.
Reading project chosen and completed under guidance of graduate faculty member resulting in acceptable technical report. Notes: For students enrolled in Earth Systems Science master's program or the Geoinformatics and Geospatial Intelligence master's program. Offered by Geography/Geoinformation Sci. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Admission to Earth Systems Science MS program or Geoinformatics and Geospatial Intelligence MS, 12 graduate credits, and permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Thesis

Grading:
This course is graded on the Satisfactory/No Credit scale.

GGS 799: *Thesis.* 1-6 credits.
Degree candidacy and departmental approval of thesis proposal. Offered by Geography/Geoinformation Sci. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Admission to Earth Systems Science MS program or Geoinformatics and Geospatial Intelligence MS, 12 graduate credits, and permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Thesis

Grading:
This course is graded on the Satisfactory/No Credit scale.

800 Level Courses

GGS 840: *Hyperspectral Imaging Applications.* 3 credits.
Introduces advanced hyperspectral imaging and multisensor concepts with emphasis on real-world civilian and military applications. Topics include advanced hyperspectral concepts, multisystem tradeoffs, data collection and processing systems, imaging radar systems, laser systems, calibration techniques, data fusion, quantitative remote sensing techniques, data compression techniques, case studies, and U.S. national policy. Applications and case studies include environmental, homeland security, medical, military, disaster mitigation, agricultural, and transportation. Offered by Geography/Geoinformation Sci. May not be repeated for credit. Equivalent to CSI 854.

Recommended Prerequisite: Permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

900 Level Courses

GGS 900: *Geography and Geoinformation Science Colloquium.* 1 credit.
Presentations in specific research areas of Geography and Geoinformation sciences by faculty and staff, Mason faculty in related programs, and professional visitors. Notes: Maximum 3 credits may be applied to Earth systems and geoinformation sciences PhD. Offered by Geography/Geoinformation Sci. May be repeated within the degree for a maximum 3 credits.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

GGS 998: *Dissertation Proposal.* 1-12 credits.
Covers development of research proposal that forms basis for doctoral dissertation, under guidance of dissertation director and doctoral committee. Notes: May be repeated, but no more than 12 credits of GGS 998 may satisfy doctoral degree requirements. Offered by Geography/Geoinformation Sci. May be repeated within the degree for a maximum 12 credits.

Recommended Prerequisite: Doctoral student or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

GGS 999: *Dissertation.* 1-12 credits.
Doctoral dissertation research under direction of dissertation advisor. Notes: May be repeated, but no more than total 24 credits in GGS 998 and 999 may be applied to doctoral degree. Offered by Geography/Geoinformation Sci. May be repeated within the degree for a maximum 24 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy.

Enrollment is limited to Graduate level students.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

Geology (GEOL)

100 Level Courses

GEOL 101: *Introductory Geology I.* 4 credits.
Covers Earth, processes that operate within Earth and on surface, and human interaction with Earth. Topics include minerals, earthquakes and seismology, isostasy, igneous processes and rocks, paleomagnetism and plate tectonics, weathering, mass movements, rivers and streams, groundwater, glaciers, and marine processes. Notes: May include field trips. Offered by Atmospheric/Oceanic/Earth Sci. Limited to three attempts.

Mason Core: Natural Science with Lab, Encore: Sustainability

Specialized Designation: Green Leaf Related Course

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GEOL 102: *Historical Geology.* 3 credits.
Earth processes in historical context. Topics include sedimentary rocks and principles, deformation and metamorphism, mountain building and plate tectonics, geologic time, fossils, and historical development of continents. Notes: May include field trips. Offered by Atmospheric/Oceanic/Earth Sci. Limited to three attempts.

Mason Core: Natural Science with Lab, Natural Science Overview, Encore: Sustainability

Specialized Designation: Green Leaf Related Course

Recommended Prerequisite: GEOL 101

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GEOL 104: *Historical Geology Laboratory.* 1 credit.
Practical investigation of earth processes in historical context. Topics include sedimentary rocks and principles, deformation and metamorphism, mountain building and plate tectonics, geologic time, fossils, and historical development of continents. Notes: May include field trips. Offered by Atmospheric/Oceanic/Earth Sci. Limited to three attempts.

Mason Core: Natural Science with Lab

Registration Restrictions:
Required Prerequisites: (GEOL 102[*C], 134[*C], 102[XS] or 134[XS]).
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

GEOL 134: *Evolution and Extinction.* 3 credits.
Evolution and Extinction is a science class for non-science majors that explores how diversity of animals and plants has changed through geologic time, when mass extinctions occurred, when major diversifications of life occurred, and how the position of continents on the surface of the earth influenced the evolution, extinction, and distribution of life, landforms and the atmosphere. Designated a Green Leaf Course. Offered by Atmospheric/Oceanic/Earth Sci. Limited to three attempts.

Mason Core: Natural Science Overview, Encore: Sustainability

Specialized Designation: Green Leaf Related Course

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

300 Level Courses

GEOL 302: *Mineralogy.* 4 credits.
Crystallographic, optical, chemical, and physical properties of minerals. Notes: May include field trips. Offered by Atmospheric/Oceanic/Earth Sci. Limited to three attempts.

Specialized Designation: Mason Impact.

Recommended Prerequisite: GEOL 101 and 102 with a grade of 2.0 or better and CHEM 211.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GEOL 303: *Field Mapping Techniques.* 3 credits.
Basic techniques for collecting, recording, and plotting spatial field data including use of topographic maps, compasses, transit, alidade, and global positioning systems (GPS). Designated a Green Leaf Course. Notes: Includes field work. Offered by Atmospheric/Oceanic/Earth Sci. Limited to three attempts.

Specialized Designation: Green Leaf Related Course, Mason Impact.

Recommended Prerequisite: 30 credits including MATH 105 or equivalent and GGS 102 or GEOL 102.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

GEOL 304: *Sedimentary Geology.* 4 credits.
Introduces sedimentation, sedimentary petrology, facies analysis, and stratigraphy. Notes: May include field trips. Offered by Atmospheric/Oceanic/Earth Sci. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (GEOL 101[C] or 101[XS]) and (GEOL 102[C] or 102[XS]) and (GEOL 302[C] or 302[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GEOL 305: *Environmental Geology.* 3 credits.
Investigates geological principles directly relating to environmental hazards. Geological causes and effects of natural disasters such as earthquakes, tsunamis, volcanoes, floods and landslides; climate variability and change; prediction of, and planning for geological hazards and disasters and understanding their major societal impacts; and medical geology. Notes: May include field trips. Offered by Atmospheric/Oceanic/Earth Sci. Limited to three attempts.

Specialized Designation: Green Leaf Related Course, Writing Intensive in Major

Recommended Prerequisite: GEOL 101 and one of the following: GEOL 102, GEOL/BIOL 309, GGS 309.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GEOL 306: *Soil Science.* 3 credits.
Composition, classification, physical properties, and origin of soils. Notes: May include field trips. Offered by Atmospheric/Oceanic/Earth Sci. Limited to three attempts.

Specialized Designation: Green Leaf Related Course, Mason Impact.

Recommended Prerequisite: GEOL 101 and CHEM 103 or 211.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GEOL 308: *Igneous and Metamorphic Petrology.* 4 credits.
Genesis, classification, and recognition of igneous and metamorphic rocks. Notes: May include field trips. Offered by Atmospheric/Oceanic/Earth Sci. Limited to three attempts.

Recommended Prerequisite: MATH 105 or higher, and GEOL 302 (grade of C or higher)

Registration Restrictions:
Required Prerequisites: (GEOL 101[C] or 101[XS]) and (GEOL 102[C] or 102[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GEOL 309: *Introduction to Oceanography.* 3 credits.
Introduction to chemical, biological, and geological aspects of oceanic environment. May include field trips. Offered by Atmospheric/Oceanic/Earth Sci. Limited to three attempts. Equivalent to BIOL 309, EVPP 309.

Recommended Prerequisite: Two of the following lab sciences courses are required for a total of 8 credits: [GEOL 101 or 102], [EVPP 108 and 109 or 112 and 113 or 210], CHEM 211 and 213, [BIOL 103 or 213], [PHYS 160 and 161 or 243 and 244].

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GEOL 312: *Invertebrate Paleontology.* 4 credits.
Classification, evolutionary trends, and distribution of common invertebrate fossils. Notes: May include field trips. Offered by Atmospheric/Oceanic/Earth Sci. Limited to three attempts. Equivalent to BIOL 336.

Recommended Prerequisite: GEOL 101 and GEOL 102, or BIOL 103, 104, or BIOL 213, 303, 304.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GEOL 313: *Hydrogeology.* 3 credits.
Geological and hydrologic factors controlling occurrence, distribution, movement, quality, and development of groundwater. Designated a Green Leaf Course. Offered by Atmospheric/Oceanic/Earth Sci. Limited to three attempts.

Specialized Designation: Green Leaf Related Course

Recommended Prerequisite: GEOL 101 or GGS 102, MATH 113 and CHEM 211.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GEOL 315: *Topics in Geology II.* 1-3 credits.
Discusses particular topic in geology. Notes: May include field trips. Offered by Atmospheric/Oceanic/Earth Sci. May be repeated within the term for a maximum 12 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: GEOL 101 or GEOL 102 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GEOL 316: *Computers in Geology.* 3 credits.
Uses of mainframe and microcomputers, with emphasis on geologic applications. Offered by Atmospheric/Oceanic/Earth Sci. Limited to three attempts.

Recommended Prerequisite: GEOL 101, 102, 302, one semester of mathematics, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GEOL 317: *Geomorphology.* 4 credits.
Analyzes processes that occur at Earth's surface and resulting landforms. Labs stress recognition and evaluation of landforms using maps and aerial photographs, and methods of data collection used in study of surficial geology. Notes: May include field trips. Offered by Atmospheric/Oceanic/Earth Sci. Limited to three attempts.

Specialized Designation: Writing Intensive in Major

Recommended Prerequisite: Grade of 2.0 or better in GEOL 101 and 102, or 6 credits of GGS, including GGS 102; GGS 412 is strongly recommended.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GEOL 320: *Geology of Earth Resources.* 3 credits.
A survey of earth resources, including metallic and non-metallic ore deposits, mineral resources, precious gems, sand and gravel, water, and air. Designated a Green Leaf Course. Offered by Atmospheric/Oceanic/Earth Sci. Limited to three attempts.

Specialized Designation: Green Leaf Related Course

Recommended Prerequisite: GEOL 101, GEOL 102, GEOL 302. GEOL 305 strongly suggested.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GEOL 321: *Geology of Energy Resources.* 3 credits.
A survey of energy resources, including fossil fuels, renewable, nuclear and unconventional sources. Emphasis on origin, use and implications of development. Designated a Green Leaf Course. Offered by Atmospheric/Oceanic/Earth Sci. Limited to three attempts.

Specialized Designation: Green Leaf Focused Course

Recommended Prerequisite: GEOL 101 or GEOL 102, and completion of all Mason Core science requirements.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GEOL 325: *Planetary Geology.* 3 credits.
Covers the geology and geologic processes of the terrestrial planets, moons, and other small bodies in the solar system including dwarf planets, asteroids and comets. The emphasis is on understanding past and present surface geologic processes. Observation session at campus observatory may be required outside of class hours. Offered by Atmospheric/Oceanic/Earth Sci. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: GEOL 101[C], 101[XS], 102[C] or 102[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GEOL 332: *Paleoclimatology.* 3 credits.
Explores the natural evolution of Earth's climate with the goal of providing a baseline for understanding present climate variability and future trends through increased knowledge of the physical, chemical, and biological processes that influence climate over the long-term. Designated a Green Leaf Course. Offered by Atmospheric/Oceanic/Earth Sci. Limited to three attempts.

Specialized Designation: Green Leaf Related Course

Recommended Prerequisite: GEOL 102 or BIOL 103 or EVPP 110.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GEOL 334: *Vertebrate Paleontology.* 4 credits.
Vertebrate Paleontology explores the evolution of vertebrates from the early Paleozoic to Recent. The course will cover the systematics, anatomy, paleogeography, and ecology of extinct vertebrates. Discussions will include fishes, early tetrapods & amniotes, dinosaurs, birds and mammals. Lab portion includes paleontology techniques, analysis, and study of fossil specimens and casts. A weekend field trip is included. Offered by Atmospheric/Oceanic/Earth Sci. Limited to three attempts. Equivalent to BIOL 334.

Specialized Designation: Writing Intensive in Major

Recommended Prerequisite: Any two courses from the following list: GEOL 101, GEOL 102, BIOL 103, BIOL 104, BIOL 213, BIOL 303 or the permission of the instructor.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GEOL 363: *Coastal Morphology and Processes.* 4 credits.
Studies global coastal geomorphology and processes with emphasis on U.S. Atlantic and Gulf coasts. Topics include plate tectonics, sea level changes, sediment supply, waves, tides, storm impacts, and human activities. Lecture and extended weekend field trips to mid-Atlantic coast. Designated a Green Leaf Course. Offered by Atmospheric/Oceanic/Earth Sci. Limited to three attempts. Equivalent to EVPP 363.

Specialized Designation: Green Leaf Related Course

Recommended Prerequisite: GEOL 309 or BIOL 309 or GEOL 317 or 9 credit hours in Geography including GGS 309.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GEOL 364: *Marine Geology.* 3 credits.
This course will present a global overview of the geologic origin and composition of the ocean seafloor, and an introduction to the basic principles of the geologic processes occurring in the marine environment. Primary topics include geologic, tectonic and sedimentary characteristics of the deep ocean basins and continental margins; transport and deposition of marine sediments; micropaleontology and paleoceanography; geochemistry and hydrothermal systems; and marine mineral resources. Offered by Atmospheric/Oceanic/Earth Sci. Limited to three attempts.

Recommended Prerequisite: GEOL 101, GEOL 102, GEOL 302, and CHEM 211.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GEOL 392: *Geology and Earth Science Seminar.* 1 credit.
Undergraduate experience that includes discussion of scientific articles and attneding seminars presented by outside experts, faculty, or students. Offered by Atmospheric/Oceanic/Earth Sci. May be repeated within the degree for a maximum 4 credits.

Recommended Prerequisite: 30 credit hours.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

GEOL 401: *Structural Geology.* 4 credits.
An introduction to both qualitative and quantitative methods of structural geology with emphasis on identifying and analyzing geologic structures in nature as well as learning the fundamentals of geological stress and strain, rock mechanics, and plate tectonics. Notes: field trips may be required. Offered by Atmospheric/Oceanic/Earth Sci. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: ((GEOL 302[C] or 302[XS] and (GEOL 317[C] or 317[XS]) and (GEOL 304[C] or 304[XS])) or GEOL 308[C] or 308[XS]) and (((MATH 110[C] or 110[XS]) and (MATH 111[C] or 111[XS])) or MATH 113[C] or 113[XS]) and (((PHYS 160[C] or 160[XS]) and (PHYS 161[C] or 161[XS])) or ((PHYS 243[C] or 243[XS]) and (PHYS 244[C] or 244[XS]))).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GEOL 402: *Geological Development of North America.* 3 credits.
Geological history of North America in terms of plate tectonics. Geological development and history of North America's major regions. Notes: May include field trips. Offered by Atmospheric/Oceanic/Earth Sci. Limited to three attempts.

Recommended Prerequisite: GEOL 101, 102, 302, 304, 308 and 401.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GEOL 403: *Geochemistry.* 3 credits.
Includes stable isotope, crystal, water, and organic geochemistry; geochronology; and geochemistry of rocks. Offered by Atmospheric/Oceanic/Earth Sci. Limited to three attempts.

Recommended Prerequisite: GEOL 101 and 102, and CHEM 211.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GEOL 404: *Geological Field Techniques.* 1-6 credits.
Mapping techniques involved in collecting geological field data. Notes: Includes field work. Offered by Atmospheric/Oceanic/Earth Sci. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Required Prerequisites: (GEOL 101[C] or 101[XS]) and (GEOL 102[C] or 102[XS]) and (GEOL 302[C] or 302[XS]) and (GEOL 304[C] or 304[XS]) and (GEOL 308[C] or 308[XS]) and (GEOL 317[C] or 317[XS]) and (GEOL 401[C] or 401[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

GEOL 408: *Practicum for Geology Laboratories.* 1 credit.
Studies techniques to make geology lab effective component in geological education. Discusses developing testing materials, supplemented by experience operating geology course lab section. Offered by Atmospheric/Oceanic/Earth Sci. Limited to three attempts.

Recommended Corequisite: Open only to GEOL/ESS majors with 80 credit hours and permission of Chair.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

GEOL 409: *Practicum for Geology Laboratories.* 1 credit.
Studies techniques to make geology lab effective component in geological education. Discusses developing testing materials, supplemented by experience operating geology course lab section. Offered by Atmospheric/Oceanic/Earth Sci. Limited to three attempts.

Recommended Prerequisite: Open only to GEOL/ESS majors with 80 credit hours and permission of Chair.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

GEOL 410: *Research Proposal Preparation.* 1 credit.
Prepares students for research in GEOL 411. Includes literature research, initial data collection, and preparing research proposal. Offered by Atmospheric/Oceanic/Earth Sci. Limited to three attempts.

Recommended Prerequisite: Geology or Earth Science major with 90 credits, cumulative GPA of 2.80 or higher, and permission of the Geology undergraduate coordinator.

Schedule Type: Research

Grading:
This course is graded on the Undergraduate Regular scale.

GEOL 411: *Geological Research.* 3 credits.
Geological research: data collection and reduction, interpretation, preparation of written report, and oral presentation of results. Offered by Atmospheric/Oceanic/Earth Sci. Limited to three attempts.

Recommended Prerequisite: GEOL 410.

Schedule Type: Research

Grading:
This course is graded on the Undergraduate Regular scale.

GEOL 412: *Physical Oceanography.* 3 credits.
Course describes the global patterns of temperature, salinity, currents and waves in the world's oceans, and how these patterns influence marine biota, climate, and human activity. Course introduces key concepts which explain physical features of the ocean ranging from microscopic turbulence to global circulation. Offered by Atmospheric/Oceanic/Earth Sci. Limited to three attempts. Equivalent to CLIM 412.

Recommended Prerequisite: MATH 113 or MATH 115, and PHYS 160 or PHYS 243, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GEOL 417: *Geophysics.* 3 credits.
Basic principles of geophysics including gravity, magnetism, and seismic reflection and refraction. Offered by Atmospheric/Oceanic/Earth Sci. Limited to three attempts. Equivalent to PHYS 417.

Recommended Prerequisite: GEOL 101, MATH 113, one year of PHYS or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GEOL 420: *Earth Science and Policy.* 3 credits.
Discusses Earth science issues that have policy implications. Course uses a broad definition of Earth science, from atmosphere to geosphere. Taught seminar-style, with emphasis on discussion, reading, writing, critical analysis, and student oral presentations. Notes: Course may include field trips. Offered by Atmospheric/Oceanic/Earth Sci. Limited to three attempts.

Mason Core: Encore: Sustainability, Synthesis

Specialized Designation: Green Leaf Focused Course

Recommended Prerequisite: 18 credit hours in major or minor (geology, Earth science, ocean and estuarine science, or global and environmental change), and one of the following social science based courses: EVPP 361; ECON 103; ANTH 114; GGS 103; GLOA 101; GOVT 132 or 133; HIST 125 or 130; or SOCI 101, 102, or 120.

Recommended Corequisite: All other required Mason Core courses.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

GEOL 441: *Great Events in Earth History.* 3 credits.
Through 4.5 billion years, Earth has undergone tumultuous changes, from the origin of life and atmospheric oxygenation, to mass extinction events and human evolution. In this seminar-style course, each week will involve an in-depth, student-led discussion on one 'Great Event' that helped shape the course of Earth history. The course is also focused on scientific literacy, with emphasis on reading the primary literature and writing/communicating effectively in a scientific setting. Offered by Atmospheric/Oceanic/Earth Sci. Limited to two attempts.

Recommended Prerequisite: GEOL 101

Registration Restrictions:
Required Prerequisites: GEOL 102^{C} or 102^{XS}.
^{C} Requires minimum grade of C.
^{XS} Requires minimum grade of XS.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

GEOL 458: *Chemical Oceanography.* 3 credits.
The world's oceans, including a variety of closed basins and estuaries, comprise a complex and dynamic system of chemical processes that interact with biological, geological, physical, and atmospheric processes to play a significant role in defining the earth's fragile environment. This course will present an overview of the origin, occurrence, and distribution of the chemical components in sea water and an introduction to the basic principals of the chemical processes taking place in the marine environment. Designated a Green Leaf Course. Offered by Atmospheric/Oceanic/Earth Sci. Limited to three attempts. Equivalent to CHEM 458.

Specialized Designation: Green Leaf Related Course

Recommended Prerequisite: CHEM 211 and CHEM 212, and CHEM 321 or GEOL 302.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GEOL 480: *Internship.* 1-3 credits.
Approved study programs with specific employers. Notes: Contact department one semester before enrollment. Offered by Atmospheric/Oceanic/Earth Sci. Limited to three attempts.

Recommended Corequisite: Open only to authorized majors with 90 credit.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

500 Level Courses

GEOL 500: *Selected Topics in Modern Geology.* 1-3 credits.
Topic designated in class schedule. Notes: Lecture, lab, field trip. Offered by Atmospheric/Oceanic/Earth Sci. May be repeated within the degree.

Specialized Designation: Topic Varies

Recommended Prerequisite: Baccalaureate degree in geology, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:

This course is graded on the Graduate Regular scale.

GEOL 501: *Selected Topics in Modern Geology.* 1-3 credits.
Topic designated in class schedule. Lecture, lab, field trip. Offered by Atmospheric/Oceanic/Earth Sci. May be repeated within the degree.

Specialized Designation: Topic Varies

Recommended Prerequisite: Baccalaureate degree in geology or Permission of Instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GEOL 503: *Special Topics in Earth Science.* 1-6 credits.
In-service course to strengthen and update knowledge of Earth science. Notes: May include field trips. Offered by Atmospheric/Oceanic/Earth Sci. May be repeated within the degree.

Specialized Designation: Topic Varies

Recommended Prerequisite: Employment or anticipated employment as an Earth Science teacher.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GEOL 504: *Sedimentary Geology.* 4 credits.
Introduces sedimentation, sedimentary petrology, facies analysis, and stratigraphy. Notes: May include field trips. Offered by Atmospheric/Oceanic/Earth Sci. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: ((GEOL 101[C] or 101[XS]) and (GEOL 102[C] or 102[XS]) and (GEOL 302[C] or 302[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Graduate Regular scale.

GEOL 506: *Soil Science.* 3 credits.
Explores the composition, classification, physical properties, and origin of soils. Offered by Atmospheric/Oceanic/Earth Sci. May not be repeated for credit. Equivalent to EVPP 503.

Recommended Prerequisite: Previous lab-science courses in each of the following: geology and chemistry (8 credit hours); or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GEOL 512: *Invertebrate Paleontology.* 4 credits.
Classification, evolutionary trends, and distribution of common invertebrate fossils. Offered by Atmospheric/Oceanic/Earth Sci. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Graduate Regular scale.

GEOL 513: *Hydrogeology.* 3 credits.
Geological and hydrologic factors controlling occurrence, distribution, movement, quality, and development of groundwater. Offered by Atmospheric/Oceanic/Earth Sci. May not be repeated for credit.

Recommended Prerequisite: Previous lab-science courses in each of the following: geology, calculus, and chemistry (12 credit hours); or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GEOL 521: *Geology of Energy Resources.* 3 credits.
Survey of global non-renewable and renewable energy resources. Topics include petroleum, natural gas, coal, nuclear, geothermal, solar, wind, and hydro power, and biofuels. Course discusses global production, usage, impacts and future prospects of these resources, and data capture,

analysis and modeling of finite resources. Offered by Atmospheric/Oceanic/Earth Sci. May not be repeated for credit.

Recommended Prerequisite: GEOL 101 or GEOL 102, and completion of all Mason Core Natural Science requirements or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GEOL 525: *Modeling Earth Signals and Systems.* 3 credits.
Provides instruction on time series analysis customized for Earth signals and systems such as climate, Earth-space orientation, earthquakes, geomagnetism, river flow, tides and many other timedependent phenomena. Concepts including linear systems, filtering, spectrum estimation, harmonic analysis and hypothesis testing are applied to time series data sampled from natural processes to address a variety of scientific problems. Offered by Atmospheric/Oceanic/Earth Sci. May not be repeated for credit.

Recommended Prerequisite: MATH 114 and STAT 250 or equivalent or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GEOL 532: *Paleoclimatology.* 3 credits.
Explores the natural evolution of Earth's climate with the goal of providing a baseline for understanding present climate variability and future trends through increase knowledge of the physical, chemical, and biological processes that influence climate over the long-term. Offered by Atmospheric/Oceanic/Earth Sci. May not be repeated for credit.

Recommended Prerequisite: Previous lab-science courses in geology and/or atmospheric science and/or oceanography (12 credit hours); or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GEOL 534: *Vertebrate Paleontology.* 4 credits.
Explores the evolution of vertebrates from the early Paleozoic to Recent. Covers systematics, anatomy, paleogeography, and ecology of extinct vertebrates. Discussions include fishes, early tetrapods and amniotes, dinosaurs, birds, and mammals. Lab portion includes paleontology techniques, analysis, and study of fossil specimens and casts.Notes: A weekend field trip is included. Students who have taken GEOL 334 as an undergraduate may not take 534 as a graduate student. Offered by Atmospheric/Oceanic/Earth Sci. May not be repeated for credit.

Recommended Prerequisite: Undergraduate degree in biology or geology or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Graduate Regular scale.

GEOL 535: *Quantitative Stratigraphy.* 3 credits.
Quantitative stratigraphy is a branch of geology that applies statistics to reconstruct the time sequence of geological events recorded in sedimentary strata. Methods of interpolation and error analysis used for defining stratigraphic boundaries and events, time scale estimation using integrated chronostratigraphy, and intercalibration are examined. Students receive advanced training in graphic correlation, constrained optimization, ranking and scaling, and dynamic programming. Offered by Atmospheric/Oceanic/Earth Sci. May not be repeated for credit.

Recommended Prerequisite: MATH 114 and STAT 250 or equivalent or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GEOL 536: *Paleontology Seminar.* 1-2 credits.
Paleontology Seminar presents topical research in paleontology and paleobiology in a structured discussion among graduate students and paleontology faculty. A theme for the seminar is chosen each semester the course is offered, tailored to the interests of the students. Offered by Atmospheric/Oceanic/Earth Sci. May be repeated within the degree for a maximum 12 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

GEOL 541: *Great Events in Earth History.* 3 credits.
Through 4.5 billion years, Earth has undergone tumultuous changes, from the origin of life and atmospheric oxygenation, to mass extinction

events and human evolution. In this seminar-style course, each week will involve an in-depth, student-led discussion on one 'Great Event' that helped shape the course of Earth history. The course is also focused on scientific literacy, with emphasis on reading the primary literature and writing/communicating effectively in a scientific setting. Offered by Atmospheric/Oceanic/Earth Sci. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

GEOL 553: *Field Mapping Techniques.* 3 credits.
Explores basic techniques for collecting, recording, and plotting spatial field data, including topographic maps, compass, transit, alidade, and global positioning systems. Field work and field based research project. Offered by Atmospheric/Oceanic/Earth Sci. May not be repeated for credit. Equivalent to EVPP 503.

Recommended Prerequisite: Previous courses in geometry or trigonometry or equivalent; and environmental science, geography, or geology or equivalent.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory

Grading:
This course is graded on the Graduate Regular scale.

GEOL 563: *Coastal Morphology and Processes.* 4 credits.
Investigates global coastal geomorphology and processes, with emphasis on U.S. Atlantic and Gulf coasts. Topics include plate tectonics; sea-level changes; sediment supply; impacts of waves, tides, storms; and human activities. Lecture and extended weekend field trips to U.S. mid-Atlantic coast. Offered by Atmospheric/Oceanic/Earth Sci. May not be repeated for credit. Equivalent to EVPP 563.

Recommended Prerequisite: Previous courses in geology, oceanography marine science, earth science, or physical geography; or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GEOL 565: *Paleoceanography.* 3 credits.
Investigates ocean evolution through geologic time. Earth's sediment archive provides proxy data on paleo-ocean chemistry, biology, geology, and physical properties. Class examines proxy reconstructions of oceanic conditions such as circulation, salinity, stratification, anoxia, and biogeochemistry. Discusses the history of ocean basins, with case studies from Precambrian to Holocene. Offered by Atmospheric/Oceanic/Earth Sci. May not be repeated for credit.

Recommended Prerequisite: Previous course in oceanography or marine science and 16 credits of geology or earth science courses, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

600 Level Courses

GEOL 601: *The Lithosphere.* 3 credits.
Global-scale overview of lithosphere, solid non-living Earth, materials, cycles, plate tectonic and geomorphic processes; and history, including interactions with and history of hydrosphere, atmosphere and biosphere, and methods of analysis. Offered by Atmospheric/Oceanic/Earth Sci. May not be repeated for credit. Equivalent to GGS 657.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GEOL 694: *Supervised Internship.* 3-12 credits.
Training in application of geological skills under supervision of a qualified earth scientist at governmental agency, consulting firm, industry, or other acceptable organization Offered by Atmospheric/Oceanic/Earth Sci. May be repeated within the degree for a maximum 18 credits.

Recommended Prerequisite: Permission of student's MS thesis committee, graduate program director and department chair.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Satisfactory/No Credit scale.

700 Level Courses

GEOL 700: *Comprehensive Exam.* 1 credit.
Preparation for and completion of written comprehensive exam within AOES department. The comprehensive exam is given as part of the degree requirements in lieu of writing a master's thesis. Instructor should be the chair of the examination committee. The exam committee will specify exam content. Notes: No more than 1 credit of GEOL 700 may be applied toward the master's degree. Offered by Atmospheric/Oceanic/Earth Sci. May be repeated within the degree for a maximum 2 credits.

Recommended Prerequisite: At least 15 graduate credits, approved project proposal, and permission of major advisor or chair of the examination committee.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Satisfactory/No Credit scale.

GEOL 792: *Seminar in Earth Systems Science, Geology, & Earth Science.* 1 credit.
Capstone experience that includes discussion of scientific articles and attending seminars. Seminars presented by outside experts, faculty, and students. Offered by Atmospheric/Oceanic/Earth Sci. May be repeated within the degree for a maximum 12 credits.

Recommended Prerequisite: 15 Graduate Credits including GEOL 601 or equivalent, or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

GEOL 798: *Master's Research Project in Earth Systems Science.* 1-6 credits.
Experimental, observational, literature-based, or theoretical research project chosen and completed under guidance of faculty member. Proposal required before enrollment. Comprehensive technical report acceptable to student's committee required for completion. Notes: No more than 6 credits of GEOL 798 may be applied to master's degree. Offered by Atmospheric/Oceanic/Earth Sci. May be repeated within the degree for a maximum 12 credits.

Recommended Prerequisite: 15 graduate credits, approved project or thesis proposal, and permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Thesis

Grading:
This course is graded on the Satisfactory/No Credit scale.

GEOL 799: *Master's Thesis in Earth Systems Science.* 1-6 credits.
Experimental, observational, or theoretical research under major advisor's supervision that culminates in production of thesis. Thesis work should be potentially publishable. Offered by Atmospheric/Oceanic/Earth Sci. May be repeated within the degree for a maximum 18 credits.

Recommended Prerequisite: Approved thesis proposal by thesis committee, and permission of major advisor or instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Thesis

Grading:
This course is graded on the Satisfactory/No Credit scale.

German (GERM)

100 Level Courses

GERM 101: *Elementary German I.* 3 credits.
Designed for students with no knowledge of German. Introduces elements of grammar, vocabulary, oral skills, listening comprehension, and reading. Notes: Students may not receive credit for GERM 101 and GERM 105 or 110. Offered by Modern & Classical Languages. Limited to three attempts. Equivalent to GERM 110.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in German

GERM 102: *Elementary German II.* 3 credits.
Continuation of GERM 101. Notes: Students may not receive credit for GERM 102 and GERM 105 or 110. Offered by Modern & Classical Languages. Limited to three attempts. Equivalent to GERM 110.

Recommended Prerequisite: GERM 101.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in German

GERM 110: *Elementary German.* 6 credits.
Introduces elements of grammar, vocabulary, oral skills, listening comprehension, and reading. Notes: Lab work required. Students may not receive credit for GERM 110 and GERM 101, 102, or 105. Offered by Modern & Classical Languages. Limited to three attempts. Equivalent to GERM 101, GERM 102.

Schedule Type: Lecture

Grading:

This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in German

200 Level Courses

GERM 201: *Intermediate German I.* 3 credits.
Further development of skills in listening, speaking, reading, and writing. Notes: GERM 201 and 202 must be taken in sequence. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: GERM 102, GERM 110, appropriate placement score, or permission of department.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in German

GERM 202: *Intermediate German II.* 3 credits.
Applies skills to reading, composition, and discussion. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: GERM 201.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Fulfills Frgn Lng requirment, Taught in German

300 Level Courses

GERM 301: *Culture and Civilization.* 3 credits.
Covers development of German civilization from 18th century to present. Includes German cultural contributions to world civilization. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: 60 hours or Permission of Instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GERM 310: *Conversation and Composition.* 3 credits.
Develops fluency in speaking and proficiency in writing German through discussion, reports, and compositions based on texts dealing with contemporary events and issues. Notes: Not for native speakers of German. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: GERM 202 or equivalent, appropriate placement score, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in German

GERM 312: *Great Cities in Germany, Austria and Switzerland.* 3 credits.
Examines famous cities, such as Berlin, Nuremberg, Vienna, and Weimar, in their cultural and historical context. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: GERM 202 or permission of instructor

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in German

GERM 315: *German for the Global World.* 3 credits.
Explores the complexity of globalization in the context of Germany in relation to Europe and the greater world. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: GERM 202 or permission of instructor

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in German

GERM 316: *German for the Business World.* 3 credits.
Introduces terminology and structural features of business German. Emphasizes acquiring vocabulary and developing facility in reading German business articles and correspondence. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: GERM 202 or equivalent, appropriate placement score, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in German

GERM 318: *Translation of Texts.* 3 credits.
Introduces principles and techniques of translation. Translation of texts from the natural and social sciences, current events, and contemporary culture. Notes: Translations mainly from German into English. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: GERM 202 or equivalent, appropriate placement score, or permission of instructor

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in German

GERM 325: *Major Writers.* 3 credits.
Works of major German, Austrian, and Swiss writers in translation. Notes: Writers studied vary. May be repeated when topic is different with permission of department. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 6 credits.

Mason Core: Literature

Recommended Prerequisite: ENGL 101/ENGH 101 or equivalent or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GERM 329: *Representations of the Holocaust.* 3 credits.
Examines the Holocaust through film, literature, autobiography and museum culture. Students critically discuss causes of the Holocaust in Nazi Germany and explore its impact on German, Austrian and American culture. Offered by Modern & Classical Languages. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GERM 340: *Topics in German Literature and Film.* 3 credits.
Topics in German literature and film from Goethe to the present. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: GERM 202 or equivalent, appropriate placement score, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in German

GERM 355: *Readings in Poetry (Topic Varies).* 3 credits.
Intensive reading of German poetry in its historical context. Studies genre characteristics and development. Types of poetry studied vary. Notes: May be repeated for credit when subject is different, with permission of department. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: GERM 202 or equivalent, appropriate placement score, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in German

GERM 365: *Topics in German History and Culture.* 3 credits.
Studies German narrative prose, such as autobiographical texts, fairy tales, short stories, film, and other forms of (artistic) expression in their historical context. Topics to be studied vary. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: GERM 202 or equivalent, appropriate placement score, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in German

GERM 370: *German Through the Arts.* 3 credits.
Focuses on advanced-level language development through the investigation of German arts (film, music, theater, paintings, etc.) in their historical and cultural contexts. Oral and written competence achieved by means of integrated vocabulary and grammar study in content-based instruction. Notes: May be repeated for credit when topic is different. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: GERM 202 or equivalent, appropriate placement score, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in German

GERM 375: *Readings in Drama.* 3 credits.
Intensive reading of German dramas in their historical context. Study of genre characteristics and development, including performance aspects. Genre varies; may be historical drama, radio play, or epic theater. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: GERM 202 or equivalent, appropriate placement score, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in German

400 Level Courses

GERM 415: *Advanced Grammar and Style.* 3 credits.
Studies syntax, idiomatic features, and levels of style. Extensive practice in different types of written expression. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: 15 hours of GERM or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in German

GERM 418: *Advanced Composition.* 3 credits.
Develops proficiency in writing German through intensive practice in preparing guided and original compositions. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: Completion of 15 hours of GERM or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in German

GERM 442: *The Age of Goethe.* 3 credits.
Major works of Enlightenment, Sturm und Drang, Classicism, and early Romanticism. Emphasizes drama and poetry by Goethe and Schiller, with additional works by Lessing, Kleist, and other important writers of the era. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: 15 hours of GERM or Permission of Instructor. Must have satisfactorily completed GERM 440 or 441.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in German

GERM 444: *The Literature of Romanticism.* 3 credits.
German Romantic poetry and prose. Background and some theory included. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: 15 hours of GERM or Permission of Instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in German

GERM 480: *Special Topics.* 3 credits.
Special topics on language, literature, or culture by theme, approach, or era. Notes: May be repeated for credit with permission of department. Offered by Modern & Classical Languages. Limited to three attempts.

Specialized Designation: Topic Varies

Recommended Prerequisite: 15 hours of GERM or permission of instructor

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in German

Global Affairs (GLOA)

100 Level Courses

GLOA 101: *Introduction to Global Affairs.* 3 credits.
Surveys wide range of global topics: previous periods of globalization, international organizations and law, transnational corporations and global economy, immigration and refugees, world environmental concerns, world culture, war and peace, paradoxical presence of nationalism and fundamentalism in global world, and antiglobalization movement.Offered by Global Affairs. Limited to three attempts.

Mason Core: Global Understanding

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

300 Level Courses

GLOA 305: *Global Affairs College-to-Career.* 1 credit.
Focuses on career choices and effective self-presentation for soon-to-be graduating students with majors in Global Affairs. Explores how skills typically learned in humanities majors can be leveraged for a successful transition to post-graduation employment.Offered by Global Affairs. Limited to three attempts. Equivalent to UNIV 420.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

GLOA 400: *Global Affairs Capstone.* 3 credits.
Students draw from interdisciplinary core and concentration coursework in order to synthesize, compare and consolidate the various approaches and theories explored throughout the major through a focus on a pressing global issue. Additionally, course is designed to further develop research, writing, presentation, and organizational skills.Offered by Global Affairs. May be repeated within the term for a maximum 6 credits.

Mason Core: Capstone

Recommended Prerequisite: Completion of GLOA 101 or SOCI 120 and 18 credits in major.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GLOA 450: *Topics in Global Affairs.* 1-3 credits.
Selected topics in global affairs. Content varies. Notes: May be repeated for credit when topic is different.Offered by Global Affairs. May be repeated within the degree for a maximum 9 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: GLOA 101 or SOCI 120.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GLOA 480: *Study Abroad.* 1-6 credits.
Study abroad under supervision of Mason faculty. Course topics, content, and locations vary. Notes: May be repeated with permission of department.Offered by Global Affairs. May be repeated within the term for a maximum 12 credits.

Schedule Type: Lecture

Grading:

This course is graded on the Undergraduate Regular scale.

GLOA 490: *Independent Study in Global Affairs.* 1-6 credits.
Reading or research on specific topic related to globalization, under direction of faculty member. Notes: At least one written paper required. Course may involve combination of reading assignments, tutorials, presentations, or off-campus activities.Offered by Global Affairs. May be repeated within the term for a maximum 6 credits.

Recommended Prerequisite: Global Affairs majors with 90 credits, GLOA 101, and permission of instructor.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

GLOA 491: *Honors Seminar in Global Affairs.* 3 credits.
Emphasizes an interdisciplinary approach to the study of global affairs. Covers a variety of topics, including consideration of economic, political, and cultural forces at work in the complex interactions among global processes.Offered by Global Affairs. Limited to three attempts.

Recommended Prerequisite: Admission to Global Affairs honors in the major.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

GLOA 492: *Honors Research Project in Global Affairs.* 3 credits.
Honors-level research on specialized topic in Global Affairs culminating in substantial paper and oral presentation.Offered by Global Affairs. Limited to three attempts.

Recommended Prerequisite: Completion of GLOA 491 with minimum grade of B.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

GLOA 495: *Global Experiential Learning.* 1-18 credits.
On-the-job training in transnational or international fields through approved internship programs. Notes: Enrollment and credits controlled by Global Affairs Program. Contact Global Affairs Program one semester before planned enrollment.Offered by Global Affairs. May be repeated within the term.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

500 Level Courses

GLOA 599: *Issues in Global Affairs.* 1-6 credits.
Studies current issues and debates in global affairs. Notes: May be repeated for credit when topic is different.Offered by Global Affairs. May be repeated within the term for a maximum 12 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

600 Level Courses

GLOA 600: *Global Competencies.* 3 credits.
Explores the nature of globalization. Students will understand the characteristics of the current global system; be familiar with key global issues and debates; have an advanced understanding of and appreciation for organizations, languages, cultures in many global contexts; and be better habituated to thinking across disciplinary lines.Offered by Global Affairs. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

GLOA 605: *Interdisciplinary Research Methods.* 3 credits.
Designed to provide students with an overview of basic techniques in quantitative and qualitative methods with special attention to epistemological and ethical concerns in global studies research. Course includes a discussion of the theoretical assumptions that shape research questions and design, practical exercises in research techniques, and analysis of methodology in practice.Offered by Global Affairs. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GLOA 610: *Economic Globalization and Development.* 3 credits.
Focuses on the intersection of countries and firms in the arenas of international trade, investment and finance, as the lenses into understanding better today's "global" economy: countries of differing levels of economic development and economic system structure, factors of monetary union and currency disequilibria, trade liberalization or protectionism, market entry, cross-border variables, risk and relations. Offered by Global Affairs. May not be repeated for credit.

Registration Restrictions:

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

GLOA 615: *Case Studies in Globalization.* 3 credits.
Introduces interdisciplinary, social theoretical approaches and themes useful to understanding today's global issues and then applies them to a particular case study. Considers scholarly debates around globalization in the context of this case study.Offered by Global Affairs. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

GLOA 690: *Independent Study.* 3 credits.
Reading or research on specific topic related to globalization, under directions of faculty member. Notes: At least one written paper required. Course may involve combination of reading assignments, tutorials, presentations, or off-campus activities.Offered by Global Affairs. May not be repeated for credit.

Recommended Prerequisite: 12 MA credits and permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment limited to students in the LA-MA-GLOA program.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Regular scale.

700 Level Courses

GLOA 710: *Seminar Abroad.* 3 credits.
Intensive program in a foreign setting focusing on a deep overview of the research specialization of the supervising faculty member. Required pre-departure component to set the intellectual, logistical and culture terms of the abroad period. Locations vary from year to year. Notes: May be repeated with permission of program.Offered by Global Affairs. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

GLOA 720: *Capstone Research Seminar.* 3 credits.
Provides students with the opportunity to engage in significant original research an analysis of a topic in global affairs. Topics vary from year to year.Offered by Global Affairs. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

Global and Community Health (GCH)

200 Level Courses

GCH 205: *Global Health.* 3 credits.
This course examines the biological and social aspects of major international health issues, especially in the areas of infectious disease, nutrition, and environmental health. Other topics include population groups with special risks, policies and programs designed to reduce health inequalities, and basic methods used to study global health. Offered by Global and Community Health. Limited to three attempts.

Mason Core: Global Understanding

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

300 Level Courses

GCH 300: *Introduction to Public Health.* 3 credits.
Explores the principles and foundations of public health and its practice in the United States. Emphasizes the public health system's contributions to improving individual, community, and population health. Offered by Global and Community Health. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GCH 305: *Introduction to OneHealth.* 3 credits.
Introduces the transdisciplinary One Health approach of solving complex health issues by recognizing the interconnectedness of human health, animal health and environmental health. A One Health approach to health issues is important because the majority of diseases in humans are spread from animals thus successful public health interventions require the cooperation of human, animal, and environmental health communities. Offered by Global and Community Health. Limited to three attempts.

Recommended Prerequisite: GCH 205 or EVPP 210 or BIOL 213

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GCH 310: *Health Behavior Theories.* 3 credits.
Examines theory for understanding health and health behaviors and their role in the development, implementation, and evaluation of public health programs. Offered by Global and Community Health. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GCH 320: *Community Health and Literature.* 3 credits.
This on-line course explores key historical worldwide public health events and humankind's responses to them, through in-depth study of selected literary works. The course includes investigation of scientific, social, cultural, geographical, and political factors that affect health and policy development on local, community and global levels. Offered by Global and Community Health. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GCH 325: *Stress and Well-Being.* 3 credits.
Explores the influences of stress on population-based health issues. The causes and pathways of the stress experience are explored from an ecological public health perspective. Theoretical aspects of stress and coping are considered, along with methods for relieving and preventing the stress response in both individuals and communities. Offered by Global and Community Health. Limited to three attempts.

Mason Core: Social/Behavioral Sciences

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GCH 332: *Health and Disease.* 3 credits.
Introduces the etiology, control, and prevention of human disorders from a public health perspective. Focuses on health problems and potential prevention throughout the life span. Offered by Global and Community Health. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GCH 335: *Applied Health Statistics.* 3 credits.
Emphasizes the statistical concepts and procedures used in applied public health practice and research. Students will learn to use SPSS to analyze, interpret, and present statistical findings. Offered by Global and Community Health. Limited to three attempts.

Recommended Prerequisite: Any Mason Core quantitative reasoning course.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GCH 350: *Health Promotion and Education.* 3 credits.
Introduces the principles of health promotion and education, including history; philosophical and theoretical foundations; professional preparation, ethics, and responsibilities; and work settings. Assessment of health information/sources and the development of effective health promotion and education strategies for diverse populations are emphasized. Offered by Global and Community Health. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GCH 360: *Health and Environment.* 3 credits.
Examines principles and methods, risk factors, prevention and control, and policies related to the aspects of human health determined by biological, physical, and chemical factors in the environment at the local, regional, and global levels. Offered by Global and Community Health. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GCH 370: *Sexuality and Human Behavior.* 3 credits.
Introduction to human sexual behavior with an emphasis on the interaction between psychological, social, and biological factors. Topics include sexual differentiation and development, sexually transmitted infections and HIV, sexual orientation, patterns of sexual behavior, and the sexual health of individuals, communities, and global populations. Offered by Global and Community Health. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GCH 376: *Health Ethics, Leadership, and Advocacy.* 3 credits.
Examines legal and ethical issues in public health practice and the skills necessary for effective leadership. Includes personal and organizational ethics, management and leadership styles, and public health advocacy. Offered by Global and Community Health. Limited to three attempts.

Recommended Prerequisite: GCH 350.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GCH 380: *Public Health Research Methods.* 3 credits.
Emphasizes the formation of public health research questions and selection of appropriate study designs to address them. Offered by Global and Community Health. Limited to three attempts.

Specialized Designation: Mason Impact.

Registration Restrictions:
Required Prerequisites: GCH 300^{C} or 300^{XS}.

[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

GCH 405: *Global Health Interventions: History and Systems.* 3 credits.
Examines the history, development, and implementation of international health policies and programs, with an emphasis on maternal and child health, undernutrition, and infectious diseases. Offered by Global and Community Health. Limited to three attempts.

Recommended Prerequisite: GCH 205

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GCH 406: *Global Health Interventions: Emerging Issues.* 3 credits.
Examines strategies for addressing emerging global health issues, with an emphasis on noncommunicable diseases, aging, mental health, and injuries. Offered by Global and Community Health. Limited to three attempts.

Recommended Prerequisite: GCH 205.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GCH 410: *Physical Activity and Public Health.* 3 credits.
Examines the theory, discipline and practice of the emerging field of physical activity and public health. At the population level, physical activity assessment techniques are addressed as well as the effects of physical activity on health. Community-level needs and programs are also analyzed. Offered by Global and Community Health. Limited to three attempts. Equivalent to RHBS 410.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GCH 411: *Health Program Planning and Evaluation.* 3 credits.
Addresses planning, implementation and evaluation of highly effective health programs. Emphasis is placed on using evidence-based approaches to program design and evaluation and working productively with communities. Offered by Global and Community Health. Limited to three attempts.

Specialized Designation: Writing Intensive in Major

Registration Restrictions:
Required Prerequisites: (GCH 310[C] or 310[XS]) and (GCH 380[C] or 380[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GCH 412: *Fundamentals of Epidemiology.* 3 credits.
Explores health research methods for measuring population health, designing and implementing observational and experimental studies, reading health science publications, and applying research findings to global and community health. Offered by Global and Community Health. Limited to three attempts.

Recommended Prerequisite: One of the following: GCH 335, STAT 250, BIOL 214, OM 210, PSYC 300, or SOCI 313.

Registration Restrictions:
Enrollment is limited to students with a major, minor, or concentration in Community Health, Global Health or Public Health.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GCH 426: *Global Emerging Infectious Diseases.* 3 credits.
Explores emerging infectious diseases with an emphasis on prevention and control interventions at the local through global levels. Offered by Global and Community Health. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GCH 445: *Social Determinants of Health.* 3 credits.
Examine the social determinants of health and the application of this framework to social work and public health policy and practice interventions. Explore the many social justice factors that affect health and consider which community systems and social change approaches may decrease or eliminate health inequities. Offered by Global and Community Health. Limited to three attempts. Equivalent to SOCW 445.

Recommended Prerequisite: 45 credits or permission of the instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GCH 450: *Culture, Sexuality and the Global AIDS Epidemic.* 3 credits.
Examines how the cultural values and mores regarding sexuality shape HIV/AIDS social policy and how these values and mores facilitate and hinder prevention and care efforts. Also examines several sexuality-related topics that interface with culture (e.g., gender, the sex industry, homosexuality) and the effectiveness of prevention and care initiatives around such issues as condom use, blood donation restrictions, immigration laws, sex education, and HIV testing. Offered by Global and Community Health. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GCH 465: *Community Health Capstone.* 3 credits.
Analyzes current public health issues, and policies and program used to address these issues. Integrates and applies skills and knowledge learned across the community health curriculum to develop a program that addresses a current public health issue. Develops professional skills

necessary for the field of public health. Offered by Global and Community Health. Limited to three attempts.

Mason Core: Capstone

Specialized Designation: Writing Intensive in Major

Registration Restrictions:
Required Prerequisites: GCH 380[C] or 380[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GCH 466: *Physical Activity in Public Health Capstone.* 3 credits.
Analyzes current physical activity and public health issues, policies, and programs used to address these issues. Integrates and applies skills and knowledge learned across the community health curriculum to develop a legislative advocacy plan that addresses a current physical activity and public health issue. Develops professional skills necessary for the field of public health. Offered by Global and Community Health. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: ((GCH 376[C] or 376[XS]) and (GCH 380[C] or 380[XS]) and (GCH 410[C] or 410[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GCH 480: *Health Maintenance and Health Aspects of Aging.* 3 credits.
Studies physiological and psychological factors that influence health and have implications for preventive measures in disease and health disorders. Examines nutrition, nature of health problems, and methods of assessing physical and psychological needs. Offered by Global and Community Health. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GCH 491: *Study Abroad in Public Health.* 0-6 credits.
Study abroad under supervision of George Mason University faculty. Course topics, content and locations vary. Offered by Global and Community Health. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GCH 494: *Special Topics in Global and Community Health.* 3 credits.
Selected topics analyzing specialized areas in global and community health. Notes: Content varies. Lecture, seminar, laboratory, workshops. Offered by Global and Community Health. May be repeated within the term for a maximum 12 credits.

Specialized Designation: Topic Varies

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GCH 497: *Pre-Internship Seminar.* 1 credit.
Prepares students for future professional roles including the GCH 498 internship. The coursework will include resume and cover letter writing, interviewing skills, networking, communications, professionalism, job search strategies, and relationship dynamics in the workplace. Students will select and prepare for a possible GCH internship. Notes: This course must be completed with a grade of B or better in order to be considered for enrollment in GCH 498 Community Health Internship. Offered by Global and Community Health. Limited to three attempts.

Recommended Prerequisite: GCH 300 and completion of 60 credit hours, or instructor's permission.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GCH 498: *Global and Community Health Internship.* 3,6 credits.
Provides advanced students with the opportunity to apply community health knowledge while working under the supervision of a community preceptor in a local health organization. Students submit an application to the GCH internship coordinator the semester prior to enrollment for review. Students who have demonstrated academic excellence will receive priority internship placement. Notes: A criminal background check and proof of vaccination status may be required of students prior to beginning an internship. This course provides experiential learning in a community health organization under the direction of a faculty advisor and a preceptor in the community health organization. Students are expected to understand the roles and functions of the community health organization and complete a project approved by the faculty advisor and the preceptor. Offered by Global and Community Health. May be repeated within the degree for a maximum 6 credits.

Recommended Corequisite: GCH 497 with B or better.

Schedule Type: Internship

Grading:
This course is graded on the Satisfactory/No Credit scale.

GCH 499: *Independent Study in Global and Community Health.* 1-6 credits.
Provides individual study of a particular problem area in global and community health research, theory development, or education under the direction of faculty. Offered by Global and Community Health. May be repeated within the term for a maximum 6 credits.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

500 Level Courses

GCH 500: *Foundations of Public Health.* 3 credits.
Focuses on foundational principles and practices of public health, including historical origins, professional competencies, ethics, core functions and essential services, determinants of health, cultural competence, and communication strategies for diverse populations. Offered by Global and Community Health. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GCH 515: *Lesbian, Gay, Bisexual, Transgender, and Queer Health.* 3 credits.
Examines health status and health disparities among lesbian, gay, bisexual, transgender, and queer (LGBTQ) communities across the lifespan. Measurement and methodological considerations in LGBTQ health research, as well as health-related interventions targeting LGBTQ populations will be emphasized. Notes: Offered every other year. Upper level undergraduates interested in taking this course are encouraged to contact the instructor. Offered by Global and Community Health. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

GCH 535: *Public Health Preparedness and Response.* 3 credits.
Examines principles and practices of preparedness for and response to all-hazards, with a focus in the US and select global applications. Provides an overview of roles of public health workers and organizations in emergencies. Discusses significance of collaborating and coordinating with emergency management agencies and other stakeholders. Also reviews at-risk individuals, behavioral health, ethical, and legal issues during public health emergencies. Offered by Global and Community Health. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GCH 543: *Global Health.* 3 credits.
Examines the major causes of morbidity, mortality, and disability in high, middle, and low income countries and the social, economic, and environmental factors that contribute to the global burden of disease. Offered by Global and Community Health. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GCH 560: *Environmental Health.* 3 credits.
Examines principles and methods, risk factors, prevention and control, and policies related to the aspects of human health determined by biological, physical, and chemical factors in the environment at the local, regional, and global levels. Offered by Global and Community Health. May not be repeated for credit.

Specialized Designation: Green Leaf Related Course

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

GCH 565: *Public Health Toxicology.* 3 credits.
Focuses on the general mechanisms of toxicity and direct and indirect effects of major environmental and occupational agents. Considers the genetic, physiologic, and psychosocial factors that affect susceptibility to adverse health outcomes associated with environmental or occupational hazard exposure. Offered by Global and Community Health. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

GCH 571: *HIV/AIDS: Concepts, Principles, and Interventions.* 3 credits.
Overview of HIV disease, including retrospective and current concepts and analyses, global and societal effect, and cutting-edge research. Examines development of therapeutic tools and skills to educate, reduce risks, control infection, and affect care and healing of client, family, and community, and issues of increasing dilemma for health care professionals. Offered by Global and Community Health. May not be repeated for credit. Equivalent to NURS 571.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GCH 591: *Study Abroad in Public Health.* 3 credits.
Study abroad under supervision of George Mason University faculty. Course topics, content and locations vary. Offered by Global and Community Health. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GCH 594: *Special Topics in Global and Community Health.* 3 credits.
Selected topics analyzing specialized areas in health care. Notes: Content varies. Lecture, seminar, laboratory, and workshops. Offered by Global and Community Health. May be repeated within the degree for a maximum 6 credits. Equivalent to HAP 594.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

600 Level Courses

GCH 600: *Health Promotion Methods.* 3 credits.
Fundamental principles and practices of public health promotion and education, including historical origins; professional responsibilities; ethics; health behavior and learning theories; models for planning, implementing and evaluating programs; health literacy; public health advocacy; and the development, selection and implementation of effective instructional materials, methods, and interventions. Offered by Global and Community Health. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GCH 601: *Introduction to Biostatistics.* 3 credits.
Applies selected biostatistics techniques to public health and health system management issues. Includes univariate and bivariate statistics, and regression analysis. Offered by Global and Community Health. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GCH 604: *Fundamentals of Epidemiology and Biostatistics.* 3 credits.
Introduces methods for measuring population health and designing epidemiological studies, integrating statistical inference and interpretation of epidemiological data. Offered by Global and Community Health. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GCH 607: *Evidence-Based Public Health Practice.* 3 credits.
Examines strategies for implementing evidence-based approaches in public health practice by applying principles of scientific reasoning and

the systematic use of data. Offered by Global and Community Health. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (GCH 604[B-], 604[XS], 712[B-] or 712[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GCH 609: *Community Assessment and Partnerships.* 3 credits.
Examines strategies for conducting community assessments using community-based participatory approaches to identify factors affecting the health and well-being of population and community health. Offered by Global and Community Health. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GCH 610: *Health Behavior Theory.* 3 credits.
Introduces students to the fundamentals of social and behavioral sciences, emphasizing current health behavior theories and models. Students develop an understanding of the theoretical and scientific basis of health promotion/health education interventions and develop community need and asset assessment skills. Offered by Global and Community Health. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GCH 611: *Health Program Planning and Evaluation.* 3 credits.
Addresses the process of program planning, development, and fundamental evaluation principles, emphasizing health promotion programs. Offered by Global and Community Health. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: GCH 609[B-] or 609[XS].
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GCH 618: *Environmental and Occupational Risk Assessment.* 3 credits.
Focuses on how environmental and occupational health risks are identified and quantitatively characterized. Introduces risk communication strategies for technical and non-technical audiences. Introduces students to the development of testable models of chemical exposure. Offered by Global and Community Health. May not be repeated for credit.

Recommended Corequisite: GCH 560.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

GCH 620: *Public Health Promotion Strategies.* 3 credits.
Examines the fundamental principles and practices of public health promotion and education, including historical origins; professional responsibilities, competencies, and ethics; structurally and culturally competent programs; health literacy and communication; public health advocacy; and the design of population specific health promotion materials, methods, and evidence-based interventions. Offered by Global and Community Health. May not be repeated for credit.

Recommended Prerequisite: GCH 610

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

GCH 626: *Migrant Health.* 3 credits.
Examines principles and methods for addressing the health concerns of migrant and mobile populations, including immigrants, refugees, asylum seekers, internal migrants, and internally displaced persons. Offered by Global and Community Health. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GCH 632: *SAS for Health Research.* 3 credits.
Introduces students to data management and analysis in the SAS statistical package environment. Guides students through the selection and execution of appropriate analyses for different types of data. Teaches students appropriate written presentation and interpretation of data analysis results. Examples focus on applications to public health research. Offered by Global and Community Health. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (GCH 601[B-], 601[XS], 604[B-], 604[XS], 804[B-], 804[XS], HAP 602[B-], 602[XS], 719[B-] or 719[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

GCH 640: *Global Infectious Diseases.* 3 credits.
Examines ethical approaches for the prevention and control of infectious and parasitic diseases of global importance. Offered by Global and Community Health. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

GCH 645: *U.S. and Global Public Health Systems.* 3 credits.
Examines the organization, financing, and delivery of health services for individuals and populations in the United States and across the globe. Compares international health systems and policies. Offered by Global and Community Health. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GCH 650: *Global Non-Communicable Diseases.* 3 credits.
Examines sustainable, evidence-based approaches for the prevention and management of NCDs of global importance. Offered by Global and Community Health. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GCH 651: *Behavioral Research Methods.* 3 credits.
Explores quantitative and qualitative research methods, principles and techniques necessary for implementation of health science research. Offered by Global and Community Health. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: GCH 601[B-], 601[XS], 804[B-] or 804[XS].
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

GCH 690: *Independent Study.* 1-3 credits.
In-depth studies of selected area of health science theory, research, or practice under direction of faculty. Offered by Global and Community Health. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Research

Grading:
This course is graded on the Graduate Regular scale.

GCH 691: *Project Management in Public Health.* 3 credits.
Course examines project management roles and environments, the project lifecycle and various techniques of work planning, and control and evaluation to achieve project objectives. Emphasizes leadership, communication, grant writing and ethics. Offered by Global and Community Health. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

700 Level Courses

GCH 700: *Social and Ecological Determinants of Health.* 3 credits.
Examines the evolution and transformation of public health in the United States and globally. Explores the social and ecological determinants of health that are associated with health disparities, and the public health methods that are essential for Public Health 3.0. Analyzes the models, frameworks, methods, and policies that can be used to bridge the research-practice gap in public health. Offered by Global and Community Health. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

GCH 712: *Introduction to Epidemiology.* 3 credits.
Explores epidemiological methods for measuring population health, designing and implementing observational and experimental studies, critically reading the public health literature, and applying research findings to global and community health. Offered by Global and Community Health. May not be repeated for credit.

Recommended Prerequisite: Graduate level statistics course

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GCH 722: *Infectious Disease Epidemiology.* 3 credits.
Focuses on the epidemiology of infectious and parasitic diseases. Emphasizes study design and data analysis to support the prevention and control of communicable diseases. Offered by Global and Community Health. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (GCH 712^{B-}, 712^{XS}, 604^{B-} or 604^{XS}).
$^{B-}$ Requires minimum grade of B-.
^{XS} Requires minimum grade of XS.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GCH 726: *Advanced Methods in Epidemiology I.* 3 credits.
Develops epidemiological skills through critical review of public health literature and synthesis of evidence. Focuses on interpretation and communication of epidemiological methods and biostatistical analyses. Offered by Global and Community Health. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: GCH 712^{B-} or 712^{XS}.
$^{B-}$ Requires minimum grade of B-.
^{XS} Requires minimum grade of XS.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

GCH 727: *Advanced Methods in Epidemiology II.* 3 credits.
Focuses on the development of testable research hypotheses that address issues of public health significance, utilizing principles of causal inference. Emphasis on linkage of research hypothesis to appropriate and relevant epidemiologic study designs. Offered by Global and Community Health. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (GCH 726^{B-} or 726^{XS}) and (GCH 804^{B-} or 804^{XS}).
$^{B-}$ Requires minimum grade of B-.
^{XS} Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

GCH 728: *Meta-Analysis for Population Health Research.* 3 credits.
Focuses on conceptual understanding of the quantitative methods used to synthesize evidence on population health issues. Methods for pooling evidence across independent studies, pooling binary/continuous outcomes, differences between fixed and random effects models, and guidelines for appraising published systematic reviews/meta-analyses. Offered by Global and Community Health. May not be repeated for credit.

Recommended Prerequisite: GCH 726

Registration Restrictions:
Required Prerequisites: (GCH 805[B-], 805[XS], HAP 719[B-], 719[XS], NURS 805[B-] or 805[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

GCH 730: *Interventions in Public Health.* 3 credits.
Application of intervention mapping to the design of theory-based interventions for target populations; collaboration with communities to design and implement interventions; selection of evidence-based interventions (EBIs); adaptation of EBIs for new populations; dissemination of EBIs; and cultural and ethical issues related to intervention development, implementation, evaluation, and sustainability. Offered by Global and Community Health. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: GCH 609[B] and 610[B].
[B] Requires minimum grade of B.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GCH 731: *Monitoring and Evaluation of Public Health Interventions.* 3 credits.
Examines frameworks, models, and strategies for monitoring and evaluating public health interventions, including policies and programs. Special emphasis on the development of evaluation and communication plans. Offered by Global and Community Health. May not be repeated for credit.

Registration Restrictions:
Required Prerequisite: GCH 730[B].
[B] Requires minimum grade of B.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

GCH 732: *Chronic Disease Epidemiology.* 3 credits.
Focuses on the epidemiology of chronic diseases, including cancers, cardiovascular and lung diseases, and mental health disorders. Emphasizes study design, critical reading, and public health approaches to disease control, such as surveillance and screening. Offered by Global and Community Health. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (GCH 712[B-], 712[XS], 604[B-] or 604[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

GCH 742: *Behavioral Epidemiology.* 3 credits.
Focuses on applying epidemiological principles to the study of behavior and human health, emphasizing the role of behavior in public health, determinants of behavior, and research methods for studying health and disease in relation to behavior. Notes: Offered every other year. Offered by Global and Community Health. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (GCH 712[B-], 712[XS], 604[B-] or 604[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

GCH 752: *Nutritional Epidemiology.* 3 credits.
Focuses on the examination of the methodologies of dietary assessment and their application to design, conduct, analysis, and interpretation of epidemiologic studies related to nutrition. Introduces the practical application of nutritional epidemiology to health programs and policy. Notes: Offered every other year. Offered by Global and Community Health. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (GCH 712[B-], 712[XS], 604[B-] or 604[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GCH 762: *Environmental Epidemiology.* 3 credits.
Focuses on applying epidemiological principles to the study of the environment exposures and human health, emphasizing research methods and data analysis, critical review of research, communication of research results, and applications to public health. Offered by Global and Community Health. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (GCH 712[B-], 712[XS], 604[B-] or 604[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

GCH 772: *Social Epidemiology.* 3 credits.
Focuses on applying epidemiological principles to the study of social factors and human health. Prepares students to measure population-level social determinants of health and quantitatively evaluate their relationship with health and disease. Requires students to translate information and analyses into summaries suitable for technical and non-technical audiences. Offered by Global and Community Health. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (GCH 712[B-], 712[XS], 604[B-] or 604[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GCH 780: *Practicum Seminar.* 0 credits.
Provides students with guidance and preparation for engaging in the public health practicum. Notes: This course should be taken one semester prior to enrollment in the GCH 790 Practicum in Public Health and GCH 792 Integrative Learning Experience. Offered by Global and Community Health. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Special scale.

GCH 782: *International Research Ethics and Methods.* 3 credits.
Prepares students to conduct global and community health research. Discusses ethical issues in international health research. Develops plans for identifying a research project, collecting and analyzing data, and reporting results of international health research. Offered by Global and Community Health. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: ((GCH 543[B-] or 543[XS]) and (GCH 604[B-] or 604[XS])).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GCH 790: *Practicum in Public Health.* 3 credits.
The practicum provides students with an in-depth supervised experience in an approved public health organization. The practicum will require students to complete a project related to an actual public health issue that is a focus within the organization. Offered by Global and Community Health. May not be repeated for credit.

Recommended Prerequisite: Students must be enrolled in the MPH program in good standing and have completed 21 credit hours in the MPH program.

Registration Restrictions:
Required Prerequisites: (GCH 780[C], 780[XS] or 780[XP]) and (GCH 792[*B-] or 792[*XS]).
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.
[XP] Requires minimum grade of XP.
[B-] Requires minimum grade of B-.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Graduate Special scale.

GCH 792: *Integrative Learning Experience.* 0 credits.
Provides an integrative learning experience to demonstrate synthesis of the Master of Public Health foundational and concentration competencies. Students produce a written product appropriate to educational and professional objectives. Taken in conjunction with GCH 790 and is part of the MPH practicum requirement. Offered by Global and Community Health. May not be repeated for credit.

Recommended Prerequisite: Must be enrolled in the MPH program in good standing and have completed at least 21 credit hours in the degree program.

Registration Restrictions:

Required Prerequisites: (GCH 790[*B-] or 790[*XS]) and (GCH 780[C], 780[XS] or 780[XP]).
[*] May be taken concurrently.
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.
[C] Requires minimum grade of C.
[XP] Requires minimum grade of XP.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Satisfactory/No Credit scale.

GCH 794: *Global Health Research Capstone.* 3 credits.
Provides a supervised, collaborative research experience on a global health topic that allows students to synthesize, integrate, and apply the knowledge and skills acquired in coursework. Offered by Global and Community Health. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (GCH 651[B-] or 651[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students in the HH-MS-GLOH program.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Special scale.

GCH 795: *Advanced Special Topics in Global and Community Health.* 1-3 credits.
Advanced special topics course to address in-depth study of contemporary areas of global and community health insufficiently covered in other courses. Notes: Fulfills elective requirement for MS in global health degree and global health certificate program. Topics vary. May take up to 6 credits within their degree program. Offered by Global and Community Health. May be repeated within the term for a maximum 6 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: Must be enrolled in a graduate program and have permission of the instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

GCH 799: *Thesis Research.* 1-6 credits.
Thesis research and writing. Offered by Global and Community Health. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Completion of 30 hours in the Master of Science program.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Schedule Type: Thesis

Grading:
This course is graded on the Satisfactory/No Credit scale.

800 Level Courses

GCH 804: *Biostatistics for Public Health I.* 3 credits.
Examines regression modeling including ANOVA techniques, linear regression and logistic regression. Using public health and health care research data, students will apply statistical methods and interpret output from a statistical computing package. Offered by Global and Community Health. May not be repeated for credit.

Recommended Prerequisite: A graduate-level statistics course.

Registration Restrictions:
Required Prerequisites: (GCH 604[B-] or 604[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GCH 805: *Biostatistics for Public Health II.* 3 credits.
Examines data analysis techniques for data management, data cleaning, exploratory data analysis, and statistical modeling, and applies these approaches to public health data using a statistical computing package. Introduces advanced statistical analysis techniques including Poisson regression, longitudinal data analysis, survival analysis, and analysis of survey data. Offered by Global and Community Health. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: GCH 804[B-] or 804[XS].
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GCH 806: *Advanced Multivariate Statistics and Data Analysis for Health Care Research.* 3 credits.
Examines canonical correlation, discriminant analysis, factor analysis and causal analysis (path models and structural equation modeling). Students analyze and interpret data using these statistical techniques.

Offered by Global and Community Health. May not be repeated for credit. Equivalent to NURS 806.

Recommended Prerequisite: GCH 805 or NURS 805, or equivalent multivariate statistics course.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GCH 807: *Measurement Theories and Applications in Public Health Research.* 3 credits.
Theories, principles, and techniques presented as foundation for the development and evaluation of instruments for use in health care research. Includes review of statistical techniques required for understanding measurement theory, reliability, validity, item analysis, and instrument construction. Students required to design, construct, administer, analyze, and evaluate an original instrument or evaluate an existing instrument in health care research. Notes: Completion of GCH 805/NURS 805 or GCH 806/NURS 806 is highly recommended. Offered by Global and Community Health. May not be repeated for credit.

Recommended Prerequisite: GCH 805/NURS 805 or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GCH 814: *Biostatistics for Public Health III.* 3 credits.
Examines statistical techniques for the analysis of longitudinal, multilevel, survival, and other epidemiologic data. For epidemiologic research hypotheses, students will select appropriate state-of-the-art statistical methods, utilize statistical computing software to evaluate results, and communicate scientific findings. Offered by Global and Community Health. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (GCH 805[B-] or 805[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GCH 824: *Advanced Data Analysis for Epidemiologic Research.* 3 credits.
Emphasizes theory and practice of advanced computational methods for controlling for confounding, evaluating effect modification, and approaches for addressing missing data, using multivariable and other models in the context of major epidemiological study designs. Offered by Global and Community Health. May not be repeated for credit.

Registration Restrictions:
Required Prerequisite: GCH 814[B].
[B] Requires minimum grade of B.

Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GCH 826: *Design of Epidemiologic Research.* 3 credits.
Focuses on the application of strategies for addressing key methodologic challenges that arise when carrying out epidemiologic research and incorporates experiential learning components. Offered by Global and Community Health. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: GCH 727[B] and 805[B].
[B] Requires minimum grade of B.

Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GCH 830: *Research Grant Writing for Public Health.* 3 credits.
Examines universal principles and concepts of writing effective research grant applications for public health with the emphasis on submitting proposals to agencies that support public health research. Offered by Global and Community Health. May not be repeated for credit.

Recommended Prerequisite: GCH 726 and GCH 805/NURS 805/HAP 719

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

GCH 851: *Advanced Research Designs and Analysis for Social and Behavioral Health Sciences.* 3 credits.
Examines and analyzes data from group-randomized and controlled quasi-experimental trials, including longitudinal and time-series experiments in social and behavioral public health research. Offered by Global and Community Health. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: GCH 804[B] and 651[B].
[B] Requires minimum grade of B.

Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GCH 880: *Epidemiologic Research Seminar.* 3 credits.
Facilitates the development of students' dissertation research through an emphasis on critical review of the epidemiologic research literature. Includes integrative discussions of contemporary challenges in epidemiology. Offered by Global and Community Health. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: GCH 727[*B] and 814[*B].
[*] May be taken concurrently.
[B] Requires minimum grade of B.

Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

GCH 890: *Doctoral Seminar.* 0-3 credits.
Explores contemporary issues and innovations in public health research and population health. Focuses on the responsible conduct of research. Emphasizes professional development activities, such as scientific communication skills, preparing for the job market, and career planning. Offered by Global and Community Health. May be repeated within the degree for a maximum 3 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Satisfactory/No Credit scale.

900 Level Courses

GCH 998: *Doctoral Dissertation Proposal.* 1-9 credits.
Focuses on the development of a doctoral dissertation proposal in their area of concentration under the direction of their dissertation committee. Includes the development of research hypotheses, literature review, study methods, data analysis, and detailed publication strategy. Offered by Global and Community Health. May be repeated within the degree for a maximum 12 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

GCH 999: *Doctoral Dissertation.* 1-9 credits.
Doctoral dissertation research and defense under the direction of their dissertation committee. Offered by Global and Community Health. May be repeated within the degree for a maximum 18 credits.

Registration Restrictions:
Required Prerequisite: GCH 998.

Enrollment limited to students with a class of Advanced to Candidacy.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

Government (GOVT)

100 Level Courses

GOVT 101: *Democratic Theory and Practice.* 3 credits.
Comparative exploration; topics include contemporary analysis of the meanings of liberty, equality, representation, property rights, voting rights, and civil responsibilities. Offered by Schar School of Policy & Govt. Limited to three attempts.

Mason Core: Social/Behavioral Sciences

Schedule Type: Lecture, Recitation

Grading:
This course is graded on the Undergraduate Regular scale.

GOVT 103: *Introduction to American Government.* 3 credits.
An overview of key organizing principles of American government, including its institutions, history, and various aspects of political participation. Offered by Schar School of Policy & Govt. Limited to three attempts.

Mason Core: Social/Behavioral Sciences

Schedule Type: Lecture, Recitation

Grading:
This course is graded on the Undergraduate Regular scale.

GOVT 132: *Introduction to International Politics.* 3 credits.
Nature of international politics, approaches to study of international politics, state and nonstate actors in international system, patterns of action and interaction between nation-states, international institutions, and major global issues. Offered by Schar School of Policy & Govt. Limited to three attempts.

Mason Core: Global Understanding

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GOVT 133: *Introduction to Comparative Politics.* 3 credits.
Discusses methods and subject matter of comparative political analysis. Includes political systems, politics, participation in politics,

government structures, policy-making process, and evaluation of political performance. Offered by Schar School of Policy & Govt. Limited to three attempts.

Mason Core: Global Understanding

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GOVT 134: *Grand Challenges to Human Security.* 3 credits.
The complexity and diversity of the international system gives rise to myriad security threats outside of the traditional force- and conflict-based study of international security. This course provides the tools to understand, reflect on, and critically examine broad contextual threats to global security, including: demographic change, environmental (climate change, pollution and habitat destruction) change, technological change (impact on jobs, decent work and job creation), sustainable development (keeping in mind climate change and impact on agriculture, for example), forced migration, humanitarian emergencies, and the United Nations (UN) human security approach to identify challenges and approaches to tackle these issues.Offered by Policy, Govt, and Intl Affairs. Limited to three attempts.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

300 Level Courses

GOVT 300: *Research Methods and Analysis.* 4 credits.
Emphasizes asking clear, researchable questions and using appropriate evidence to answer them. Introduces broad range of evidence including quantitative and qualitative information. Studies design and analysis of surveys, government archives, case studies, and interpretations of events in journals. Examines ethical implications of information technologies. Notes: Required for all majors in government and international politics, and public administration. Strongly recommended before or during first semester of enrolling in 300-level courses. Offered by Schar School of Policy & Govt. Limited to three attempts.

Mason Core: Info Tech & Computing

Recommended Prerequisite: 60 hours or permission of instructor.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GOVT 301: *Public Law and the Judicial Process.* 3 credits.
American judicial organization and operation, role of the Supreme Court in policy formation, and selected constitutional principles. Offered by Schar School of Policy & Govt. Limited to three attempts. Equivalent to CRIM 301.

Recommended Prerequisite: GOVT 103.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GOVT 302: *American Political Development.* 3 credits.
Examines American political development, both in itself and compared to other nations. Addresses the extent to which theUnited States has or has not been exceptional in its development as a nation state. Offered by Schar School of Policy & Govt. Limited to three attempts.

Recommended Prerequisite: GOVT 103.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

GOVT 304: *American State and Local Government.* 3 credits.
Nature, organization, functions, and problems of American state and local governments. Notes: Students may not receive credit for GOVT 204 and 304. Offered by Schar School of Policy & Govt. Limited to three attempts.

Recommended Prerequisite: GOVT 103.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GOVT 305: *Contemporary American Federalism.* 3 credits.
Legal, administrative, fiscal, and political dimensions of evolving American federalism. Offered by Schar School of Policy & Govt. Limited to three attempts.

Recommended Prerequisite: GOVT 103.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GOVT 307: *Legislative Behavior.* 3 credits.
Organization, processes, functions, and roles of legislature and U.S. Congress members. Topics include state legislatures and cross-national comparisons as time and resources permit. Offered by Schar School of Policy & Govt. Limited to three attempts.

Recommended Prerequisite: GOVT 103.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GOVT 308: *The American Presidency.* 3 credits.
Survey of modern presidency, including constitutional origins of office, growth and influence of White House staff, Cabinet, presidential appointees and control of executive branch, relations with Congress, and domestic and national security policy making. Offered by Schar School of Policy & Govt. Limited to three attempts.

Recommended Prerequisite: GOVT 103.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GOVT 309: *Government and Politics of Metropolitan Areas.* 3 credits.
Government, politics, and problems of metropolitan centers and surrounding areas. Offered by Schar School of Policy & Govt. Limited to three attempts.

Recommended Prerequisite: GOVT 103.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GOVT 311: *Public Opinion and Electoral Behavior.* 3 credits.
Studies actions of voters, candidates, and political parties in relation to the expression of relevant public opinion in a democratic system. Offered by Schar School of Policy & Govt. Limited to three attempts.

Recommended Prerequisite: GOVT 103 and 300.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GOVT 312: *Political Parties and Campaigns.* 3 credits.
Characteristics and functions of political parties, influence of parties and other political forces on electoral decisions, and emphasis on parties' inability or ability to hold government accountable to citizens. Offered by Schar School of Policy & Govt. Limited to three attempts.

Recommended Prerequisite: GOVT 103.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GOVT 313: *Political Psychology.* 3 credits.
Examines political topics through a psychological lens. Review of theoretical approaches, methods and themes. Political psychology has been used to explore the motivation of presidents, why some groups will seek to kill off other groups through acts of genocide, how the authoritarian state can emerge, and what goes through your mind as you go to cast your ballot on Election Day. Offered by Schar School of Policy & Govt. Limited to three attempts.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

GOVT 318: *Interest Groups, Lobbying, and the Political Process.* 3 credits.
Role, internal operations, strategies, and activities of interest groups. Evaluates ability of these groups to enable citizens to influence or control government and enhance democratic process. Considers conditions under which social movements become, or fail to become, effective interest groups. Offered by Schar School of Policy & Govt. Limited to three attempts.

Recommended Prerequisite: GOVT 103.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GOVT 319: *Issues in Government and Politics.* 1-3 credits.
Studies special issues relevant to government and politics. Topics announced in advance. Examples include politics and the arts, ethnic conflict and the political system, gender politics, and changing dynamics in political institutions. Notes: May be repeated when topic is different with permission of department. Offered by Schar School of Policy & Govt. May be repeated within the term for a maximum 9 credits.

Recommended Prerequisite: GOVT 103.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GOVT 322: *International Relations Theory.* 3 credits.
Advanced inquiry into international relations. Studies theories, concepts of international relations, and major forces and issues in international politics. Offered by Schar School of Policy & Govt. Limited to three attempts.

Recommended Prerequisite: GOVT 132 or 133.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GOVT 323: *Classical Western Political Theory.* 3 credits.
Lectures, discussions of developments in Western tradition of political thought from time of Greek city-state to late medieval Christendom. Topics include nature and purpose of politics, relationship between individual and state, political significance of religion and tradition, and concept of natural law. Offered by Schar School of Policy & Govt. Limited to three attempts. Equivalent to PHIL 323.

Recommended Prerequisite: GOVT 101, or three credits of Philosophy.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GOVT 324: *Modern Western Political Theory.* 3 credits.
Lectures, discussions of developments in Western tradition of political thought from Renaissance to mid-19th century. Topics include rise of individualism in political theory, early developments in social contact theory, theories of radical popular sovereignty, and early criticisms of liberal theory. Offered by Schar School of Policy & Govt. Limited to three attempts. Equivalent to PHIL 324.

Recommended Prerequisite: GOVT 101, or three credits of Philosophy.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GOVT 327: *Contemporary Western Political Theory.* 3 credits.
Lectures, discussions of developments in Western tradition of political thought from mid-19th century to today. Different sections focus on various political theories that have been influential during this period, such as liberal, libertarian, conservative, communitarian, Marxist, feminist, and postmodern thought. Notes: May be repeated when topic

is different. Offered by Schar School of Policy & Govt. May be repeated within the term for a maximum 12 credits. Equivalent to PHIL 327.

Recommended Prerequisite: GOVT 101 or three credits of Philosophy.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GOVT 328: *Global Political Theory.* 3 credits.
Theory and history of political community, governance, and development as understood around the world, including China, Japan, India, Africa, Latin America, and the Islamic world; relations of power in modern conceptions of the political; comparative visions of world order in the context of emerging global powers. Offered by Schar School of Policy & Govt. Limited to three attempts.

Specialized Designation: Non-Western Culture

Recommended Prerequisite: GOVT 101 or 133.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GOVT 329: *Issues in Political Theories and Values.* 1-3 credits.
Studies special issues relevant to theoretical and value aspects of government and politics. Topics announced in advance. Examples include ethics and politics, ethics and environmental policy, changing perspectives on civil rights and liberties, religion and politics, and changing views of public space. Notes: May be repeated when topic is different with permission of department. Offered by Schar School of Policy & Govt. May be repeated within the term for a maximum 9 credits.

Recommended Prerequisite: GOVT 103.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GOVT 331: *Government and Politics of Latin America.* 3 credits.
Contemporary political systems of Latin America, with emphasis on institutions, political processes, and political behavior. Presents case studies of several key Latin American politics; discusses problems of political development. Offered by Schar School of Policy & Govt. Limited to three attempts.

Recommended Prerequisite: GOVT 132, 133.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GOVT 332: *Government and Politics of the Middle East and North Africa.* 3 credits.
Societies of Middle East and North Africa and their response to impact of internal sociocultural-political determinants and external forces. Focuses on contemporary politics, ideologies, popular manifestations, institutions, and operations. Offered by Schar School of Policy & Govt. Limited to three attempts.

Specialized Designation: Non-Western Culture

Recommended Prerequisite: GOVT 132, 133.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GOVT 333: *Government and Politics of Asia.* 3 credits.
Government structures and political processes of Asian countries. Examines patterns of conflict and cooperation, and issues of economic development and political reform in rapidly changing world. Offered by Schar School of Policy & Govt. Limited to three attempts.

Specialized Designation: Non-Western Culture

Recommended Prerequisite: GOVT 132, 133.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GOVT 334: *Government and Politics of Europe.* 3 credits.
Examines governance and political systems in Europe at the national and supranational levels, with emphasis on actors, institutions, processes, and behavior. Explores key policies in a variety of fields, such as social policy, migration, and economic and monetary union. Offered by Schar School of Policy & Govt. Limited to three attempts.

Recommended Prerequisite: GOVT 132, 133.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GOVT 337: *Ethnic Politics in Western Europe and North America.* 3 credits.
Studies resurgence of ethnic nationalism in industrial democracies of Western Europe and North America, and the comparative analysis of policy issues related to ethnonationalism. Case studies drawn from the industrial democracies. Offered by Schar School of Policy & Govt. Limited to three attempts.

Recommended Prerequisite: GOVT 132, 133.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GOVT 338: *Government and Politics of Russia.* 3 credits.
Examines continuity and change in Russia's Soviet era and post-Soviet era politics and international relations. Offered by Schar School of Policy & Govt. Limited to three attempts.

Specialized Designation: Non-Western Culture

Recommended Prerequisite: GOVT 132, 133.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GOVT 339: *Issues in the Politics of Advanced Industrial Societies.* 1-3 credits.
Studies selected current political issues in industrial democracies of Western Europe and North America. Specific topics chosen each semester to reflect contemporary political concerns in these countries, but political process in advanced industrial countries is organizing principle throughout the course. Notes: May be repeated when topic is different. Offered by Schar School of Policy & Govt. May be repeated within the term for a maximum 9 credits.

Recommended Prerequisite: GOVT 103 or 133 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GOVT 340: *Central Asian Politics.* 3 credits.
Comparative examination of political change in Central Asia with attention to national identity formation, political economy, political conflict, political Islam, and democratization. Offered by Schar School of Policy & Govt. Limited to three attempts.

Specialized Designation: Non-Western Culture

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GOVT 341: *Chinese Foreign Policy.* 3 credits.
Discusses theories and practices of Chinese foreign policy decision making, which are then used to understand China's relations with United States, Japan, Russia, Europe, and its Asian neighbors, and China's policy in issues such as human rights, environmental protection, and nuclear nonproliferation. Offered by Schar School of Policy & Govt. Limited to three attempts.

Specialized Designation: Non-Western Culture

Recommended Prerequisite: GOVT 132, 133.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GOVT 342: *Diplomacy.* 3 credits.
Origins of organized diplomacy: tasks, procedures, instruments, and problems of diplomacy. Emphasizes current, future roles of diplomacy. Offered by Schar School of Policy & Govt. Limited to three attempts.

Recommended Prerequisite: GOVT 132, 133.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GOVT 343: *International Political Economy.* 3 credits.
Introduces international political economy. Examines interplay of economics and politics, and applies these to different issues. Focuses on issues of contemporary significance, with attention to historical issues and basic political and economic concepts. Offered by Schar School of Policy & Govt. Limited to three attempts.

Recommended Prerequisite: GOVT 132, 133; or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GOVT 344: *American Foreign Policy.* 3 credits.
Central issues surrounding the conduct of America's foreign relations, with special emphasis on structural and constitutional questions, national policy objectives abroad, and conduct of foreign policy in a democracy. Offered by Schar School of Policy & Govt. Limited to three attempts.

Recommended Prerequisite: GOVT 132, 133.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GOVT 345: *Islam and Politics.* 3 credits.
Covers politics of religion in Muslim societies; history, ideology, and practices of key individuals, movements, and institutions; case studies of political Islam in the Middle East, Asia, Africa, and the West; plurality and diversity of political expression in Muslim world; nature of democracy in Islam; and Islamic state. Offered by Schar School of Policy & Govt. Limited to three attempts.

Specialized Designation: Non-Western Culture

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GOVT 346: *American Security Policy.* 3 credits.
Approaches U.S. National security policy from perspective of organization and implementation of specific policies. Applies theoretical concerns to historic cases to illuminate problems that continue to challenge country. Offered by Schar School of Policy & Govt. Limited to three attempts.

Recommended Prerequisite: GOVT 132, 133.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GOVT 347: *International Security.* 3 credits.
Explores enduring security problems and new developments. Examines effects of international system on defense policies of states, particularly tensions of world caught between emerging interdependence and national demands. Encourages development of critical-thinking and group and oral presentation skills. Offered by Schar School of Policy & Govt. Limited to three attempts.

Recommended Prerequisite: GOVT 132.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GOVT 348: *Political Violence and Civil War.* 3 credits.
Covers major theories on the causes and consequences of political violence and civil war. Topics include the onset of civil wars, civil war processes, conflict termination, and post-conflict recovery. Covers practical public policy issues of conflict resolution and intervention, as well as methodological approaches and challenges in political violence research. Issues of political violence and civil war are explored in diverse world regions.Offered by Policy, Govt, and Intl Affairs. Limited to three attempts.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

GOVT 351: *Administration in the Political System.* 3 credits.
Administrative structures and processes in political setting of public management. Presents organization and administrative theory, critiques, and current practices; and examines impact of changes in social, political, and economic environment on concepts, models. Offered by Schar School of Policy & Govt. Limited to three attempts.

Recommended Prerequisite: GOVT 103.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GOVT 353: *Social Entrepreneurship.* 3 credits.
Introduces students to the different steps that social entrepreneurs work through to drive social change: identifying problem to address, developing a strategy to address the social need, fundraising, growing the organization, tracking results, and maximizing impact. Offered by Schar School of Policy & Govt. Limited to three attempts.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

GOVT 354: *Nonprofit Sector in Society.* 3 credits.
Introduces students to the thousands of soup kitchens, shelters, health clinics, educational institutions, arts agencies, and other organizations that make up the U.S. nonprofit sector. Topics covered include: the internal structure and operation of nonprofits; the role of nonprofits in delivering services, advocating for particular points of view, and providing vehicles for caring and self-expression; and the partnerships that nonprofits form with donors, government agencies, and businesses to address social problems. Offered by Schar School of Policy & Govt. Limited to three attempts.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

GOVT 355: *Public Personnel Administration.* 3 credits.
Analyzes techniques and tools in human resource management including merit system, classification, compensation, evaluation, recruitment, and labor relations. Emphasizes current legal and policy issues in personnel administration, such as diversity and privatization. Offered by Schar School of Policy & Govt. Limited to three attempts.

Recommended Prerequisite: GOVT 351.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GOVT 356: *Public Budgeting and Finance.* 3 credits.
Covers tools and techniques in budgeting and financial management in U.S. governments, including management of public financial institutions, budgetary process and reform, and relationship of public budgeting to national economic policy. Offered by Schar School of Policy & Govt. Limited to three attempts.

Recommended Prerequisite: GOVT 351.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GOVT 357: *Urban Planning.* 3 credits.
Reviews spatial, policy, and administration principles that guide urban planning activities in the United States. Outlines differences between theory and practice and provides tools, methods, and perspectives commonly incorporated into practice of urban planning and policy analysis. Offered by Schar School of Policy & Govt. Limited to three attempts.

Recommended Prerequisite: GOVT 351

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GOVT 358: *Nonprofit Financial Planning.* 4 credits.
Provides understanding of social mission and entrepreneurial cross pressures underlying financial planning and accounting in nonprofit sector. Topics include revenue sources and projections, entrepreneurial techniques, and cost analysis for nonprofit and nongovernmental entities. Lectures, student case studies. Offered by Schar School of Policy & Govt. Limited to three attempts.

Recommended Prerequisite: 60 credits or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GOVT 361: *Introduction to Environmental Policy.* 3 credits.
Environmental politics and policy making since the 1970s. Primarily U.S. focus, with some discussion of global issues. Examines policy strategies and outcomes, ethical and economic debates, political controversies, lawmaking and enforcement, and role of key players. Offered by Schar School of Policy & Govt. Limited to three attempts. Equivalent to EVPP 361.

Specialized Designation: Green Leaf Focused Course

Recommended Prerequisite: 30 credits.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GOVT 362: *Intermediate Environmental Policy.* 3 credits.
Examines environmental issues building on learning objectives from GOVT 361. Focuses on environmental and policy issues in the US and internationally, exploring the politics of nature and the interaction of environmental science and politics and resulting controversy. Risk and uncertainty loom large in most environmental issues. Covers "natural" disasters as well as direct "man-made" problems. Offered by Schar School of Policy & Govt. May be repeated within the degree for a maximum 12 credits. Equivalent to EVPP 362.

Recommended Prerequisite: EVPP 361 or GOVT 361 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GOVT 364: *Public Policy Making.* 3 credits.
Processes, agencies, and politics involved in the proposal making, implementation, evaluation, and revision of U.S. public policy. Offered by Schar School of Policy & Govt. Limited to three attempts.

Recommended Prerequisite: GOVT 103.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GOVT 365: *State and Regional Public Policy.* 3 credits.
Examines public policy decisions that affect local and state jurisdictions in context of federal system of government. Examines context, substance, and impact of such policies as housing, transportation, land use, crime prevention, service delivery, and health care. Offered by Schar School of Policy & Govt. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GOVT 366: *Public Policy Analysis.* 3 credits.
Methods of public policy analysis, evaluation, and research. Studies design and development of alternative courses of government action and evaluation of results, and problems in applying systematic analysis to political issues. Offered by Schar School of Policy & Govt. Limited to three attempts.

Recommended Prerequisite: GOVT 300.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GOVT 367: *Money, Markets and Economic Policy.* 3 credits.
Applies basic economic concepts and principles to issues facing the U.S. and global economies. Topics include productivity and economic growth, taxes, health care, globalization, income distribution and financial crises, with an emphasis on market structure, social institutions and the not-always rational behavior of investors and consumers. Offered by Schar School of Policy & Govt. Limited to three attempts. Equivalent to ECON 367.

Mason Core: Social/Behavioral Sciences

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

GOVT 368: *Tools for Economic Policy Analysis.* 3 credits.
This course outlines the economic framework for studying public policy, taking a more quantitative approach than GOVT 367. Topics include consumer and producer behavior under different market structures, how and why markets can fail to produce socially desirable outcomes, income distribution, and macroeconomic growth. Emphasizes using economic models to evaluate both market outcomes and policy interventions. Offered by Schar School of Policy & Govt. Limited to three attempts.

Recommended Prerequisite: GOVT 367.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

GOVT 398: *Study Abroad.* 3 credits.
Study abroad. Course topics, content, and locations vary. Notes: GOVT 398 may only be applied to a major or minor with prior written approval from the department. A maximum of 6 credits may be applied to the BA in government and international politics, the BS in public administration, or any minor offered by the Schar School of Policy and Government. Offered by Schar School of Policy & Govt. May be repeated within the term for a maximum 12 credits.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GOVT 399: *Research Practicum.* 1-3 credits.
Applies research methods in context of assisting with faculty research. Individualized sections taught by arrangement with full-time faculty. Methods adopted vary, but generally include library research, data collection, data analysis, and report construction. Offered by Schar School of Policy & Govt. May be repeated within the term for a maximum 6 credits.

Recommended Prerequisite: GOVT 300 and Permission of Instructor.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

GOVT 400: *Issues in Political Analysis.* 1-3 credits.
Studies special issues relevant to analytical approaches to studying government and politics. Topics announced in advance. Examples include advanced statistical methods, time series analysis, game theory, social network analysis, geographic information systems for politics, social science experiments, and causal inference. Notes: May be repeated when topic is different with permission of department. Offered by Schar School of Policy & Govt. May be repeated within the term for a maximum 9 credits. Offered by Schar School of Policy & Govt. May be repeated within the term for a maximum 9 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Required Prerequisites: GOVT 300[C] or 300[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

GOVT 407: *Law and Society.* 3 credits.
Explores relationship between law and society, including concept of law; origin, development, and role of law in society; and relationship between law and social change. Assesses different approaches and methodologies. Offered by Schar School of Policy & Govt. Limited to three attempts.

Recommended Prerequisite: CRIM 100 or GOVT 301.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GOVT 409: *Virginia Government and Politics.* 3 credits.
Examines history of politics in Virginia and current political issues. Particular attention to changing dynamics of political parties, key legislative issues, and policies of recent administrations. Offered by Schar School of Policy & Govt. Limited to three attempts.

Recommended Prerequisite: GOVT 103.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GOVT 412: *Politics and the Mass Media.* 3 credits.
Responsibilities and freedoms of mass media in democracy. Explores Influence of media on citizens' opinions, elections, and decisions of public officials. Offered by Schar School of Policy & Govt. Limited to three attempts. Equivalent to COMM 412.

Recommended Prerequisite: GOVT 103.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GOVT 414: *Politics of Race and Gender.* 3 credits.
Examines political, economic, and social impact of public policies and implications for race, gender, and age. Offered by Schar School of Policy & Govt. May be repeated within the term for a maximum 9 credits.

Recommended Prerequisite: GOVT 103.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GOVT 420: *American Political Thought.* 3 credits.
Major political values and theories in America from formation of American republic to present. Covers changes in American political values in crisis periods and contemporary American political theory including pluralism, elite theories of democracy, and empirical political theory. Offered by Schar School of Policy & Govt. Limited to three attempts.

Recommended Prerequisite: GOVT 103.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GOVT 422: *Constitutional Interpretation.* 3 credits.
Examines Supreme Court's interpretation of constitutional powers of Congress, presidency, and judiciary. Includes examination of major decisions concerning state regulation, taxation, and interstate relations. Offered by Schar School of Policy & Govt. Limited to three attempts.

Recommended Prerequisite: GOVT 103.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GOVT 423: *Constitutional Law: Civil Rights and Liberties.* 3 credits.
Studies First Amendment freedoms of speech, press, assembly, association, and religion; right to privacy; and Fourteenth Amendment equal protection. Offered by Schar School of Policy & Govt. Limited to three attempts. Equivalent to CRIM 423.

Recommended Prerequisite: GOVT 103.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GOVT 427: *Feminist Political Thought.* 3 credits.
Explores feminist political thought in historical context. Topics include feminist political movements, feminist critiques of political philosophy, and feminist contributions to political theory. Offered by Schar School of Policy & Govt. Limited to three attempts.

Recommended Prerequisite: GOVT 101, WMST 200, 3 credits of PHIL, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GOVT 428: *Advanced Democratic Theory.* 3 credits.
Explores various theoretical approaches to nature and justification of democracy. Topics may include liberal, communitarian, pluralist, and deliberative theories and their critics; constitutionalism; role of markets; and transnational democracy. Offered by Schar School of Policy & Govt. Limited to three attempts.

Recommended Prerequisite: GOVT 101; or one course in PHIL.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GOVT 430: *Comparative Political Leadership.* 3 credits.
Comparative political leadership, relationships between political cultures and types of leadership, patterns of leadership recruitment, and linkages

between political elites and citizenry. Offered by Schar School of Policy & Govt. Limited to three attempts.

Recommended Prerequisite: GOVT 132, 133.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GOVT 433: *Political Economy of East Asia.* 3 credits.
Discusses different theoretical perspectives of East Asian political economy; transformation of East Asia; and issues such as money, finance, trade, investment, environment, and energy. Focuses on issues of contemporary significance, but attention also given to history. Offered by Schar School of Policy & Govt. Limited to three attempts.

Specialized Designation: Non-Western Culture

Recommended Prerequisite: GOVT 133 and 60 credits, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GOVT 434: *Democracy in Global Perspective.* 3 credits.
Comparative study of structures and performance of democracies around the world since 1975. Examines growing influence of global forces such as economy, media, and culture in process of democratization. Examines select current elections. Offered by Schar School of Policy & Govt. Limited to three attempts.

Recommended Prerequisite: GOVT 133.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GOVT 435: *Data Analysis for Comparative and International Politics.* 3 credits.
Provides practical tools for organizing and conducting original empirical research in the fields of comparative and international politics. The course considers both the analytical logic of quantitative methods and their practical application using statistical software. Topics may include (but are not limited to) data management practice, comparative public opinion, categorizing regime types, implications of international organization, global health and energy policy, and empirically assessing political violence, conflict, and civil war.Offered by Policy, Govt, and Intl Affairs. Limited to three attempts.

Recommended Prerequisite: GOVT 300 and 3 credits of Mason Core Quantitative Reasoning

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

GOVT 441: *Grand Strategy.* 3 credits.
Why, how, and for what purposes do states employ their national power abroad? This is a big question that cuts to the core of higher-order questions regarding foreign policy formulation and deployment. This class provides an advanced introduction to the relationship between war, peacetime settlements, politics, and strategy.Offered by Policy, Govt, and Intl Affairs. Limited to three attempts.

Recommended Prerequisite: GOVT 132

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

GOVT 443: *Law and Ethics of War.* 3 credits.
Explores sources of morality in armed conflict, and implications of such ideas for international relations. Examines content and philosophy of modern law of war. Offered by Schar School of Policy & Govt. Limited to three attempts.

Recommended Prerequisite: GOVT 132.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GOVT 444: *Issues in International Studies.* 1-3 credits.
Major issues in international systems, including international political economy and security. Notes: May be repeated when topic is different with permission of department. Offered by Schar School of Policy & Govt. May be repeated within the term for a maximum 9 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: GOVT 132, 133.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GOVT 445: *Human Rights.* 3 credits.
Explores philosophical, legal, and political issues at heart of modern international human rights movement. Examines historical background legal architecture of modern human rights movement. Offered by Schar School of Policy & Govt. Limited to three attempts.

Recommended Prerequisite: GOVT 132.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GOVT 446: *International Law and Organization.* 3 credits.
Nature, sources, and subject of law of nations; law and individual; territorial questions; nature, sources, and functions of international organizations; international transactions and organizations; war and present; and future status of international law. Offered by Schar School of Policy & Govt. Limited to three attempts.

Recommended Prerequisite: GOVT 132, 133.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GOVT 447: *Revolution and International Politics.* 3 credits.
Historical overview of modern revolutions as well as different theories about causes and consequences of revolutions. Special attention to Marxist-Leninist, Arab nationalist, and Islamic revolutions. Offered by Schar School of Policy & Govt. Limited to three attempts.

Recommended Prerequisite: GOVT 133.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GOVT 448: *Ethics and International Politics.* 3 credits.
Ethics and international politics ask students to wrestle with dilemmas raised by a desire to behave morally in an international system in which consensus about ethical matters is absent. Distributive justice and use of force are two overarching themes. Students also develop, apply, and justify their own perspectives on ethical problem using philosophical theory, history, and social science research. Offered by Schar School of Policy & Govt. Limited to three attempts.

Recommended Prerequisite: 60 hours and GOVT 132 or PHIL 151.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GOVT 452: *Administrative Law and Procedures.* 3 credits.
Law of public office. Studies procedures followed by and the legal limits on administrative agencies and their officers and employees. Offered by Schar School of Policy & Govt. Limited to three attempts.

Recommended Prerequisite: GOVT 351.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GOVT 460: *Surveillance and Privacy in Contemporary Society.* 3 credits.
Philosophical perspectives, historical context, technological developments, and institutional changes that surround controversies about privacy and surveillance in contemporary society. Explores public and private institutions doing surveillance, how they calculate and manage risk, and legal constraints on surveillance activities. Offered by Schar School of Policy & Govt. Limited to three attempts. Equivalent to CRIM 460.

Recommended Prerequisite: CRIM 100.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GOVT 464: *Issues in Public Policy and Administration.* 1-3 credits.
Analyzes selected policy issues in administering public policies. Topics announced in advance. Examples include environmental policy, government regulation, federal mandates, state policy, and regional policy. Notes: May be repeated when topic is different with permission of department. Offered by Schar School of Policy & Govt. May be repeated within the term for a maximum 9 credits.

Recommended Prerequisite: GOVT 103 plus 60 credits.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GOVT 467: *Current Issues in Economic Policy.* 3 credits.
Applies basic concepts of economics, political science and ethics to some of the most pressing issues facing the U.S. and global economies. Topics include productivity and economic growth, taxes, soaring costs for health care and higher education, globalization, income inequality, financial crises, the size of government and the proper role of regulation. Offered by Schar School of Policy & Govt. Limited to three attempts.

Recommended Prerequisite: Open to PPE concentrators or permission of instructor.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

GOVT 469: *Philosophy, Politics, and Economics.* 3 credits.
Covers issues in the philosophy, economics, and political science of institutions, information, and collective action. Through case studies of existing legal and political institutions, applies the insights to problems in politics, policy making, social theory, and social, moral, and political philosophy. (Specific content varies). Offered by Schar School of Policy & Govt. Limited to three attempts. Equivalent to ECON 460, PHIL 460.

Recommended Prerequisite: PHIL 358, ECON 412, and GOVT 467, or permission of instructor.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

GOVT 480: *Internship.* 3 credits.
Approved internships with specific employer. Programs relate in some capacity to government, politics, public policy, or the law. For 3 credits, a minimum of 135 hours is required. 3 credits of GOVT 480 may be applied to field study requirements. No more than 6 credits of GOVT 480 may be applied toward a student's 120 (Schar) degree applicable credits. Offered by Schar School of Policy & Govt. May be repeated within the term for a maximum 6 credits.

Recommended Prerequisite: GOVT 101, GOVT 103, GOVT 132, and GOVT 133.

Schedule Type: Internship

Grading:
This course is graded on the Satisfactory/No Credit scale.

GOVT 490: *Synthesis Seminar.* 3 credits.
Readings, individual or group projects, and discussion of papers reflecting on connections between liberal arts and sciences and political world. Notes: Course topic varies by semester. Offered by Schar School of Policy & Govt. Limited to three attempts.

Mason Core: Synthesis

Specialized Designation: Writing Intensive in Major

Recommended Prerequisite: GOVT 300 and 18 credits in major.

Registration Restrictions:

Enrollment is limited to students with a major in Administration of Justice, Global Affairs, Government and Politics, Government Intl Politics, International Studies or Public Administration.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

GOVT 491: *Honors Seminar.* 3 credits.
Readings, individual or group projects, and discussions of seminar papers. Notes: Subject varies. Offered by Schar School of Policy & Govt. Limited to three attempts.

Mason Core: Synthesis

Specialized Designation: Writing Intensive in Major

Recommended Prerequisite: GOVT 300 and 18 credits in major.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

GOVT 496: *Directed Readings and Research.* 1-3 credits.
Reading and research on specific topic under direction of faculty member. Notes: Written report required; oral report of research may be required. Offered by Schar School of Policy & Govt. May be repeated within the term for a maximum 6 credits.

Recommended Prerequisite: Major in government and international politics with 90 credits and permission of instructor and department.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

500 Level Courses

GOVT 500: *The Scientific Method and Research Design.* 3 credits.
Grounds students in the principles of the scientific method as the framework for investigating all research questions in political science, whether qualitative or quantitative in character (or both). Focus is on sound and rigorous research design. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

GOVT 510: *American Government and Politics.* 3 credits.
Examines institutions and processes of American government, including separate institutions of power in national government, theory and practice of federal system, role of interest groups and political parties, and effects of media and public opinion on electoral behavior and policy making. Seminar examining normative and empirical research. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Political Science.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GOVT 520: *Political Theory.* 3 credits.
Analyzes selected major works of ancient, modern, or contemporary political theory that illuminate basic problems and questions for people engaged in political or civic life. Examines justice, liberty, equality, autonomy, rights, obligation, participation, and nature of politics. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Recommended Prerequisite: Admission to the MA in political science or permission of department.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

GOVT 530: *Comparative Politics.* 3 credits.
Examines fundamental issues in comparative politics and provides broad coverage of the central themes under study. Designed to help students think theoretically and critically about the study of comparative politics, its scientific objectives, and its epistemological assumptions. Within this context, students will look at concepts and approaches, as well as important theories and debates that characterize the subfield. Helps prepare students for qualifying exams in comparative politics. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GOVT 540: *International Relations.* 3 credits.
Focuses on changing structure of international politics, post-Cold War security issues, effect of globalized economy and information technology revolution, enhanced role of global corporations and nongovernmental organizations, and rise of nonsecurity issues in emerging international agenda. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GOVT 550: *Seminar in Theories of Public Administration.* 3 credits.
Reviews the theoretical traditions in American public administration, from the earliest days of the founding to the present. Concludes with consideration of contemporary theoretical debates over the proper role of public administrators and controversies about conflicting demands made on the public service and the public sector. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Recommended Prerequisite: GOVT 510.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

GOVT 560: *Topics in Government and International Affairs.* 3 credits.
Explores topics of contemporary and emerging concern in government and international affairs. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

600 Level Courses

GOVT 603: *Seminar in the Courts and Constitutionalism.* 3 credits.
Analyzes the role, influence, and effects of courts in creating constitutional legal norms and interpreting them. Special attention is paid to the courts as a political institution. Lecture and discussion; students are expected to read and analyze both court cases and case studies. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

GOVT 604: *Seminar on Congress and Legislative Behavior.* 3 credits.
Examines theories and empirical research on the U.S. Congress and legislative behavior, including elections, representation, structures, and processes. Also examines Congress' impact on the design and implementation of public policy, interactions with other branches of government, and comparisons with parliamentary systems. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Recommended Prerequisite: GOVT 510.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

GOVT 605: *Seminar on the Presidency.* 3 credits.
Examines the American presidency from a number of substantive and methodological perspectives. Readings and discussions in the course appraise the presidency within the system and focus on the role the presidency plays in formulating and implementing public policy. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Recommended Prerequisite: GOVT 510.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:

This course is graded on the Graduate Regular scale.

GOVT 631: *Seminar in Comparative Politics and Institutions.* 3 credits.
Examines theories and practices of governance and development in comparative national settings. Course explores key subsets of the comparative politics literature in depth, including institutional change, regime types and transitions, democracy and authoritarianism, states and state-society relations, revolution, social movements, political cultures, and methods. Course is explicitly conceptual and cross-regional. Notes: May be repeated when topic is different. Offered by Schar School of Policy & Govt. May be repeated within the term for a maximum 9 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GOVT 632: *Politics and Societies of the Middle East.* 3 credits.
Studies the Middle East in comparative perspective, using social scientific categories of analysis. Topics include: regime types, their basis and causes; influential political trends such as Arab nationalism, Ba'athism, and political Islam; the role of kinship, religion, and tribe in opposition and regime politics; the regional oil economy and economic crisis; democratic liberalization; and the growth of civil society. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

700 Level Courses

GOVT 706: *Federalism and Intergovernmental Relations.* 3 credits.
Examines broad trends in governance, including theory and practice of federal, state, and local governments. May include privatization, devolution, mandating, regulatory reform, and comprehensive federalism reform. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Recommended Prerequisite: GOVT 510.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

GOVT 717: *Qualitative Methods.* 3 credits.
Focuses on scientific design of qualitative research questions and use of specific qualitative methods in scientific analysis. Covers when and how to use qualitative research methods to answer empirical questions in political science; primary data collection methods (interviews, observations, document review); the appropriateness of different research approaches; procedural and ethical concerns that may arise in use of qualitative methods. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Recommended Prerequisite: GOVT 511 or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

GOVT 719: *Issues in American Politics.* 3 credits.
Examines significant issue in American politics and political behavior. Analyzes topic of contemporary and emerging concern. Notes: May be repeated when topic is different. Offered by Schar School of Policy & Govt. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: GOVT 510.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

GOVT 720: *Advanced Seminar in Political Theory.* 3 credits.
Contemporary, historical, and comparative study of key themes in Political Theory. Topics may include theories of sovereignty, power, democracy, secularism, political economy, justice, humanism, race, empire, colonialism, gender, and sexuality. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

GOVT 725: *Democratic Theory.* 3 credits.
Examines democracy in terms of versions of liberalism, theories of social capital and civic participation, and discourses about civil, political, and human rights. How is democracy conceptualized normatively and empirically? What underlying economic, social, and cultural conditions promote democracy? What role do institutions play in

creating and sustaining a stable democratic society? Takes a broadly comparative perspective, focusing on variety of established and emerging democracies around the world. Elective for students specializing in American government or international politics and comparative governments. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

GOVT 726: *Theories of Justice.* 3 credits.
Overview of ancient and modern theories of justice with application to contemporary issues involving justice system and other social and political institutions. Offered by Schar School of Policy & Govt. May not be repeated for credit. Equivalent to CRIM 700.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

GOVT 731: *Advanced Seminar in Comparative Politics.* 3 credits.
Assumes basic proficiency in comparative analysis. Regionally based examination of key debates in the comparative politics field. Key theoretical and methodological debates are addressed through in depth examination of regional political processes. Regions include Latin America, Asia, Middle East, European Union, Africa, and Russia. Notes: May be repeated when topic is different with permission of department. Offered by Schar School of Policy & Govt. May be repeated within the term for a maximum 6 credits.

Recommended Prerequisite: GOVT 530.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

GOVT 733: *Islam and Politics.* 3 credits.
Provides an overview and understanding of the multifaceted nature of political Islam in the contemporary world. Covers brief history of Islam, formation of modern states in the post-colonial Muslim world, nature of contemporary Islamic radicalism and militancy and the future of Islamism. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

GOVT 739: *Issues in Comparative and International Politics.* 3 credits.
Explores issues of contemporary and emerging concern in comparative and international politics. Notes: May be repeated when topic is different. Offered by Schar School of Policy & Govt. May be repeated within the term for a maximum 6 credits.

Recommended Prerequisite: GOVT 540.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GOVT 741: *Advanced Seminar in International Politics.* 3 credits.
Examines theoretical and methodological issues central to study of international relations by focusing on specific topic: American foreign policy, diplomacy, international law and organization, international relations theory, international ethics, human rights and humanitarian intervention, the environment, and others. Notes: May be repeated when topic is different with permission of department. Offered by Schar School of Policy & Govt. May be repeated within the term for a maximum 9 credits.

Recommended Prerequisite: GOVT 540.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GOVT 742: *International Negotiation.* 3 credits.
Examines frameworks and perspectives that have guided scholarly work on negotiation. Students will analyze complex cases of negotiations in the areas of security, trade, and the environment, and practice negotiating key security and environmental issues on the agendas of nations and international organizations. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

GOVT 743: *International Political Economy.* 3 credits.
Examines interplay of international politics and economics. Discusses theoretical perspectives and analytical tools in academic field of international political economy, and applies theories and tools to trade, investment, exchange rates, development, regionalization, and globalization. Explores how international economic and political forces increasingly shape domestic interests, and how domestic politics affect international political economy. Lecture, discussion. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Recommended Prerequisite: GOVT 343 or equivalent.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GOVT 744: *Foundations of Security Studies.* 3 credits.
Introduces students to a selection of the original sources of the most important ideas that form the basis of security studies as a subfield of political science. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

GOVT 745: *International Security.* 3 credits.
Examines interplay of international politics and international security. Discusses theoretical perspectives and analytical tools in academic field of international security, and applies theories and tools to nuclear, biological, and chemical weapons, strategy and defense, and arms control. How domestic issues affect defense policies, terrorism, changing nature of international conflict, and human security will be examined. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Recommended Prerequisite: GOVT 540.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GOVT 753: *Collaborative Public Management.* 3 credits.
Examines design and management of public service programs relying on various levels of government, the nonprofit and private sectors for delivery, with focus on organizational networks, their management, and tools (e.g., contracts, grants, loans, regulation, and tax credits). Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

GOVT 755: *Seminar in Politics and Bureaucracy.* 3 credits.
Explores research and theory on political causes and effects of actions of government bureaucratic agencies. Readings examine origins of agencies, influences on decisions and programs, sources of internal and external accountability, pathologies of bureaucracies, and contributions bureaucracies make on effective and just governance. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Recommended Prerequisite: GOVT 510.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

GOVT 758: *Homeland/Transportation Security Administration.* 3 credits.
Examines the terrorist attacks of 9/11, vulnerabilities of the aviation security at that time, failure of elected officials and administrators to act more decisively to improve security before 9/11, and the policy and administrative responses to the 9/11 attacks, including the creation of the Transportation Security Administration and the Department of Homeland Security. Includes the development of radical Islam and the rise of Osama bin Laden and Al Qaeda. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

GOVT 794: *Internship.* 1-6 credits.
Work-study program with specific employers. Notes: Contact internship coordinator one semester before enrollment. Credit determined by department. Offered by Schar School of Policy & Govt. May be repeated within the term for a maximum 6 credits.

Recommended Prerequisite: Admission to graduate program and 12 credits. Notes: Contact internship coordinator one semester before enrollment. Credit determined by department. May be repeated for a maximum of 6 credits.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Graduate Special scale.

GOVT 796: *Directed Readings and Research.* 1-6 credits.
Reading and research on specific topic under direction of faculty member. Notes: Written paper required. Offered by Schar School of Policy & Govt. May be repeated within the term for a maximum 6 credits.

Recommended Prerequisite: 15 credits of GOVT courses at 500 level and above, and permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Regular scale.

GOVT 798: *Political Science Research Project.* 3 credits.
Research project related to student's concentration under supervision of a faculty advisor. Student produces substantial and original contribution to political science knowledge on model of article in scholarly journal. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Recommended Prerequisite: 24 credits.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Thesis

Grading:
This course is graded on the Graduate Special scale.

GOVT 799: *Political Science Thesis.* 1-6 credits.
Substantial and original research paper with guidance of faculty advisor. Thesis proposal must be approved in advance by advisor and two faculty members who comprise thesis committee. Completed research must be approved by committee and defended publicly in oral presentation. Offered by Schar School of Policy & Govt. May be repeated within the degree.

Recommended Prerequisite: 24 credits and approval of thesis proposal.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Thesis

Grading:
This course is graded on the Satisfactory/No Credit scale.

800 Level Courses

GOVT 800: *PhD Research Seminar.* 3 credits.
Provides an opportunity for PhD students in political science to present and refine independent research, and to further improve understanding of social scientific method as they prepare for conference presentations, qualifying exams, and subsequent dissertations. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to students with a major in Political Science.

Enrollment limited to students in a Doctor of Philosophy degree.

Enrollment limited to students in the Schar School of Policy and Gov college.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

900 Level Courses

GOVT 998: *Doctoral Dissertation Proposal.* 3,6 credits.
Work on research proposal that forms basis for doctoral dissertation. Offered by Schar School of Policy & Govt. May be repeated within the degree.

Recommended Prerequisite: Advancement to candidacy.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

GOVT 999: *Doctoral Dissertation Research.* 1-12 credits.
Research on approved dissertation topic under direction of dissertation committee. Notes: May be repeated for up to 9 credits in a semester. Offered by Schar School of Policy & Govt. May be repeated within the degree.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy.

Enrollment is limited to Graduate level students.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

Graduate School of Business (GBUS)

500 Level Courses

GBUS 540: *Analysis of Financial Decisions.* 3 credits.
Provides a survey of financial decision-making. Assists students with developing a framework within which they can understand the linkages between financial decisions and organizational performance. Examines methods for using information based on financial statements in making decisions and assessing performance, evaluating investment opportunities, and choosing among alternative sources of funds. Focuses on public firms in the corporate sector as well as applications for privately-held companies and organizations in the government and non-for-profit sectors. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GBUS 551: *Leadership.* 3 credits.
Distinguishes between leadership and management, and focuses on the critical roles and functions of leadership, including communication ability, use of power and influence, providing direction, aligning an organization's systems, motivating a workforce, and creating a culture for effectiveness. Focuses on strategies for developing oneself as an effective leader. Integrates theory, research, and applications. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

600 Level Courses

GBUS 613: *Financial Reporting and Decision Making.* 3 credits.
Foundation course focusing on economics and analysis of business transactions and related financial reporting issues. Topics include introduction to accounting framework used in financial reporting; and analysis of financial statements, economic events and their impact on financial reports, and impact of accounting methods on financial reports. Offered by School of Business. May not be repeated for credit. Equivalent to BMGT 613, MBA 613.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Students cannot enroll who have a major in Business Administration.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

GBUS 623: *Marketing Management.* 3 credits.
Develops market-based knowledge and skills for effective marketing decision making, strategy design, implementation, and evaluation in wide variety of institutional and competitive situations. Addresses the importance of companies being market-driven and customer-focused. Emphasis on case studies, team work, and projects. Offered by School of Business. May not be repeated for credit. Equivalent to MBA 623.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Students cannot enroll who have a major in Business Administration.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

GBUS 643: *Managerial Finance.* 3 credits.
Introduces theory and practice of finance within corporations. Topics include intertemporal choice, valuation, capital budgeting and structure, working capital management, and risk and return analysis. Offered by School of Business. May not be repeated for credit. Equivalent to BMGT 643, MBA 643.

Registration Restrictions:
Required Prerequisites: (GBUS 613[B-], MBA 613[B-], GBUS 613[XS] or MBA 613[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Students cannot enroll who have a major in Business Administration.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

GBUS 653: *Organizational Behavior.* 3 credits.
Emphasizes development of conceptual tools for understanding and analyzing individual and group behavior in organizations and organizational processes. Considerable focus on developing relevant skills for working in groups and teams. Lectures, discussions, case analyses, and class exercises. Offered by School of Business. May not be repeated for credit. Equivalent to MBA 653.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Students cannot enroll who have a major in Business Administration.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

GBUS 696: *Directed Studies in Graduate School of Business.* 1-3 credits.
Approval by faculty member and program director required prior to registration. Studies specialized topics in business not otherwise available in the curriculum. Offered by School of Business. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Regular scale.

GBUS 697: *Special Topics in Graduate School of Business.* 1-3 credits.
Sections established as necessary to focus on various topical issues that emerge in practice of business. Offered by School of Business. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

700 Level Courses

GBUS 720: *Marketing Analytics.* 3 credits.
Marketing analytics is a systemic approach to harnessing data/ information to drive effective marketing decision making . The objective of this course is to equip you with the tools required to address fundamental marketing decision problems using a data-driven approach. It will train students to view the marketing processes and relationships systemically and analytically. Offered by School of Business. May not be repeated for credit. Equivalent to MBA 720.

Recommended Prerequisite: Grade of B or higher in STAT 515 or STAT 554

Registration Restrictions:
Required Prerequisites: (GBUS 738[B-], MBA 738[B-], GBUS 738[XS] or MBA 738[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Business Analytics or Data Analytics Engineering.

Enrollment is limited to Graduate level students.

Enrollment limited to students in a Graduate Certificate or Master of Science degrees.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GBUS 721: *Marketing Research.* 3 credits.
Develops skills to plan and implement effective marketing research studies. Topics include research design, data collection, statistical analysis, and use of database systems. Offers perspective on how managers can use market data to develop successful product or service strategies. Note: Students enrolled in the Business Administration MBA program and the Business Analytics Graduate Certificate should not take this course, since an equivalent course is included in the MBA program. Offered by School of Business. May not be repeated for credit. Equivalent to MBA 721.

Recommended Prerequisite: Grade of B or higher in (STAT 515 or STAT 554).

Registration Restrictions:
Enrollment is limited to students with a major in Business Analytics or Data Analytics Engineering.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GBUS 738: *Data Mining for Business Analytics.* 3 credits.
Examines how data warehouses and data mining are used to help businesses successfully gather, structure, analyze, understand and act on relevant data, both operational and contextual. Note: Students enrolled in the Business Administration MBA program and the Business Analytics Graduate Certificate should not take this course, since an equivalent course is included in the MBA program. Offered by School of Business. May not be repeated for credit. Equivalent to MBA 738.

Recommended Prerequisite: B or higher in (STAT 515 or STAT 554).

Registration Restrictions:
Enrollment is limited to students with a major in Business Analytics or Data Analytics Engineering.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GBUS 739: *Advanced Data Mining for Business Analytics.* 3 credits.
This course covers business analytics using advanced data mining methods for the purposes of developing predictive models and forecasting . The course will develop the concept of feature selection to identify what dimensions to best use for constructing decision making models. Offered by School of Business. May not be repeated for credit. Equivalent to MBA 739.

Recommended Prerequisite: Grade of B or higher in STAT 515 or STAT 554

Registration Restrictions:

Required Prerequisites: (GBUS 738[B-], MBA 738[B-], GBUS 738[XS] or MBA 738[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Business Analytics or Data Analytics Engineering.

Enrollment is limited to Graduate level students.

Enrollment limited to students in a Graduate Certificate or Master of Science degrees.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GBUS 740: *People Analytics.* 3 credits.
This course seeks to develop business leaders who understand how people data can be leveraged to improve firm performance. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (MBA 738[B] or GBUS 738[B]).
[B] Requires minimum grade of B.

Enrollment is limited to students with a major in Business Analytics or Data Analytics Engineering.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

GBUS 744: *Fraud Examination.* 3 credits.
Introduces strategies and techniques for fraud prevention and detection. Focuses on financial fraud such as bribery, contract rigging and kickbacks, embezzlement, fraudulent financial reporting, payroll fraud, and misappropriation of inventory and other assets. Note: Students enrolled in the Business Administration MBA program and the Business Analytics Graduate Certificate should not take this course, since an equivalent course is included in the MBA program. Offered by School of Business. May not be repeated for credit. Equivalent to ACCT 636, MBA 744.

Recommended Prerequisite: B or higher in (STAT 515 or STAT 554).

Registration Restrictions:
Enrollment is limited to students with a major in Business Analytics or Data Analytics Engineering.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

Greek (GREE)

100 Level Courses

GREE 150: *Classical Greek I.* 3 credits.
Addresses linguistic, semantic, and cultural aspects. Covers basic structure and vocabulary, its place among other world languages and its unique role in development of modern thought. Notes: Lectures, discussions supplemented by web-posted material. Offered by Modern & Classical Languages. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

GREE 160: *Classical Greek II.* 3 credits.
Expands proficiency, refines grasp of morphology and syntax, and fosters greater command of vocabulary. Introduces selected original passages from Greek classical authors. Notes: Lectures, discussions supplemented by web-posted material. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: GREE 150 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Health (HEAL)

100 Level Courses

HEAL 110: *Personal Health.* 3 credits.
Focuses on individual health improvement by studying mental/emotional well-being, fitness, nutrition, drug abuse prevention, consumerism, safety and other topics. Offered by School of Education. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

200 Level Courses

HEAL 200: *School and Community Safety.* 1 credit.
Focuses on safety in home, school, road, work, and community settings. Offered by School of Education. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HEAL 220: *Dimensions of Mental Health.* 3 credits.
Focuses on integrating behavioral and sociocultural factors in studying mental health. Offered by School of Education. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HEAL 230: *Introduction to Health Behavior.* 3 credits.
Introduces health behavior in context of health psychology. Explores various theoretical models to understand health, illness and sick-

role behaviors. Studies health and disease from a biopsychosocial perspective. Examines means of preventing and treating health problems. Offered by School of Education. Limited to three attempts.

Mason Core: Social/Behavioral Sciences, Encore: Well-Being

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HEAL 250: *Introduction to School Health.* 3 credits.
Presents an overview of school health programs. Focuses on the content of health education in K-12 schools and provides an introduction to health education instruction. Offered by School of Education. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

300 Level Courses

HEAL 310: *Drugs and Health.* 3 credits.
Analyzes drug use, with emphasis on positive aspects, and presents alternatives to drug misuse and abuse. Offered by School of Education. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HEAL 325: *Human Sexuality.* 3 credits.
Covers the biological, psychological, emotional, and sociocultural factors related to human sexual behaviors. Includes topics such as anatomy, gender, sexual response, sexual behaviors, sexual orientation, relationships, reproduction, contraception, sexual difficulties and solution, sexually transmitted infections, and sexual coercion. Offered by School of Education. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HEAL 327: *Women's Health.* 3 credits.
Examines health issues unique to women, including health care, food and exercise, reproductive and gynecological issues, chronic diseases, and issues of violence. Offered by School of Education. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HEAL 331: *Men's Health.* 3 credits.
Examines socio-cultural influences on men's development and expression of health beliefs and practices. Explores health issues specific to men. Analyzes research literature on interventions to improve men's health. Offered by School of Education. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HEAL 350: *Interventions for Populations and Communities at Risk.* 3 credits.
Identifies culturally, physically, emotionally, mentally, and demographically diverse populations and communities at risk. Covers implications for developing innovative programs and role of HFRR interventions. Offered by School of Education. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HEAL 351: *Relationship Health.* 3 credits.
Describes development of healthy relationships. Examines influencing factors. Analyzes current research. Designs strategies for maintaining healthy relationships. Offered by School of Education. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HEAL 372: *Health Communication.* 3 credits.
Applies research-based models and theories of health assessment and promotion at individual, organizational, agency, and community levels. Uses communication approaches and skills in context of behavior change strategies, including policy and program development. Offered by School of Education. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

HEAL 405: *Teaching Methods in Health Education (K-12).* 3 credits.
Presents methodology and resources for teaching health education in K-12 schools. Offered by School of Education. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: HEAL 250[C] or 250[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major in Physical Education.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

500 Level Courses

HEAL 516: *Program Development and Resources in Health Education.* 3 credits.
Open to licensed and provisionally licensed health and physical education teachers in the commonwealth of Virginia and students in ASTL physical education program. Focuses on program development, health content, methodology, and resources for teaching preK-12 health education.
Notes: Distance learning course. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: Licensed and provisionally licensed health and physical education teachers in the Commonwealth of Virginia, and students in the Physical Education masters program.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

Health Administration and Policy (HAP)

200 Level Courses

HAP 201: *Health Professions Careers.* 3 credits.
Acquaints students early in their college education with a variety of health professions careers. Provides overview of the health care system, and identifies the current supply and demand for health care professionals. Presents information about educational and licensing requirements as well as expected salaries. Defines professionalism and outlines the principal rights and responsibilities of being a health care professional. Offered by Health Administration & Policy. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HAP 202: *Medical Terminology.* 3 credits.
Prepares students with a basic understanding of medical terminology needed to work in a wide variety of healthcare environments. Offered by Health Administration & Policy. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HAP 290: *Lifestyle Management.* 3 credits.
In this introductory course on practical application of Bayesian causal modeling techniques and Statistical Process Control tools, students make resolutions and analyze their progress toward goal achievement. Each student maintains a diary and analyses it using Bayesian causal modeling techniques to understand the constraints and causes leading to their success and failures. Students analyze their pattern of success using Statistical Process Control tools and engage cyclical assessment of their self improvements. Offered by Health Administration & Policy. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

300 Level Courses

HAP 301: *Health Care Delivery in the United States.* 3 credits.
Introduces students to the history of health care delivery in the United States from pre-colonial times to the present. Exposes students to how healthcare services are organized, accessed, and delivered. Explores influences that impact access and healthcare public policy decisions; factors that determine the allocations of healthcare resources; the establishment of priorities within the healthcare system; and the relationship of healthcare costs to measurable benefits. Comparisons are made with healthcare delivery systems in other countries. Offered by Health Administration & Policy. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HAP 308: *Public Health Informatics.* 3 credits.
Provides students with a basic understanding of public health Informatics and its applications. Students will understand the basic technological tools and building blocks needed to utilize these tools in to improve their personal and professional productivity. Offered by Health Administration & Policy. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HAP 309: *Healthcare Accounting.* 3 credits.
Introduces basic concepts, standards, practices and terminology underlying financial and managerial accounting as applied in healthcare organizations. Key concepts include accounting principles and conventions; financial reporting; valuations of assets; analysis, interpretation, and communication of financial information; the management of costs and profitability; and the use of spreadsheets and other tools. Offered by Health Administration & Policy. Limited to three attempts.

Recommended Prerequisite: HAP 301.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HAP 310: *Healthcare Ethics.* 3 credits.
Introduces current ethical ideas and issues in healthcare and the healthcare system. Case studies require students to apply critical thinking in ethical decision making situations encountered by healthcare professionals. Offered by Health Administration & Policy. Limited to three attempts.

Recommended Prerequisite: HAP 301.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HAP 312: *Healthcare Law.* 3 credits.
Introduces students to the legal environment in healthcare with emphasis on laws and regulations of routine importance to healthcare managers in the areas of labor, contracts, real estate, medical malpractice, general

business, and intellectual property. Offered by Health Administration & Policy. Limited to three attempts.

Recommended Prerequisite: HAP 301.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HAP 318: *Introduction to IT Methods for Healthcare.* 3 credits.
Reviews computer hardware and software with applications in healthcare. Covers basic features of operating systems (Windows and Linux), reviews use of basic office applications and introduces their advanced features. Introduces advanced tools to access and analyze healthcare data. Introduces basic programming concepts. Offered by Health Administration & Policy. Limited to three attempts.

Recommended Prerequisite: IT 103 or IT 104 or equivalent.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HAP 360: *Introduction to Health Information Systems.* 3 credits.
An introduction to basic information management in health care service organizations. Provides an overview of health information systems for selected administrative functions and clinical care services, including electronic data interchange for billing and claims management, institutional approaches to ensuring data security and privacy, and information management and decision support for managers and clinicians. Offered by Health Administration & Policy. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HAP 361: *Health Databases.* 3 credits.
Introduces students to the design and use of various health and healthcare databases, and provides hands-on experience with database design and use. Reviews database management systems. Examines the application of databases for both clinical and managerial purposes. Offered by Health Administration & Policy. Limited to three attempts.

Recommended Prerequisite: HAP 360

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HAP 392: *Human Resources Management in Healthcare.* 3 credits.
Exposes students to the major issues, laws, administrative processes, procedures, and psychological factors related to the human resource function in healthcare. Offered by Health Administration & Policy. Limited to three attempts.

Recommended Prerequisite: HAP 301.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HAP 395: *Healthcare Finance.* 3 credits.
Introduces finance in health care organizations. Reviews issues in reimbursement structures, regulatory mechanisms, cost control, and related factors affecting financial management of health service organizations including financial decision support skills. Offered by Health Administration & Policy. Limited to three attempts.

Recommended Prerequisite: HAP 301.

Registration Restrictions:
Required Prerequisites: HAP 309[C] or 309[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HAP 396: *Strategic Health Management and Planning.* 3 credits.
Introduces past and present interventions that affect supply and demand for health care at community, state, regional, and national levels. Presents health planning and regulatory entities, and discusses strategic and program planning in context of current economic and market conditions. Offered by Health Administration & Policy. Limited to three attempts.

Recommended Prerequisite: HAP 301

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

HAP 403: *Assisted Living/Senior Housing Management and Philosophy.* 3 credits.
Overview of growth of assisted living industry, its role in health care continuum, current or proposed regulatory environments, and differences between assisted living and other forms of senior health care and senior living services. Specific instruction provided in philosophy and day-to-day management of assisted-living communities, including resident care, operations, finance and budgeting, human resources and staffing, and successful marketing and community relations. Also examines industry future, including cutting-edge programs and technologies, and approaches to creating next generation of assisted-living services. Offered by Health Administration & Policy. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HAP 404: *Senior Housing Sales and Marketing.* 3 credits.
Introduction and analysis of sales and marketing practices within senior housing environments, including but not limited to Active Adult (55+), assisted living, Alzheimer's assisted living, and Continuing Care Retirement Communities (CCRC's). Offered by Health Administration & Policy. Limited to three attempts.

Recommended Prerequisite: HAP 301.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HAP 408: *Societal and Health Related Needs of the Aging Population.* 3 credits.
Introduces students to the social, medical, emotional, and cognitive supports available to older adults in the United States. Provides an overview of societal and health related needs relating to aging. Exposes students to aging services available to older adults. Explores the physical and emotional needs of the elderly. Offered by Health Administration & Policy. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HAP 410: *Introduction to Health/Medical Practice Management.* 3 credits.
An introductory course in the leadership and management of ambulatory health service practices and small provider organizations. Content covers a variety of health/medical practice management functions, including administrative systems, operations and strategies for effective management of quality, efficiency and business performance (contracts and marketing), and human resources. Trends in practice integration and affiliations with multiprovider groups and larger enterprises will be covered. Offered by Health Administration & Policy. Limited to three attempts.

Recommended Prerequisite: HAP 309.

Registration Restrictions:
Required Prerequisites: HAP 301[C] or 301[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HAP 411: *Introduction to Revenue Cycle Management.* 3 credits.
Introduces the revenue cycle process and its role within a clinical practice setting to support the overall financial health of the organization. Offered by Health Administration & Policy. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HAP 416: *Leadership and Management of Health Systems I.* 3 credits.
Introduces theoretical concepts and their application to the leadership and management of effective health care organizations. Explores the structure and function of health-related organizations and selected administrative and operational issues in program development and service design, emphasizing strategies for effective performance management, decision making, and communication. Offered by Health Administration & Policy. Limited to three attempts. Equivalent to NURS 436.

Recommended Prerequisite: Complete all 300-level course requirements.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HAP 417: *Leadership and Management of Health Systems II.* 3 credits.
Explores challenges to providing effective leadership and management of health care organizations and systems of care related to operational issues such as personnel management and labor relations, information management, conflict and goal alignment, financial management, accountability, and quality and safety improvement. Focuses on identification of management skills, technology, and strategy that influence optimal performance and communication between clinicians, administrative staff, and managers. Offered by Health Administration & Policy. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: HAP 416[C] or 416[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HAP 425: *Health Economics and Policy.* 3 credits.
An introduction to the role of economics in health care policy. Concepts used by economists to analyze health outcomes, health behaviors, health care markets, health insurance markets, and the role of government. Concepts are linked to current health policy debates, Relevance and limits of the health economics approach to analyzing health issues are discussed. Offered by Health Administration & Policy. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (HAP 301[C] or 301[XS]) and (ECON 103[C] or 103[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HAP 430: *Process Improvement in Healthcare Organizations.* 3 credits.
Introduces the process of quality management in healthcare organizations. Exposes students to the principles, models, and tools of quality management. Presents guidelines for implementing total quality in healthcare. Contrasts quality assurance, quality control, quality improvement, and quality management. Offered by Health Administration & Policy. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: HAP 301[C] or 301[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HAP 436: *Electronic Health Data in Process Improvement.* 3 credits.
Focuses on using electronic health records (EHRs) to improve health care processes. Compares means and rates of clinical & managerial processes. Uses EHRs in risk-adjusted statistical process control. Uses Excel to analyze data on patient satisfaction, wait time, mortality/

morbidity, and cost of care. Offered by Health Administration & Policy. Limited to three attempts.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HAP 440: *Mobile Health.* 3 credits.
Introduces emerging technologies used in Mobile Health (mHealth). Students will examine the impact and potential of mobile devices on health. Students will conceptualize and design health apps that incorporate evidence-based guidelines and capitalize on the mobility, portability, and input and output capabilities of smartphones and tablets. Offered by Health Administration & Policy. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HAP 442: *Introduction to Health Care Politics and Policy.* 3 credits.
Reviews health care system issues and trends, and economic concepts, ways to understand the critical role of public health policy and the policy-making process in the United States. Identifies the major political institutions and policy processes that shape health policy. Examines the past and present health policy and its impact on changes in the ability of patients to access health services, the practice of health sciences professionals. and the quality and process of care. Explores the role of politics at both the federal and state government in health policy-making and critical aspects of the U.S. health system are compared to those of other countries. Offered by Health Administration & Policy. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: HAP 301[C] or 301[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HAP 445: *Introduction to Health Services Research.* 3 credits.
An introductory course for undergraduate students in understanding the basic methods of interdisciplinary health services research and program evaluation in health systems and policy. Emphasis is placed on understanding, assessing and using relevant findings from health services research. The course covers a variety of topics related to policy, management, and program evaluation in health delivery systems. Offered by Health Administration & Policy. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: HAP 301[C] or 301[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HAP 456: *Health Data Mining and Analysis.* 3 credits.
Introduces data mining and analysis in health. Exposes students to fundamental concepts of data mining, machine learning, data preprocessing and data visualization within the context of health applications. Students learn practical skills needed to apply these methods to health problems illustrated by case studies. Offered by Health Administration & Policy. Limited to three attempts.

Recommended Prerequisite: HAP 318 or IT 106 or IT 109 or equivalent, HAP 361 or IT 214 and knowledge of SQL, Completed required math core, or permission of instructor

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HAP 458: *Clinical Informatics Applications in a Health Care Setting.* 3 credits.
Provides health informatics students with an overview of how various health professionals use data from various information systems to support clinical decision-making and improve patient outcomes. Leverages classes, laboratory simulation and field work in a health care setting. Introduces students to team-based working relationships/work in the health care environment and the use of health information in that setting. Exposes students to simulated and real health environments with the focus on the use of information technology to support clinical workflows, data collection and decision making. Teaches students to collaborate with healthcare professionals in order to promote patient care goals for safety, efficiency, effectiveness, timeliness, is patient-centered, and equitable. Offered by Health Administration & Policy. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: ((HAP 318[C] or 318[XS]) and (HAP 360[C] or 360[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HAP 459: *Health Data Standards and Interoperability.* 3 credits.
Introduction to prevailing and emerging data standards applicable in health information technology. Students will learn about standard-making organizations, such as HL7 and Healthcare Information Technology Standards Panel (HITSP), and their standardization processes. The structure of and relationship between standard terminologies applicable in healthcare, such as International Classification of Diseases (ICD-10-CM), Logical Observation Identifiers Names and Codes (LOINC) and Systematized Nomenclature of Medicine--Clinical Terms (SNOMED-CT), will be explained. Offered by Health Administration & Policy. Limited to three attempts.

Recommended Prerequisite: HAP 301 or permission of instructor. HAP 361.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HAP 460: *Information Technology Project Management.* 3 credits.
Identifies methods and skills for managing health care information technology (IT) projects. Students learn tools such as critical path analysis, resource management, crashing projects, vendor selection,

quality assessment, and risk analysis. Offered by Health Administration & Policy. Limited to three attempts.

Recommended Prerequisite: HAP 360.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HAP 461: *Internet and Web Technology Applications for Healthcare.* 3 credits.
Introduces students to the major applications of Internet and Web technology in healthcare. Two major applications are studied: online promotion/marketing for consumer-oriented health web sites, and online Personal Health Records (PHR). Students will learn about Search Engine marketing and the practical skill of creating an online health marketing/promotion campaign. They also will learn to create and manage PHR. The technological challenges such as reliability, privacy, security and organizational barriers to adoption are discussed. Offered by Health Administration & Policy. Limited to three attempts.

Recommended Prerequisite: HAP 360.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HAP 462: *Privacy and Security in Health Informatics.* 3 credits.
Health information security and privacy issues in the current healthcare system. Evaluates methods to achieve privacy and security. Discusses the important role of sound security policies and procedures; looks into technical solutions and non-technical solutions for achieving privacy and security. Offered by Health Administration & Policy. Limited to three attempts.

Recommended Prerequisite: HAP 360.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HAP 464: *Electronic Health Record Configuration and Data Analysis.* 3 credits.
Covers basic features and functionalities of an electronic health record (EHR). Introduces methods to access and analyze patient data from an EHR. Provides students with hands-on experience on EHR systems. Offered by Health Administration & Policy. Limited to three attempts.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HAP 465: *Integration of Professional Skills and Issues.* 3 credits.
Assists students in synthesizing the varied dimensions of their roles as health professionals in a global society. Provides opportunities to examine issues in health care through reflection on the natural and behavioral sciences, humanities and other prerequisite coursework. Selected topics examined through writing, presentation, reading and discussion. Prepares the student to actively engage in critical thinking, professional writing, and self-reflection. Provides the student the opportunity to develop a persuasive argument, receiving peer and instructor feedback. (Writing intensive course). Offered by Health Administration & Policy. Limited to three attempts. Equivalent to NURS 465.

Mason Core: Synthesis

Specialized Designation: Writing Intensive in Major

Registration Restrictions:
Required Prerequisites: (HAP 301[C] or 301[XS]) and (ENGH 302[C] or 302[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Senior Plus or Senior.

Enrollment is limited to students with a major in Health Administration.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HAP 467: *Advanced Information Technology Project Management.* 3 credits.
Teaches project management methods and techniques with focus on health IT projects. Covers knowledge, skills, and abilities associated with certification (Certified Associate in Project Management).
Notes: Certification is not provided in this course. Offered by Health Administration & Policy. Limited to three attempts.

Recommended Prerequisite: HAP 460 or HAP 417 or equivalent.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HAP 489: *Pre-Internship Seminar.* 3 credits.
Provides students with guidance and preparation for engaging in the internship. Offered by Health Administration & Policy. Limited to three attempts.

Mason Core: Capstone

Recommended Prerequisite: Senior standing.

Registration Restrictions:
Required Prerequisites: HAP 301[C] or 301[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major in Health Administration.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HAP 494: *Special Topics in Health Administration and Policy.* 3 credits.
Selected topics analyzing specialized areas in health administration and policy. Notes: Content varies. Lecture, seminar, laboratory, and workshops. Offered by Health Administration & Policy. May be repeated within the term for a maximum 12 credits.

Specialized Designation: Topic Varies

Schedule Type: Lecture

Grading:

This course is graded on the Undergraduate Regular scale.

HAP 498: *Health Administration Internship.* 4 credits.
Provides variety of applied management experiences in a health systems or related organization (field agency), under the direction of a HAP faculty member and a preceptor in the field. Students integrate and apply critical-thinking, project-planning, and management and communication skills in the internship experience and toward completion of an approved internship project. Notes: Taken in last semester of studies. Capstone course involves a two-hour weekly seminar and a 12-hour internship in a health-related organization. Offered by Health Administration & Policy. Limited to three attempts.

Mason Core: Capstone

Registration Restrictions:
Required Prerequisites: HAP 489 or 489[XS].
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Senior Plus or Senior.

Enrollment is limited to students with a major in Health Administration.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

HAP 499: *Independent Study in Health Administration and Policy.* 1-6 credits.
Provides individual study of a particular problem area in health administration and policy research, theory development, or education under the direction of faculty. Offered by Health Administration & Policy. May be repeated within the term for a maximum 6 credits.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

500 Level Courses

HAP 555: *Computer Programming in Health Applications.* 3 credits.
Introduces concepts of computer programming of health applications with a focus on open source software. Students are provided with an overview of open source software and introduced to open source EHR (Electronic Health Record) systems. Includes practical exercises in programming to customize and extend the capability of health information systems are explored, implemented and tested. Offered by Health Administration & Policy. May not be repeated for credit.

Recommended Prerequisite: HAP 318 or IT 106 or IT 109 or equivalent, HAP 361 or IT 214 or equivalent, HAP 464 or equivalent, basic knowledge of programming, Linux, and SQL required, or permission of instructor

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Graduate Regular scale.

HAP 594: *Special Topics in Health Care.* 3 credits.
Selected topics analyzing specialized areas in health care. Notes: Content varies. Lecture, seminar, laboratory, and workshops. Offered by Health Administration & Policy. May be repeated within the degree for a maximum 6 credits. Equivalent to GCH 594.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

600 Level Courses

HAP 601: *E-Commerce and On-line Marketing for Health Services.* 3 credits.
Explores development of online health services; organization of online businesses; online marketing, financial, and clinical transactions; and venture capital and the IPO process. Explores creating and maintaining web pages and databases. Reviews literature on effect of computer services on patient care and health care organizations. Also reviews examples of both successful and bankrupt technology firms in health care. Student groups draft business plan and develop early version of service proposal. Offered by Health Administration & Policy. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HAP 602: *Statistics in Health Services Management.* 3 credits.
Focuses on descriptive and inferential statistics with applications of various statistical techniques to health services management. Topics include sampling, measures of central tendency and dispersion, probability distributions, hypothesis testing, analysis of variance, correlation, linear regression, and chi-square analysis. Offered by Health Administration & Policy. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HAP 609: *Comparative International Health Systems.* 3 credits.
Uses Roemer's Model of Health Systems to examine resource allocation, management, and health outcomes in the United States and around the globe. The structure and functioning of national health systems based on geographic location and governance in developing and developed countries (democracies, monarchies, and communist nations). Resource allocation across the continuum of nations and relationship to national health needs, health status, and longevity are examined. Notes: An online course in comparative international health care systems. Offered by Health Administration & Policy. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HAP 618: *Computational Tools in Health Informatics.* 3 credits.
Introduces computational tools used in health informatics. Reviews hardware and software needs and uses. Topics covered include operating systems, virtualization and high performance computing, basic programming in a scripting language, basic data analysis and data integration skills, and use of specialized software. All topics are covered in context of specific solutions used in health information systems. Offered by Health Administration & Policy. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Graduate Regular scale.

HAP 621: *Organization Behavior and Healthcare Leadership.* 3 credits.
Applies organizational behavior and theories of leadership to the management of interdisciplinary teams and decision making in healthcare organizations. Offered by Health Administration & Policy. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HAP 622: *Healthcare Information Systems Analysis and Design.* 3 credits.
Introduces system analysis, modeling, design, and management of large-scale healthcare information systems. Describes both traditional and data-driven analysis and design methods. Different aspects of systems analysis and design are illustrated using examples from healthcare industry case studies applied to a group project. Offered by Health Administration & Policy. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HAP 635: *Role of Government in Health Care and Public Health.* 3 credits.
Provides a foundation for how and why federal and state governments are involved in health care and public health. Introduces students to contemporary public policies that address inequities in access and quality of public health and health care services. The process of how public health policy is formulated, implemented and evaluated is covered in detail. Offered by Health Administration & Policy. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HAP 640: *Current Issues in Health Policy.* 3 credits.
Introduces students to current health policy issues, the public policy process, and their influence on the organization and financing of health care. Attention is given to the 1) roles of key players in health policy formulation and implementation, and 2) public policy responses to major issues such as disparities and un-insurance coverage, cost-containment, and quality of care. Differing perspectives on reforming health care are debated. Offered by Health Administration & Policy. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HAP 645: *Introduction to Health Services Research.* 3 credits.
An introductory course in the basic methods of interdisciplinary health services research and program evaluation in health systems and policy. The course covers topics related to policy, management, and program effect and evaluation within health delivery systems, including research design, existing data systems, measurement of quality and basic cost benefit, and effectiveness analysis. Offered by Health Administration & Policy. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: HAP 678.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HAP 647: *Regulatory Requirements for Health Care Systems.* 3 credits.
Helps health care professionals understand link between infrastructures of organization and regulatory and accreditation processes for health care organizations. Covers major accrediting agencies and their roles, accreditation principles, and survey process. Focuses on hospitals with reference to ambulatory care, managed care organizations, rehabilitation centers, laboratories, and home health and long-term care facilities. Emphasizes requirements of Joint Commission on Accreditation of Health Care Organization and regulations mandated by Health Care Finance Administration. Offered by Health Administration & Policy. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HAP 652: *Essentials of Health Insurance and Managed Care.* 3 credits.
Focuses on the health insurance and managed care private sector. Topics include moral hazard; the history of private benefits plans; types of health plans; provider network management; provider payment; medical and quality management; health plan operations including marketing/sales, claims, member services, IT, finance; and relevant health policy, and federal and state laws and regulations affecting private health plans. Offered by Health Administration & Policy. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HAP 661: *Policy Development and Analysis for Community Health Programs.* 3 credits.
Prepares students to critically analyze issues and develop skills pertinent to effective policy development for community and family public health programs. Explores what constitutes a vulnerable population and examines current government programs and policies supporting these programs for such populations. Recent case examples ground students in current issues faced by community groups and other health interests. Offered by Health Administration & Policy. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HAP 670: *Introduction to Health Informatics.* 3 credits.
Examines applications of information technology in healthcare. Considers a wide range of technology applications – from enterprise application systems to EHR (Electronic Health Records), to current trends in information technology and related regulatory initiatives. Examines how these technologies enable the healthcare industry to manage information and knowledge resources most effectively and deliver superior services to its customers. Offered by Health Administration & Policy. May not be repeated for credit.

Recommended Corequisite: HAP 678 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HAP 671: *Health Care Databases.* 3 credits.
Introduces students to design and query of health databases. Provides hands-on experience with design, maintain and make queries of

databases. Explores uses of health record systems. Includes review and analysis of databases and database management systems. Examines application of databases to clinical and business transaction. Offered by Health Administration & Policy. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HAP 672: *Health Data: Vocabulary and Standards.* 3 credits.
Explores the challenges and possible solutions to ensure the interoperability between health information systems, representation of health data using standardized vocabulary and standards of communication. Covers topics such as data standards and semantics, policy, and theory and practice of standardization. Offered by Health Administration & Policy. May not be repeated for credit.

Recommended Prerequisite: HAP 618 or HAP 671 or permission of instructor

Recommended Corequisite: HAP 678 or permission of instructor

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HAP 675: *Project in Health Data Analysis.* 1-4 credits.
Focuses on analysis of data from electronic health records. Includes instruction on preparation of data including (a) removing inaccurate information, (b) organizing the timing of events/variables, (c) summarizing time-based variables. Students will work on real data obtained by them from a practicum through an employer or real data supplied by instructor. Students will complete a literature review, describe methods used, present results, and discuss findings. Offered by Health Administration & Policy. May be repeated within the term for a maximum 4 credits.

Recommended Prerequisite: HAP 361 and HAP 602 or equivalent statistics and database courses.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Regular scale.

HAP 678: *Introduction to the U.S. Health System.* 3 credits.
Explores the U.S. healthcare system focusing on health system development, key influences, accessibility, financing, changing components and the effects of the system on patients, providers, financers, government, insurers, and society. The role of population health management and public health is explored, including the impact of social, cultural, economic, and environmental factors on health care systems and practices. Offered by Health Administration & Policy. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HAP 680: *Applied Public Health Leadership and Management.* 3 credits.
Survey course in leadership, management, and planning applied to public health systems. Students apply theoretical knowledge from a variety of disciplines relevant to development and implementation of public health policy, regulatory directives, public health program planning and management (including human resources and financial management), and the design and evaluation of public health services/functions. Content includes strategies for ensuring access to essential public health services and use of evaluation and monitoring systems to ensure the safety, efficiency, and effectiveness of local public health programs/systems. Course emphasizes leadership, communication, systems thinking, data-driven decision making, and ethical practice in public health systems. Offered by Health Administration & Policy. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

HAP 686: *Quality Improvement in Health Services.* 3 credits.
Examines how quality in healthcare is measured and controlled in order to improve processes and outcomes. Demonstrates how interdisciplinary teams analyze quality by applying a variety of quantitative methods (such as statistical process control, histograms, and Pareto charts); and qualitative methods (such as root cause analysis, affinity diagrams, nominal group technique, and flow charts). Analyzes performance improvement techniques designed to improve processes. Offered by Health Administration & Policy. May not be repeated for credit.

Registration Restrictions:

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HAP 690: *Independent Study.* 1-3 credits.
In-depth studies of selected area of health science theory, research, or practice under direction of faculty. Offered by Health Administration & Policy. May be repeated within the degree.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Regular scale.

700 Level Courses

HAP 700: *Introduction to Health Informatics.* 3 credits.
Examines applications of information technology in healthcare. Considers a wide range of technology applications – from enterprise application systems to EHR (Electronic Health Records), to current trends in information technology and related regulatory initiatives. Examines how these technologies enable the healthcare industry to manage information and knowledge resources most effectively and deliver superior services to its customers. Offered by Health Administration & Policy. May not be repeated for credit.

Recommended Corequisite: HAP 678 or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HAP 701: *Health Data: Vocabulary and Standards.* 3 credits.
Explores the challenges of representing health care data using standardized vocabulary in health information systems. Topics include data standards and semantics, policy, and theory and practice of standardization. Offered by Health Administration & Policy. May not be repeated for credit.

Recommended Corequisite: HAP 678, or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HAP 702: *Managerial Accounting in Health Care.* 3 credits.
Examines the controllership function of health care organizations and systems (for-profit and not-for-profit) with emphasis on policy formulation and evaluation of performance, including cost methods and systems, measurement criteria, and managerial planning, methods, and techniques. Offered by Health Administration & Policy. May not be repeated for credit.

Recommended Prerequisite: Graduate-level statistics course.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HAP 703: *Financial Management in Health Systems.* 3 credits.
Examines tools and methods of financial management in healthcare organizations and systems with emphasis on allocation and use of funds. Analyzes costs and constraints of alternative source of funds, and applies financial decision instruments and effect on operational management and market value of entity. Offered by Health Administration & Policy. May not be repeated for credit.

Recommended Prerequisite: Graduate-level statistics course.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HAP 704: *Contemporary Issues in Health Systems Management.* 3 credits.
Analyzes the challenges confronting healthcare leaders in a new era characterized by economic incentives and changing relationships between providers, payers and purchasers, new delivery models and payment mechanisms, and advances in clinical integration, information technology, and quality improvement. Explores leadership strategies required for achieving financial stability while delivering greater value. Offered by Health Administration & Policy. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HAP 705: *Strategic Management and Marketing in Health Care.* 3 credits.
Explores the role of strategic planning in healthcare organizations and the process by which they formulate, implement, and evaluate strategic decisions. Reviews the contemporary issues and trends impacting the strategic imperatives for healthcare organizations, including ways in which organizations evaluate and address the health needs of the communities they serve. Offered by Health Administration & Policy. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HAP 706: *Integrated Health Systems Management.* 3 credits.
Explores emerging structures for financing and delivery of comprehensive health services in integrated health systems. Covers successful development and management of alliances, provider hospital organizations, and managed care systems with emphasis on strategies for vertical integration, community partnering, contract negotiation, governance, and management of antitrust situations. Offered by Health Administration & Policy. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HAP 707: *Human Resource Management in Healthcare.* 3 credits.
Examines how people are managed within health care organizations to achieve performance consistent with the organization's strategic objectives. Offered by Health Administration & Policy. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HAP 708: *Quantitative Methods in Health Care Management.* 3 credits.
Presents a framework for decision making in health care management. Covers epidemiological, statistical and decision modeling tools commonly used in health care management. Includes measures of risk, forecasting, decision trees and statistical quality control. Students use Excel to analyze data sets related to the application of these techniques in assessing health care related problems. Offered by Health Administration & Policy. May not be repeated for credit.

Registration Restrictions:
Required Prerequisite: HAP 602[B].

[B] Requires minimum grade of B.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HAP 709: *Health Care Databases.* 3 credits.
Introduces design and use of health and medical databases, providing hands-on experience. Explores uses of medical record systems. Includes review and analysis of databases and database management systems. Examines application of databases to clinical and managerial transaction. Offered by Health Administration & Policy. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory

Grading:
This course is graded on the Graduate Regular scale.

HAP 711: *Quality Improvement in Health Services.* 2 credits.
Examines how quality in healthcare is measured and controlled in order to improve processes and outcomes. Demonstrates how interdisciplinary teams analyze quality by applying a variety of quantitative methods (such as statistical process control, histograms, and Pareto charts); and qualitative methods (such as root cause analysis, affinity diagrams, nominal group technique, and flow charts). Analyzes performance improvement techniques designed to improve processes. Offered by Health Administration & Policy. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HAP 712: *Topics in Public Policy.* 3 credits.
Presents selected topics current in public policy related to health care and health care administration. Offered by Health Administration & Policy. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Research

Grading:

This course is graded on the Graduate Regular scale.

HAP 713: *Project Management in Health Information Technology.* 3 credits.
Applies body of knowledge in project management to the implementation of information technology and systems in healthcare organizations. Examines how tasks such as needs assessment, project planning, project cost analysis, risk management, and management of personnel are readily included in the use of health information systems. Offered by Health Administration & Policy. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HAP 715: *Health Economics.* 3 credits.
Uses economic tools to illuminate the healthcare delivery and financing systems in the US. Explores the production of and demand for health, health care, and health insurance, and how incentives affect choices. Focuses on the US but also draws examples from other countries, since health economics principles apply everywhere, even though values, resources, priorities and constraints vary. Offered by Health Administration & Policy. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HAP 717: *Population Health Informatics.* 3 credits.
Provides students with foundational principles, informatics tools, methodologies, data sources, terminologies, and policy issues related to the emerging field of population health informatics. Examines key concepts such as registries, electronic health records, epidemiological databases, and quality reporting. Employs specific health informatics tools throughout the course, with many opportunities for gaining practical experience. Offered by Health Administration & Policy. May not be repeated for credit.

Recommended Prerequisite: HAP 709.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HAP 718: *Consumer Health Informatics.* 3 credits.
Exposes students to the emerging subfield of health informatics, which is at the intersection of public and community health, health education, and more traditional informatics areas. Demonstrates the use of technology to increase awareness and improve population health. Reviews issues involved in consumer health informatics, and explores hands-on informatics tools and applications. Offered by Health Administration & Policy. May not be repeated for credit.

Recommended Prerequisite: HAP 709.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HAP 719: *Advanced Statistics in Health Services Research I.* 3 credits.
Covers principles and methods of statistical data analysis and inference. Emphasizes the use and application of various data analysis techniques and their assumptions. Computer outputs will be used to demonstrate the application of statistical techniques in analyzing health related data sets. Offered by Health Administration & Policy. May not be repeated for credit.

Recommended Prerequisite: HAP 602 or GCH 601 or an equivalent statistics course.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HAP 720: *Health Data Integration.* 3 credits.
Students learn to manipulate large databases, create link table queries, write SQL application programs, understand sources of data conflicts, and identify methods of integrating ODBC databases with legacy data. Covers data warehousing, methods of analyzing large databases, including Bayesian belief networks and machine learning in health care context. Features semester long data integration group project. Offered by Health Administration & Policy. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HAP 721: *Project in Data Analysis.* 1-4 credits.
Focuses on analysis of data from electronic health records. Includes instruction on preparation of data including (a) removing inaccurate information, (b) organizing the timing of events/variables, (c) summarizing time-based variables. Students work on real data obtained by them from a practicum through an employer or real data supplied by instructor. Students must complete a literature review, describe methods used, present results, and discuss findings. Offered by Health Administration & Policy. May be repeated within the degree for a maximum 4 credits.

Recommended Prerequisite: HAP 361 and HAP 602 or equivalent statistics and database courses.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Regular scale.

HAP 725: *Statistical Process Control in Healthcare.* 3 credits.
Provides students with hands-on experience with data from electronic health records. Introduces students to causal analysis of observational data, including propensity scoring and stratification. Provides students with access to simulated data from electronic health records. Exposes students to trends that influence the quality management system and drivers for change, including measures used by CMS to strengthen value based payment. Offered by Health Administration & Policy. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Research

Grading:
This course is graded on the Graduate Regular scale.

HAP 730: *Health Care Decision Analysis.* 3 credits.
Students analyze practice patterns and find optimal methods of improving them. Uses decision analysis and failure mode analysis in health care settings. Students integrate scientific evidence, patients' preferences, and experts' opinions to identify optimal alternatives. Offered by Health Administration & Policy. May not be repeated for credit.

Recommended Prerequisite: Graduate-level statistics course.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HAP 740: *Management of Health Information Systems.* 3 credits.
Introduces health and medical information systems with emphasis on systems analysis and design to support managerial and clinical communications and decision making. Explores trends and innovations in information technology and systems, focusing on managerial oversight of health and medical information systems. Explores contemporary management strategies for information systems personnel. Offered by Health Administration & Policy. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HAP 742: *Health Policy Development and Analysis.* 3 credits.
Provides an overview of the core elements of a health policy analysis, including problem definition, background, policy options, and recommendations. Explores the policymaking process, key stakeholders, and types of analytic frameworks used in the development of U.S. healthcare policy. Students will apply key concepts and frameworks to analyze a health policy issue and clearly communicate information in written assignments and oral presentations. Offered by Health Administration & Policy. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HAP 745: *Health Care Security Policy.* 3 credits.
Focuses on health security and privacy policy and compliance issues. Students will develop policies for the type of threats faced by facilities. The legal and business policies for facility, personnel, travel, information, and patient security will be discussed. Offered by Health Administration & Policy. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HAP 746: *Health Policy Leadership.* 3 credits.
Examines leadership strategies to influence health policy-making from a community stewardship and interest group advocacy perspective. Students will develop an understanding of how health and socio-economic issues affect the development, implementation and change of health policy, appreciate the complexity of engaging the public policy process, and selectively employ strategies to influence politics and the policy making process. Offered by Health Administration & Policy. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HAP 750: *Legal Issues in Health Administration.* 3 credits.
Examines legal issues facing the healthcare industry. Prepares health professionals to understand legal principles, statutes, regulations, and case law related to managing health care organizations and health professionals ' practice. Students are provided with practical knowledge of health law and its application to actual work experience. Offered by Health Administration & Policy. May not be repeated for credit.

Registration Restrictions:

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HAP 760: *Philosophy of Science in Health Services Research.* 3 credits.
An introductory course on the theory and philosophy of science and humanism that relate to the design and conduct of health services research. The course examines selected theories on the nature of reality (ontology), the justification of knowledge claims (epistemology), and how knowledge is constructed (methodology) in design and analysis of health services research. Offered by Health Administration & Policy. May not be repeated for credit.

Recommended Prerequisite: Admission to a doctoral program or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HAP 761: *Philosophy of Science and Research Methods.* 3 credits.
Introduces the philosophy of science and methods used to conduct health services research. Examines the justification of knowledge claims (epistemology), approaches to research study design, and the application of analytic methods and data to develop knowledge in field of health services research. Offered by Health Administration & Policy. May not be repeated for credit.

Recommended Prerequisite: Admission to a doctoral program or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HAP 764: *Health Policy and Government Payment Systems for Health Care Services.* 3 credits.
Examines the rationale for government intervention in provider payment and explores the current policy issues and politics of major government provider payment systems, including Medicare and Medicaid, and examines options for managing these programs more effectively. The course will "follow the money" as it flows through government and provider payment systems, model potential changes in such systems, and identify policies for improving the operation of these programs and payment systems. Offered by Health Administration & Policy. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HAP 770: *Medical Decision Making and Decision Support Systems.* 3 credits.
Introduces the complex subject of medical decision making. Examines systematic approaches to decision making. Explores principles governing the design, application, and maintenance of clinical decision support systems. Laboratory time provides learning experience in various applied situations. Offered by Health Administration & Policy. May not be repeated for credit.

Recommended Prerequisite: HAP 701 or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Graduate Regular scale.

HAP 774: *Artificial Intelligence in Health.* 3 credits.
Reviews artificial intelligence (AI) methods in the context of health applications. Covers AI approaches to problem solving, uncertain reasoning, human-computer interaction, machine learning, intelligent optimization and simulation. Students are provided with theory and practical exercises in the context of Electronic Health Records and intelligent devices used in health. Offered by Health Administration & Policy. May not be repeated for credit.

Recommended Prerequisite: HAP 618, HAP 671, HAP 719, HAP 752 or permission of instructor. Knowledge of Python programming and SQL are required.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Graduate Regular scale.

HAP 777: *Health Data Visualization.* 3 credits.
Introduces the principles and techniques of data visualization with special focus on applications in healthcare. Students will learn practical skills to make visually appealing graphics on web browsers to present their data using a publicly available JavaScript library D3 (Data-driven documents). Notes: Assumes that students have baisc knowledge of the web, browsers, HTML, CSS, and JavaScript programming. Offered by Health Administration & Policy. May not be repeated for credit.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HAP 780: *Data Mining in Health Care.* 3 credits.
An introductory course to data mining and knowledge discovery in health care. Methods for mining health care databases and synthesizing task-oriented knowledge from computer data and prior knowledge are emphasized. Topics include fundamental concepts of datamining, data preprocessing, classification and prediction (decision trees, attributional rules, Bayesian networks), constructive induction, cluster and association analysis, knowledge representation and visualization, and an overview of practical tools for discovering knowledge from medical data. These topics are illustrated by examples of practical applications in health care. Offered by Health Administration & Policy. May not be repeated for credit.

Recommended Prerequisite: Graduate-level statistics course.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Research

Grading:
This course is graded on the Graduate Regular scale.

HAP 789: *Pre-Capstone Professional Development Seminar.* 1-3 credits.
Provides students with guidance and preparation for engaging in the capstone practicum. Offered by Health Administration & Policy. May be repeated within the degree for a maximum 3 credits.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Satisfactory/No Credit scale.

HAP 790: *Capstone Practicum in Health Systems Management.* 3 credits.
Field practicum in health systems management where students function as an integral member of an organizational entity to complete a non-thesis project while continuing to build skills in leadership, critical thinking and systematic problem analysis. Offered by Health Administration & Policy. May not be repeated for credit.

Recommended Prerequisite: All coursework in the major.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Graduate Regular scale.

HAP 793: *Final Project in Applied Health Policy.* 3 credits.
Provides students experience in executing an approved written research project related to a public health policy issue. Students will demonstrate skills learned in the MSHMP program. Projects require students to understand different positions related to a particular policy issue, to assess existing evidence and research related to the policy issue, and to formulate additional research questions. Offered by Health Administration & Policy. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Research

Grading:
This course is graded on the Graduate Regular scale.

HAP 799: *Master's Thesis.* 1-6 credits.
Provides students with skills to develop their research proposal, conduct their research, and complete their thesis in a relevant field of study. Offered by Health Administration & Policy. May be repeated within the degree.

Recommended Prerequisite: Admission to one of the master's programs in the department and permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Thesis

Grading:
This course is graded on the Satisfactory/No Credit scale.

800 Level Courses

HAP 819: *Advanced Statistics in Health Services Research II.* 3 credits.
Covers principles and methods of advanced statistical data analysis and inference with applications in health services research. Emphasizes the use and application of various data analysis techniques. including multivariate statistics. regression and longitudinal data analysis. Use of statistical software STATA demonstrates the application of statistical techniques in analyzing health related data sets. Offered by Health Administration & Policy. May not be repeated for credit.

Recommended Prerequisite: HAP 719.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Research

Grading:
This course is graded on the Graduate Regular scale.

HAP 823: *Comparative Effectiveness Analysis using Observational Data.* 3 credits.
Applies linear and logistic regression to analysis of comparative cost and effectiveness using massive data in electronic health records. Emphasizes (1) ridge regression and (2) propensity scores. Covers the following topics: (1) counterfactual framework and assumptions, (2) data balancing, (3) matching or weighting, and (4) sensitivity analysis. Offered by Health Administration & Policy. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (HAP 671[B-] or 671[XS]) and (HAP 719[B-] or 719[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to Graduate level students.

Schedule Type: Research

Grading:
This course is graded on the Graduate Regular scale.

HAP 824: *Social Determinants of Health: A Multilevel Evidence-Based Approach.* 3 credits.
Apply multilevel approaches to analyze public health problems through the lens of social determinants of health. Students will identify a current public health problem and examine its causes or risk factors at individual, interpersonal, organizational, community, and policy levels, and explore appropriate strategies to address the problem. Students will learn writing a systematic literature review manuscript and using appropriate datasets to explore the social determinants of the health problem. Offered by Health Administration & Policy. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

HAP 835: *Causal Inference in Health Services Research.* 3 credits.
Discusses the nature of causation and alternative means of inferring causal relationships. Included are experimentation, matching, instrumental variables, conditioning, and mechanism in network models. Covers a broad range of methodological considerations that emerge in identifying causal effects. The focus is less on analysis of data and more on considerations of causal inference in non-randomized study design. Offered by Health Administration & Policy. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Research

Grading:
This course is graded on the Graduate Regular scale.

HAP 846: *Advanced Health Economics.* 3 credits.
Prepares students to conduct economic analysis of the health care market. Covers topics such as the supply and demand of health care services, health insurance and the role of asymmetric information, technology and the cost of health care, the role of government in health care, and health externalities. Highlights current empirical work using state-of-the-art econometric techniques to illustrate how knowledge is advanced and consensus emerges and dissipates over time. Offered by Health Administration & Policy. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

HAP 850: *Health Informatics Research.* 3 credits.
Introduces technical research methods in the field of health informatics. Reviews quantitative, qualitative and mixed research methods applied to study health informatics problems. Contrasts research methods used in health informatics to those traditionally used in health services research and health sciences. Provides students concrete examples of health informatics research. Allows students to work on research projects individually and in groups. Offered by Health Administration & Policy. May not be repeated for credit.

Recommended Prerequisite: HAP 719 or HAP 819, HAP 761, HAP 780

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

HAP 865: *Health Services Research Seminar.* 3 credits.
Builds student professional skills in publishing papers, disseminating research findings at conferences, translating research into practice and policy, and career development. Advances student knowledge in a variety of research topics pertaining to both health systems and policy, and health informatics. Includes student and faculty presentations on completed research studies and those in-progress. Offered by Health Administration & Policy. May not be repeated for credit.

Recommended Prerequisite: Complete most core courses (e.g. research methods) in the doctoral program or have instructor's permission to register

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

HAP 868: *Advanced Research Seminar in Health Policy Analysis.* 3 credits.
Seminar on advanced research methods that analyzes theoretical and analytic foundations to critique health services research and health policy analysis. Students synthesize, integrate, and apply theoretical knowledge and advanced skills relevant to health services research, policy analysis, and program evolution. Notes: Limited to doctoral students having completed core courses in statistics and research design, or permission of instructor. Offered by Health Administration & Policy. May not be repeated for credit.

Recommended Prerequisite: HAP 703 or equivalent or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Research

Grading:
This course is graded on the Graduate Regular scale.

HAP 880: *Advanced Health Data Mining.* 3 credits.
Provides the knowledge and skills needed to analyze health data using modern tools. Describes analytics of administrative and clinical data. Covers concepts and tools for big data analvtics and NoSQL data analytics. Offered by Health Administration & Policy. May not be repeated for credit.

Recommended Prerequisite: HAP 719, HAP 780, or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Research

Grading:
This course is graded on the Graduate Regular scale.

900 Level Courses

HAP 925: *Advanced Methods in Qualitative Research for Health Care.* 3 credits.
Builds upon the foundation of qualitative research in health care. Designed to develop skills in data generation techniques; data analysis using NVivo and text analysis software, including narrative and intentions analysis; application of standards for qualitative research; and utilization of various styles for qualitative reports and research proposals. The course also reviews mixed methods designs for research studies. Offered by Health Administration & Policy. May not be repeated for credit.

Recommended Prerequisite: NURS 920 or HAP 835

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Research

Grading:
This course is graded on the Graduate Regular scale.

HAP 940: *Advanced Independent Study.* 1-9 credits.
Prepares doctoral-level students for the field comprehensive exam in their program of study, and builds knowledge and skills in a specific or individualized health related topic. Designed for doctoral-level students, this independent study course is built by the student with the advice of the potential independent study faculty/dissertation director. It may involve data analysis, synthesis and/or evaluation of research evidence, theory and/or exemplary practice in an area of inquiry or scholarship depending on the student's program of doctoral study. Offered by Health Administration & Policy. May be repeated within the degree for a maximum 18 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Schedule Type: Independent Study

Grading:
This course is graded on the Satisfactory/No Credit scale.

HAP 998: *Doctoral Dissertation Proposal.* 1-9 credits.
An independent study for HAP doctoral students resulting in the development of a doctoral dissertation proposal. Includes development of the research problem, study methods, data analysis and literature review. Notes: The course must be supervised by a HAP faculty member qualified to serve as a dissertation chair. Offered by Health Administration & Policy. May be repeated within the degree for a maximum 36 credits.

Recommended Prerequisite: Advancement to candidacy.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

HAP 999: *Doctoral Dissertation.* 1-9 credits.
Under faculty direction, develop dissertation proposal and complete the dissertation. Offered by Health Administration & Policy. May be repeated within the degree for a maximum 25 credits.

Recommended Prerequisite: All courses in the PhD program.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy.

Enrollment is limited to Graduate level students.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

Health and Human Services (HHS)

400 Level Courses

HHS 432: *Healthy Aging.* 3 credits.
Offers a broad perspective of normal aging in the older adult, and the impact of chronic disease and psychosocial and cultural factors on the aging process. Offered by Health and Human Services. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HHS 480: *Research Internship in Public Health.* 3 credits.
The student works as a member of a team engaged in population health research and attends a bi-weekly research seminar. Under direction of the course seminar leader and the faculty research mentor, the student will acquire selected research skills and develop introductory research writing and presentation skills. Offered by Health and Human Services. Limited to three attempts.

Recommended Prerequisite: Open only to CHHS majors or students who have completed CHSS minor or certificate courses.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HHS 490: *COVID-19 Response Internship.* 1-3 credits.
Emphasizes public health and clinical infectious disease control and prevention measures at the community level in response to the COVID-19 pandemic in a practicum field experience under the direct supervision of a preceptor. Provides students a boots-on-the ground opportunity to make a positive impact on health and economic well-being of a variety

of local communities. Focuses on all aspects of the Virginia COVID-19 vaccination protocol plan, including recruiting critical populations: vaccine storage, handling and administration (if qualified): second dose reminders, program communication; safety monitoring; and program monitoring. Offered by the College of Health and Human Services, open to all major. Students are required to complete 45 hours of contact per credit hour. May be repeated within degree for a maximum of six credits. Offered by Health and Human Services. May be repeated within the term for a maximum 12 credits.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Special scale.

HHS 491: *Foundations of Clinical Research.* 1 credit.
Provides students with fundamental concepts and basic analytic methods pertaining to the design, analysis, and interpretation of clinical research. Outlines the research process by introducing the components of research - from beginning a literature search, to designing an experiment, to selecting appropriate outcome measures, and collecting data. Offered by Health and Human Services. Limited to three attempts.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

HHS 492: *RS: Internship in Clinical Research.* 3 credits.
Provides students with experiential learning in a research laboratory that focuses on clinical health research. Students are matched with a clinical research supervisor that provides both research and professional development mentorship. Through this opportunity, students enhance their research, critical thinking, problem-solving and presentation skills. An application must be submitted in the semester prior to enrollment in the course. During the semester prior to entry, students may be asked to acquire certain competencies/certifications in order to fully participate at their research site (e.g., human subjects research protections training, lab safety, certification, HIPAA training). Offered by Health and Human Services. Limited to three attempts.

Specialized Designation: Research/Scholarship Intensive

Recommended Prerequisite: Course is open to honors college students only.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

500 Level Courses

HHS 597: *Approaches to Quantitative Data Analysis in Public Health Research.* 3 credits.
Examine univariate and bivariate statistical procedures appropriate for analyzing quantitative population health research data. Includes selecting, applying, and interpreting data analysis procedures. Offered by Health and Human Services. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

600 Level Courses

HHS 646: *Social Gerontology.* 3 credits.
Examines physical, psychological, sociological, cultural, spiritual, and economic aspects of aging and explores the challenges of service delivery to older persons. Considers the impact of aging populations on the social structure, economy, demography, and social policy of society and identifies social and cultural forces that influence older persons and their families, with special regard to caregiving, institutionalization, and social roles in retirement. Offered by Health and Human Services. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HHS 648: *Aging and Health.* 3 credits.
Provides an overview of normal aging and explores factors that affect health and well being in older adults; demonstrates strategies for maintaining health and managing chronic illness in older adults; examines common misconceptions about aging and healthcare issues; and explores the process of normal aging and the presentation of common health conditions in older adults. Offered by Health and Human Services. May not be repeated for credit. Equivalent to NURS 648.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HHS 690: *COVID-19 Response Practicum.* 1-3 credits.
Emphasizes public health and clinical infectious disease control and prevention measures at the community level in response to the COVID-19 pandemic in a practicum field experience under the direct supervision of a preceptor. Provides students a boots-on-the ground opportunity to make a positive impact on health and economic well-being of a variety of local communities. Focuses on all aspects of the Virginia COVID-19 vaccination protocol plan, including recruiting critical populations:

vaccine storage, handling and administration (if qualified): second dose reminders, program communication; safety monitoring; and program monitoring. Offered by the College of Health and Human Services, open to all major. Students are required to complete 45 hours of contact per credit hour. May be repeated within degree for a maximum of six credits. Offered by Health and Human Services. May be repeated within the term for a maximum 6 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Graduate Special scale.

700 Level Courses

HHS 702: *Public Health Promotion and Disease Prevention.* 3 credits.
Prepares students to address public health needs of individuals or groups through health promotion and disease prevention. Emphasis is placed on research evidence and motivational interviewing to improve healthy lifestyle, prevent disease and manage chronic conditions. Offered by Health and Human Services. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

800 Level Courses

HHS 810: *Systematic Reviews of Health Research.* 3 credits.
Applies systematic methods for evaluating current research in order to develop empirically-based decisions about the next major research questions that need to be addressed in the students' selected area of inquiry. Offered by Health and Human Services. May not be repeated for credit.

Recommended Prerequisite: Master's degree in a health-related discipline.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HHS 818: *Advanced Ethics of Health Research.* 3 credits.
Analyze ethical issues associated with designing and conduction public health research in diverse populations and settings. Offered by Health and Human Services. May not be repeated for credit.

Recommended Prerequisite: Master's degree in a health-related discipline.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

HHS 825: *Conducting and Publishing Health Research.* 3 credits.
Apply scientific and ethical principles of inquiry by participating in a guided public health research practicum and seminars. Apply principles of writing for scientific publication. Offered by Health and Human Services. May not be repeated for credit.

Recommended Prerequisite: Master's degree in a health-related discipline.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Internship

Grading:
This course is graded on the Graduate Regular scale.

HHS 850: *Teaching Practicum in Public Health.* 0-3 credits.
Provides supervised teaching experience of selected public health courses. Focuses on effective strategies for facilitating student learning, methods of assessment and testing, and using student and peer feedback for self-improvement. Examines the principles and practices of effective classroom management. Offered by Health and Human Services. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Minimum of 18 graduate hours in a health-related field.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Enrollment limited to students in the Health and Human Services college.

Schedule Type: Internship

Grading:
This course is graded on the Satisfactory/No Credit scale.

Hebrew (HEBR)

100 Level Courses

HEBR 101: *Elementary Hebrew I.* 3 credits.
Designed for students with no knowledge of Hebrew. Introduction including grammar, vocabulary, oral skills, listening comprehension, and reading. Offered by Modern & Classical Languages. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Hebrew

HEBR 102: *Elementary Hebrew II.* 3 credits.
Continuation of HEBR 101. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: HEBR 101 or equivalent.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Hebrew

HEBR 150: *Introduction to Biblical Hebrew.* 3 credits.
Introduces basic vocabulary, grammar, and development of reading skills with introduction to religion and culture of ancient Israel that produced the Hebrew Bible/Old Testament. Offered by Modern & Classical Languages. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Hebrew

HEBR 160: *Readings in Biblical Hebrew.* 3 credits.
Continuation of HEBR 150 to increase students' proficiency in vocabulary and understanding of morphology and syntax. Selected passages from Hebrew Bible read; students introduced to text formation and analysis. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: HEBR 150 or equivalent.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Hebrew

200 Level Courses

HEBR 201: *Intermediate Hebrew I.* 3 credits.
Further development of skills acquired in HEBR 101 and 102, including grammar, oral expression, listening comprehension, reading, and writing. Notes: Lab work required. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: HEBR 102 or equivalent.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Hebrew

HEBR 202: *Intermediate Hebrew II.* 3 credits.
Continuation of HEBR 201. Notes: Lab work required. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: HEBR 201 or equivalent.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Fulfills Frgn Lng requirment, Taught in Hebrew

Higher Education (HE)

600 Level Courses

HE 601: *The Community College.* 3 credits.
Studies institutional character of the community college, including history, purpose, clientele, organization, finance, and social function. Studies issues currently faced by community colleges. Offered by Higher Education Program. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

HE 602: *College Teaching.* 3 credits.
Describes issues that affect teaching and learning and provides basic tools to use in college classroom. Teaches how to plan course, develop syllabus, promote learning among diverse students, and implement classroom assessment techniques. Offered by Higher Education Program. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

HE 605: *Learning Assessment.* 3 credits.
Focuses on classroom and program-level learning assessment, and describes the political and historical context for assessment. Offers hands-on practice of assessment for instructors and student affairs professionals. Offered by Higher Education Program. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:

This course is graded on the Graduate Regular scale.

HE 606: *Cultural Pluralism in Higher Education.* 3 credits.
Examines the role of cultural pluralism in U.S. higher education. Focuses on issues of race, ethnicity and gender, and their implications for the change processes of colleges and universities. Offered by Higher Education Program. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

HE 610: *Research Methods in Higher Education.* 3 credits.
Provides an introduction to higher education research methodologies, analysis, and decision-making through introduction of basics of research design including problem identification, literature review, method selection, data collection and analysis, application, writing, and ethics. Offered by Higher Education Program. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HE 624: *Finance and Fiscal Management in Higher Education.* 3 credits.
Overview of higher education finance and fiscal management. Offered by Higher Education Program. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

HE 641: *Introduction to Helping Skills.* 3 credits.
Focuses on helping skills that assist others in reflecting on concerns, considers possible causes of problems, and contemplates options and strategies for problem solving. Introduces students to and practices basic helping skills. Explores ethical issues surrounding helping skills and determining when to refer students to professional counselors. Offered by Higher Education Program. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

HE 644: *Organization and Administration of Student Affairs.* 3 credits.
Focuses on development and organization of student personnel programs and services in institutions of higher learning. Covers philosophy, methods, and techniques. Offered by Higher Education Program. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

HE 645: *The Contemporary College Student.* 3 credits.
Analyzes changing demographics, barriers, and developmental issues facing college students. Studies impact of college environment on student development, and interaction between students of varying subcultures and the environment. Examines technology issues and their impact. Offered by Higher Education Program. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

HE 646: *Student Development Theory.* 3 credits.
Addresses developmental issues facing students, including adult students; factors that affect development; and the need to work with individuals, groups, and organizations within the campus community to establish conducive learning environments. Application of psychosocial, cognitive development, identity, and person-environment interaction

theories are considered in depth. Offered by Higher Education Program. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HE 685: *Practicum.* 3 credits.
Experiential learning that could include supervised on-the-job experience, academic service learning, community outreach, or research field work in approved college or university setting or public agency involved in higher education. Develops skills applicable to higher education. Approval of practicum coordinator needed one semester before registration. Notes: Minimum 150 hours of work and participation in internship seminar. Offered by Higher Education Program. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Admission to certificate or MAIS/Higher Education program; approval of advisor and practicum coordinator; 9 credits of core requirements.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Graduate Regular scale.

700 Level Courses

HE 701: *Higher Education Law.* 3 credits.
Introduces students to laws and legal issues that impact higher education and establishes a general familiarity with higher education law. Uses a case study approach to teach students to recognize when a legal issue presents itself in situations involving students, faculty, or administration. Offered by Higher Education Program. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HE 702: *Contemporary Issues and Fundamental Theories in Higher Education.* 3 credits.
Examines key concepts, issues, questions, contemporary concerns, theories, and literature relevant to scholars and practitioners of higher education. Offered by Higher Education Program. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HE 703: *Higher Education in the Digital Age.* 3 credits.
Higher education is undergoing rapid transformation in the 21st century, due in large part to emerging digital technologies. This course explores the changing landscape, including face-to-face and online teaching and learning, student affairs, infrastructure, and administration. Combining reading, writing, viewing, and hands-on learning, students examine issues through the content and lens appropriate for their discipline and learning goals. Offered by Higher Education Program. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

HE 704: *The Scholarship of Teaching and Learning.* 3 credits.
Overview of scholarship on teaching and learning in higher education. Focuses on ways students learn, how learning can be improved, and different methods of conducting research into teaching and learning. Offered by Higher Education Program. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HE 705: *Access and Social Justice.* 3 credits.
Examines the inequitable structural systems that produce unequal access to higher education. Explores the meaning of social justice in higher education, and emphasizes policy, administrative processes, and educational practices. Offered by Higher Education Program. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HE 706: *Students in Postsecondary Education.* 3 credits.
Provides in-depth study and analysis of current issues with today's college students. Examines theories relating to college student success including college access and choice, college's impact on students, student retention and attrition, and student learning and engagement as well as current issues affecting contemporary college students and higher education institutions. Offered by Higher Education Program. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HE 707: *Scholarly Digital Storytelling.* 3 credits.
This course explores scholarly digital storytelling as a compelling medium for redefining academic research, intended audiences, and scholarly communication. Students create a scholarly digital story based on their academic area of interest. Offered by Higher Education Program. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

HE 710: *Leadership in Higher Education.* 3 credits.
Focusing on the leadership of higher education and the role leaders play in institutional transformation, this course explores the complex social and political environments and the current and future trends of higher education. This focus occurs through the foundational grounding of leadership theory and research. Students will be challenged to employ multiple perspectives of leadership in higher education. Offered by Higher Education Program. May not be repeated for credit.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HE 711: *Policy Studies in Higher Education.* 3 credits.
Intended as a toolkit for the understanding and creation of evidence-based analysis of public policy issues at all levels of governance, this course examines examples of policy research and analysis prompted from discussion around higher education policy issues. Offered by Higher Education Program. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HE 712: *Assessment and Program Evaluation in Higher Education.* 3 credits.
Examines educational assessment and evaluation practices and methods. Students critique and design an evaluation study and an evaluation report. Reviews ethical issues and impact of assessment and evaluation for students, employees, and programs. Offered by Higher Education Program. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HE 713: *The Internationalization of Higher Education.* 3 credits.
Explores the internationalization of higher education through various lenses including administration, student services, curriculum integration, study abroad, and branch campus development. Offered by Higher Education Program. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HE 721: *History of Higher Education.* 3 credits.
History of higher education from colonial period to the present. Examines philosophical, political, social, and economic forces that have influenced development. Reviews today's issues and challenges. Offered by Higher Education Program. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

HE 722: *Organization and Administration in Higher Education.* 3 credits.
Provides concepts of organization and administration in contemporary institutions from macro to micro perspectives. Studies theory and practices of the organization as it relates to governance, structure, and management of the institution. Offered by Higher Education Program. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HE 792: *Special Topics in Higher Education.* 1-3 credits.
Covers current topics in higher education. Notes: May be repeated when topic is different. Offered by Higher Education Program. May be repeated within the degree.

Specialized Designation: Topic Varies

Recommended Prerequisite: Admission to doctoral program or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HE 797: *Higher Education Capstone.* 3 credits.
This capstone course guides students in the creation of a learning and professional practice portfolio. The portfolio is a compilation of academic work and other forms of educational evidence assembled for the purpose of (1) evaluating coursework quality, learning progress, and academic achievement; and (2) determining whether learning standards or other academic requirements for courses and the program have been met. Students should enroll in the HE 797 course in their last academic year. Offered by Higher Education Program. May not be repeated for credit.

Recommended Prerequisite: Students must be in the last academic year of their course work.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HE 799: *Higher Education Thesis.* 1-3 credits.
Original research related to student development or higher education. Offered by Higher Education Program. May be repeated within the degree. Equivalent to MAIS 799.

Recommended Prerequisite: HE 610

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Thesis

Grading:
This course is graded on the Satisfactory/No Credit scale.

800 Level Courses

HE 897: *Directed Reading in Higher Education.* 1-6 credits.
Independent reading on topic agreed on by student and instructor. Offered by Higher Education Program. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Admission to the doctoral program and permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Enrollment limited to students in a Doctor of Arts, Doctor of Philosophy or Master of Interdiscply Studies degrees.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Regular scale.

900 Level Courses

HE 998: *Doctoral Dissertation Proposal.* 1-3 credits.
Contact program for permission to register. Work on research proposal that forms basis for doctoral dissertation. Offered by Higher Education Program. May be repeated within the degree.

Recommended Prerequisite: Completion of all course work and qualifying exams.

Registration Restrictions:
Enrollment is limited to students with a major in Education (Community College).

Enrollment is limited to Graduate level students.

Enrollment limited to students in a Doctor of Arts degree.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

HE 999: *Doctoral Dissertation.* 1-12 credits.
Doctoral dissertation research and writing under direction of dissertation committee. Offered by Higher Education Program. May be repeated within the degree.

Recommended Prerequisite: HE 998 and appointed dissertation committee.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy.

Enrollment is limited to students with a major in Education (Community College).

Enrollment is limited to Graduate level students.

Enrollment limited to students in a Doctor of Arts degree.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

History (HIST)

100 Level Courses

HIST 100: *History of Western Civilization.* 3 credits.
History of Western civilization from ancient Mediterranean origins through medieval and modern development of Europe to contemporary world. Notes: Students who take HIST 100 may not receive credit for HIST 101 or HIST 102. Offered by History & Art History. Limited to three attempts. Equivalent to HIST 101, HIST 102.

Mason Core: Western Civilization

Schedule Type: Lecture, Recitation

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 101: *Foundations of Western Civilization.* 3 credits.
Evolution of Western culture from ancient Mediterranean world to formation of modern Europe in 17th century. Notes: Students may not receive credit for HIST 101 if they have taken HIST 100. Offered by History & Art History. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 102: *Development of Western Civilization.* 3 credits.
History of Western institutions and ideas from 17th century to the present. Notes: Students may not receive credit for HIST 102 if they have taken HIST 100. Offered by History & Art History. Limited to three attempts. Equivalent to HIST 100.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 121: *Formation of the American Republic.* 3 credits.
Social, political, economic, and intellectual growth of American institutions from colonization through Reconstruction. Notes: Students may not receive credit for HIST 121 if they have taken HIST 120. Offered by History & Art History. Limited to three attempts.

Mason Core: Social/Behavioral Sciences

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 122: *Development of Modern America.* 3 credits.
History of the United States since 1877. Notes: Students may not receive credit for HIST 122 if they have taken HIST 120. Offered by History & Art History. Limited to three attempts.

Mason Core: Social/Behavioral Sciences

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 125: *Introduction to World History.* 3 credits.
Analytical approach to world history overview that surveys major features of principal existing civilizations of world, as originally formed and as altered by key global processes including forces of modernity. Offered by History & Art History. Limited to three attempts.

Mason Core: Western Civilization

Schedule Type: Lecture, Recitation

Grading:
This course is graded on the Undergraduate Regular scale.

200 Level Courses

HIST 202: *Freshman/Sophomore Seminar in Global History.* 3 credits.
Focuses on skills, methods of learning, and subject matter to introduce discipline of history. Notes: Topics vary. Offered by History & Art History. Limited to three attempts. Equivalent to SYST 202.

Recommended Prerequisite: Freshman or sophomore standing.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 251: *Survey of East Asian History.* 3 credits.
Surveys history of China and Japan from prehistoric times to ca. 1600. Offered by History & Art History. Limited to three attempts.

Mason Core: Global Understanding

Specialized Designation: Non-Western Culture

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 252: *Survey of East Asian History.* 3 credits.
Surveys history of China and Japan from early modern times (ca. 1600) to present. Offered by History & Art History. Limited to three attempts.

Mason Core: Global Understanding

Specialized Designation: Non-Western Culture

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 261: *Survey of African History.* 3 credits.
Focuses on the sub-Saharan region and examines evolving systems of kinship power, spirituality, and slavery. Explores the interactions between Africans and global influences from the religions of the book and colonialism to the politics of development and continuities and changes in production. HIST 261 surveys African history from the earliest times to 1800. HIST 262 surveys African history from 1800 to the present. Offered by History & Art History. Limited to three attempts.

Mason Core: Global Understanding

Specialized Designation: Non-Western Culture

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 262: *Survey of African History.* 3 credits.
Focuses on the sub-Saharan region and examines evolving systems of kinship power, spirituality, and slavery. Explores the interactions between Africans and global influences from the religions of the book and colonialism to the politics of development and continuities and changes in production. HIST 261 surveys African history from the earliest times to 1800. HIST 262 surveys African history from 1800 to the present. Offered by History & Art History. Limited to three attempts.

Mason Core: Global Understanding

Specialized Designation: Non-Western Culture

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 271: *Survey of Latin American History.* 3 credits.
Surveys colonial era to 1825. Emphasizes interactions of United States, Latin America. Offered by History & Art History. Limited to three attempts.

Mason Core: Global Understanding

Specialized Designation: Non-Western Culture

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 272: *Survey of Latin American History.* 3 credits.
Surveys development of independent Latin America since 1825. Emphasizes interactions of United States, Latin America. Offered by History & Art History. Limited to three attempts.

Mason Core: Global Understanding

Specialized Designation: Non-Western Culture

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 281: *Survey of Middle Eastern Civilization.* 3 credits.
Survey of Middle Eastern history from rise of Islam to present, emphasizing processes that led to emergence of economic, cultural, social, and political institutions that characterize region today. Surveys period from rise of Islam in 570 to medieval period (ca. 1258) Offered by History & Art History. Limited to three attempts.

Mason Core: Global Understanding

Specialized Designation: Non-Western Culture

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 282: *Survey of Middle Eastern Civilization.* 3 credits.
Survey of Middle Eastern history from rise of Islam to present, emphasizing processes that led to emergence of economic, cultural, social, and political institutions that characterize region today. Surveys medieval period to present. Offered by History & Art History. Limited to three attempts.

Mason Core: Global Understanding

Specialized Designation: Non-Western Culture

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

300 Level Courses

HIST 300: *Introduction to Historical Method.* 3 credits.
Introduces research skills and methods, as well as historical interpretation, culminating in written and oral presentations. Notes: Topics vary according to instructor. History majors strongly urged to take HIST 300 as soon as possible after reaching 30 credits. Grade of C or better is required to graduate with BA in history. Students may repeat HIST 300 only with permission from the Department of History and Art History and repetitions are limited. Offered by History & Art History. Limited to three attempts.

Mason Core: Synthesis

Specialized Designation: Mason Impact., Writing Intensive in Major

Recommended Prerequisite: History majors with 30 credits or permission of instructor.

Registration Restrictions:
Enrollment is limited to students with a major in History.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 301: *Classical Greece.* 3 credits.
Political, social, economic, and cultural history of classical Greece from development of the city-state through 5th century. Offered by History & Art History. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 302: *Classical Rome.* 3 credits.
Political, social, economic, and cultural history of classical Rome from founding of the city through fall of Roman republic. Offered by History & Art History. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 304: *Western Europe in the Middle Ages.* 3 credits.
Survey of development of European society from collapse of Roman rule in 5th century to advent of Black Death in 14th century. Emphasizes political, social, cultural, and intellectual growth of society that developed from Roman, Catholic, and Germanic roots. Offered by History & Art History. Limited to three attempts.

Recommended Prerequisite: 6 hours of history or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 305: *The Renaissance.* 3 credits.
Survey considering Renaissance as phenomenon rather than chronological period. Emphasizes growth of humanism in Italy in 14th and 15th centuries, development of new political concepts, and laicization of society. Includes transmission of these developments to transalpine Europe in late 15th and 16th centuries. Offered by History & Art History. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 306: *The Reformation.* 3 credits.
Late medieval ecclesiastical conditions and reform movements, late scholasticism, Protestant Reformation, Catholic Reformation, dynastic rivalries, and religious wars. Concludes with Peace of Westphalia. Offered by History & Art History. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 307: *Old Regime and Revolutionary Europe.* 3 credits.
Political, social, economic, and cultural history of Europe from 1648 to 1815. Crisis of authority, consolidation of the state, absolutism, colonial expansion, the Scientific Revolution and the Enlightenment, and the French Revolution and Napoleon. Offered by History & Art History. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 308: *Nineteenth-Century Europe.* 3 credits.
History of Europe from Congress of Vienna to outbreak of World War I. Offered by History & Art History. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 309: *Europe in Crisis: 1914-1948.* 3 credits.
Two world wars, the Great Depression, and political and cultural revolutions transformed Europe as never before. Explores causes and consequences of these tumultuous events, and concludes with consideration of reconstruction that caps period. Offered by History & Art History. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 312: *Nationalism in Eastern Europe.* 3 credits.
Examines history of modern Eastern Europe from mid-19th century through collapse of communist regimes in 1989, and includes focus on Yugoslav wars of 1990s. Nationalism provides organizing theme; topic approached through literature, political, social, cultural, and new media sources. Class sessions emphasize discussion of central issues and sources. Offered by History & Art History. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 314: *History of Germany.* 3 credits.
Political, diplomatic, economic, social, and cultural development of Germany from dissolution of Holy Roman Empire to present. Offered by History & Art History. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 315: *STEM and Society: A History.* 3 credits.
Students will use case histories to explore the cultural and social aspects of global STEM development during the Scientific and Industrial Revolutions, roughly the period from 1700 to 1900. Students will be required to critically analyze articles, books chapters, other readings and media, and articulate their findings and viewpoints in classroom and online discussions and presentations. They will also work in a team project which will present its results to the class in live and online formats. Offered by History & Art History. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 316: *History of Modern Architecture.* 3 credits.
This course covers the history of modern architecture in the Western world from the mid-19th century to the present. Introduces movements such as Art Nouveau, Futurism, Modernism, and Post-Modernism in their political, social, and cultural contexts. Offered by History & Art History. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 321: *Modern France.* 3 credits.
Surveys two centuries of French history presenting an introduction to the multidisciplinary study of culture, politics, and society. Course begins with the 1789 French Revolution, covering the nation's long and difficult transition to democracy and ends with the consideration of enduring discourses of liberty, equality, and secularism in the contemporary political and social landscape. Covers major events such as revolutions, wars, and uprisings, as well as the experiences of ordinary citizens, social practices, and cultural techniques. Offered by History & Art History. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 322: *Modern Britain.* 3 credits.
History of Britain from mid-18th century to present. Focuses on social, political, and economic transformations of industrialization; culture of 19th-century industrial society; problems of late 19th-century economic competition and imperialism; creation of welfare state; and experience of post-World War II political, social, and economic realignments. Offered by History & Art History. Limited to three attempts.

Recommended Prerequisite: 6 hours of history or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 326: *Stalinism.* 3 credits.
Examines Josef Stalin and Stalinism as a political, economic, social, and cultural system, with a focus on the period from Lenin's death in 1924 through Stalin's death in 1953. Explores the history of rapid industrialization, collectivization of agriculture, famine, terror, war, Cold War, and human suffering in the Soviet Union and Eastern Europe. Offered by History & Art History. Limited to three attempts.

Specialized Designation: Non-Western Culture

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 327: *The Soviet Union and Russia Since World War II.* 3 credits.
Analyzes the Soviet Union, the Cold War "enemy" of the United States, from victory in World War II under Joseph Stalin through collapse in 1991. Studies the fifteen independent countries that emerged from the Soviet collapse, including Russia, the Baltic States, Ukraine, Belarus, Moldova, Central Asia, and the Caucasus, which continue to influence world politics and culture today. Offered by History & Art History. Limited to three attempts.

Specialized Designation: Non-Western Culture

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 328: *Rise of Russia.* 3 credits.
Political, social, and cultural development of Russia from early times to the end of the 19th century. Offered by History & Art History. Limited to three attempts.

Mason Core: Global Understanding

Specialized Designation: Non-Western Culture

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 329: *Modern Russia and the Soviet Union.* 3 credits.
Russia and the Soviet Union from the early 20th century to the present. Focuses on the Russian Revolution and the political, social, cultural, and economic developments of the Soviet and post-Soviet eras. Offered by History & Art History. Limited to three attempts.

Mason Core: Global Understanding

Specialized Designation: Non-Western Culture

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 334: *American Scriptures.* 3 credits.
In this course, students will analyze texts that Americans have treated as “scripture.” Students will read texts that present themselves as scripture, such as selections from the Book of Mormon and a Holy Sacred and Divine Roll and Book (a Shaker text). They will also read texts that have attained a sort of canonicity within American culture, such as the Declaration of Independence and Martin Luther King Jr.’s “Letter from Birmingham Jail.” Students will thus gain more than a valuable familiarity with a variety of American religious traditions. They will also reflect on the way that, even in a digital age, texts continue to shape American identity. Offered by History & Art History. Limited to three attempts. Equivalent to RELI 334.

Mason Core: Literature

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 335: *The African American Experience in the United States: African Background to 1885.* 3 credits.
History of African American experience in United States including African origins; trans-Atlantic slave trade; development of slavery in colonial, revolutionary, and antebellum periods; abolitionist movements; and African American participation in Civil War and during Reconstruction. Offered by History & Art History. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 336: *The African American Experience in the United States: Reconstruction to the Present.* 3 credits.
History of African American life in post-slavery America, and rise and consequences of racial segregation in 19th and 20th centuries. Examines African American response to continued racial inequality and repression. Covers great migration, urbanization, black nationalism, and civil rights era, as well as contemporary debates about race. Offered by History & Art History. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 339: *History of Baseball.* 3 credits.
Examines development of baseball in U.S. context of labor, intellectual, economic and political events including racial segregation. Offered by History & Art History. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 340: *Basketball and the American Experience.* 3 credits.
Explores history of basketball in the United States since the late 1800s. Examines how basketball reflects and informs attitudes toward race, ethnicity, gender, and national identity. Possible topics include YMCA movement, Jews in basketball, racial segregation, growth of college basketball, international politics, evolution of black aesthetic, ABA-NBA merger, women's basketball, Magic Johnson-Larry Bird rivalry, Michael Jordan, and basketball's professionalization, commercialization, and globalization. Offered by History & Art History. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 341: *History of Sport in the United States.* 3 credits.
Examines the roots of American sport in colonial play and recreation, the emergence of organized and national sports, issues of gender and race in the sporting world, and the intersection of U.S. sport with events such as the Civil Rights Movement and the Cold War. Offered by History & Art History. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 342: *History of the Olympics and the United States.* 3 credits.
Traces history of American participation in the Olympics from 1896 to the present. Topics may include American leadership in the Olympic Movement, the historical legacy of American Olympic host cities, American Imperialism, Nazism, issues of race, gender and ethnicity in the Olympics, the Cold War and Olympic boycotts, and commercialization of sport. Offered by History & Art History. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 343: *Women during the Enslavement Era.* 3 credits.
This course examines the history of African American women in antebellum America, both the general experiences of enslaved and nominally free women, and the lives of noted women who were involved in the public arena as orators, writers, preachers, abolitionists and women's rights activists. Within the context of the national political debates and compromises that took place on the issue of slavery and the status of free blacks, the course uses an intersectional analysis in examining the effect of gender, class and race on the development of ideologies concerning abolition, colonization, women's rights and enslavement. Offered by History & Art History. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 344: *Black Social Movements.* 3 credits.
The course examines the underlying causes of the increased violence and oppression African Americans faced post-Reconstruction and the organizational responses of blacks to the drastic curtailment of their basic rights. During this period of Jim Crow ascendancy, African American life was circumscribed by race riots and lynching, police brutality, segregation, job exclusion, housing discrimination, unequal educational opportunities and disfranchisement. Race and gender ideology figured prominently in white justification for violence and the restrictions meted out against blacks. In addition to examining the changing political and economic conditions that gave rise to various protest and civil rights organizations and movements, the course analyzes the different personalities and ideologies of leaders in these organizations, explores the divisions that sometimes impeded a movement's effectiveness, and investigates the gendered meanings of what it meant to be black and white in America. Offered by History & Art History. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 345: *Women's Activism: From Jim Crow to Black Power.* 3 credits.
At the turn of the 20th century popular culture categorized African American women as desexualized Mammies or immoral Jezebels. These devastating depictions were also linked to the myth of black men as hypersexual rapists of white women whose image was infused with a heightened purity. This course examines the simultaneous struggles of black women to defend their name and fight all forms of race and sex proscriptions from the turn of the century period of Jim Crow segregation and disfranchisement through the Civil Rights and Black Power Movements of the 1960s. This course establishes that the activism of women was central to struggles to overturn segregation, end lynching, and secure political and civil rights. The course explores the effects of sexist and racist ideologies on their lives and activism, the changes in their economic and political status, the legal and social barriers they faced, and the ways in which they were defined within families and within popular culture. Offered by History & Art History. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 350: *U.S. Women's History.* 3 credits.
History of women and their changing status and gender roles in American society from colonial period through "second wave" of feminism in 1970s. Explores images and lives of women of different class, ethnic, and regional origins. Also focuses on women's political, economic, and legal conditions, and changes in them. Offered by History & Art History. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 351: *History of the Old South.* 3 credits.
History of South to outbreak of Civil War, with particular emphasis on rise of sectionalism. Focuses on development of distinct Southern culture through emergence of economic, political, social, agricultural, and intellectual institutions. Offered by History & Art History. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 352: *The South since 1865.* 3 credits.
History of South during Reconstruction, Redeemer era, and New South, with particular emphasis on race relations. Covers political, economic, cultural, and intellectual development from aftermath of war. Offered by History & Art History. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 353: *History of Traditional China.* 3 credits.
China from earliest times to period of modern Western intrusion. Development of traditional Chinese culture, society, and government. Offered by History & Art History. Limited to three attempts.

Specialized Designation: Non-Western Culture

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 354: *Modern China.* 3 credits.
China from 1644 to the People's Republic of China. Emphasizes coming of West and various stages of Chinese reaction. Offered by History & Art History. Limited to three attempts.

Mason Core: Global Understanding

Specialized Designation: Non-Western Culture

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 356: *Modern Japan.* 3 credits.
Japan from Meiji Restoration to World War II. Emphasizes Japan's modernization in face of challenge. Offered by History & Art History. Limited to three attempts.

Mason Core: Global Understanding

Specialized Designation: Non-Western Culture

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 357: *Postwar Japan.* 3 credits.
History of Japan from World War II to present. Examines Japanese experience of several key moments: Japan's defeat in Pacific War, reconstruction during U.S. occupation, rise to economic prominence during 1960s and 1970s, and cultural and international identity crisis during 1980s and 1990s. Offered by History & Art History. Limited to three attempts.

Mason Core: Global Understanding

Specialized Designation: Non-Western Culture

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 358: *Post-1949 China.* 3 credits.
Puts People's Republic of CHINA (PRC) into historical context by assessing legacies of China's socialist revolution (1949-1976) and post-socialist reforms (1978-present). Explores revolutionary heritage of the Chinese Communist Party, goals and agendas of china's socialist state, ideologies and policies shaping urban and rural development, individual agency and responses to revolutionary mass mobilization and market reforms. Offered by History & Art History. Limited to three attempts.

Mason Core: Global Understanding

Specialized Designation: Non-Western Culture

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 359: *Modern Iraq.* 3 credits.
Examines the politics of Iraq under the British mandate, as an independent state under the monarchy, and as a republic after the revolution of 1958, emphasizing the social composition of Iraq's people and its ruling elites. Offered by History & Art History. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 360: *History of South Africa.* 3 credits.
Explores the historical processes that led to the rise of African kingdoms, colonialism, industrialization, resistance movements, and legalized segregation. Offered by History & Art History. Limited to three attempts.

Mason Core: Global Understanding

Specialized Designation: Non-Western Culture

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 364: *Revolution and Radical Politics in Latin America.* 3 credits.
During 20th century, Latin America has witnessed both peaceful political movements and violent revolutions aimed at achieving social justice. Considers several of these movements in comparative perspective: Mexican Revolution, Arbenz government in Guatemala, Allende regime in Chile, Cuban and Nicaraguan revolutions, and Brazilian Worker's Party. Offered by History & Art History. Limited to three attempts.

Mason Core: Global Understanding

Specialized Designation: Non-Western Culture

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 365: *Conquest and Colonization in Latin America.* 3 credits.
Examines forms of conquest and colonization practiced by Aztec, Inca, Spanish, and Portuguese in what is now Latin America. Includes role of ideology and religion in imperial rule, use of warfare to create empires and colonies, and implementation of political and economic systems

to rule subject people. Offered by History & Art History. Limited to three attempts.

Mason Core: Global Understanding

Specialized Designation: Non-Western Culture

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 366: *Comparative Slavery.* 3 credits.
Examines systems of slavery from ancient world to modern world, with special emphasis on Atlantic slave trade and slave societies in Latin America and Anglo America. Considers impact of slaves and slavery on cultural, economic, and political systems in Africa and Americas from 16th to 19th centuries. Offered by History & Art History. Limited to three attempts.

Specialized Designation: Non-Western Culture

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 367: *History, Fiction, and Film in Latin America.* 3 credits.
Explores modern Latin American history through different types of texts: scholarly histories, historical novels, fictional films, documentary films, and oral history. Explores ways these texts produce knowledge about the past. What motivates different approaches? What counts as evidence? How do we know what really happened? How do we decide what mattered and what did not? Also introduces several important episodes in 20th century Latin American history. Offered by History & Art History. Limited to three attempts.

Specialized Designation: Non-Western Culture

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 370: *War and American Society.* 3 credits.
Examines war and American society from the colonial period to the post-Cold War era, including how military institutions, war, and the preparation for war have affected American society, and how Americans have thought about military service, experience war, and made peace through their history. Special emphasis on civil-military relations and the role of war and militarism in American culture. Offered by History & Art History. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 373: *The Civil War and Reconstruction.* 3 credits.
Analyzes the history of the American Civil War from its origins in the late 18th century to the withdrawal of federal troops from the south in 1877. Examines the political, social, and economic issues that led to war; the home fronts, war leadership, diplomacy, combat motivation, and grand strategy; problems associated with reconstituting the nation's political institutions; and the integration of millions of newly freed slaves. Offered by History & Art History. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 377: *The Vietnam War.* 3 credits.
Covers the causes, major events, and legacies of America's Vietnam War, including an introduction to Vietnamese history and culture, American decisions for war, strategy and major military engagements, diplomacy and peace talks, and the aftermath of the conflict in Vietnam and United States. Offered by History & Art History. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 378: *History of Aviation.* 3 credits.
Examines history of aviation from origins to the present in the context of culture, economics, politics, society, technology and war. Addresses such topics as the emergence of aerospace engineering as a profession, the evolution of aerospace technology and growth of the industry, military aviation, the Space Race, and aviation art, literature, music and film. Offered by History & Art History. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 380: *Uncovering the U.S. Past Through Film.* 3 credits.
Examines Hollywood films as historical sources that reveal the social, political, cultural and economic landscapes of their historical moment. Explores the ways films participate in pressing national debates over gender, race and ethnicity , and national security. Offered by History & Art History. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 384: *Global History of Christianity.* 3 credits.
Exlpores the history of Christianity around the world in the context of political and social structures as well as religious beliefs and practices. Offered by History & Art History. Limited to three attempts.

Mason Core: Global Understanding

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 385: *Humanities College to Career.* 1 credit.
Focuses on career choices and effective self-presentation for soon-to-be graduating students with majors in the humanities. Explores how skills typically learned in humanities majors can be leveraged for a successful transition to post-graduation employment. Offered by History & Art History. Limited to three attempts. Equivalent to ENGH 303, FRLN 309, PHIL 393, UNIV 420.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 386: *Topics in History.* 1-6 credits.
Study of historical topics of special interest. Notes: Topics announced in advance. May be repeated for credit when topic is different. Offered by History & Art History. May be repeated within the term.

Specialized Designation: Topic Varies

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 387: *Topics in Global History.* 3-6 credits.
Study of historical topics or periods of special interest in global, Latin American, African, Asian, or Middle Eastern history. Notes: Topics announced in advance. May be repeated for credit when topic is different. Offered by History & Art History. May be repeated within the term.

Mason Core: Global Understanding

Specialized Designation: Topic Varies, Non-Western Culture

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 388: *Topics in European History.* 3 credits.
Study of historical topics or periods of special interest. Notes: Topics announced in advance. May be repeated for credit when topic is different. Offered by History & Art History. May be repeated within the term.

Specialized Designation: Topic Varies

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 389: *Topics in U.S. History.* 3 credits.
Study of historical topics or periods of special interest. Notes: Topics announced in advance. May be repeated for credit when topic is different. Offered by History & Art History. May be repeated within the term.

Specialized Designation: Topic Varies

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 390: *The Digital Past.* 3 credits.
Teaches the fundamentals of information technology within the context of a history course. Students learn fundamentals and skills as well as how our society became so enamored of and dependent on these knowledge and information tools. Understanding a new technology requires understanding how new technologies transform the societies that embrace them. Emphasizes the use of free and open-source software whenever possible. Offered by History & Art History. Limited to three attempts.

Mason Core: Info Tech & Computing

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 391: *History of Virginia to 1800.* 3 credits.
Discovery and settlement of Virginia. Colonial period with emphasis on development of representative government and race relations, Golden Age of Virginia dynasty, and coming of Civil War. Offered by History & Art History. Limited to three attempts.

Recommended Prerequisite: 6 hours of history or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 392: *History of Virginia Since 1800.* 3 credits.
Decision to secede, Civil War and Reconstruction, Readjustors and Populism, disfranchisement and Constitution of 1902, and rise of Senator Harry F. Byrd. Recent developments. Offered by History & Art History. Limited to three attempts.

Recommended Prerequisite: 6 hours of history or Permission of Instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 393: *Topics in Film and History.* 3 credits.
Study of historical periods or topics from perspective of feature films and documentaries. Notes: Topics available in advance from the department. May be repeated when topic is different. A maximum of 6 credits may be applied to the BA in history. Offered by History & Art History. May be repeated within the term for a maximum 6 credits.

Specialized Designation: Topic Varies

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 394: *Globalization and History.* 3 credits.
Explores major events in the making of the modern world from a global perspective, with emphasis on interconnections and the historical development of power, authority, and governance. Offered by History & Art History. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 395: *Topics in Digital History.* 3 credits.
Introduces students to issues and methods in digital history through study of a particular topic Offered by History & Art History. May be repeated within the term for a maximum 15 credits.

Specialized Designation: Topic Varies

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 396: *Introduction to Public History.* 3 credits.
Explores the role of historical memory in shaping public perceptions of the past, with emphasis on museums , monuments, and other public and popular culture expressions of historical information and themes. Offered by History & Art History. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 397: *Topics in Public History.* 3 credits.
Introduces students to issues and methods in preserving history and presenting historical information to a variety of audiences through museum exhibits, websites, public commemorations, and other means. Offered by History & Art History. May be repeated within the term for a maximum 9 credits.

Specialized Designation: Topic Varies

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 398: *Historical Study Abroad.* 1-6 credits.
Intended for participation in formally organized course offered by Center for Global Education during intersession or spring break. Notes: May be repeated with permission of department. Offered by History & Art History. May be repeated within the degree for a maximum 6 credits.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 399: *Internship.* 1-9 credits.
Approved work-study programs in cooperation with specific organizations including area museums; archives; historic sites; and local, state, and federal agencies. Notes: Credit determined by department. Offered by History & Art History. May be repeated within the degree for a maximum 9 credits.

Registration Restrictions:
Enrollment is limited to students with a major in History.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

HIST 401: *Colonial America.* 3 credits.
Intensive study of colonial American history from European origins through Revolutionary War. Offered by History & Art History. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 403: *Revolutionary Era in American History, 1763-1812.* 3 credits.
Study of formative years of new republic from Treaty of Paris of 1783 to election of 1820. Offered by History & Art History. Limited to three attempts.

Recommended Prerequisite: 6 hours of HIST or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 404: *Jacksonian America, 1812-1854.* 3 credits.
Study of age of Andrew Jackson. Emphasizes democratic institutions that emerged as dominant influences in American society. Offered by History & Art History. Limited to three attempts.

Recommended Prerequisite: 6 hours of history or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 426: *The Russian Revolution.* 3 credits.
Era of revolutionary activity from 19th century to end of 1920s, with emphasis on Russian Revolutions of 1917. Explores why revolutionary situation developed; political, social, and cultural issues at stake; why it took various forms; and revolution's contribution to nature of Soviet state and post-Soviet problems. Offered by History & Art History. Limited to three attempts.

Specialized Designation: Non-Western Culture

Recommended Prerequisite: 45 credits or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 436: *European Society and Culture: 19th and 20th Centuries.* 3 credits.
Examines major cultural trends in Europe since French Revolution. Major themes include romanticism; socialism; Marxism; and social effect of modernization, science, and societies. Offered by History & Art History. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 460: *Modern Iran.* 3 credits.
Modern Iran, from 1800 to present, in context of several broad themes: institutional structure of state; role of great powers in Iran and Iranian response to economic, military, technological, and ideological challenge posed by West; interaction of religion and other ideologies and politics; economic development and impact on politics and society; and ways historians have sought to understand and interpret modern Iranian history. Offered by History & Art History. Limited to three attempts.

Mason Core: Global Understanding

Specialized Designation: Non-Western Culture

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 461: *Arab-Israeli Conflict.* 3 credits.
Overview of history of Arab-Israeli conflict. Examines conflict from various perspectives: over land and between competing nationalisms and identities; in terms of national interests of various states, including Israelis and Palestinians as well as other Arab governments and great powers; and in terms of peace making and conflict resolution. Some knowledge of history of Middle East since World War I strongly advised. Offered by History & Art History. Limited to three attempts.

Specialized Designation: Non-Western Culture

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 462: *Women in Islamic Society.* 3 credits.
Surveys history of women in Islamic society from rise of Islam to present day. Examines historical processes that affected role and status of women in society, and specific topics around which issues of gender status and identity coalesced, especially in modern period. Offered by History & Art History. Limited to three attempts.

Mason Core: Global Understanding

Specialized Designation: Non-Western Culture

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 465: *The Middle East in the 20th Century.* 3 credits.
Political, social, and cultural history of Middle East since World War I. Emergence of Israel, Arab nationalism, and political and economic influence of Middle East in world affairs. Offered by History & Art History. Limited to three attempts.

Specialized Designation: Non-Western Culture

Recommended Prerequisite: 6 hours of HIST or permission of Instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 490: *Honors Directed Readings.* 3 credits.
Students must have completed at least one course in the field, or with the professor, chosen for these honors courses. Notes: The 3 reading credits should be taken before 3 research credits, though they may be taken concurrently. Either may be taken concurrently with HIST 499. Linked, individualized courses, usually given by same instructor. Involves directed readings. Offered by History & Art History. Limited to three attempts.

Recommended Prerequisite: Acceptance into the departmental honors program and permission of instructor.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 491: *Honors Directed Research.* 3 credits.
Students must have completed at least one course in the field, or with the professor, chosen for these honors courses. Notes: The 3 reading credits should be taken before 3 research credits, though they may be taken concurrently. Either may be taken concurrently with HIST 499. Linked, individualized courses, usually given by same instructor. Culminates in research paper related to subject of readings. Offered by History & Art History. Limited to three attempts.

Recommended Prerequisite: Acceptance into the departmental honors program and permission of instructor.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 498: *Directed Readings/Research in History.* 1-3 credits.
Readings, research conducted on individual basis in consultation with instructor. Notes: Only 3 credits may be applied to credits for degree. Offered by History & Art History. May be repeated within the term for a maximum 6 credits.

Recommended Prerequisite: History majors with 90 credits and Permission of Instructor.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

HIST 499: *RS: Senior Seminar in History.* 3 credits.
Research on specialized historical topic culminating in seminar paper and oral presentation. Synthesis course; students expected to integrate knowledge and skills acquired in Mason Core courses. Notes: Subject determined by instructor. Student may present no more than 3 credits for graduation credit. Must receive passing grade to graduate with BA in history. Offered by History & Art History. Limited to three attempts.

Mason Core: Synthesis

Specialized Designation: Research/Scholarship Intensive, Writing Intensive in Major

Recommended Prerequisite: History majors with 90 credits

Registration Restrictions:
Required Prerequisites: (HIST 300[C] or 300[XS]) and (ENGH 302[C], ENGL 302[C], ENGH 302[XS], HNRS 110[C], 110[XS], 210[C], 302[C] or 302[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major in History.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

500 Level Courses

HIST 510: *Approaches to Modern World History.* 3 credits.
Introduces historical study of world beyond Europe and United States. Students read major theoretical works and case studies of particular regions. Examines imperialism, national identity, and various forms

of popular resistance; familiarizes students with range of scholarly approaches, including world systems theory and subaltern studies. Offered by History & Art History. May not be repeated for credit.

Recommended Prerequisite: Admission to graduate program in history.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HIST 525: *Problems in Latin American History.* 3 credits.
Analysis of selected problems. Emphasizes reading and discussion of historical interpretations, and development of bibliography. Notes: May be repeated for credit when topic is different. Offered by History & Art History. May be repeated within the term.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HIST 535: *Problems in Comparative World History.* 3 credits.
Investigates selected problems in global and comparative history, covering multiple countries or world regions. Notes: May be repeated for credit when topic is different. Offered by History & Art History. May be repeated within the term.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HIST 555: *Problems in Asian History.* 3 credits.
Discussion of readings and historical interpretations and compilation of a comprehensive bibliography on given theme. Notes: Topics announced by instructor. May be repeated for credit when topic is different. Offered by History & Art History. May be repeated within the term.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HIST 565: *Problems in African History.* 3 credits.
Analysis of selected problems in African history. Emphasis on reading and discussion of historical interpretations and development of bibliography. Notes: May be repeated for credit when topic is different. Offered by History & Art History. May be repeated within the term.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HIST 575: *Approaches to Middle East and Islamic History.* 3 credits.
Introduces students to the central issues and debates surrounding the study of the Middle East, Islam, and Muslim societies. Covers key methodological issues including the role of area studies vis-a-vis disciplinary approaches and debates on the politics of knowledge production and historiography. Offered by History & Art History. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

HIST 576: *The Crusades.* 3 credits.
Explores the interaction between the Christian East, the Muslim World and the Christian West. Examines primary sources (in translation) and secondary sources that render a wide spectrum of ideologies and scholarship on the crusading movement. Emphasizes cultural interaction and transmission, warfare and coexistence between competing societies from Western Europe, Byzantium, and the Middle East. Offered by History & Art History. May not be repeated for credit.

Registration Restrictions:

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

HIST 585: *Problems in Middle Eastern History.* 3 credits.
Analyzes selected problem. Emphasizes reading and discussion of historical interpretations, and development of bibliography. Notes: May be repeated for credit when topic is different. Offered by History & Art History. May be repeated within the term.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HIST 598: *Historical Study Abroad.* 1-3 credits.
Intended for participation in formally organized course offered by the Center for Global Education. Offered by History & Art History. May be repeated within the term for a maximum 6 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Regular scale.

600 Level Courses

HIST 605: *Themes in European History I.* 3 credits.
Survey of European history from 1500 to 1815. Designed for individuals entering graduate program who need to strengthen preparation in this area, or who seek to enhance knowledge of latest interpretations in field. Stresses factual knowledge and its interpretation. Offered by History & Art History. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HIST 606: *Themes in European History II.* 3 credits.
Survey of European history from 1815 to present. Designed for individuals entering graduate program who need to strengthen preparation in this area, or who seek to enhance knowledge of latest interpretations in field. Stresses factual knowledge and its interpretation. Offered by History & Art History. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HIST 610: *The Study and Writing of History.* 3 credits.
Methodology of the historian including techniques of research, use of documentation and other sources, development of bibliography, and synthesis of material. Offered by History & Art History. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HIST 613: *Colonial North America.* 3 credits.
Examines European colonization in North America from a variety of perspectives, including cultural interaction, exchange, and conflict among Native, European, and African peoples, the political, social, economic, and cultural development of European colonies, and historical interpretations of the colonial era within national, continental, Atlantic, and world-historical frameworks. Offered by History & Art History. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:

This course is graded on the Graduate Regular scale.

HIST 615: *Problems in American History.* 1-6 credits.
Readings and discussion of bibliographies, interpretations, and research trends in topics selected by instructor. Notes: May be repeated for credit when topic is different. Offered by History & Art History. May be repeated within the term.

Specialized Designation: Green Leaf Related Course

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HIST 617: *Topics in the American Civil War Era.* 3 credits.
Joint project of instructor and students into various aspects of common topic in Civil War era, with emphasis on historiography and historical method. Offered by History & Art History. May not be repeated for credit.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HIST 618: *The Age of Jackson, 1815-1854.* 3 credits.
Survey of social, cultural, intellectual, economic, and political changes in United States during period of rapid growth and expansion. Topics include second-party system; growth of sectionalism, nationalism, and expansionism; industrialization and spread of market economy; rise of romantic reform and evangelical religion; and growth of abolitionist and proslavery movements. Offered by History & Art History. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HIST 620: *Development of the Early Republic, 1783-1815.* 3 credits.
Investigates breakdown of Confederation, Constitutional Convention, and role of revolutionary ideology of republicanism. Discusses leadership and policies of republic in hostile international context. Students read extensively in monographic literature and prepare research paper. Offered by History & Art History. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HIST 622: *U.S. South Since 1865.* 3 credits.
Provides a graduate level survey of the major themes and trends in the historical literature on the U.S. South since 1865. Topics covered include Jim Crow, the New Deal, the long Civil Rights movement, the rise of the Sunbelt, and the changing role of the South in national politics. Offered by History & Art History. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

HIST 623: *Recent U.S. History, 1945 to Present.* 3 credits.
Selected political, social, economic, diplomatic, and cultural forces that shaped the post-World War II American experience. Offered by History & Art History. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HIST 627: *Disasters in U.S. History.* 3 credits.
Examines disasters as lived experiences and cultural constructions from the seventeenth century to the industrial era. Presents so-called natural disasters as partly the result of human agency. Shows how that storms,

fires, and other unfortunate events become “disasters” only when they intersect with human lives. Uses case studies of disasters to explore their larger cultural and social contexts. Offered by History & Art History. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

HIST 629: *The Gilded Age and Progressive Era.* 3 credits.
Examines history of United States from 1877 to 1918, with attention to history of reform movements and politics, and social history of the period. Familiarizes with major issues and historical literature of the period. Offered by History & Art History. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HIST 630: *U.S. Women's History.* 3 credits.
Wide-ranging survey of burgeoning field of women's history, emphasizing critical evaluation of sources and interpretation. Readings represent variety of approaches, which may include material culture studies, medical history, history of sexuality, political history, and social and cultural history. Offered by History & Art History. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HIST 631: *Era of the American Revolution.* 3 credits.
Examines history and historiography of revolutionary era, with special emphasis on social and ideological interpretations of period. Includes events leading to War for Independence, war itself, and social and political effects of war on American society. Offered by History & Art History. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HIST 633: *Reconstruction Era.* 3 credits.
Examines Reconstruction as an era in which the federal government became increasingly powerful, but also one in which people on the ground, including former slave and rebels, western settlers, and Natives were able to resist or overthrow its actions. Addresses the rise of liberal individualism and the freedom of contract, as well as the way events on the ground resulted in more regionally focused, pragmatic understandings of rights. Offered by History & Art History. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

HIST 634: *Interwar America: 1918-1939.* 3 credits.
Considers issues of United States between the two world wars. Explores various ways issues complemented and contradicted each other in rich and complex historical era. Offered by History & Art History. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

HIST 635: *Problems in European History.* 3 credits.
Investigates selected problems. Readings, discussions, development of bibliographies. Primary sources used where possible. Notes: May be repeated for credit when topic is different. Offered by History & Art History. May be repeated within the term.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HIST 636: *Political Culture in Twentieth-Century Germany and Austria: Continuities and Discontinuities.* 3 credits.
Recent interpretations of key political events of 20th century. Asks if there were fundamental continuities in structure of German and Austrian society that can be observed throughout the period under review. Offered by History & Art History. May not be repeated for credit.

Recommended Prerequisite: Baccalaureate degree in history or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HIST 639: *Society and Politics in Western Europe, 1750-1914.* 3 credits.
Focuses on changes in social conditions and ramifications in political life. Attention to urbanization of workers, changes in peasantry, growth of middle classes, decline of nobility, and major political developments and expansion of liberal reforms. Offered by History & Art History. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HIST 640: *Metropolitan Cities of Europe in the Nineteenth and Twentieth Centuries.* 3 credits.
Studies individual cities, and investigates particular cities in depth. Considers economic, social, cultural, and political features of urban life. Offered by History & Art History. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HIST 642: *Humanism and the Renaissance.* 3 credits.
The Renaissance as a unique period in European cultural history from ca. 1350 to 1520. Concentrates on Italian situation as standard, with consideration given to manifestations of Renaissance in northern Europe, especially Germany, until Reformation. Focuses on recent studies of political, social, intellectual, and religious changes. Students write class reports and a larger bibliographic paper. Offered by History & Art History. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HIST 644: *Society and Culture in Early Modern Europe.* 3 credits.
Overview of most recent historical work on social and cultural history of premodern West, ca. 1400 to 1800. Uses theoretical approaches and empirical methodologies of other disciplines, especially social anthropology, sociology, and literary theory, to shed new light on popular culture, class, manners, taste, rituals, religion, language, gender, and the state. Formulates new topics of research and poses new questions, and suggests new approach to more traditional topics such as politics, religion, and ideas. Offered by History & Art History. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HIST 646: *Stalinism.* 3 credits.
Explores differing interpretations of the history of Stalinism. Topics include Soviet ideology, terror, Stalinist culture and society, the politicization of everyday life, industrialization and urbanization, family and gender politics, nationalities policies, and foreign policy—all of which combined to create the strange new culture that has been called

Stalinism. Offered by History & Art History. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

HIST 661: *Religion in North America to 1870.* 3 credits.
Dimensions of religion and religious experience in early America, from the beginnings of European settlement into the mid-to-late nineteenth century. Offered by History & Art History. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

HIST 662: *U.S. Religion since 1870.* 3 credits.
Dimensions of religion and religious experience in the United States, from the mid-to-late nineteenth century through recent decades. Offered by History & Art History. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

HIST 663: *Topics in U.S. Religious History.* 3 credits.
Readings and discussion of bibliographies, interpretations, and research trends in U.S. religious history. Topics selected by the instructor. Notes: May be repeated when topic is different. Offered by History & Art History. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

HIST 664: *Indigenous North America.* 3 credits.
Examines recent historiographical debates in the field of US Indigenous history and situates Indigenous peoples within the broader context of US cultural, social, and political history. Introduces students to various historical methodologies for working with Indigenous peoples as well as the politics of Indigenous history. Offered by History & Art History. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

HIST 677: *The Vietnam War.* 3 credits.
Considers the causes, major events, and historiographic debates of America's Vietnam War including the war's antecedents in Vietnamese history, American decisions for war, strategy and major military engagements, the American antiwar movement, and diplomacy and peace talks. Offered by History & Art History. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

HIST 679: *War and Remembrance.* 3 credits.
Considers various approaches to the study of public or collective memory as it pertains to war, in particular how people around the world have constructed memories of war and how those memories have been expressed in literature, popular culture, memorials, and commemorative activities. Offered by History & Art History. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

HIST 680: *Introduction to Digital Humanities.* 3 credits.
Introduces students to key concepts, tools, and practices of digital humanities. Offered by History & Art History. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

HIST 685: *Topics in Applied History.* 3 credits.
Addresses specific topics in applied history selected by the instructor, with emphasis on combining theoretical analysis and readings with attention to practices and skills of applied history. Offered by History & Art History. May be repeated within the degree for a maximum 15 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

HIST 688: *Topics in History and New Media.* 3 credits.
Covers specific topics in history and new media selected by the instructor, with an emphasis on combining theoretical analysis and readings with hands-on projects and problem-solving. Notes: May be repeated for credit when topic is different. Offered by History & Art History. May be repeated within the term for a maximum 12 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

HIST 689: *Teaching and Learning History in the Digital Age.* 3 credits.
Examines what happens when instructors integrate new media technology into history classroom. Includes consideration of learning theory, new media theory, and an in-depth examination of state-of-the-art in practice. In the final third of semester, students produce practicum that is either working history teaching web site or concept paper for site, depending on student's degree of technical sophistication. No prior facility with information technology required. Course appropriate for graduate students working as teachers or planning career in teaching. Offered by History & Art History. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

HIST 690: *The Administration of Archives and Manuscripts.* 3 credits.
Introduces principles and practices of managing records and administering archival and manuscript collections, public and private. Designed for graduate students with special interest in historical sources as well as for those specializing in applied history. Offered by History & Art History. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HIST 691: *Museum Studies.* 3 credits.
General introduction to museums of history and museum studies in the United States, intended for interested citizen as well as for assistance to students in course and career choices. Explores development, present state, and future possibilities of U.S. Museums, with some reference to international developments. Offered by History & Art History. May not be repeated for credit.

Recommended Prerequisite: 6 hours of U.S. HIST or permission of department.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HIST 692: *Historical Editing.* 3 credits.
Introduces fundamentals of historical editing of documents, including microform, word processing, and computer techniques. Designed for those seeking introduction to various areas of applied history, and those intending to edit historical documents for publication. Offered by History & Art History. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HIST 693: *Historic Preservation.* 3 credits.
General introduction to historic preservation in the United States, intended for interested citizen and to assist students in course and career choices. Explores development, present state, and future possibilities of historic preservation in the United States, with some reference to international aspects of preservation. Offered by History & Art History. May not be repeated for credit.

Recommended Prerequisite: 6 credits of U.S. history or permission of department.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

HIST 694: *Digital Public History.* 3 credits.
Introduces students to the theories and methods central to doing digital public history, and develops the skills necessary for students to plan and execute their own projects. Topics include digital strategy development, developing effective digital exhibits, describing and publishing digital collections, mobile computing and curating the landscape, creating participatory history projects, and effective methods for evaluating digital public history work. Offered by History & Art History. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

HIST 696: *Clio Wired: An Introduction to History and New Media.* 3 credits.
Students with limited computer competency should consult department before enrolling. Introduces changes that new media and technologies are bringing to how we research, write, present, and teach about the past. Students explore theoretical and historical issues as well as learn hands-on skills in digital history. Notes: Students with limited computer competency should consult with department before enrolling. Offered by History & Art History. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

HIST 697: *Creating Historical Knowledge using Digital Methods.* 3 credits.
Seminar; students create original historical knowledge by using digital and computational techniques. Offered by History & Art History. May not be repeated for credit.

Recommended Prerequisite: HIST 696 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

HIST 698: *Programming for History.* 3 credits.
Seminar; focuses on developing proficiency in a variety of programming languages and tools for humanistic and historical purposes. Offered by History & Art History. May not be repeated for credit.

Recommended Prerequisite: HIST 696, or literacy in new media.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:

This course is graded on the Graduate Regular scale.

700 Level Courses

HIST 711: *Research Seminar in U.S. History.* 3 credits.
Research in specialized topics using primary sources. Offered by History & Art History. May be repeated within the term for a maximum 6 credits. Equivalent to HIST 797.

Recommended Prerequisite: HIST 610 or permission of department.

Registration Restrictions:
Enrollment is limited to students with a major in Cultural Studies, Education (Community College) or History.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

HIST 794: *Internship in Applied History.* 1-6 credits.
All internship placements must be approved by the department to ensure suitability to student's program. Introduces applied history through work and study at historical museum, site, library archive, editing project, or other approved agency. Offered by History & Art History. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Admission to graduate program in history and 3 hours of applied history.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Graduate Special scale.

HIST 795: *Practicum in Digital History.* 3 credits.
Exposes students to various projects in digital history through work and study at the Center for History and New Media. All placements must be approved by CHNM to ensure the suitability of students and projects. Offered by History & Art History. May be repeated within the degree for a maximum 12 credits.

Registration Restrictions:
Enrollment is limited to students with a major, minor, or concentration in History.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Special scale.

HIST 796: *Directed Readings.* 1-6 credits.
Independent reading on topic agreed to by student and faculty member. Offered by History & Art History. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Regular scale.

HIST 797: *Research Seminar in History.* 3 credits.
Research in specialized topics using primary sources. May be repeated for credit when topic is different, or with same topic with permission of the department. Offered by History & Art History. May be repeated within the term for a maximum 6 credits. Equivalent to HIST 711.

Specialized Designation: Topic Varies

Recommended Prerequisite: HIST 610 or permission of department.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Cultural Studies, Education (Community College) or History.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

HIST 798: *Directed Research and Writing in History.* 3 credits.
Intended for students in department's predoctoral track who are not writing master's thesis. Goal is to produce substantial and original contribution to historical knowledge on model of article in scholarly journal. Offered by History & Art History. May not be repeated for credit.

Recommended Prerequisite: Admission to MA program, HIST 610, and research seminar.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Thesis

Grading:
This course is graded on the Graduate Special scale.

HIST 799: *Thesis.* 1-6 credits.
Master's thesis research and writing under direction of faculty committee. Offered by History & Art History. May be repeated within the degree.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Thesis

Grading:
This course is graded on the Satisfactory/No Credit scale.

800 Level Courses

HIST 803: *Doctoral Readings for Major Field.* 3 credits.
Independent readings for PhD students on topic agreed on by student and instructor, taken in preparation for completing major field exam. Should be broadly comprehensive of field, and cover major historical themes and historiographical debates. Offered by History & Art History. May be repeated within the term for a maximum 20 credits.

Recommended Prerequisite: Admission to doctoral program.

Registration Restrictions:
Enrollment is limited to students with a major in History.

Enrollment is limited to Graduate level students.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Regular scale.

HIST 804: *Doctoral Readings for Minor Field.* 3 credits.
Independent readings for PhD students on topic agreed on by student and instructor, taken in preparation for completing minor field statement. Designed to help student master literature of subfield that is subject of field statement. Offered by History & Art History. May be repeated within the term for a maximum 20 credits.

Recommended Prerequisite: Doctoral standing.

Registration Restrictions:
Enrollment is limited to students with a major in History.

Enrollment is limited to Graduate level students.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Regular scale.

HIST 810: *History Doctoral Colloquium.* 1 credit.
Introduces array of scholars and scholarship through discussions of innovative historical events, important theories, and significant methodological breakthroughs in history. Offered by History & Art History. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Doctoral standing.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Satisfactory/No Credit scale.

HIST 811: *Doctoral Research Seminar.* 3 credits.
Students pursue research projects in their areas of specialization. Offered by History & Art History. May not be repeated for credit.

Recommended Prerequisite: Doctoral standing.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

900 Level Courses

HIST 998: *Doctoral Dissertation Proposal.* 1-6 credits.
Work on research proposal that forms basis for doctoral dissertation. Offered by History & Art History. May be repeated within the degree.

Recommended Prerequisite: Advancement to candidacy.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

HIST 999: *Doctoral Dissertation Research.* 1-12 credits.
Doctoral dissertation research and writing under direction of student's dissertation committee. Offered by History & Art History. May be repeated within the degree.

Recommended Prerequisite: Completion of HIST 998.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy.

Enrollment is limited to Graduate level students.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

Honors College (HNRS)

100 Level Courses

HNRS 110: *Principles of Research and Inquiry.* 4 credits.
Introduces students to a wide range of disciplinary research practices. Students learn how to pose and pursue a focused research question, identify and evaluate the multiple perspectives and approaches involved, analyze pertinent evidence, and write and speak clearly by participating in scholarly conversation.Offered by Honors College. Limited to three attempts.

Specialized Designation: Mason Impact.

Registration Restrictions:
Enrollment limited to students with the Honors College (Business)., Honors College (STEM). or Honors College. attributes.

Schedule Type: Lecture, Recitation

Grading:
This course is graded on the Undergraduate Regular scale.

HNRS 122: *Reading the Arts (Topic Varies).* 3 credits.
Course topic varies by semester and section. Students will pursue focused questions or investigate specific topics in the arts by considering selected works of art and/or literature in historical, social, and formal contexts. Inquiry may be complemented by attendance and/or

participation in creative activities.Offered by Honors College. Limited to three attempts.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with the Honors College (Business)., Honors College (STEM). or Honors College. attributes.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

HNRS 130: *Identity, Community, and Difference (Topics Vary).* 3 credits.
Pursues focused questions about how different conceptions of identity, community and difference are articulated and practiced in specific social and historical contexts. Students will explore how questions about individuality and subjectivity are asked in the humanities, arts, and/or social sciences.Offered by Honors College. Limited to three attempts.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with the Honors College (Business)., Honors College (STEM). or Honors College. attributes.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

HNRS 131: *Contemporary Social Issues (Topic Varies).* 3 credits.
Course topic varies by semester and section. Students will pursue a focused question about contemporary social issues. Students consider and apply theories, methods and evidence from the social sciences and humanities. Topics range in focus from global to local issues involving how power and inequality shape social and institutional structures.Offered by Honors College. Limited to three attempts.

Specialized Designation: Topic Varies

Registration Restrictions:
Required Prerequisites: HNRS 110[C], 110[XS], 302[C], 302[XS], 108[C] or 108[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment limited to students with the Honors College (Business)., Honors College (STEM). or Honors College. attributes.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

200 Level Courses

HNRS 240: *Reading the Past (Topic Varies).* 3 credits.
Course topic varies by semester and section. Students will pursue focused questions about a historical problem or situate a contemporary social issue in historical context. Students assess what is at stake in specific historiographic debates, consider how historical narratives are constructed and contested, and/or apply historical perspectives to analyze pressing social issues.Offered by Honors College. Limited to three attempts.

Specialized Designation: Topic Varies

Registration Restrictions:
Required Prerequisites: HNRS 110[C], 110[XS], 302[C], 302[XS], 109[C] or 109[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment limited to students with the Honors College (Business)., Honors College (STEM). or Honors College. attributes.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

HNRS 260: *Society and Community Engagement Topics (Topics Vary).* 3 credits.
Course topic varies by semester and section. Students pursue focused questions about a problem facing a community, society, or government. Students assess what is at stake in specific debates, consider how narratives are constructed and contested and/or apply multiple perspectives to analyze pressing social issues.Offered by Honors College. May be repeated within the degree for a maximum 6 credits. Equivalent to HNRS 230.

Specialized Designation: Topic Varies

Recommended Prerequisite: Completion of 30 credits

Registration Restrictions:
Required Prerequisites: HNRS 109[C], 109[XS], 110[C], 110[XS], 302[C] or 302[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment limited to students with the Honors College (Business)., Honors College (STEM). or Honors College. attributes.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

HNRS 261: *Community Connection Practicum (Topics Vary).* 3 credits.
Course topic varies by semester. Students will identify and address a challenge or question in response to the needs of the community. All students will contribute to and benefit from rigorous discussion among of a cohort of students representing multiple disciplines. Where relevant, the conversation also includes stakeholders from the community. Students learn to account for their own and for other points of view, and to adapt communication practices to reach those who do not share their backgrounds or expectations. As a result, they integrate new directions & approaches as well as alternate, divergent or contradictory perspectives or ideas.Offered by Honors College. May be repeated within the degree for a maximum 6 credits. Equivalent to HNRS 230.

Specialized Designation: Topic Varies

Recommended Prerequisite: Completion of 30 credits

Registration Restrictions:
Required Prerequisites: HNRS 109[C], 109[XS], 110[C], 110[XS], 302[C] or 302[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment limited to students with the Honors College (Business)., Honors College (STEM). or Honors College. attributes.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

300 Level Courses

HNRS 300: *Advanced Study Abroad.* 0-6 credits.
Offers students in the Honors College the opportunity to take advanced study abroad courses that focus on in-depth research or engaged learning. Offered by Honors College. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Grade of C or better in HNRS 109, HNRS 110, HNRS 210, or HNRS 302.

Registration Restrictions:
Enrollment limited to students with the Honors College (Business)., Honors College (STEM). or Honors College. attributes.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

HNRS 302: *Principles of Research and Inquiry for Transfer Students.* 3 credits.
Introduces students to a wide range of disciplinary research practices. Students learn how to pose and pursue a focused research question, identify and evaluate the multiple perspectives and approaches involved, analyze pertinent evidence, and write and speak clearly by participating in scholarly conversation.Offered by Honors College. Limited to three attempts.

Specialized Designation: Mason Impact.

Registration Restrictions:
Enrollment limited to students with the Honors College (Business)., Honors College (STEM). or Honors College. attributes.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

HNRS 360: *Multi-Disciplinary Topics (Topic Varies).* 3 credits.
Course topic varies by semester and section. Students will ask and refine manageable research questions focused on a topical theme selected by the instructor. Students will evaluate, analyze, and synthesize new or existing evidence and explicitly identify and explain the implications of connections between their findings and existing scholarship.
The results of projects developed in this research seminar will be communicated in the form of papers, public or digital communications, visual representations, public presentations, performances, and/or other significant deliverables.Offered by Honors College. May be repeated within the degree for a maximum 6 credits. Equivalent to HNRS 353.

Specialized Designation: Topic Varies

Registration Restrictions:
Required Prerequisites: HNRS 260[C], 260[XS], 261[C] or 261[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment limited to students with the Honors College (Business)., Honors College (STEM). or Honors College. attributes.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

HNRS 361: *Multi-Disciplinary Practicum (Topic Varies).* 3 credits.
Course topic varies by semester. Students in HNRS 361 identify and address a challenge or question that emerges from their individual goals & interests or in response to the needs of the community. All students in HNRS 361, whether pursuing individual or community challenges, contribute to and benefit from rigorous discussion among of a cohort of students representing multiple disciplines. Where relevant, the conversation also includes stakeholders from the community. Students learn to account for their own and for other points of view, and to adapt communication practices to reach those who do not share their backgrounds or expectations. As a result, they integrate new directions & approaches as well as alternate, divergent or contradictory perspectives or ideas. Course deliverables include strengthened and transformed proposals, reports, and/or prototypes.Offered by Honors College. May be repeated within the degree for a maximum 6 credits. Equivalent to HNRS 353.

Specialized Designation: Topic Varies

Registration Restrictions:
Required Prerequisites: HNRS 260[C], 260[XS], 261[C] or 261[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment limited to students with the Honors College (Business)., Honors College (STEM). or Honors College. attributes.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

HNRS 490: *Undergraduate Apprenticeship.* 1-3 credits.
Independent work with a faculty mentor on an inquiry-based project involving research, creative activities, or teaching and mentoring. Notes: This course is open only to undergraduates who have been accepted to the Undergraduate Apprenticeship Program.Offered by Honors College. Limited to three attempts.

Recommended Prerequisite: 45 credits and acceptance into the Undergraduate Apprenticeship Program.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

Honors College (Science/Math) (HNRT)

100 Level Courses

HNRT 125: *Applied Quantitative Reasoning.* 3 credits.
The course will emphasize statistical reasoning and develop statistical thinking using real-life examples. The following topics will be covered: descriptive statistics, probability, probability distributions, estimation, and

single sample hypothesis testing.Offered by Honors College. Limited to three attempts.

Mason Core: Quantitative Reasoning

Registration Restrictions:
Enrollment limited to students with the Honors College (Business)., Honors College (STEM). or Honors College. attributes.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

200 Level Courses

HNRT 225: *Applied Calculus.* 3 credits.
Theory and applications of calculus for nonSTEM students. Assumes a previous introductory course in calculus. Topics include exponential models in the life sciences and business, theory of integration and may include improper integrals, infinite series, differential equations, or probability.Offered by Honors College. Limited to three attempts.

Registration Restrictions:
Enrollment limited to students with the Honors College (Business)., Honors College (STEM). or Honors College. attributes.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Human Development and Family Science (HDFS)

200 Level Courses

HDFS 200: *Individual and Family Development.* 3 credits.
Examines how individuals and families function and develop over the lifespan. Uses a multidisciplinary approach to integrate theories of family science and human development emphasizing the role of contextual factors in contemporary families' lives. Explores the impact of gender, socioeconomics, race/ethnicity, culture, and immigrant status on human development and family relationships. Introduces a basic model of scientific inquiry and theorizing. Offered by School of Education. May not be repeated for credit.

Mason Core: Social/Behavioral Sciences

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HDFS 250: *Family Financial Literacy and Resource Management.* 3 credits.
Introduces personal and family financial planning and resource management throughout the lifespan. Integrates theories of family finance and resource management using a multidisciplinary approach. Emphasizes role of contextual factors in contemporary families' financial lives. Explores impact of gender, socioeconomic, race, ethnicity, and culture on family finance and resource management. Offered by School of Education. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

300 Level Courses

HDFS 300: *Individual and Family Services Delivery.* 3 credits.
Offers an overview of human services delivery with a focus on families. Explores the historical and social contexts as well as the theoretical orientations of systems that shape delivery of services to families. Examines: 1) economic and cultural barriers that prevent families from gaining access to services; 2) social policy surrounding services for families; 3) ethical and legal issues in family services. Offered by School of Education. Limited to three attempts.

Recommended Prerequisite: HDFS 200.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HDFS 301: *The Hospitalized Child and Family.* 3 credits.
Examines the philosophy, purposes, and concepts of Child Life Specialists. Explores developmental and psychological needs of hospitalized children, their families, and those who provide services to children. Examines the impact of illness and illness-related stressors on the dynamics of the family and strategies for coping. Offered by School of Education. Limited to three attempts.

Recommended Prerequisite: HDFS 200 or permission from instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

HDFS 400: *Advanced Family Processes.* 3 credits.
Examines family system dynamics and processes, with an emphasis on cultural and contextual factors that influence family functioning and well-being over the lifespan. Examines both healthy and dysfunctional family processes (including abuse, neglect, and family violence). Explores evidence-based practices and interventions that promote family health, resilience, and well-being. Offered by School of Education. Limited to three attempts.

Mason Core: Synthesis

Recommended Prerequisite: HDFS 200 or permission from instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HDFS 401: *Family Law and Public Policy.* 3 credits.
Examines contemporary family life and the impact of government laws, policies, and programs on families over time and across contexts and cultures. Explores the intended and unintended consequences of policies for diverse families across a variety of policy matters, from anti-poverty and social welfare policies to health and environmental policies. Offered by School of Education. Limited to three attempts.

Specialized Designation: Writing Intensive in Major

Recommended Prerequisite: HDFS 200 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HDFS 480: *Special Topics in Human Development and Family Science.* 3 credits.
Provides study on selected topic or emerging issue in Human Development and Family Science. Offered by School of Education. May be repeated within the degree for a maximum 9 credits.

Specialized Designation: Topic Varies

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

HDFS 498: *Internship and Analysis in Human Development and Family Science.* 1-6 credits.
Enables students to discuss work-related experiences within the context of developmental and family theories and research. Fosters and promotes professional development through class and small group discussions, activities, lectures, guest speakers, and practical assignments. This is the first course in a two-course series that supports students in their internship and in transitioning from student to professional. Offered by School of Education. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Required Prerequisites: HDFS 300[C] or 300[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Human Devl and Family Science.

Schedule Type: Internship

Grading:
This course is graded on the Satisfactory/No Credit scale.

HDFS 499: *Advanced Internship and Analysis in Human Development and Family Science.* 1-3 credits.
Supports students in the development and implementation of a program for staff and/or clients at internship site. Examines internship-related experiences within the context of developmental and family theories and empirical research. Contemplates and prepares for the transition to professional. This course is the second required internship experience. Note: Students will have 10 hours in the classroom and complete field-based hours that align with course credit hours. A 3 credit course requires 125 hours in the field, a 2 credit course requires 83 hours, and a 1 credit course requires 42 hours. Offered by School of Education. May be repeated within the degree for a maximum 3 credits.

Registration Restrictions:
Required Prerequisites: (HDFS 498 or 498[XS]) and (PSYC 301[C], 301[XS], SOCI 303[C], 303[XS], INTS 434[C] or 434[XS]).
[XS] Requires minimum grade of XS.
[C] Requires minimum grade of C.

Enrollment is limited to students with a major, minor, or concentration in Human Devl and Family Science.

Schedule Type: Internship

Grading:
This course is graded on the Satisfactory/No Credit scale.

Information Security Assurance (ISA)

500 Level Courses

ISA 562: *Information Security Theory and Practice.* 3 credits.
A technical introduction to the theory and practice of information security, which serves as the first security course for the MS-ISA degree, is required as a prerequisite for all subsequent ISA courses (at the 600 and 700 levels) and subsumes most topics covered by the CISSP examination. Also serves as an entry-level course available to non-ISA students, including MS-CS, MS-IS, and MS-SWE students. Offered by Computer Science. May not be repeated for credit.

Recommended Prerequisite: INFS 501, 515, 519, and SWE 510, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ISA 564: *Security Laboratory.* 3 credits.
Provides hands-on experience in configuring and experimenting with commodity-networked systems and security software in a live laboratory environment, with the purpose of understanding real-world security threats. Takes both offensive and defensive approaches and exposes students to a variety of real-world attacks, including viruses, worms, rootkits, and botnets. Possible mitigation and defending mechanisms, such as firewalls and intrusion detection software, also covered. Offered by Computer Science. May not be repeated for credit.

Recommended Prerequisite: ISA 562 and CS 531 or equivalent.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Laboratory

Grading:
This course is graded on the Graduate Regular scale.

600 Level Courses

ISA 650: *Security Policy.* 3 credits.
Focuses on security policy and its management for information systems having national and international connectivity. Issues include legal, international, cultural, and local factors. Students are expected to participate regularly in presenting material, in discussion of recent security issues, and by writing short papers on major current issues. Offered by Computer Science. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (ISA 562[B-] or 562[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ISA 652: *Security Audit and Compliance Testing.* 3 credits.
Presents the fundamental concepts of the IT-security audit and control process that is being conducted in a plethora of environments, including government, the financial industry, and the healthcare industry. The goal of this course is to enable the students to structure and perform audits based on the specifications of Sarbanes-Oxley, HIPAA, and FISMA audit programs. Covers all the CISA certification requirements in depth. Students completing the course are encouraged to attempt the certification exam on their own. Offered by Computer Science. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (ISA 562[B-] or 562[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ISA 656: *Network Security.* 3 credits.
An in-depth introduction to the theory and practice of network security. It assumes basic knowledge of cryptography and its applications in modern network protocols. Studies firewalls architectures and virtual private networks and provides deep coverage of widely used network security protocols such as SSL, TLS, SSH, Kerberos, IPSec, IKE, and LDAP. It covers countermeasures to distributed denial of service attacks, security of routing protocols and the Domain Name System, e-mail security and spam countermeasures, wireless security, multicast security, and trust negotiation. Offered by Computer Science. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (((ISA 562[B-] or 562[XS]) and (INFS 612[B-] or 612[XS])) or (CS 555[B-] or 555[XS])).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ISA 673: *Operating Systems Security.* 3 credits.
Covers fundamentals and advanced topics in operating system (OS) security, including OS-level security mechanisms and policies in investigating and defending against real-world attacks on computer systems, such as self-propagating worms and large-scale botnets. Basic OS security techniques, such as logging, system call auditing, and memory protection, will be discussed. Recent advanced techniques, such as honeypots and honeyfarms, system randomization, vulnerability fingerprinting, and virtualization, will also be introduced. Offered by Computer Science. May not be repeated for credit.

Recommended Prerequisite: ISA 562.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ISA 674: *Intrusion Detection.* 3 credits.
Studies methodologies, techniques, and tools for monitoring events in computer system or network, with the objective of preventing and detecting unwanted process activity and recovering from malicious behavior. Topics include types of threats, host-based and network-based information sources, vulnerability analysis, denial of service, deploying and managing intrusion detection systems, passive versus

active responses, and designing recovery solutions. Offered by Computer Science. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: ((ISA 564[B-] or 564[XS]) and (ISA 656[B-] or 656[XS])).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ISA 681: *Secure Software Design and Programming.* 3 credits.
Theory and practice of software security, focusing in particular on some common software security risks, including buffer overflows, race conditions and random number generation, and the identification of potential threats and vulnerabilities early in the design cycle. Emphasis is on methodologies and tools for identifying and eliminating security vulnerabilities, techniques to prove the absence of vulnerabilities, and ways to avoid security holes in new software and on essential guidelines for building secure software. Explores how to design software with security in mind from the ground up and integrate analysis and risk management throughout the software life cycle. Offered by Computer Science. May not be repeated for credit. Equivalent to SWE 681.

Recommended Prerequisite: SWE 619.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ISA 697: *Topics in Information Security.* 1-6 credits.
Special topics in information security and assurance not occurring in regular ISA sequence. Notes: May be repeated for credit when distinct offerings of course differ in subject. Offered by Computer Science. May be repeated within the term for a maximum 12 credits.

Specialized Designation: Topic Varies

Registration Restrictions:

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

700 Level Courses

ISA 763: *Security Protocol Analysis.* 3 credits.
Teaches how to design, understand, verify, and test communication protocols so they meet their objectives of recognizing the basic components of a communication protocol; specifying security properties accurately; modeling actors and mal-actors against which a protocol ought to be secure; discussing verification and testing methods and their limitations by ensuring that the specified protocol satisfies stated security objectives in the presence of specified mal-actions; designing a medium-size protocol that satisfies a specification of requirement; using existing tools to specify and verify security protocols; and testing protocols for satisfying their security objectives. Offered by Computer Science. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: ISA 656[B-] or 656[XS].
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ISA 764: *Security Experimentation.* 3 credits.
Teaches how to conduct security experimentations and empirically demonstrate, validate, and evaluate security vulnerabilities, exploits, and defense mechanisms. By the end of the course, students will gain a deeper understanding and first-hand experience on capturing packets of interests from both wired and wireless networks, and replying interested network flows and how shellcode various buffer overflows attacks, worms, spyware, rootkits, botnets, anonymous communication and traceback mechanisms work. Offered by Computer Science. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: ((ISA 564[B-] or 564[XS]) and (ISA 656[B-] or 656[XS])).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ISA 785: *Research in Digital Forensics.* 3 credits.
Focuses on research-related aspects of digital forensics including open problems in digital forensics, countermeasures against digital forensics, and fundamental and practical limitations of current digital forensics techniques. Also covers currently established techniques and tools for digital forensics as well as common legal and ethical issues. Offered by Computer Science. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (((ISA 562[B-] or 562[XS]) and (INFS 612[B-] or 612[XS])) or (CS 555[B-] or 555[XS])).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ISA 796: *Directed Readings in Information Security.* 3 credits.
Research and analysis of contemporary problem in information security. Notes: Prior approval required by faculty sponsor who supervises student's work. To register, students must complete independent study form available in department office. It must be initialed by faculty sponsor and approved by department chair. Written report also required. Offered by Computer Science. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Graduate standing in information security and assurance, with at least 12 prior credits in MS.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Research

Grading:
This course is graded on the Graduate Special scale.

ISA 797: *Advanced Topics in Information Security.* 3 credits.
Special advanced topics not occurring in regular ISA sequence. Notes: May be repeated for credit when distinct offerings of course differ in subject. Offered by Computer Science. May be repeated within the term for a maximum 9 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ISA 798: *Research Project.* 3 credits.
Research project chosen under guidance of full-time graduate faculty member, resulting in written technical report. Notes: Prior approval required by faculty sponsor who supervises student's work. To register, students must complete independent study form available in department office. It must be initialed by faculty sponsor and approved by department chair. Offered by Computer Science. May be repeated within the degree for a maximum 9 credits.

Recommended Prerequisite: 18 credits applicable toward MS.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Thesis

Grading:
This course is graded on the Graduate Special scale.

ISA 799: *Thesis.* 1-6 credits.
Original or expository work chosen and completed under supervision of graduate faculty member, which results in technical report accepted by three-member faculty committee. Report must be defended in oral presentation. Notes: To register, students must complete independent study form available in department office. It must be initialed by faculty sponsor and approved by department chair. Offered by Computer Science. May be repeated within the degree.

Recommended Prerequisite: 18 credits applicable toward MS or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Thesis

Grading:
This course is graded on the Satisfactory/No Credit scale.

800 Level Courses

ISA 862: *Models for Computer Security.* 3 credits.
This class will be focused on current research in Security with emphasis in Network and Software Security. Notes: May be repeated with change in topic. Offered by Computer Science. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Required Prerequisites: (ISA 562[B-] or 562[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to Graduate level students.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ISA 863: *Advanced Topics in Computer Security.* 3 credits.
Current topics of advanced research. Content varies depending on faculty interests, research developments, and student demand. Requires substantial student participation. May include formal models for computer security, multilevel data models, multilevel database management system architectures, secure concurrency control protocols, distributed secure system architectures, integrity models and mechanisms, security policy, and requirements analysis. Offered by Computer Science. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Required Prerequisites: (ISA 562[B-] or 562[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to Graduate level students.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

Information Security Management (ISM)

600 Level Courses

ISM 603: *Fundamentals of Information Security.* 3 credits.
This course will cover foundational technical concepts as well as managerial and policy topics on a variety of information and cyber security topics. The purpose of the course lectures, reading, in-class presentations, and examinations are to ensure that students have sufficient technical awareness and managerial competence related to information security and assurance. Students will examine the nature of threats and vulnerabilities, cryptography, software vulnerabilities, managing risk, and security controls. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Graduate.

Enrollment is limited to students with a major in Information Security Mgmt.

Enrollment limited to students in a Master of Science degree.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ISM 620: *Security of Communication Networks.* 3 credits.
This course provides students with a knowledge of network security and related topics in securing communication networks. In context of CIA triad of information security, threat classifications to the communication networks are discussed: eavesdropping (confidentiality), man-in-the-middle (integrity), and denial-of-service (availability). Real world examples of attack methods and attacks on communication networks and networked applications are discussed to translate principles into reality. Security design and architecture consisting of authentication, authorization, access control, traffic monitoring, secure protocols are covered. The course adopts "learning by doing" to connect principles to practice and provide insight into practical implementation. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Graduate.

Enrollment is limited to students with a major in Information Security Mgmt.

Enrollment limited to students in a Master of Science degree.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ISM 630: *Data Security Management.* 3 credits.
The course covers principles and practices of assessing data security needs, and implementation of the necessary data security plan covering databases as well as unstructured data in files, cloud, etc. More specifically, the course will focus on database security principles, database auditing, database reliability and implementation of database controls and security. In context of CIA triad of information security real world examples of attack methods and cases of database breaches are discussed. Database and data security implementations are covered through hands-on “learning by doing” exercises undertaken with commercial database products. Class project requires students to undertake security requirements assessment, conduct an audit and present a data security plan. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Graduate.

Enrollment is limited to students with a major in Information Security Mgmt.

Enrollment limited to students in a Master of Science degree.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ISM 640: *Analytics Driven Management of Security Operations.* 3 credits.
This course teaches how to use analytics to support decision making of information security managers. The course teaches how to create effective analytics driven tools for security monitoring, incident detection and for informing decisions in formulating response to incidents as well as ongoing review of information security policies. The course teaches you how to create reports, charts, dashboards, lookups, and alerts. Using examples and hands-on exercises with commercially used tools such as Splunk, to familiarize students with real-world implementations. The course bridges this knowledge with creation of incident handling and response plans to maintain business continuity. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (ISM 603[B-], 620[B-] and 630[B-]).
[B-] Requires minimum grade of B-.

Enrollment limited to students with a class of Graduate.

Enrollment is limited to students with a major in Information Security Mgmt.

Enrollment limited to students in a Master of Science degree.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ISM 692: *Internship and Professional Development Experience.* 3 credits.
Professional experience in conjunction with academic development. Hands-on experience is an important part of academic and career preparation and may be completed by an internship, consulting project, independent study or additional global experience. Must involve an average of 15 hours per week and be approved by program director. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Graduate.

Enrollment is limited to students with a major in Information Security Mgmt.

Enrollment limited to students in a Master of Science degree.

Schedule Type: Internship

Grading:
This course is graded on the Graduate Regular scale.

700 Level Courses

ISM 710: *Managing Information Security with Vendors and Partners.* 3 credits.
This course addresses various important information security issues related to IT and non-IT vendors and partners of organizations operating in an increasingly global economy. Topics covered includes information security related issues that need considered when managing IT vendors of hardware, software, or managing services (cloud, IT operations, security). Other topics covered include supply chain and cybersecurity, information security considerations during organizational change, downsizing as well as mergers and/or acquisitions. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Required Prerequisite: ISM 603[B-].
[B-] Requires minimum grade of B-.

Enrollment limited to students with a class of Graduate.

Enrollment is limited to students with a major in Information Security Mgmt.

Enrollment limited to students in a Master of Science degree.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ISM 720: *Economics of Information Security.* 3 credits.
Cybersecurity is more than a technical problem: security failures are caused as often by bad business decisions and incentive systems as by bad technical designs. This course provides an introduction to fundamental economic issues behind cybersecurity. It focuses on understanding the factors affecting the security decisions of organizations and individuals in the ecosystem of security products/services, as well as economic mechanisms and tools that help make better security decisions, through the lens of economic concepts and principles. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Graduate.

Enrollment is limited to students with a major in Information Security Mgmt.

Enrollment limited to students in a Master of Science degree.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ISM 730: *Information Security Governance, Policy, & Compliance.* 3 credits.
Information security governance allows for an organization to set security goals, responsibilities, and metrics to drive a successful security program. A successful security program begins with policies, and is monitored and improved through compliance requirements and metrics. This course takes students through understanding different security governance frameworks, information security policies, and cyber compliance requirements that organization must be aware of and practice in order to maintain an effective security posture. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Required Prerequisite: ISM 603[B-].
[B-] Requires minimum grade of B-.

Enrollment limited to students with a class of Graduate.

Enrollment is limited to students with a major in Information Security Mgmt.

Enrollment limited to students in a Master of Science degree.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ISM 747: *Information Security Risk Management and Audit.* 3 credits.
This course is focused on assessing the information security posture of an enterprise along available control frameworks, control objectives, logging, monitoring, reporting, and change management actions of the enterprise. Students will learn the process of risk assessment and management, and creating a control structure with goals and objectives, audit a given IT infrastructure against it, and if found inadequate, establish a systematic remediation procedure. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Required Prerequisite: ISM 603[B-].
[B-] Requires minimum grade of B-.

Enrollment limited to students with a class of Graduate.

Enrollment is limited to students with a major in Information Security Mgmt.

Enrollment limited to students in a Master of Science degree.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ISM 792: *Special Topics in Information Security Management.* 3 credits.
This course uses a seminar-based pedagogy to examine topics of state-of-the-art in information security based on faculty research and student interest. Sections established as necessary to focus on various topical issues that emerge in the research and practice of management of information security. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Required Prerequisite: ISM 603[B-].
[B-] Requires minimum grade of B-.

Enrollment limited to students with a class of Graduate.

Enrollment is limited to students with a major in Information Security Mgmt.

Enrollment limited to students in a Master of Science degree.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

Information Systems (INFS)

500 Level Courses

INFS 501: *Discrete and Logical Structures for Information Systems.* 3 credits.
Study of discrete and logical structures for information systems analysis and design including basic set theory and proof techniques, propositional and predicate logic, trees and graphs, finite state machines, formal languages and their relation to automata, computability and computational complexity, formal semantics-operational, axiomatic and denotational approaches. Notes: Credit cannot be applied to a graduate degree in the Volgenau School or the BS degree in computer science. Offered by Computer Science. May not be repeated for credit.

Recommended Prerequisite: Completion of 6 hrs of undergraduate mathematics.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

INFS 515: *Computer Organization Course and Operating Systems.* 3 credits.
Computer hardware architecture concepts including number systems, machine representation of numbers, instruction set formats, addressing techniques, memory organization, internal processor structure and operation. Symbolic assembly language fundamental operating systems concepts: process synchronization and scheduling, interprocess communication, memory management, virtual memory, deadlocks, file I/O and disk management, and LINUX operating system case studies. Notes: Credit cannot be applied to a graduate degree in the Volgenau School or the BS degree in computer science. Offered by Computer Science. May not be repeated for credit. Equivalent to ECE 445.

Recommended Prerequisite: Undergraduate courses or equivalent knowledge in structured programming in a high-level language.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

INFS 519: *Program Design and Data Structures.* 3 credits.
Study of the fundamentals of data structures and algorithms applied in programming solutions to application problems. The course stresses programming in a modern high-level language. Laboratory required. Notes: Credit cannot be applied to a graduate degree in the Volgenau School or the BS degree in computer science. Offered by Computer Science. May not be repeated for credit.

Recommended Prerequisite: Undergraduate courses or equivalent knowledge in structured programming in a high-level language.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

600 Level Courses

INFS 612: *Principles and Practices of Communication Networks.* 3 credits. Introduces principles of computer networks and applications to Internet. Discusses details of layering, protocols, performance, resource allocation, management, security and other contemporary issues related to networks. Examples of course material are protocols such as HTTP(S), DNS, TCP/IP, RSVP, SNMP, algorithms such as Dijkstra's link state routing; and security measures such as firewalls and encryption, the principles behind them and analysis of performance. Notes: No substitutions can be made for this class. Offered by Computer Science. May not be repeated for credit.

Recommended Prerequisite: INFS 501, 515, 519, and SWE 510, or equivalent

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

INFS 622: *Information Systems Analysis and Design.* 3 credits. Integration of computing technologies, systems analysis, system design practices, and management criteria in the design of large-scale information management and decision-support systems. Includes cases, computing lab. Offered by Computer Science. May not be repeated for credit.

Recommended Prerequisite: INFS 501, 515, and 519, or equivalent

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

INFS 623: *Web Search Engines and Recommender Systems.* 3 credits. Study of Web search engines and recommender systems. Topics to include classical information retrieval methods, Boolean retrieval systems, ranked retrieval, performance metrics, Web crawling, link analysis, overall search engine architecture, fundamentals and classification of recommender systems, learning user interests and object properties, and case studies. Offered by Computer Science. May not be repeated for credit.

Recommended Prerequisite: INFS 501, 515, 519, and SWE 510.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

INFS 640: *Introduction to Electronic Commerce.* 3 credits. Studies electronic commerce from both managerial and technical perspectives. Topics include e-commerce models and concepts; Internet and web protocols and infrastructure; e-commerce marketing and branding; security protocols and standards; e-commerce payment systems; and case studies of business-to-consumer, business-to-business, consumer-to-consumer, and e-government. Offered by Computer Science. May not be repeated for credit.

Recommended Prerequisite: INFS 501, 515, and 519; and SWE 510 or equivalent.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

INFS 697: *Topics in Information Systems.* 1-6 credits. Presents special topics in information systems not occurring in regular INFS sequence. Notes: May be repeated for credit when distinct offerings of course differ in subject. Offered by Computer Science. May be repeated within the degree.

Specialized Designation: Topic Varies

Registration Restrictions:

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

700 Level Courses

INFS 740: *Database Programming for the World Wide Web.* 3 credits.
Information systems accessible through web and Internet are becoming prevalent. Course focuses on technologies and industry standards for accessing and manipulating persistent data that are suitable for web applications. Offered by Computer Science. May not be repeated for credit.

Recommended Prerequisite: INFS 614.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

INFS 760: *Advanced Database Management.* 3 credits.
Study of advanced database models and languages, database design theory, transaction processing, recovery, concurrency, distributed database, and security and integrity. Discusses recent developments and research directions. Offered by Computer Science. May not be repeated for credit.

Recommended Prerequisite: INFS 614.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

INFS 770: *Knowledge Management for E-Business.* 3 credits.
Addresses knowledge management (KM) from managerial, technical viewpoints in context of large organizations doing business over web and Internet. Topics include KM life cycle for knowledge creation, aggregation, dissemination, and sharing; ontology modeling, design, and engineering; role of standards such as XML, RDF, web services, and semantic web for e-business; business rules and reasoning engines; and digital rights management for e-business. Offered by Computer Science. May not be repeated for credit.

Recommended Prerequisite: INFS 622 or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

INFS 772: *Intelligent Agents and the Semantic Web.* 3 credits.
Course covers the role of intelligent agents in cooperating to access, harvest, sift and winnow information and knowledge from the semantic web. Topics include agent architectures, practical reasoning and deductive agents, beliefs-desires-intentions (BDI) framework for agent reasoning, commitments and actions; Semantic Web ontology languages, description logics, reasoning and rule languages; and agent communication languages, protocols and standards. Offered by Computer Science. May not be repeated for credit.

Recommended Prerequisite: INFS 614

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

INFS 774: *Enterprise Architecture.* 3 credits.
This course presents the basic concepts and methodologies for the discipline known as Enterprise IT Architecting within a framework, structure, and methodology. Enterprise IT Architecting is a necessary step for designing and developing a system of information systems. It includes the definition of the business, work, functional, information and technical perspectives. As such, it is the enabling approach for the system development process that builds complex information systems. Offered by Computer Science. May not be repeated for credit.

Recommended Prerequisite: INFS 622 or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:

This course is graded on the Graduate Regular scale.

INFS 796: *Directed Readings in Information Systems.* 3 credits.
Research and analysis of contemporary problem in information system development. Notes: To register, students must complete independent study form available in department office. It must be initialed by faculty sponsor and approved by department chair. Prior approval required by faculty sponsor who supervises student's work. Written report required.. Offered by Computer Science. May be repeated within the term for a maximum 12 credits.

Recommended Prerequisite: Graduate standing in information systems, with at least 12 prior credits in MS.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Research

Grading:
This course is graded on the Graduate Regular scale.

INFS 797: *Advanced Topics in Information Systems.* 1-6 credits.
Special advanced topics not occurring in regular INFS sequence. Notes: May be repeated for credit when distinct offerings of course differ in subject. Offered by Computer Science. May be repeated within the degree.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

INFS 798: *Research Project.* 3 credits.
Research project chosen under guidance of full-time graduate faculty member, resulting in written technical report. Notes: To register, students must complete independent study form available in department office. It must be initialed by faculty sponsor and approved by department chair. Prior approval required by faculty sponsor who supervises student's work. Offered by Computer Science. May not be repeated for credit.

Recommended Prerequisite: 18 credits applicable toward MS.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Thesis

Grading:
This course is graded on the Graduate Special scale.

INFS 799: *Thesis.* 1-6 credits.
Original or compilary work evaluated by a committee of three faculty members. Notes: To register, students must complete independent study form available in department office. It must be initialed by faculty sponsor and approved by department chair. Offered by Computer Science. May be repeated within the degree.

Recommended Prerequisite: 18 credits applicable toward MS.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Thesis

Grading:
This course is graded on the Satisfactory/No Credit scale.

Information Technology (IT)

100 Level Courses

IT 102: *Discrete Structures.* 3 credits.
Introduces ideas of high-level program design and discrete structures. This course focuses on problem-solving and includes an introduction to programming, Boolean algebra, symbolic logic, digital circuits, set theory, combinatorics, discrete probability, mathematical induction, recursion and a basic introduction to trigonometry. Offered by Info Sciences & Technology. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (MATH 108^{*C}, 108^{XS}, 113^{*C}, 113^{XS}, HNRT 225^{C} or 225^{XS} or ((MATH 123^{C} or 123^{XS}) and (MATH 124^{*C} or 124^{XS}))).
* May be taken concurrently.
^{C} Requires minimum grade of C.
^{XS} Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

IT 104: *Introduction to Computing.* 3 credits.
This course, using both lecture and laboratory practice, introduces students to basic computer concepts in hardware, software, networking, computer security, programming, database, e-commerce, decision support systems, and current developments in 3-D printing, virtualization, and Siri-like systems. Additional lectures examine social, legal, ethical issues including privacy, intellectual property, health concerns, green computing, and accessibility. Students learn techniques to search, evaluate, validate, and cite information found online. Hands-on lab includes spreadsheets, databases, presentation, HTML 5, CSS, cybersecurity, blogs, wiki, and mobile app development. Offered by Info Sciences & Technology. Limited to two attempts.

Mason Core: Info Tech & Computing

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

IT 105: *IT Architecture Fundamentals.* 3 credits.
Introduces students to fundamental hardware and software concepts of information technology (IT) to understand the basics of modern computing environments. Students acquire a comprehensive understanding of a computer system's essential components, component interdependence, and binary functions, factoring in performance, data communication models, telecommunication basics, and information security. Recent trends and advancements in mobile computing, telecommunications, and IT infrastructures are discussed. Offered by Info Sciences & Technology. Limited to two attempts.

Registration Restrictions:
Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

IT 106: *Introduction to IT Problem Solving Using Computer Programming.* 3 credits.
Introduces techniques for developing solutions to business problems using procedural programming as an IT resource/tool. Students apply problem solving concepts by analyzing problems and constructing, testing, and implementing algorithms using pseudocode, desk checking, and procedural programming. Topics include: program flow, control structures, programming fundamentals, and integrating program modules into a cohesive solution. Offered by Info Sciences & Technology. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (IT 103[C], 103T, 103X, 104[C], 104[XS] or 104T) and (MATH 112[*C], 125[*C], 125[XS], IT 102[*C] or 102[XS]).
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

IT 109: *Introduction to Computer Programming.* 3 credits.
This foundation course is designed to teach students problem-solving skills using procedural programming that is required for the Information Technology degree program. The course accomplishes the goals through hands-on experience in the lecture class as well as through computer laboratory work. Topics to be discussed include, but are not limited to: variables, conditionals, functions, strings, iteration, testing, storage types and files. Offered by Info Sciences & Technology. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (IT 103[C], 103T, 103X, 104[C], 104[XS] or 104T) and (MATH 112[*C], 125[*C], 125[XS], IT 102[*C] or 102[XS]).
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

IT 191: *Review of Computing Fundamentals.* 1 credit.
Provides an extensive understanding of computing fundamentals. Topics include: hardware, software, networking, computer security, programming, database, e-commerce, decision support systems, and other emerging technologies. Open only to students with transfer credit comparable to IT 103 or IT 104 who have not attempted IT 191 or IT 104. Offered by Info Sciences & Technology. Limited to two attempts.

Registration Restrictions:
Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

IT 193: *Review of Multimedia and Web Design.* 1 credit.
Provides an extensive understanding of concepts and techniques for designing and developing attractive and accessible websites with multimedia components. Introduces and discusses technological, aesthetic, and human factors. Open only to students with transfer credit comparable to IT 213 who have not attempted IT 193 or IT 213. Offered by Info Sciences & Technology. Limited to three attempts.

Registration Restrictions:
Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

IT 194: *Review of Database Fundamentals.* 1 credit.
Provides an extensive understanding of database fundamentals. Topics include: database classifications, data models with extensive coverage of the relational model, entity-relationship and extended entity relationship models, normalization, advanced data modeling, and Structured Query Language (SQL) programming. Open only to students with transfer credit comparable to IT 214 who have not attempted IT 194 or IT 214. Offered by Info Sciences & Technology. Limited to two attempts.

Registration Restrictions:
Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

IT 196: *Review of IT Problem Solving Using Computer Programming.* 1 credit.
Provides an extensive understanding of techniques for developing solutions to business problems through an iterative design and implementation approach. Open only to students with transfer credit comparable to IT 106 who have not attempted IT 106 or IT 196.

(MATH 112 prior completion or co-registration is strongly recommended.) Offered by Info Sciences & Technology. Limited to two attempts.

Registration Restrictions:
Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

200 Level Courses

IT 206: *Object Oriented Techniques for IT Problem Solving.* 3 credits.
Introduces techniques for developing solutions to business problems using object-oriented programming as an IT resource/tool. Students apply problem solving concepts by analyzing problems and constructing, testing, and implementing object-oriented solutions using object-oriented analysis and design, data modeling, and object-oriented programming fundamentals. Topics include: Unified Modeling Language (UML), classes, inheritance, polymorphism, and exception handling. Notes: Students cannot receive credit for both IT 108 and IT 206. Offered by Info Sciences & Technology. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (IT 106[C], 106[XS] or 196[C]) and (IT 102[C], 102[XS], MATH 112[C], 125[C] or 125[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

IT 207: *Applied IT Programming.* 3 credits.
Building on fundamentals of problem solving, logic and algorithm development, and procedural programming, this course further develops these skills while covering server side scripting languages and relational database connectivity. Students will use open source software tools to develop database-enabled web applications. Offered by Info Sciences & Technology. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (IT 106[C], 106[XS], 109[C], 109[XS], 196[C], CS 112[C] or 112[XS]) and (IT 102[C], 102[XS], MATH 112[C], 125[C] or 125[XS]) and (IT 214[C], 214[XS] or 194[C]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

IT 209: *Introduction to Object Oriented Programming.* 3 credits.
Introduction to Object Oriented Programming (OOP) is intended for students who want to advance their basic programming skill to the next level by learning the OO programming paradigm. This course is designed to teach the benefits of OOP, including faster development, code reusability and less code maintenance. The course accomplishes the goals through hands-on experience with a number of coding assignments. Topics include, but are not limited to: OOP design, objects, class, methods, inheritance, testing, debugging, graphical user interfaces (GUIs). Offered by Info Sciences & Technology. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: ((IT 109[C] or 109[XS]) and (IT 102[C], 102[XS], MATH 112[C], 125[C] or 125[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

IT 213: *Multimedia and Web Design.* 3 credits.
Through lecture, class demonstration, class discussion, and hands-on lab experience, introduces multimedia and web computer graphics. Focuses on development of web-enabled multimedia applications from practical business perspective. Introduces and discusses technological, aesthetic, and human factors. Offered by Info Sciences & Technology. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (IT 103[C], 103T, 103X, 104[C], 104[XS] or 104T).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students cannot enroll who have a major in Civil and Infrastructure Engr, Computer Engineering, Computer Science, Electrical Engineering or Systems Engineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

IT 214: *Database Fundamentals.* 3 credits.
Covers fundamentals of relational database management systems and their use in business environments. Topics include: database classifications, data models with extensive coverage of the relational model, entity-relationship and extended entity-relationship models, normalization, advanced data modeling, and Structured Query Language (SQL) programming. Students design and implement a real-world relational database and create complex SQL queries to retrieve data from the database. Offered by Info Sciences & Technology. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (IT 103[C], 103X, 103T, 104[C], 104[XS], 104T, CS 112[C] or 112[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students cannot enroll who have a major in Civil and Infrastructure Engr, Computer Engineering, Computer Science, Electrical Engineering or Systems Engineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

IT 216: *Systems Analysis and Design.* 3 credits.
Students survey and apply techniques in analyzing and modeling information systems. Requirements are derived in various domains and abstracted at conceptual, logical, and physical levels. Process, data, and state modeling are applied through a project that follows a systems development lifecycle. Object modeling is explored and contrasted with data and process modeling. Individual and group modeling assignments are required. Offered by Info Sciences & Technology. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (IT 106[C], 106[XS], 109[C], 109[XS], 196[C], CS 112[C] or 112[XS]) and (IT 206[C], 206[XS], 209[C], 209[XS], CS 211[C] or 211[XS]) and (IT 194[C], 214[C] or 214[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

IT 223: *Information Security Fundamentals.* 3 credits.
Introduces concept of information security. Discusses need for organizational policy to define required services such as confidentiality, authentication, integrity, nonrepudiation, access control, and availability, and mechanisms to implement those services. Covers different types of security including physical security, computer security, and network security; common threats to and attacks against information systems, including accidental damage, identity theft, malicious software, and "spam"; and defensive measures. Notes: Students cannot receive credit for both IT 221 and IT 223. Offered by Info Sciences & Technology. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (IT 103[C], 103T, 103X, 104[C], 104[XS] or 104T) and (IT 101[C], 105[C] or 105[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students cannot enroll who have a major in Civil and Infrastructure Engr, Computer Engineering or Computer Science.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

IT 293: *Applied IT: Junior Transition.* 1 credit.
Focuses on transition issues for sophomores and transfer students in Information Sciences and Technology programs. Assists sophomore and transfer students with choice of concentration, course selection, and career readiness. Offered by Info Sciences & Technology. Limited to two attempts.

Registration Restrictions:
Students with a class of Freshman may **not** enroll.

Enrollment is limited to students with a major in Information Technology.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

300 Level Courses

IT 300: *Modern Telecommunications.* 3 credits.
Comprehensive overview of the fundamental principles of telecommunications, including current status and future directions of the public switched telephone network, cellular networks, satellite networks, and computer networks. Offered by Info Sciences & Technology. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (((IT 101[C] and 212[C]) or IT 105[C] or 105[XS]) and (MATH 108[C], 108[XS], 113[C], 113[XS], HNRT 225[C] or 225[XS] or ((MATH 123[C] or 123[XS]) and (MATH 124[C] or 124[XS]))) and (IT 102[C], 102[XS], MATH 112[C], 125[C] or 125[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Applied Information Technology, Applied Science, Individualized Study, Information Technology or Infmtn Tchngy Entrepreneurship.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

IT 304: *IT in the Global Economy.* 3 credits.
Explores how IT changed nature of society and contributed to evolution of global economy. Examines changing nature of work, education, and communication, and ethical issues such as intellectual property rights, computer-related crime, privacy concerns, and public policy issues. Offered by Info Sciences & Technology. Limited to two attempts. Equivalent to CS 306.

Registration Restrictions:
Required Prerequisites: IT 103[C], 103T, 103X, 104[C], 104T or 104[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major in Applied Information Technology, Applied Science, Individualized Study, Information Technology or Infmtn Tchngy Entrepreneurship.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

IT 306: *Data Structures and Algorithms in Java.* 3 credits.
Fundamentals of data structures and analysis of algorithms. Large programs written in a modern, high-level programming language. Stresses abstraction, modular design, code reuse, and correctness. Offered by Info Sciences & Technology. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (IT 206[B] or CS 211[B]) and (IT 102[C], 102[XS], MATH 112[C], 125[C] or 125[XS]) and (IT 216[C] or 216[XS]).
[B] Requires minimum grade of B.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Applied Information Technology, Applied Science, Individualized Study, Information Technology or Infmtn Tchngy Entrepreneurship.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

IT 309: *Data Structures and Algorithms in Python.* 3 credits.
Fundamentals of data structures and analysis of algorithms. Large programs written in a modern, high-level programming language. Stresses abstraction, modular design, code reuse, and correctness. Offered by Info Sciences & Technology. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (IT 209[B] or CS 211[B]) and (IT 102[C], 102[XS], MATH 112[C], 125[C] or 125[XS]) and (IT 216[C] or 216[XS]).
[B] Requires minimum grade of B.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

IT 314: *Database Programming.* 3 credits.
The course introduces students to the Oracle Developer application development utilities and tools and describes how to create and manipulate databases in Oracle database management system. The course provides an extensive overview of SQL and introduction to PL/SQL. Topics include data definition and manipulation languages, stored procedures, triggers, indexing techniques, and elementary query optimization. Offered by Info Sciences & Technology. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (IT 106[C], 106[XS], 109[C], 109[XS], 196[C], CS 112[C] or 112[XS]) and (IT 214[B] or 194[B]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.
[B] Requires minimum grade of B.

Enrollment is limited to students with a major, minor, or concentration in Applied Information Technology, Applied Science, Individualized Study, Information Technology or Infmtn Tchngy Entrepreneurship.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

IT 315: *Mobile Development.* 3 credits.
Introduces students to Mobile Development on the iOS and Android Platforms. Provides an overview of mobile platforms and devices including evaluation, uses, design and development of applications. Offered by Info Sciences & Technology. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (IT 206[C], 206[XS], 209[C], 209[XS], CS 211[C] or 211[XS]) and (IT 213[B] or 193[B]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.
[B] Requires minimum grade of B.

Enrollment is limited to students with a major, minor, or concentration in Applied Information Technology, Applied Science, Individualized Study, Information Technology or Infmtn Tchngy Entrepreneurship.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

IT 322: *Health Data Challenges.* 3 credits.
Covers methodology and tools used to work with health data structures supporting organizations' needs for reliable data that are captured, stored, processed, integrated, and prepared for further querying, decision making, data mining and knowledge discovery for a variety of clinical and organizational purposes. Data security and privacy, data standards, data interoperability, health information exchange, and big data analytics are discussed. Tools like R and R Studio are used to work with data sets at a statistical level, analyze, visualize and predict outcomes. Offered by Info Sciences & Technology. Limited to two attempts. Equivalent to BENG 322.

Registration Restrictions:
Required Prerequisites: (IT 214[B] or 194[B]) and (STAT 250[C], 250[XS], 344[C] or 344[XS]).
[B] Requires minimum grade of B.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Applied Information Technology, Applied Science, Individualized Study, Information Technology or Infmtn Tchngy Entrepreneurship.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

IT 324: *Health Information Technology Fundamentals.* 3 credits.
Explores challenges in the development and implementation of information systems and informatics tools in healthcare environment. Discusses the importance and benefits of electronic health records (EHRs). Students learn about EHRs' creation, management, and evolution, and their use for clinical decision support. In addition, students will learn about health care access, telemedicine models, health information security, privacy, federal laws, regulations and standards, and discuss their impact on healthcare delivery. Offered by Info Sciences & Technology. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: IT 214[B] or 194[B].
[B] Requires minimum grade of B.

Enrollment is limited to students with a major, minor, or concentration in Applied Information Technology or Information Technology.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

IT 328: *Health Information Emerging Technologies.* 3 credits.
Provides an introduction to networking in the healthcare environment and covers a wide range of topics on emerging health information technologies. Discusses internet protocols, safety procedures, and data privacy considerations in healthcare environments, and processes required to design, secure, and troubleshoot a network to support healthcare organizations. Mobile computing, patient portals, personal health records, telehealth, health information exchange are discussed. Offered by Info Sciences & Technology. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (IT 341[C] or 341[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

IT 331: *Web I: Web Development.* 3 credits.
Introduces the principles and techniques necessary for successful client-side web development. Topics such as HTML5, Cascading Style Sheets, JavaScript, DOM, XML, AJAX, and jQuery are presented. Students will learn to develop attractive and interactive web pages and applications and use client-side web-scripting languages to solve problems both with a text editor and more powerful WYSIWYG HTML editors. Offered by Info Sciences & Technology. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (IT 106[C], 106[XS], 109[C], 109[XS], CS 112[C], 112[XS] or IT 196[C]) and (IT 213[B] or 193[B]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.
[B] Requires minimum grade of B.

Enrollment is limited to students with a major, minor, or concentration in Applied Information Technology, Applied Science, Individualized Study, Information Technology or Infmtn Tchngy Entrepreneurship.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

IT 332: *Web Server Administration.* 3 credits.
Covers the installation, configuration, and administration of Web servers, FTP servers, and DNS servers. Additional topics include security setups, administration, and associated performance issues. Offered by Info Sciences & Technology. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (IT 213[B] or 193[B]).
[B] Requires minimum grade of B.

Enrollment is limited to students with a major, minor, or concentration in Applied Information Technology, Applied Science, Individualized Study, Information Technology or Infmtn Tchngy Entrepreneurship.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

IT 335: *Web Development using Content Management Systems.* 3 credits.
Through lectures and hands-on lab experience, presents web development techniques using content management systems (e.g. Joomla, Dot net nuke). Introduces characteristics of various types of websites (corporate portals, intranets and extranets; online magazines, newspapers, and publications; e-commerce and online reservations, government applications, small business websites). Presents methods, languages, tools related to web content management systems from an applied perspective. Offered by Info Sciences & Technology. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: IT 213[B] or 193[B].
[B] Requires minimum grade of B.

Enrollment is limited to students with a major, minor, or concentration in Applied Information Technology, Applied Science, Individualized Study, Information Technology or Infmtn Tchngy Entrepreneurship.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

IT 341: *Data Communications and Network Principles.* 3 credits.
Focuses on primary aspects of data communications and networking. Open Systems Interconnection (OSI) and Internet models; Layer 1 interfaces and cabling configurations; IP network addressing, network design, router and port configurations; security protocols; static routing, RIPv2, and OSPF configurations; TCP, UDP, data reliability, and error correction methods; Telnet, FTP, TFTP, HTTP, SMTP, POP, and DNS protocols. Notes: This course is 50 percent lab work of configuration of routers and network design, implementation, and testing. Offered by Info Sciences & Technology. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (((IT 101[C] and 212[C]) or (IT 105[C] or 105[XS])) and (IT 106[C], 106[XS], 109[C], 109[XS], 196[C], CS 112[C] or 112[XS]) and (MATH 108[C], 108[XS], 113[C], 113[XS], HNRT 225[C] or 225[XS] or ((MATH 123[C] or 123[XS]) and (MATH 124[C] or 124[XS]))) and (IT 300[*C] or 300[XS])).
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Applied Information Technology, Applied Science, Individualized Study, Information Technology or Infmtn Tchngy Entrepreneurship.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

IT 342: *Operating Systems Fundamentals.* 3 credits.
Practices and procedures for installing and configuring modern operating systems, including user accounts, file, print, and terminal servers, mobile computing, and disaster recovery. Through practical lab sessions, students receive real-world experiences with multiple operating systems. Offered by Info Sciences & Technology. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: ((IT 101[C] and 212[C]) or (IT 105[C] or 105[XS])) and (IT 106[C], 106[XS], 109[C], 109[XS], 196[C], CS 112[C] or 112[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Applied Information Technology, Applied Science, Individualized Study, Information Technology or Infmtn Tchngy Entrepreneurship.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

IT 343: *IT Project Management.* 3 credits.
Provides essential strategies and procedures for planning, organizing, staffing, monitoring, and controlling design, development, and production of system to meet stated IT-related need in effective and efficient manner. Fulfills writing-intensive requirement for BS in information technology. Offered by Info Sciences & Technology. Limited to two attempts.

Specialized Designation: Writing Intensive in Major

Registration Restrictions:
Required Prerequisites: IT 293[C] or 293[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Junior, Senior Plus or Senior.

Enrollment is limited to students with a major in Applied Information Technology, Applied Science, Individualized Study, Information Technology or Infmtn Tchngy Entrepreneurship.

Enrollment limited to students in a Bach of Individualized Study, Bachelor of Applied Science or Bachelor of Science degrees.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

IT 352: *Security Administration of Linux Systems.* 3 credits.
Provides theoretical foundation and practical experience installing, configuring, and maintaining Linux systems with an emphasis on best practices for security. Students develop a heterogeneous suite of clients and servers with firewalls and other networking components. Offered by Info Sciences & Technology. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: IT 223[B] and ((IT 101[C] and 212[C]) or IT 105[C] or 105[XS]) and (IT 106[C], 106[XS], 109[C], 109[XS], 196[C], CS 112[C] or 112[XS]) and (IT 342[C] or 342[XS]).
[B] Requires minimum grade of B.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Applied Information Technology or Information Technology.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

IT 353: *Information Defense Technologies.* 3 credits.
This course will examine and assess the role of information technology as a tool of warfare and civil defense. Topics will be discussed from both defensive and offensive perspectives and will include asset tracking, asymmetric warfare, network centric warfare, physical attacks, cyberterrorism, espionage, psyops, reconnaissance and surveillance, space assets, and applications of GPS and cryptographic technology. Students will research and write about the social, ethical, and political effects of such technology. Notes: For INFT and AIT majors, minors and certificates, and BAS cybersecurity concentration only. Offered by Info Sciences & Technology. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (IT 101[C], 105[C] or 105[XS]) and (IT 223[B]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.
[B] Requires minimum grade of B.

Enrollment is limited to students with a major, minor, or concentration in Applied Information Technology, Applied Science, Individualized Study, Information Technology or Infmtn Tchngy Entrepreneurship.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

IT 357: *Computer Crime, Forensics, and Auditing.* 3 credits.
Covers computer crime, relevant laws, agencies, and standards. Presents auditing, logging, forensics, and related software. Explores legal principles such as chain of evidence, electronic document discovery, eavesdropping, and entrapment. Students get hands-on experience with forensics tools. Notes: For INFT and AIT majors, minors and certificates, and BAS cybersecurity concentration only. Offered by Info Sciences & Technology. Limited to two attempts.

Registration Restrictions:

Required Prerequisites: (IT 103X, 103[C], 103T, 104[C], 104[XS] or 104T) and (IT 223[B]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.
[B] Requires minimum grade of B.

Enrollment is limited to students with a major, minor, or concentration in Applied Information Technology, Applied Science, Individualized Study, Information Technology or Infmtn Tchngy Entrepreneurship.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

IT 366: *Network Security.* 3 credits.
Examines information security services and mechanisms in network context. Topics include symmetric and asymmetric cryptography; message authentication codes, hash functions and digital signatures; digital certificates and public key infrastructure; access control including hardware and biometrics; intrusion detection; and securing network-enabled applications including e-mail and web browsing. Offered by Info Sciences & Technology. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (IT 206[C], 206[XS], 209[C], 209[XS], CS 211[C] or 211[XS]) and IT 223[B].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.
[B] Requires minimum grade of B.

Enrollment is limited to students with a major, minor, or concentration in Applied Information Technology, Applied Science, Individualized Study, Information Technology or Infmtn Tchngy Entrepreneurship.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

IT 369: *Data and Application Security.* 3 credits.
Introduces concept of data and application security. Discuss challenges of database, and application and industrial control system security. Offered by Info Sciences & Technology. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (IT 207[*C] or 207[XS]) and IT 223[B].
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.
[B] Requires minimum grade of B.

Enrollment is limited to students with a major, minor, or concentration in Applied Information Technology, Applied Science, Individualized Study, Information Technology or Infmtn Tchngy Entrepreneurship.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

IT 390: *Rapid Development of Scalable Cloud Applications.* 3 credits.
Presents software engineering, programming techniques, platforms and tools necessary for rapid development of scalable applications including: cloud platforms; scalable data storage solutions; web applications development environments. The course will provide a general overview of such techniques but will concentrate on selected ones in each term. The students will work in small teams and must develop scalable prototypes during the course. Offered by Info Sciences & Technology. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (IT 206[B], 209[B] or CS 211[B]) and (IT 213[C], 213[XS] or 193[C]) and (IT 214[C], 214[XS] or 194[C]).
[B] Requires minimum grade of B.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Applied Information Technology, Applied Science, Individualized Study, Information Technology or Infmtn Tchngy Entrepreneurship.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

IT 409: *Python Web Programming.* 3 credits.
This course covers layers of the n-tier architecture. It teaches students how to use Python and Django framework for building web sites. It starts with developing a web application with Python and adding additional features to that application. These features include, persisting data to an RDBMS systems such as Postgres SQL, securing the developed applications including user authentication, logging and debugging, and testing. Finally, we will explore developing RESTFul web services with Python/Django and integrating them with a Python web application. Offered by Info Sciences & Technology. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: IT 209[B] or CS 211[B].
[B] Requires minimum grade of B.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

IT 410: *Web Programming.* 3 credits.
This course covers layers of the n-tier architecture. Students will build web applications using available frameworks at each tier, such as Java Server Faces and Servlets for the UI tier, Web Services for the business tier and Java Database Connectivity for the persistence tier. Offered by Info Sciences & Technology. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: IT 206[B] or CS 211[B].
[B] Requires minimum grade of B.

Enrollment is limited to students with a major, minor, or concentration in Applied Information Technology, Applied Science, Individualized Study, Information Technology or Infmtn Tchngy Entrepreneurship.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

IT 413: *Digital Media Editing.* 3 credits.
Examines three areas of digital media editing- tools for editing, content and logic decision process, and information technology used by major corporations for development and distribution- through video examples from entertainment industry and corporate productions as well as hands-on editing experience. Offered by Info Sciences & Technology. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (IT 213[C], 213[XS] or 193[C]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Applied Information Technology, Applied Science, Individualized Study, Information Technology or Infmtn Tchngy Entrepreneurship.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

IT 414: *Database Administration.* 3 credits.
Explores advanced concepts of database administration using enterprise-level database management system. Topics include: backup, recovery, corruption, automatic management, resource management, job scheduling, space management, memory management, storage management, diagnosis and corresponding tools. Offered by Info Sciences & Technology. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (IT 314[C] or 314[XS]) and (IT 214[B] or 194[B]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.
[B] Requires minimum grade of B.

Enrollment is limited to students with a major, minor, or concentration in Applied Information Technology, Applied Science, Individualized Study, Information Technology or Infmtn Tchngy Entrepreneurship.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

IT 415: *Information Visualization.* 3 credits.
Provides an overview of information visualization applications in intelligence analysis, decision support systems, and network monitoring. Covers human factors, human interface with information, and current and future trends in information visualization. Students also learn to develop a rudimentary visualization application. Offered by Info Sciences & Technology. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (IT 213[B] or 193[B]).
[B] Requires minimum grade of B.

Enrollment is limited to students with a major, minor, or concentration in Applied Information Technology, Applied Science, Individualized Study, Information Technology or Infmtn Tchngy Entrepreneurship.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

IT 429: *Security Accreditation of Information Systems.* 3 credits.
This course explains basic principles of performing FISMA certification and accreditation (C&A) of an IT System. The course covers methodology for completing C&A, explains the role of the Certifier and the Information System Security Officer (ISSO), and gives students real world experience with IT Systems in the Federal Government. Offered by Info Sciences & Technology. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (IT 105[C], 105[XS] or 212[C]) and (IT 223[B]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.
[B] Requires minimum grade of B.

Enrollment is limited to students with a major, minor, or concentration in Applied Information Technology, Applied Science, Individualized Study, Information Technology or Infmtn Tchngy Entrepreneurship.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

IT 431: *Web II: Advanced Web Development.* 3 credits.
Introduces students to database-driven Web application design and development on cloud platforms and frameworks, and Web presentation using server-side coding and advanced techniques. Additional topics include LINQ, AJAX, and RESTful Web services. Offered by Info Sciences & Technology. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (IT 331[C] or 331[XS]) and (IT 213[B] or 193[B]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.
[B] Requires minimum grade of B.

Enrollment is limited to students with a major, minor, or concentration in Applied Information Technology, Applied Science, Individualized Study, Information Technology or Infmtn Tchngy Entrepreneurship.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

IT 441: *Network Servers and Infrastructures.* 3 credits.
Covers IP networking concepts and practices for IPv6 addressing, DHCP and DNS in IPv6 networks, secure communication over VPNs, VoIP architecture, Virtual Computing, Cloud Computing, MPLS, traffic monitoring and network connectivity between operating systems. Students learn the latest technologies of IP networks and understand application-level services used in the Internet. Lab sessions focus on installation of applications on virtual servers. Notes: Term project. Offered by Info Sciences & Technology. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (IT 341[B] or L341) and (IT 102[C], 102[XS], MATH 112[C], 125[C] or 125[XS]).
[B] Requires minimum grade of B.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Applied Information Technology, Applied Science, Individualized Study, Information Technology or Infmtn Tchngy Entrepreneurship.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

IT 442: *Cloud Infrastructure.* 3 credits.
This course covers the fundamentals of building IT infrastructure on a cloud platform. A broad overview of the cloud platform will be discussed and then individual elements of cloud services will be covered deeply. Students learn how to optimize different services by understanding cloud-based solutions. In addition, students explore best practices and design patterns for architecting optimal IT solutions on cloud. A combination of lectures and hands-on lab assignments expose students to the leading cloud computing paradigms and services. Offered by Info Sciences & Technology. Limited to two attempts.

Registration Restrictions:
Required Prerequisite: IT 341[B].
[B] Requires minimum grade of B.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

IT 445: *Advanced Networking Principles.* 3 credits.
This course focuses on Layer 2 and 3 of the OSI model and WAN technologies. Frame Relay and ISDN, complex router configurations of Variable Length Subnet Masking (VLSM), Classless Inter-Domain Routing (CIDR), Network Address Translation (NAT), Dynamic Host Configuration Protocol (DHCP), and study of Network Management Systems available for Data Communications Networks. Layer 2 involves Ethernet-switching components, including detailed hands-on configuration covering all aspects of switches using the command-line interface method. Offered by Info Sciences & Technology. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (IT 341[B] or L341).
[B] Requires minimum grade of B.

Enrollment is limited to students with a major, minor, or concentration in Applied Information Technology, Applied Science, Individualized Study, Information Technology or Infmtn Tchngy Entrepreneurship.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

IT 451: *Cloud Services Management.* 3 credits.
The course offers a top-down view of cloud services management including the techniques for building, deploying and maintaining various cloud models. Through hands-on lab assignments and real-world standard projects students will learn how to deal with cloud architecture challenges, such as load balancing, auto scaling, configuration management, caching, adaptive virtualization, on-demand resources provisioning, monitoring, and access control. Offered by Info Sciences & Technology. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: IT 442[C] or 442[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

IT 455: *Wireless Communications and Networking.* 3 credits.
Covers fundamental principles underlying wireless data communications. Topics include wireless transmission basics, radio propagation issues, antennas, digital modulation, spread spectrum techniques and their applications, and popular standards: WiFi, WiMAX and Bluetooth. Also presents practical knowledge to enable the design, testing, deployment, debugging and commissioning of WiFi, WiMAX networks and point-to-point microwave systems. Discussions on cellular network technologies are also included. Offered by Info Sciences & Technology. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (IT 101[C], 105[C] or 105[XS]) and (IT 102[C], 102[XS], MATH 112[C], 125[C] or 125[XS]) and (IT 341[B] or L341).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.
[B] Requires minimum grade of B.

Enrollment is limited to students with a major, minor, or concentration in Applied Information Technology, Applied Science, Individualized Study, Information Technology or Infmtn Tchngy Entrepreneurship.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

IT 461: *Application Development in Cloud.* 3 credits.
Introduces techniques for developing applications to take advantage of availability, security, performance, and scalability of the cloud. Students will learn the serverless framework and deploy and test serverless

applications on a cloud platform. Offered by Info Sciences & Technology. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: ((IT 106[C], 106[XS], CS 112[C], 112[XS], IT 196[C], 196[XS], 109[C] or 109[XS]) and (IT 214[C], 214[XS], 194[C] or 194[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

IT 462: *Applied Cyber Threat Analysis.* 3 credits.
Studies security policies, models, and mechanisms for secrecy, integrity, availability, and usage controls. Topics include models and mechanisms for mandatory, discretionary, and role-based access controls; authentication technologies; control and prevention of viruses and other rogue programs; common system vulnerabilities and countermeasures; privacy and security policies and risk analysis; intellectual property protection; and legal and social issues. Notes: For INFT and AIT majors, minors and certificates, and BAS cybersecurity concentration only. Offered by Info Sciences & Technology. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (IT 105[C], 105[XS] or 212[C]) and (IT 223[B]) and (IT 369[*C] or 369[XS]).
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.
[B] Requires minimum grade of B.

Enrollment is limited to students with a major, minor, or concentration in Applied Information Technology, Applied Science, Individualized Study, Information Technology or Infmtn Tchngy Entrepreneurship.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

IT 466: *Foundations of Cryptography and Security.* 3 credits.
Detailed study of certain symmetric and asymmetric cryptographic schemes; analysis of network data (including "packet sniffing"); security at different network layers (including IPSec, SSL/TLS and Kerberos); and secure e-commerce. Teaches principles of designing and testing secure networks, including use of network partitioning, firewalls, intrusion detection systems, and vulnerability assessment tools. Offered by Info Sciences & Technology. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: ((IT 223[B]) and (IT 366[C] or 366[XS]) and (IT 341[C] or 341[XS]) and (IT 206[C], 206[XS], 209[C], 209[XS], CS 211[C] or 211[XS]) and (IT 102[C], 102[XS], MATH 112[C], 125[C] or 125[XS])).
[B] Requires minimum grade of B.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Applied Information Technology, Applied Science, Individualized Study, Information Technology or Infmtn Tchngy Entrepreneurship.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

IT 467: *Network Defense.* 3 credits.
Practices and procedures for defending business-class, heterogeneous networks against threats (including system failure, environmental events, human error) and attacks (including intrusion, malicious software, denial of service). Through practical lab sessions, students receive real-world experience designing networks, installing and configuring system components, detecting and recovering from problems and attacks, and gathering data to support prosecution of offenders and refinement of countermeasures. Offered by Info Sciences & Technology. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (IT 366[C] or 366[XS]) and IT 223[B].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.
[B] Requires minimum grade of B.

Enrollment is limited to students with a major, minor, or concentration in Applied Information Technology, Applied Science, Individualized Study, Information Technology or Infmtn Tchngy Entrepreneurship.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

IT 471: *Big Data on Cloud Systems.* 3 credits.
This course focuses on cloud-based big data solutions. Students learn to create and use big data analytical environments using cloud data services and tools. Also covered is employing best practices for designing big data cloud environments for performance, security, and cost effectiveness. Offered by Info Sciences & Technology. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: ((CS 112[C], 112[XS], IT 106[C], 106[XS], 196[C], 109[C] or 109[XS]) and (IT 214[C], 214[XS], 194[C] or 194[XS]) and (IT 442[C] or 442[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

IT 479: *Digital Media and Web Design Capstone.* 3 credits.
Student team-based experience grounded in the work of the preceding courses in the digital media and web design minor. Each individual student will produce a portfolio of digital media and web-design related products and features that demonstrate core competencies in coding, design, content, and accessibility. Students will work in cross-disciplinary

teams to carry out a client-based web design project, the process and outcomes of which will also be represented in the individual portfolio. Offered by Info Sciences & Technology. Limited to two attempts. Equivalent to AVT 479, COMM 479, ENGH 479.

Recommended Prerequisite: Before enrolling in the Capstone seminar, students need to have completed all required courses for the Digital Media and Web Design Minor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

IT 481: *Cloud Security.* 3 credits.
This course covers the fundamentals of building security into cloud platforms and how to securely manage and access cloud environments using hands-on lab environments. Students will learn how to access cloud environments using IPSec utilizing the respective cloud VPN gateways. Students will also be exposed to identity and access management in the various platforms, how to create and assign roles to users and groups, how to audit actions taken, and how most commonly utilized security services in the cloud environments operate. Students will learn to separate out environments using virtual networks for project and system segmentation and learn how to apply virtual firewall rules and network access control lists. Offered by Info Sciences & Technology. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: IT 223[C] or 223[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

IT 484: *Voice Communications Technologies.* 3 credits.
Examines current and emerging technologies for transmission of voice signals over telecommunications systems. Highlights significant differences between the requirements for voice and other forms of data. Topics provide a balance between traditional voice technologies and those that use data networks. Real-world implementations are analyzed to determine reliability, quality, and cost effectiveness. Includes lab experiments with analog and digital technologies. Offered by Info Sciences & Technology. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (IT 300[C] or 300[XS]) and (IT 341[B] or L341).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.
[B] Requires minimum grade of B.

Enrollment is limited to students with a major, minor, or concentration in Applied Information Technology, Applied Science, Individualized Study, Information Technology or Infmtn Tchngy Entrepreneurship.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

IT 488: *Fundamentals of Satellite Communications.* 3 credits.
Provides a comprehensive overview of the principles of satellite communications systems. Major topics include satellite orbits and constellations, the space segment, antennas, modulation, coding, satellite access methods and link analysis. Also covers satellite applications, with emphasis on recent developments in the satellite communications field. Hands-on design experience is gained through the use of readily available vendor software systems. Offered by Info Sciences & Technology. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (IT 300[C] or 300[XS]) and (IT 341[B]) and (MATH 108[C], 108[XS], 113[C], 113[XS], HNRT 225[C] or 225[XS] or ((MATH 123[C] or 123[XS]) and (MATH 124[C] or 124[XS]))).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.
[B] Requires minimum grade of B.

Enrollment is limited to students with a major, minor, or concentration in Applied Information Technology, Applied Science, Individualized Study, Information Technology or Infmtn Tchngy Entrepreneurship.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

IT 491: *Introduction to Applied Natural Language Processing.* 3 credits.
This is an introductory course on natural language processing. It will focus on studies of textual data using rule-based and statistical methods. Our goal will be to create computer programs that analyze, interpret, and even generate human language. Offered by Info Sciences & Technology. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: IT 209[B] and (STAT 250[C] or 250[XS]).
[B] Requires minimum grade of B.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

IT 492: *Senior Design Project I.* 3 credits.
Students use information technology as a tool to redesign business processes so the enterprise can achieve its objectives. Student teams analyze the business processes of real organizations, quantify the negative impact caused by current process challenges, then develop and present a compelling Business Case for Change. Students develop skills critical for preparing and delivering effective verbal briefings and presentations. Notes: Restricted to AIT/INFT majors. Offered by Info Sciences & Technology. Limited to two attempts.

Mason Core: Capstone, Synthesis

Registration Restrictions:
Required Prerequisites: (IT 206[C], 206[XS], 209[C], 209[XS], CS 211[C] or 211[XS]) and (IT 207[C] or 207[XS]) and (IT 213[C], 213[XS] or 193[C]) and (IT 214[C], 214[XS]

or 194[C]) and (IT 223[C] or 223[XS]) and (IT 300[C] or 300[XS]) and (IT 341[C], L341 or 341[XS]) and (IT 343[C], 343[XS], CS 321[C] or 321[XS]) and (MBUS 300[C], 300[XS], MSOM 300[C], ACCT 203[C] or 203[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Senior Plus or Senior.

Enrollment is limited to students with a major in Applied Information Technology or Information Technology.

Enrollment limited to students in a Bachelor of Science degree.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

IT 493: *Senior Design Project II.* 4 credits.
Students, in teams, complete projects demonstrating preparedness as an IT professional. This work includes ethical challenges, status reports and engineering notebooks evaluated during class. Teams members develop detailed designs, build solutions up to Beta, present final written reports and final verbal presentations before review panels of business leaders. Students must register for the section that continues their IT 492 section. Offered by Info Sciences & Technology. Limited to two attempts.

Mason Core: Capstone

Registration Restrictions:
Required Prerequisites: (IT 492[C] or 492[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major in Applied Information Technology or Information Technology.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture, Recitation

Grading:
This course is graded on the Undergraduate Regular scale.

IT 498: *Independent Study in Information Technology.* 1-3 credits.
Directed self-study of special topics of current interest in IT. Notes: Topics must be arranged with instructor and approved by department chair before registering. Offered by Info Sciences & Technology. May be repeated within the term for a maximum 6 credits.

Recommended Prerequisite: 60 credits.

Registration Restrictions:
Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

IT 499: *Special Topics in Information Technology.* 3 credits.
Topics of special interest to undergraduates. Notes: May be repeated if topics are substantially different. Offered by Info Sciences & Technology. May be repeated within the term for a maximum 6 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: 60 credits.

Registration Restrictions:
Enrollment is limited to students with a major, minor, or concentration in Applied Information Technology, Applied Science, Individualized Study, Information Technology or Infmtn Tchngy Entrepreneurship.

Washington Consortium level students may **not** enroll.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

700 Level Courses

IT 796: *Directed Reading and Research.* 1-6 credits.
Reading and research on specific topic in information technology under direction of faculty member. Offered by Info Sciences & Technology. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Regular scale.

IT 797: *Directed Reading and Research.* 1-3 credits.
Reading and research on specific topic in information technology under direction of faculty member. Offered by Info Sciences & Technology. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Regular scale.

800 Level Courses

IT 896: *Directed Readings and Research in IT.* 1-6 credits.
Students pursue research on a specific topic under direction of faculty Offered by Info Sciences & Technology. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Completed qualifying exams, or permission of instructor.

Registration Restrictions:

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Regular scale.

900 Level Courses

IT 990: *Dissertation Topic Presentation.* 1 credit.
Students put together a professional presentation of a research proposal and present it for critique to fellow students and interested faculty. Notes: This course is only offered once per year in the Spring semester. Offered by Info Sciences & Technology. May not be repeated for credit. Equivalent to CEIE 990, CS 990, ME 990, STAT 990.

Recommended Prerequisite: Completion of all coursework for the PhD in Information Technology, or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Seminar

Grading:
This course is graded on the Satisfactory/No Credit scale.

IT 998: *Doctoral Dissertation Proposal.* 1-12 credits.
Work on research proposal that forms basis for doctoral dissertation. Notes: No more than 24 credits of IT 998 and 999 may be applied to doctoral degree requirements. Offered by Info Sciences & Technology. May be repeated within the degree.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

IT 999: *Doctoral Dissertation.* 1-12 credits.
Formal record of commitment to doctoral dissertation research under direction of faculty member in information technology. Note: Students must be advanced to candidacy before registering for this course. Students may not take IT 998 and 999 at the same time. Offered by Info Sciences & Technology. May be repeated within the degree.

Recommended Prerequisite: Admission to Doctoral candidacy; students must submit the Doctoral proposal and have it approved prior to registering for this course.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy.

Enrollment is limited to Graduate level students.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

Integrative Studies (INTS)

100 Level Courses

INTS 101: *Narratives of Identity.* 6 credits.
Explores the concept of identity through the study of literature and oral communication. Introduces aesthetic, cultural, and historical aspects of these forms of communication as well as their psychological, political, and practical significance, with special emphasis on the role of communication in a free society. Offered by School of Integrative Studies. Limited to three attempts.

Mason Core: Literature, Oral Communication

Specialized Designation: Mason Impact.

Registration Restrictions:
Enrollment limited to students with a class of Freshman.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 102: *Global Networks and Communities.* 6 credits.
Prepares students for participation in a global society by investigating global and local issues in a historical context. Considers critical topics of western civilization, globalization, (neo)colonialism, imperialism, and hegemony. Students gain an in-depth perspective of the intricate relationships between people and cultures at various moments in our history. Offered by School of Integrative Studies. Limited to three attempts.

Mason Core: Global Understanding, Western Civilization

Specialized Designation: Green Leaf Related Course, Mason Impact.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 103: *Human Creativity: Science and Art.* 6 credits.
Investigates the vital role played by human creativity in fine arts and natural sciences. Fosters an understanding of the aesthetic and intellectual components of the arts while exploring the scientific method, the relation of theory and experiment, and the development and elaboration of major ideas in science. Offered by School of Integrative Studies. Limited to three attempts.

Mason Core: Arts, Natural Science Overview

Specialized Designation: Green Leaf Related Course, Mason Impact.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 195: *Field-Based Work.* 1-6 credits.
Directed field studies in topic not otherwise available to students. Notes: Topics vary, but entire course or significant component is located off campus. In addition to fieldwork, course may also include reading assignments, tutorials, lectures, papers, presentations, portfolios, journals, and exams. Students bear costs of required field trips and should consult the Center for Social Action and Integrative Learning for more information. Offered by School of Integrative Studies. May be repeated within the term for a maximum 24 credits.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

200 Level Courses

INTS 202: *Public Speaking and Critical Thinking Skills.* 4 credits.
Combines process of learning to speak in front of audiences with analysis of arguments and persuasive appeals. Students learn how to create and present effective speeches, adapt messages to specific audiences, and evaluate and critique messages produced for others. One credit of experiential learning enables students to examine public speeches, news stories, political campaigns, and advertising, among others, to make meaningful connections between public speaking theory and practice. Offered by School of Integrative Studies. Limited to three attempts.

Mason Core: Oral Communication

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 203: *Inquiry for Action: Facilitating Change.* 6 credits.
Examines the relationships between academic research, individual acts and society's social and political structures. Students design a community-based research project, explore a rich array of qualitative and quantitative approaches, apply information and communication technologies to all aspects of the research process, and learn from individuals and organizations outside the classroom. Offered by School of Integrative Studies. Limited to three attempts.

Mason Core: Info Tech & Computing, Social/Behavioral Sciences

Specialized Designation: Mason Impact.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 204: *Leadership Theory and Practice.* 4 credits.
Examines historical and contemporary leadership theories and invites students to be reflective of their own leadership experiences through the lenses of those theories. Students develop critical lenses through which to evaluate their own self-awareness, effectiveness in groups, and ability to navigate structures and systems. Offered by School of Integrative Studies. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 210: *Sustainable World.* 4 credits.
Covers basic issues in the natural and social sciences that underlie current environmental problems. Considers ethical matters such as equity as they pertain to global resource consumption, pollution, and climate change. Offered by School of Integrative Studies. Limited to three attempts.

Mason Core: Natural Science with Lab

Specialized Designation: Green Leaf Focused Course, Mason Impact.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 211: *Introduction to Conservation Studies.* 3-6 credits.
Provides foundation for the integrative study of environmental conservation. Formal and informal writing assignments and oral presentations designed to strengthen critical thinking and communication skills important to students who pursue conservation-related professions. Instructors encourage students to use course assignments and off-campus work to identify suitable educational and career paths within the conservation world. Offered by School of Integrative Studies. Limited to three attempts.

Mason Core: Natural Science Overview

Specialized Designation: Green Leaf Related Course

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 244: *Beats, Rhyme, and Culture.* 4 credits.
Examines the history of hip-hop and the effect it has had on our society. The primary focus is to consider hip-hop as a medium of communication that impacts, represents, and misrepresents the life experiences of youth in the United States. Students are exposed to historical, socioeconomic, and musical/aesthetic contexts of this genre through in-class activities and by attending related cultural events. Offered by School of Integrative Studies. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 245: *Visual Culture and Society.* 4 credits.
Explores the role of visual culture in contemporary society including an examination of photography, the visual and performing arts, film and video, and electronic media. Readings focus on the historical foundations of visuality as well as theories of visual culture and aesthetics. Students investigate the ways that forms of visual culture function in society and how these are linked to race, class, and gender as well as politics and economics. Students will gain hands-on experience working with contemporary visual media tools such as computer graphics and digital video editing. Offered by School of Integrative Studies. Limited to three attempts.

Mason Core: Arts

Schedule Type: Lecture

Grading:

This course is graded on the Undergraduate Regular scale.

INTS 249: *Digital Literacy.* 4 credits.
Investigates information literacy, the mobile web, and interactive and immersive media, including gaming, social networking, blogging and micro-blogging, intellectual, political and civic collaborations, digital aesthetics and emerging digital cultures and art forms. Explores major theories of digital literacy and culture and introduce diverse social, artistic, theoretical and cultural practices that characterize today's digital domains and virtual environments. Notes: One experiential credit is required in this class. Offered by School of Integrative Studies. Limited to three attempts.

Mason Core: Info Tech & Computing

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 275: *Special Topics.* 1-18 credits.
Studies topics of special interest to undergraduates. Notes: May be repeated for credit when topic is different. Offered by School of Integrative Studies. May be repeated within the term for a maximum 18 credits.

Specialized Designation: Topic Varies

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 291: *Living-Learning Community.* 0-1 credits.
Bridges students' academic interests with their residence hall living experience. Students with common interests live together in the same residence hall and develop personal and academic relationships with other students and faculty from their chosen Living Learning Community focus. Offered by School of Integrative Studies. May be repeated within the degree for a maximum 8 credits.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 292: *Leadership for Sustainability.* 0-1 credits.
For students living in the Sustainability Living Learning Community and/or students panicipating in the Greenleaf ENCORE Series. Develop your understanding of sustainability in both theory and practice. Learn how change happens at Mason and identify contributions you can make to Mason's continuing pursuit of campus sustainability. Offered by School of Integrative Studies. May be repeated within the degree for a maximum 8 credits.

Specialized Designation: Green Leaf Focused Course

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 294: *Service-Learning Experience.* 1-15 credits.
Service-learning courses offer students, faculty, and community partners an opportunity to work together to integrate and apply knowledge to address community needs. Learning goals, action strategies, and assignments developed collaboratively. Students demonstrate progress through critical reflection that illustrates growth in acquiring and comprehending values, skills, and knowledge content. Critical reflection may take the form of papers, presentations, portfolios, journals, and exams. Offered by School of Integrative Studies. May be repeated within the term for a maximum 15 credits.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 295: *Field-Based Work.* 1-18 credits.
Directed field studies in topic not otherwise available to students. Notes: Topics vary, but entire course or significant component is located off campus. In addition to fieldwork, course may also include reading assignments, tutorials, lectures, papers, presentations, portfolios, journals, and exams. Students bear costs of required field trips and should consult the Center for Social Action and Integrative Learning for more information. Offered by School of Integrative Studies. May be repeated within the term for a maximum 24 credits.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 299: *Study Abroad.* 1-6 credits.
Intended for participation in formally organized course offered by Center for Global Education. A maximum of 15 credits may apply toward INTS degree requirements. Offered by School of Integrative Studies. May be repeated within the term for a maximum 16 credits.

Schedule Type: Fieldwork

Grading:
This course is graded on the Undergraduate Regular scale.

300 Level Courses

INTS 300: *Law and Justice.* 3 credits.
Combines various teaching methods including lectures, the Socratic method, case studies, discussion of readings and films, debates, and active inquiry-based learning to investigate the major institutions in the American legal system. Offered by School of Integrative Studies. Limited to three attempts.

Mason Core: Social/Behavioral Sciences

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 301: *Science in the News.* 3 credits.
Examination and discussion of the current trends in science as reported in the popular media. Students learn how to evaluate the science that is reported so they may become informed consumers; discuss how scientific advancement might shape society by looking at how science and society have changed together over time; and use examples from the past to discuss future trends. Offered by School of Integrative Studies. Limited to three attempts.

Mason Core: Natural Science Overview

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 303: *Introduction to International Studies.* 3 credits.
Explores a multi-disciplinary approach to addressing world issues. Combines lectures, field trips, discussion of readings, films, case studies, projects, and active inquiry-based learning to examine the natural environment, infectious disease and globalization, media and technologies, and war and violent conflict, with an attempt to deepen community members' understanding of an increasingly interdependent world. Offered by School of Integrative Studies. Limited to three attempts.

Mason Core: Global Understanding

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 304: *Social Movements and Community Activism.* 4 credits.
Examines how citizens, individually and collectively, accomplish social change in society through case study analysis. Considers advantages and limits of social change strategies from communication and social movement theory perspectives. Surveys topics including how leaders maintain momentum in face of opposition; how movements and organizations use slogans, symbols and music to inspire followers; and how participants construct persuasive media campaigns and political arguments to facilitate policy change. Notes: One credit of experiential learning enables students to explore their role as social advocates and effective citizens in context of community. Offered by School of Integrative Studies. Limited to three attempts.

Mason Core: Social/Behavioral Sciences

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 305: *Conflict Resolution and Transformation.* 6 credits.
Examines the nature and dynamics of conflict and ways to resolve and transform conflict. Experiential learning is used as the vehicle through which students explore their assumptions about communication and develop their skills for resolving interpersonal conflicts. Offered by School of Integrative Studies. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 310: *Violence and Gender.* 3-6 credits.
Using nonfiction, research documentaries, oral histories, case studies, literature, feature films, music, dance, and visual arts, examines the dynamics of violence through different cultural lenses. Students work in university and community settings to integrate their academic experiences with practice. Offered by School of Integrative Studies. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 311: *The Mysteries of Migration: Consequences for Conservation.* 6 credits.
Investigates the biology of migration and its implications for science policy. Students consider the phenomenon of migration in the context of natural history, conservation, and cultural issues. The course includes several weekend trips for field study. Offered by School of Integrative Studies. Limited to three attempts.

Mason Core: Natural Science with Lab

Specialized Designation: Green Leaf Related Course, Writing Intensive in Major

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 312: *Images and Experiences of Childhood: Social Construct, Literature, and Film.* 3-6 credits.
Immerses students in the images of childhood through the media of literature, video, and poetry, with a strong emphasis on historical perspectives of childhood. The class is interactive, requires some work in groups, and requires classroom participation. Offered by School of Integrative Studies. Limited to three attempts. Equivalent to HIST 386, HIST 498.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 314: *Conflict, Trauma and Healing.* 6 credits.
Develops in students an appreciation of human resilience and helps them acquire better coping mechanisms. Imparts knowledge of the nature and dynamics of trauma and healing. Investigates the difficulties people face in responding to settings of conflict such as war, school shootings, abuse, domestic violence, including natural disaster. Examines case studies from a variety of personal, national, and international settings. Offered by School of Integrative Studies. Limited to three attempts.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 315: *Spirituality and Conflict Transformation.* 6 credits.
Examines dimensions of spirituality, including peacemaking efforts in large-scale conflicts, conflicts within faith communities, and interpersonal disputes. Experiential learning explores spiritually informed resolution. Offered by School of Integrative Studies. Limited to three attempts.

Mason Core: Global Understanding

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 316: *Introduction to Childhood Studies.* 4 credits.
Focuses on the study of childhood from birth to adolescence from the perspective of several disciplines. Covers childhood theory, research, and policy and their applications to decisions regarding children and youth. Offered by School of Integrative Studies. Limited to three attempts.

Mason Core: Social/Behavioral Sciences

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 317: *Issues in Family Relationships.* 4 credits.
Dynamics of family systems and issues that shape relationships among family members. How families evolve as members grow, leave, and create related family systems; family roles and forms; and communication patterns, decision- making, conflict, stress, and power. Content draws from family communication, family relations, psychology, and counseling. Lecture, discussion, observation, analysis, research, and role-playing. Notes: One credit counts for experiential learning; students complete 45 credits of course-related work outside classroom. Offered by School of Integrative Studies. Limited to three attempts.

Mason Core: Social/Behavioral Sciences

Recommended Prerequisite: Minimum of 55 hours completed.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 319: *Contemporary Youth Studies.* 3 credits.
Examines the history of positive youth development, how scholars study youth, and the theories they use to guide their research. Evaluates the policies and programs aimed at empowering youth. Offered by School of Integrative Studies. Limited to three attempts.

Mason Core: Social/Behavioral Sciences

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 320: *Construction of Differences: Race, Class, and Gender.* 6 credits.
Investigates race, sex, sexual orientation, and social class in contemporary American society. Examines commonalities in the construction of these categories and experiences of those who occupy them. Offered by School of Integrative Studies. Limited to three attempts.

Mason Core: Social/Behavioral Sciences

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 321: *Parent-Child Relations.* 3 credits.
Introduces students to concepts and challenges in parenting, along with family diversity and risk factors. Considers interactions between parents and children from birth to adolescence as well as cross-cultural, historical, and societal influences. Explores efforts that have been successful in changing detrimental parenting actions. Offered by School of Integrative Studies. Limited to three attempts.

Mason Core: Social/Behavioral Sciences

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 322: *Teacher: A Historical Perspective.* 3 credits.
Examines the rich heritage of the teaching profession in Western society. Traces the history of educational philosophy and teaching, beginning with the ancient Greeks and culminating in the 21st century United States. Using the exploration of the various philosophies of education as a foundation, examines contemporary images of teachers in literature and film. Offered by School of Integrative Studies. Limited to three attempts.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 331: *The Nonprofit Sector.* 4 credits.
Readings, classroom discussions and activities, and practical experience reveal historical, legal, and socioeconomic forces that define and influence the American nonprofit sector. Explores structures, issues that affect nonprofit management, governing, and financial systems. Offered by School of Integrative Studies. Limited to three attempts.

Mason Core: Social/Behavioral Sciences

Recommended Prerequisite: Sophomore standing.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 332: *Business and Sustainability.* 3 credits.
Examines the types of approaches businesses can take to take to respond to sustainability concerns, Designed to prepare students for assisting organizations to incorporate sustainability considerations into their strategic decision-making. Notes: Students from multiple disciplines (business, social sciences, natural sciences, humanities, education, etc.) can participate in the class without having had previous courses in management. Offered by School of Integrative Studies. Limited to three attempts. Equivalent to EVPP 322.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 334: *Environmental Justice.* 4 credits.
Examines historical and contemporary sociopolitical and socioeconomic conditions that have given rise to the environmental justice movement. Analyzes how individuals contribute to environmental justice or injustice through everyday decisions. Considers how environmental justice movement responds to these issues. Offered by School of Integrative Studies. Limited to three attempts.

Mason Core: Social/Behavioral Sciences

Specialized Designation: Green Leaf Focused Course, Writing Intensive in Major

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 336: *Poverty, Wealth and Inequality in the US.* 3 credits.
Explores the social, cultural, political, and spiritual implications of poverty, wealth, and inequality in the United States. Examines the ways in which class identity informs one's views of the world and its politics; how socioeconomic status affects one's access to education and other social goods; and how dominant discourses and stereotypes related to poverty influence mass perception regarding a range of social issues, from educational policy to welfare. Offered by School of Integrative Studies. Limited to three attempts.

Mason Core: Social/Behavioral Sciences

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 337: *Social Justice Consciousness and Action.* 3 credits.
Explores the many spaces at which the quest to strengthen social justice consciousness interacts with processes and commitments for personal transformation. Analyzes through the lens of the activist and in the spirit of bringing mindfulness to activism, how we come to see and experience the world. Examines how socialization informs consciousness. Offered by School of Integrative Studies. Limited to three attempts.

Specialized Designation: Writing Intensive in Major

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 344: *Youth, Music, & Social Change.* 4 credits.
Introduction to the theoretical underpinnings of music, popular and youth culture, and social and political change. While music is generally relegated to a subcategory of popular culture, or viewed as a mere minor facet of youth culture, in this class we will examine its impact and importance as a rhetorical and communicative vehicle, specifically in regards to its instrumentality in social and political movements. Offered by School of Integrative Studies. Limited to three attempts.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 346: *Art as Social Action.* 4 credits.
This learning community explores historical records to understand different ways art has been produced, distributed, and consumed. Examines ways artists have affected change in their worlds. Through interdisciplinary studies, teaches major social movements and artists and theories used in socially engaged art. Students engage in experiential learning outside classroom as course requirement. Offered by School of Integrative Studies. Limited to three attempts.

Mason Core: Arts

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 347: *Gender Representation in Popular Culture.* 3-6 credits.
Explores the way in which masculinity and femininity have been represented across the decades in television, movies, music videos, pop art, and print media. Provides a review of the scholarship on the historical and contemporary roles of women and men in society, and examines the contradictions and expectations associated with gender roles. Incorporates active group learning through creative, insight-oriented exercises, critical thinking and discussions, and group presentations and media research activities. Offered by School of Integrative Studies. Limited to three attempts.

Mason Core: Social/Behavioral Sciences

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 348: *Digital Futures.* 3,6 credits.
Investigates important contemporary issues such as surveillance-privacy, censorship, piracy, gender and ethnicity, digital labor and play, mobile media and globalization, and the commercialization and political potential of the digital public spheres. Introduces students to the latest technological, philosophical and creative thinking on the future of human society in a digital age. Offered by School of Integrative Studies. Limited to three attempts.

Recommended Prerequisite: NCLC 249 or INTS 249

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 355: *Mindfulness, Meaning & Well-Being.* 3 credits.
Explores the science of well-being, including theories and practices linked to various domains of well-being such as mindfulness, resilience, life-satisfaction, happiness, mind-body wellness, and meaning and purpose. Offered by School of Integrative Studies. Limited to three attempts.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 356: *Foundations of Resilience and Well-Being.* 3 credits.
Focusing on the individual in context, examines the growing research, science, and literature on well-being and resilience. Considers the many ways in which resilience can be learned and developed on individual, community, and organizational levels. Explores how resilience promotes growth and restores efficacy and agency, leading to higher levels of flourishing. Offered by School of Integrative Studies. Limited to three attempts.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 360: *The Built Environment.* 6 credits.
Examines, records, and interprets objects, structures, and landscapes that compose our built environment. Draws on the fields of historical archaeology, architectural history, and urban geography, and employs photography, cartography, and evocative writing to represent the material world we inhabit. Builds on study of one neighborhood in Arlington, Virginia, and expands to entire metropolitan area. Offered by School of Integrative Studies. Limited to three attempts. Equivalent to ANTH 315, ANTH 399.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 361: *Neighborhood, Community, and Identity.* 3-6 credits.
Examines processes of neighborhood formation and transformation in the context of urbanism, suburbanism, immigration, and transmigration. Offered by School of Integrative Studies. Limited to three attempts.

Mason Core: Social/Behavioral Sciences

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 362: *Social Justice and Human Rights.* 3 credits.
Considers the philosophical foundations of social justice and human rights. Explores the interpretive difficulties related to identifying what constitutes human rights abuses, and evaluates regional perspectives on human rights. Analyzes institutions that strive to promote and enforce social justice and human rights standards including the United Nations system, regional human rights bodies, and domestic courts. Offered by School of Integrative Studies. Limited to three attempts.

Mason Core: Social/Behavioral Sciences

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 363: *Social Justice Narratives.* 3 credits.
Analyzes depictions and aspects of social justice and injustice in contemporary literature (children's literature, historical fiction, creative nonfiction, biography and essays). Students will develop an informed awareness of the complex perspectives, uses and boundaries of literature and will learn to recognize and analyze how literature depicts stories related to social justice, tolerance, equality and social change. Offered by School of Integrative Studies. Limited to three attempts.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 365: *Independent Study.* 1-12 credits.
Individualized section form required. Study of a topic not otherwise available to the student. May involve any combination of reading assignments, tutorials, lectures, papers, presentations, or field/laboratory study (determined in consultation with instructor) Students are encouraged to work as a team on a particular topic. Notes: Maximum 12 credits can be used to fulfill graduation requirements. Offered by School of Integrative Studies. May be repeated within the term for a maximum 12 credits.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 370: *Sustainable Food Systems.* 6 credits.
Examines the evolution of US food systems with particular emphasis on the national capital region. Students place conventional agriculture and food systems in historical context; examine changing representations of food systems in film, literature, and other media; and research alternative systems that emphasize sustainability. Through a combination of classroom work and experiential learning, this course asks students to contemplate how capitalism, industrialization, and environmental ethics shape our land, culture, and society. Offered by School of Integrative Studies. Limited to three attempts.

Specialized Designation: Green Leaf Focused Course

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 371: *Food Systems and Policy.* 3 credits.
Examines the roles of individuals, corporations, and government in creating and communicating food policy. Students explore the rationale and rhetorics of US agriculture, food production and the environment, food and beverage processing, food safety and labeling, food sales and marketing, dietary guidance, and federal food assistance programs. Offered by School of Integrative Studies. Limited to three attempts.

Mason Core: Social/Behavioral Sciences

Specialized Designation: Green Leaf Related Course

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 375: *Special Topics.* 1-18 credits.
Studies topics of special interest to undergraduates. Notes: May be repeated for credit when topic is different. Offered by School of Integrative Studies. May be repeated within the term for a maximum 18 credits.

Specialized Designation: Topic Varies

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 390: *International Internship.* 1-6 credits.
Internship credit may be applied to 12 credits required in experiential learning. Notes: Students may take no more than 6 credits in any one semester, unless approved by director of experiential learning or executive director. Structured and supervised professional experience, within an approved agency, for which the student earns academic credit. The primary purpose of an internship is to connect the student's academic course work to experiences and challenges outside the university classroom. The faculty also expects that students will enhance their competencies and skills and explore career options. Offered by School of Integrative Studies. May be repeated within the term for a maximum 24 credits.

Mason Core: Global Understanding

Recommended Prerequisite: Sophomore standing and permission of instructor.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Special scale.

INTS 391: *Understanding Integrative Studies.* 3 credits.
Familiarizes students with the theory and practice of integrative learning. Challenges students not only to learn but also to think deeply about what, why, how, and for what purposes you learn. Focuses on exploration of identities and civic engagement as a global citizen. Emphasizes lifelong learning and preparation for academics and careers. Develops oral and written communication skills, critical thinking, and research skills. Offered by School of Integrative Studies. Limited to three attempts.

Specialized Designation: Writing Intensive in Major

Registration Restrictions:
Enrollment is limited to students with a major in Integrative Studies.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 394: *Service-Learning Experience.* 1-15 credits.
Service-learning courses offer students, faculty, and community partners an opportunity to work together to integrate and apply knowledge to address community needs. Learning goals, action strategies, and assignments developed collaboratively. Students demonstrate progress through critical reflection that illustrates growth in acquiring and comprehending values, skills, and knowledge content. Critical reflection may take the form of papers, presentations, portfolios, journals, and exams. Offered by School of Integrative Studies. May be repeated within the term for a maximum 15 credits.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 395: *Field-Based Work.* 1-18 credits.
Directed field studies in topic not otherwise available to students. Notes: Topics vary, but entire course or significant component is located off campus. In addition to field work, course may also include reading assignments, tutorials, lectures, papers, presentations, portfolios, journals, and exams. Students bear costs of required field trips and should consult the Center for Social Action and Integrative Learning for more information. Offered by School of Integrative Studies. May be repeated within the term for a maximum 24 credits.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 396: *Teaching Assistant Experience.* 1-6 credits.
Teaching assistantship and peer-mentoring duties carried out through existing university programs, such as Technology Assistants, Writing Tutors, and Residence Advisors. Also includes teaching assistantship arrangements for specific courses detailed in individualized course contract signed by instructor and student. In addition to peer mentoring/advising, course work may include logistical support, reading assignments, papers, presentations, and portfolios. Offered by School of Integrative Studies. May be repeated within the degree for a maximum 6 credits.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 397: *Add-On Experiential Learning.* 1-3 credits.
For students who wish to add one or more experiential learning credit to existing experiential learning course or learning community. Notes: May also be used by students who wish to add an experiential learning component to course that provides no experiential learning credit (with permission of instructor). Unless experiential learning add-on requirements are spelled out in course syllabus, requirements for add-on experiential learning credit must be detailed in individualized course contract signed by instructor and student. Offered by School of Integrative Studies. May be repeated within the term for a maximum 4 credits.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 398: *Experiential Learning.* 1-15 credits.
Experiential-based individualized studies, mentored by instructor. Notes: Topics decided by student and instructor and approved by executive director. Requirements must be detailed in individualized course contract signed by student, instructor, and executive director. May include reading assignments, papers, journals, and portfolios. Offered by School of Integrative Studies. May be repeated within the term for a maximum 15 credits.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 399: *Study Abroad.* 1-6 credits.
Intended for participation in formally organized course offered by Center for Global Education. A maximum of 15 credits may apply toward INTS degree requirements. Offered by School of Integrative Studies. May be repeated within the term for a maximum 32 credits.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

INTS 400: *Temptress: Constructs of Sex and Power.* 3 credits.
Examines the portrayal of powerful and/or sexual women throughout history, identifying famous historical "temptresses" and investigating the facts known about them. Explores representations and perceptions of contemporary female sexuality, considering possible future concepts and images of female power and sexuality. Offered by School of Integrative Studies. Limited to three attempts.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 401: *Conservation Biology.* 6 credits.
Provides students with a working knowledge of conservation biology. Integrates the study of social, economic, and political factors with biodiversity, population modeling, habitat degradation, and management issues. Students confront the leading edge of this exciting field by developing real species conservation plans. The experiential learning component of the course will include trips to the Smithsonian Institution's Conservation and Research Center in Front Royal, Virginia,

to study with nationally known experts. Offered by School of Integrative Studies. Limited to three attempts.

Mason Core: Natural Science with Lab

Specialized Designation: Green Leaf Related Course

Recommended Prerequisite: Junior standing or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 402: *Plants and People - Sustenance, Ceremony, and Sustainability.* 6 credits.
Examines the direct relationships between people and plants by integrating perspectives from both ethnobotany and economic botany. Provides students with an appreciation of the fundamental role of plants and plant-derived products in all aspects of human life in both industrialized and non-industrialized societies. Explores how plants and their uses have shaped both past and present cultures around the world. Offered by School of Integrative Studies. Limited to three attempts.

Specialized Designation: Green Leaf Focused Course

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 403: *Conservation Behavior.* 6 credits.
Introduces students to conservation behavior, a field that seeks to apply theories of animal behavior towards solving biological conservation and wildlife management problems. Consists of interactive lectures, readings (including a text and primary literature) and discussion, and hands-on, inquiry-based experiential learning while working in groups at the National Zoo to design and conduct independent behavioral-based research on endangered species. Offered by School of Integrative Studies. Limited to three attempts.

Mason Core: Natural Science with Lab

Specialized Designation: Green Leaf Related Course

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 404: *Ethics and Leadership.* 4 credits.
Uses an interdisciplinary approach to deepen and broaden student's learning about theories, models, and constructs related to the study and practice of ethics and leadership. Teaches students to develop ethical decision making strategies, communicate effectively in diverse group settings, value civic engagement and actively apply ethical leadership skills. Includes experiential learning activities and discussions that connect formal knowledge with real world experiences and includes one credit of experiential learning. Offered by School of Integrative Studies. Limited to three attempts.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 405: *Women and Leadership.* 4 credits.
Examines leadership within the context of the theoretical principles of women's studies through discussion of course texts, interactive exercises, field trips, documentary films, guest speakers, and reflection. Investigates the role that gender plays in the various forms of leadership and leadership styles. Explores the historical record of women in leadership roles, identifying the barriers as well as the opportunities. Offered by School of Integrative Studies. Limited to three attempts.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 406: *Global Leadership.* 3 credits.
Develops a concept of global leadership, emphasizing the critical importance of ethical decision-making, social responsibility, and cultural awareness. Students formulate the construction process of a global mindset and begin to develop a personal philosophy of global leadership. Offered by School of Integrative Studies. Limited to three attempts.

Mason Core: Global Understanding

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 410: *Contemporary Health Issues.* 3-18 credits.
Looks at a variety of health and health care issues. Examines several of the major health concerns of women and, to a lesser degree, men. Also explores the biology and medical implications of these diseases and how our society deals with potential life-altering information. Examines who is making the decisions on the allocation of research funds and prevention of diseases. Offered by School of Integrative Studies. Limited to three attempts. Equivalent to WMST 300.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 416: *Refugee and Internal Displacement.* 3 credits.
Provides students with a deeper understanding of refugee and internal displacement. Explores causes of displacement and its impact on people and societies. Studies the role played by governments, non-governmental organizations (NGOs) and the international community in addressing problems faced by refugees in internally displaced persons in terms of relief assistance and humanitarian services. Offered by School of Integrative Studies. Limited to three attempts.

Mason Core: Global Understanding

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 417: *Human Trafficking and Smuggling.* 3,6 credits.
Explores the complexity of human trafficking and smuggling, one of the fastest growing criminal enterprises in the world. Examines forms of human trafficking and smuggling and the countries that serve as source, transit or destinations of trafficked and smuggled individuals and groups. Studies the role of the international community in addressing trafficking and smuggling, including regional and national authorities and non-

governmental agencies. Offered by School of Integrative Studies. Limited to three attempts.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 419: *Youth Resistance and Advocacy.* 3 credits.
Focuses on contemporary perspectives on youth, resistance, and advocacy, both in the form of social movements and subcultures. Asks questions such as: When do everyday activities constitute "resistance"—and resistance to what?—and how do everyday forms of resistance relate to broader forms of historical change? How do these forms of resistance perpetuate forms of exclusion and inequality? Offered by School of Integrative Studies. Limited to three attempts.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 420: *Work Effectiveness Skills.* 3 credits.
Develops a variety of work-readiness skills needed to become successful in both local and global marketplaces. Topics and skills covered include communication, problem solving in the business setting, workplace ethics, listening skills, how to influence others, building team project rapport, and meeting effectiveness skills. Offered by School of Integrative Studies. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 422: *An Experiential Approach to American Foreign Policy.* 3-6 credits.
Takes an experiential approach to the study of American foreign policy. Through case studies, discussions, group projects, and directed research, students learn how foreign policy is made and executed and how they as citizens, activists, or officials can influence national decisions. Offered by School of Integrative Studies. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 431: *Principles of Fund Raising.* 4 credits.
Examines history of philanthropy and public policy, and the economic and legal frameworks that shape it. Combining theory and practice, students study human behavior, communications, and management systems that are hallmarks of successful fund raising, and begin to develop skills to generate donations, foundation grants, and other unearned revenue for a nonprofit organization. Notes: Includes 1 experiential learning credit. Offered by School of Integrative Studies. Limited to three attempts.

Recommended Prerequisite: INTS 331.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 434: *Research for Social Change.* 3 credits.
Introduces interdisciplinary research methods for social change. Explores students' epistemological assumptions, and use tools of inquiry and discovery to explore transformative approaches to scholarship. Examines multiple critical approaches to inquiry including auto-ethnography and ethnography, feminist and indigenous research methods, participatory action research, critical quantitative analysis, and more. Offered by School of Integrative Studies. Limited to three attempts.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 435: *Leadership in a Changing Environment.* 4 credits.
Examines diverse definitions and processes of change across multiple complex contexts. Focuses on identifying innovative, collaborative solutions to seemingly intractable social problems. Explores topics such as social change and globalization, creative conflict resolution, the nature of power, oppression and influence, and systemic leadership. Offered by School of Integrative Studies. Limited to three attempts.

Recommended Prerequisite: 60 credits.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 436: *Social Justice Education.* 4 credits.
Examines educational policy, practice, and materials using a variety of lenses informed by social justice theory and praxis. Investigates ways in which racism, sexism, economic injustice, heterosexism, ageism, and other forms of discrimination influence schools and educational access and opportunity for youth. Considers and practices what individuals and communities can do to ensure that all students have equitable educational opportunities. Offered by School of Integrative Studies. Limited to three attempts.

Mason Core: Social/Behavioral Sciences

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 437: *Critical Race Studies.* 3 credits.
Engages students in an examination of the forms and impacts of racism, as well as movements for racial justice, in the United States. Draws on theoretical frameworks including critical race theory and intersectionality theory in order to examine the structural roots of racism and the implicit and explicit ways in which racism manifests today. Offered by School of Integrative Studies. Limited to three attempts.

Mason Core: Social/Behavioral Sciences

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 438: *Representations of Race.* 4 credits.
Investigates the social and cultural construction of racial categories that have led to inaccurate and stereotypical representations that persist and cause harm today. Offered by School of Integrative Studies. Limited to three attempts.

Mason Core: Social/Behavioral Sciences

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 440: *Death, Dying, and Decision Making.* 3 credits.
Interdisciplinary examination of clinical care of dying persons along with psychosocial issues related to processes of death and dying. Special emphasis on application of ethical principles in resolving complex problems for individuals with life-threatening illnesses and their families as care givers or decision makers. Students consider the changing norms and mores surrounding end-of-life decisions and explore the care available to terminally ill patients. Offered by School of Integrative Studies. Limited to three attempts.

Recommended Prerequisite: 60 credits or Permission of Instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 450: *Social Innovation in Action.* 4 credits.
Develops students' capacity to engage in positive social change. Examines social innovation approaches, including social and political entrepreneurship, philanthropy, corporate responsibility and social movements. Explores how social innovators catalyze multistakeholder collaborations across commercial, governmental and nonprofit sectors, exploring social innovation through case studies, best practice analyses and relevant readings. Offered by School of Integrative Studies. Limited to three attempts.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 451: *Leadership and Organizational Problem-Solving.* 4 credits.
Offers a dynamic, practical, and hands-on approach to synthesizing our leadership philosophy with real problem-solving and decision-making skills. Through cases and experiential learning, students will work through framing and diagnosing problems as well as identifying and implementing solutions. Integrates students' interests with the tools necessary to be an organizational problem-solver. Offered by School of Integrative Studies. Limited to three attempts.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 455: *Consciousness and Transformation in Action.* 3 credits.
Covers how principles and practices of consciousness and transformation relate to the major and career pathway it represents. Includes the theory and practices for deepening the student's own experience with the mindfulness and contemplative approaches to inquire. Capstone course for the minor in consciousness and transformation. Offered by School of Integrative Studies. Limited to three attempts.

Recommended Prerequisite: NCLC 355 or INTS 355.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 456: *Self-Care and Well-Being for Helping Professionals.* 4 credits.
Prepares students to understand and meet a distinct set of challenges facing professionals in careers that involve directly helping others. Studies research findings about factors such as stress, burnout, and compassion-fatigue that undermine professional success and longevity in these career fields. Explores the fundamental tenets of the science of well-being, learning the vocabulary and core principles related to aspects of self-care and well-being such as positivity, strengths, mindfulness, and resilience. Offered by School of Integrative Studies. Limited to three attempts.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 465: *Independent Study.* 1-12 credits.
Individualized section form required. Study of a topic not otherwise available to the student. May involve any combination of reading assignments, tutorials, lectures, papers, presentations, or field/laboratory study (determined in consultation with instructor) Students are encouraged to work as a team on a particular topic. Notes: Maximum 12 credits can be used to fulfill graduation requirements. Offered by School of Integrative Studies. May be repeated within the term for a maximum 12 credits.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 470: *Professional Pathways in Sustainable Food Systems.* 1 credit.
Culminating experience for Environmental and Sustainability Studies majors enrolled in the Sustainable Food and Agriculture concentration. Focused on helping students see how their specific talents, interests and experiences can prepare them for specific professional roles within the emerging field of sustainable food systems. Offered by School of Integrative Studies. Limited to three attempts.

Specialized Designation: Green Leaf Related Course

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 475: *Special Topics.* 1-18 credits.
Studies topics of special interest to undergraduates. Notes: May be repeated for credit when topic is different. Offered by School of Integrative Studies. May be repeated within the term for a maximum 18 credits.

Specialized Designation: Topic Varies

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 490: *Internship.* 1-6 credits.
Students may take no more than 6 credits in any one semester, unless approved by executive director. A maximum of of 12 credits can apply to the degree. Structured and supervised professional experience, within an approved agency, for which the student earns academic credit. The

primary purpose of an internship is to connect the student's academic course work to experiences and challenges outside the university classroom. The faculty also expects that students will enhance their competencies and skills and explore career options. Offered by School of Integrative Studies. May be repeated within the term for a maximum 12 credits.

Recommended Prerequisite: Sophomore standing and permission of instructor.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Special scale.

INTS 491: *The Senior Capstone Experience.* 3 credits.
Should be taken semester before graduation; 85 credits required. Graduation requirement for integrative studies students. Students complete final SIS portfolio and senior exposition. Provides information on issues of professional development (interviewing skills, resume development, career strategies, and alumni opportunities). Offered by School of Integrative Studies. Limited to three attempts.

Specialized Designation: Writing Intensive in Major

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 492: *Graduation Portfolio.* 0 credits.
Offered by School of Integrative Studies. May be repeated within the degree.

Specialized Designation: Writing Intensive in Major

Schedule Type: Independent Study

Grading:
This course is graded on the Satisfactory/No Credit scale.

INTS 494: *Service-Learning Experience.* 1-15 credits.
Service-learning courses offer students, faculty, and community partners an opportunity to work together to integrate and apply knowledge to address community needs. Learning goals, action strategies, and assignments developed collaboratively. Students demonstrate progress through critical reflection that illustrates growth in acquiring and comprehending values, skills, and knowledge content. Critical reflection may take the form of papers, presentations, portfolios, journals, and exams. Offered by School of Integrative Studies. May be repeated within the term for a maximum 15 credits.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 495: *Field-Based Work.* 1-18 credits.
Directed field studies in topic not otherwise available to students. Notes: Topics vary, but entire course or significant component is located off campus. In addition to field work, course may also include reading assignments, tutorials, lectures, papers, presentations, portfolios, journals, and exams. Students bear costs of required field trips and should consult the Center for Social Action and Integrative Learning for more information. Offered by School of Integrative Studies. May be repeated within the term for a maximum 24 credits.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 496: *Teaching Assistant Experience.* 1-6 credits.
Teaching assistantship and peer-mentoring duties carried out through existing university programs, such as technology assistants, writing tutors, and residence advisors. Also includes teaching assistantship arrangements for specific courses detailed in individualized course contract signed by instructor and student. In addition to peer mentoring/advising, course work may include logistical support, reading assignments, papers, presentations, and portfolios. Offered by School of Integrative Studies. May be repeated within the degree for a maximum 6 credits.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 497: *Add-On Experiential Learning.* 1-3 credits.
For students who wish to add one or more experiential learning credit to existing experiential learning course or learning community. Notes: May also be used by students who wish to add an experiential learning component to course that provides no experiential learning credit (with permission of instructor). Unless experiential learning add-on requirements are spelled out in course syllabus, requirements for add-on experiential learning credit must be detailed in individualized course contract signed by instructor and student. Offered by School of Integrative Studies. May be repeated within the term for a maximum 4 credits.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

INTS 498: *Experiential Learning.* 1-15 credits.
Experiential-based individualized studies, mentored by instructor. Notes: Topics decided by student and instructor and approved by executive director. Requirements must be detailed in individualized course contract signed by student, instructor, and executive director. May include reading assignments, papers, journals, and portfolios. Offered by School of Integrative Studies. May be repeated within the term for a maximum 15 credits.

Specialized Designation: Writing Intensive in Major

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Special scale.

500 Level Courses

INTS 504: *Leadership Theory, Praxis, and Development.* 3 credits.
Explores contemporary leadership theories, models, and concepts using a theory-to-practice-to theory framework. Covers leadership theory, supporting research, and practical application. Focuses on active learning through classroom presentations, course texts, a reflection on

theory and practice, and team work. Offered by School of Integrative Studies. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

INTS 534: *Research for Social Change.* 3 credits.
Introduces interdisciplinary research methods for social change. Explores students' epistemological assumptions, and employs methods of inquiry and discovery to explore transformative approaches to scholarship. Examines multiple critical approaches to inquiry, including auto-ethnography and ethnography, feminist and indigenous research methods, participatory action research, critical and quantitative analysis. Offered by School of Integrative Studies. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

INTS 535: *Leadership in a Changing Environment.* 3 credits.
Examines change and its elements by asking students to explore and design innovative, collaborative solutions to seemingly intractable social problems. Considers and discerns topics such as social change and globalization, creative conflict resolution, the nature of power, oppression and influence, and systemic leadership. Explores methods of personal and social transformation and examine the strategies, and ideas of effective social change advocates in the 21st century. By the course's end, each student will develop a creative proposal for solving a societal problem. Offered by School of Integrative Studies. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

INTS 537: *Critical Race Studies.* 3 credits.
Engages students in an examination of the forms and impacts of racism, as well as movements for racial justice in the United States. Draws on theoretical frameworks including critical race theory and intersectionality theory in order to examine the structural roots of racism and the implicit and explicit ways in which racism manifests today. Offered by School of Integrative Studies. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

INTS 538: *Representations of Race.* 4 credits.
Investigates the social and cultural construction of persistent and harmful racial categories. Offered by School of Integrative Studies. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

INTS 540: *Contemporary Issues in Social Justice & Human Rights.* 3 credits.
Students will examine, study the socio-historical significance of, and consider solutions for some of the most pressing social justice and human rights issues in the world today. The issues examined will cut across identity, region, and scope, and may include concerns as varied as human trafficking, hegemony, animal abuse, child labor, and sexism. Offered by School of Integrative Studies. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

INTS 550: *Social Innovation In Action.* 3 credits.
Develops students' capacity to engage in positive social change. Examines social innovation approaches, including social and political entrepreneurship, philanthropy, corporate responsibility and social movements. Explores how social innovators catalyze multistakeholder collaborations across commercial, governmental and nonprofit sectors, exploring social innovation through case studies, best practice analyses

and relevant readings. Offered by School of Integrative Studies. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

INTS 575: *Special Topics.* 3-4 credits.
Studies topics of special interest to graduate students pursuing integrative, multidisciplinary degrees. Offered by School of Integrative Studies. May be repeated within the term for a maximum 12 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

INTS 595: *Experiential Learning.* 1-3 credits.
Offered by School of Integrative Studies. May be repeated within the term for a maximum 12 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Graduate Regular scale.

600 Level Courses

INTS 675: *Special Topics.* 3-4 credits.
Studies topics of special interest to graduate students pursuing integrative, multidisciplinary degrees. Offered by School of Integrative Studies. May be repeated within the term for a maximum 12 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

Interdisciplinary Studies (MAIS)

600 Level Courses

MAIS 600: *Special Topics in Interdisciplinary Studies.* 3 credits.
Examines broad social, cultural, political, environmental, and scientific issues through a variety of disciplinary lenses. Topics vary. Offered by School of Integrative Studies. May be repeated within the term for a maximum 6 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Graduate or Non-Degree.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

MAIS 695: *Experiential Learning.* 1-3 credits.
Provides practical work experience via an internship, service-learning project, consultancy, or field study that the student brokers with a third party. Students may not use work done previously or their current employment for course credit. All experiential learning placements must be approved by the student's concentration head prior to registration to ensure suitability to the student's program.Offered by Interdisciplinary Studies. May be repeated within the degree for a maximum 6 credits. Equivalent to MAIS 795.

Recommended Prerequisite: 12 credits in the Interdisciplinary Studies program or permission of the program director.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Non-Degree level students may **not** enroll.

Enrollment limited to students in a Master of Interdiscply Studies degree.

Schedule Type: Internship

Grading:
This course is graded on the Graduate Regular scale.

MAIS 696: *MAIS ProSeminar.* 1 credit.
Introduces students to the structure of the Interdisciplinary Studies (MAIS) program; students create a portfolio of their work which continues during their studies; the portfolio prepares students for the capstone project or thesis.Offered by Interdisciplinary Studies. May not be repeated for credit. Equivalent to MAIS 796.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Non-Degree level students may **not** enroll.

Enrollment limited to students in a Master of Interdiscply Studies degree.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

700 Level Courses

MAIS 797: *Interdisciplinary Studies Proposal.* 1 credit.
Focused on formulating and writing a MAIS project or thesis proposal.Offered by Interdisciplinary Studies. May not be repeated for credit.

Recommended Prerequisite: Admission to MAIS and completion of 21 credits of graduate course work, including any required research methodology course; MAIS 696.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MAIS 798: *Interdisciplinary Studies Project.* 1-5 credits.
Research project related to student's concentration taken under supervision of faculty advisor and project evaluation committee.Offered by Interdisciplinary Studies. May be repeated within the degree.

Recommended Prerequisite: MAIS 797 and prior approval of a project proposal by the committee chair, two committee members, and MAIS director.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Thesis

Grading:
This course is graded on the Satisfactory/No Credit scale.

MAIS 799: *Interdisciplinary Studies Thesis.* 1-5 credits.
Original research endeavor related to student's MAIS program concentration. Research must result in document meeting MAIS and university standards.Offered by Interdisciplinary Studies. May be repeated within the degree. Equivalent to HE 799.

Recommended Prerequisite: MAIS 797 and prior approval of a project proposal by the committee chair, two committee members, and MAIS director.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Thesis

Grading:
This course is graded on the Satisfactory/No Credit scale.

International Commerce and Policy (ITRN)

500 Level Courses

ITRN 500: *Global Political Economy.* 1-4 credits.
Foundation course in the ICP program. Explores issues and ideas affecting global security, stability, growth and development from country, regional and thematic perspectives. Introduces students to key concepts, policies, and practices that underpin international commerce, international relations more broadly, and non-governmental transnational activities. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ITRN 501: *Data Analysis for Global Political Economy.* 3 credits.
Provides the skills necessary to conduct qualitative and quantitative research and analysis of data related to global political economy. Students obtain practical information on sources of data, their origins, strengths, and weaknesses. Helps develop tools for statistical analysis of data, leading up to binary regression, and includes the use of software for analyzing and displaying information. It covers major data sources and indices related to international economic policy, including trade data, economic and financial indicators, and development indicators. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ITRN 503: *Macroeconomic Policy in the Global Economy.* 1-4 credits.
Provides an analytical introduction and overview of basic concepts in macroeconomic theory with an emphasis on applications to problems in the United States and the contemporary global economy. Covers topics such as inflation, growth and business cycles, fiscal and monetary policies, balance of payments and exchange rates. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ITRN 504: *Microeconomics and Trade Policy.* 1-4 credits.
Provides a foundation in microeconomics, including supply and demand analysis, elasticities, the theory of the firm, allocative efficiency and market failure. Covers applications of this microeconomic foundation to international trade theory, trade policy analysis, preferential trade agreements, and international production. Emphasis is on graphical and algebraic analysis. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

600 Level Courses

ITRN 602: *Global Financial Crises and Institutions.* 3 credits.
Examines the modern financial sector: how it operates, its regulation, and its role in risk transmission and crisis formation. Reviews global financial markets and instruments. Considers the role of multilateral and regional financial institutions in management of crises, macroeconomic adjustment, development policy and capital flows with emphases on financial crises including the 2007-09 crisis. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: ITRN 503[B-], 503[XS], 503[B-] or 503[XS].
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ITRN 603: *Global Trade Relations.* 3 credits.
Examines U.S. trade policy in the context of global trade relations. Considers the global trading system from legal, institutional and political perspectives, giving particular attention to trade agencies in the United States and abroad, international agreements, and the World Trade Organization. Trade policy formation is analyzed within the context of competing interest groups and corporate strategies. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (ITRN 504[B-] or 504[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ITRN 604: *New Technologies in the Global Economy.* 3 credits.
Addresses the role and impact of new technologies on global trade, production, and finance. New technologies considered include digital, robotics, artificial intelligence, blockchain, machine learning, and virtual presence. Applications covered include global value chains, financial technology, cryptocurrencies and monetary policy, innovation management, logistics, and international development. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ITRN 605: *Technology, Culture and Commerce.* 3 credits.
Examines and applies the major dimensions of technological and cultural analysis to global commerce and policy. The course assesses theories of technological change and cultural perspectives that have relevance to the flows of peoples, information, goods, capital and technology across national and cultural boundaries. It focuses on the political economy implications of technological change for commercial, national and global policies. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ITRN 612: *International Business Operations and the Multinational Corporation.* 3 credits.
Examines international business environment and challenges facing companies in conducting operations in increasingly interconnected global marketplace. Focuses on issues of management and organization, and resolution of conflicts that may arise between business organizations and home and host governments. Also focuses on role of multinational corporations in international environment, and impact on global trade, economic development, and political system. Also studies trade and international investment theories and world financial environment. Explores broad issues such as sovereignty of decision making and global impact of business activities. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

700 Level Courses

ITRN 701: *Special Topics in International Commerce and Policy.* 1-3 credits.
Offers specialized courses on various aspects of international commerce and policy. Offered by Schar School of Policy & Govt. May be repeated within the term.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ITRN 702: *Special Topics in International Commerce and Policy: Study Abroad.* 3-6 credits.
Provides opportunity for study abroad under supervision of Mason faculty. Notes: Course topics, content, and locations vary. Offered by Schar School of Policy & Govt. May be repeated within the term for a maximum 12 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ITRN 710: *International Business Transactions: Finance and Investment.* 3 credits.
Focuses on techniques for financing trade and payment methods, including letters of credit, counter trade, and other approaches. Covers issues of direct concern in financing international business operations, such as preparing financing proposals, risk insurance, international taxation, pricing policies, and currency conversion and foreign exchange risk management. Introduces foreign direct investment, alliances and acquisitions, joint ventures, and other methods for investing overseas. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ITRN 711: *United States Law and Global Trade.* 3 credits.
Surveys types of regulations imposed by United States, foreign governments, and international institutions on transnational business activities. Reviews principal regulatory bodies in United States and overseas, and powers and authorities. Covers tariffs and customs regulations; product safety and environmental restrictions; intellectual property, copyright, trademark, and patent regulations; and licensing rules. Also covers special restrictions that may be imposed because of political considerations such as embargoes, munitions controls, and antibribery and antiboycott regulations. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ITRN 712: *World Trade Organization and Global Trade.* 3 credits.
Focuses on legal aspects of international trade regulation by studying international legal and political regime established under WTO, and assessing impact of domestic economic legislation on U.S. trade regulations. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ITRN 715: *Global Environment and the World Economy.* 3 credits.
Examines growing relationship between environmental interdependence and developing world economy. Assesses increased globalization of environmental and health issues with a focus on the impact on those issues on international transactions involving trade and development. Attempts to develop an understanding of relationship of scientific

knowledge to global environment in context of existing political and economic institutions. Emphasizes formulating and assessing policies and structures for corporations, nations, regions, and international organizations. Tensions among free trade, international competitiveness, and regulatory responses are central. Gives attention to practices of nations and international organizations, emerging forms of regional and international cooperation, and growing use of multilateral agreements. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ITRN 716: *European Union in the International System.* 3 credits.
Examines current developments in European market integration from global perspective. Emphasizes impact of single market, and proposed economic and monetary union of United States and other major trading partners. Examines European economic relations with Eastern Europe, former Soviet Union, and Lome Pact countries. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ITRN 720: *Regional and Supranational Organizations.* 3 credits.
Assesses role of international organizations in international system today, and focuses on wide range of international and regional economic and political institutions. Emphasizes changing nature of these organizations in relation to nation states, and relationship of international organizations to U.S. national security and economic interests. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ITRN 736: *Sources of Growth in East Asia.* 3 credits.
Examines extraordinary economic success of East Asian NIEs and some of their problems. Focuses on understanding proximate sources of growth, role of technological development, and salient political issues. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ITRN 738: *Fundamentals of International Marketing.* 3 credits.
Offers working knowledge of principles and practices that enable managers to effectively market organizations, products, services, and brands. Emphasizes international dimensions of marketing where appropriate. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ITRN 740: *Trade and Regulatory Compliance.* 3 credits.
Acquaints students with legal, regulatory, and practical issues in importation and exportation of merchandise. Topics include theoretical framework for government oversight of international movement of goods; legal issues between parties and governments; and practical guidance concerning structuring of import and export transactions to avoid legal and tariff liability. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ITRN 744: *The Politics of International Competitiveness.* 3 credits.
Provides inquiry into governance problems of public managers and political leaders as they cope with global competitiveness in post-industrial era. Focuses on integrating public and private sectors worldwide, with special emphasis on U.S. role and how it influences such areas as technology transfer, national security, electronic commerce, trade policies, money flows, and human resources. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Recommended Prerequisite: ITRN 500.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ITRN 756: *National Security and the Global Economy.* 3 credits.
Examines impact of globalization and changes in international economic and political systems on concepts of national security. Emphasizes nexus of economic and security concerns in post-Cold War era, with particular attention to emerging issues including trade and economic

security, proliferation of advanced military technology and control of weapons of mass destruction, international drug trafficking, and defense conversion. Focuses on implications of changing security requirements on U.S. defense and economic policy and activities. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Recommended Prerequisite: ITRN 500.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ITRN 758: *Global Market Planning Practicum.* 3 credits.
Provides opportunity to develop international market plan for specific industry or service sector. Students consult with industry experts and use key trade databases to develop strategic plan that recommends market entry strategies. Completed market plan submitted to industry experts for use and dissemination. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ITRN 760: *International Environmental Politics.* 3 credits.
Examines growing concerns related to global environmental issues and problems they pose to domestic, foreign, and international political institutions. Covers major environmental issues including global warming, ozone depletion, cross-border flow of pollution, and threats to biodiversity. Assesses strengths and weaknesses of traditional political institutions in dealing with these issues and providing for sustainable economic development while limiting environmental damage. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Specialized Designation: Green Leaf Focused Course

Recommended Prerequisite: ITRN 500.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ITRN 761: *European Political and Economic Union.* 3 credits.
Examines movement for European integration since World War II, focusing on political and institutional development of European Community/Union. Topics include theories of European integration, Treaties of Rome, Single European Act, Maastricht Treaty, European Union (EU) policies and programs, and EU's external relations. Analyzes changing nature of U.S.-EU relations and prospects for EU enlargement into Central and Eastern Europe. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ITRN 764: *Trade, Investment, and Politics in East Asia.* 3 credits.
Examines issues related to international transactions involving Korea, China, Taiwan, and Hong Kong, with some attention to Japan. Focuses on trade and financial relations between these East Asian nations and United States. Assesses impact of culture and domestic political and economic institutions within these states, and roles in regional institutions and in international system. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ITRN 765: *Trade, Investment, and Politics in Sub-Saharan Africa.* 3 credits.
Examines role and potential of sub-Saharan Africa in international trading system. Emphasizes political, historical, cultural, and development factors. Focuses on perspectives of U.S. firms and on international institutions trading or investing in region. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ITRN 766: *Trade, Investment, and Politics in the Middle East and North Africa.* 3 credits.
Examines major economic, political, and cultural issues that influence trade and investment relations with Middle East and North Africa. Focuses on roles of international and regional institutions in economic development, and develops understanding of challenges facing region and their implications for formulating trade and investment strategies by U.S. firms. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Recommended Prerequisite: ITRN 500.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ITRN 767: *Political Economy and Integration in Latin America.* 3 credits.
Examines contemporary political, economic, and cultural dynamics of Latin American and Caribbean regions. Emphasizes issues and trends that affect U.S.-Latin American political, business, and trade relations, particularly recent political and economic reforms. Examines roles of domestic interest groups and decision-making systems in individual countries, and evolution of regional integration arrangements and integration with international system. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (ITRN 503[B-], 503[XS], 504[B-], 504[XS], PUBP 720[B-] or 720[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ITRN 768: *Global Intellectual Property Rights and International Trade.* 3 credits.
Examines national and regional systems, international contractual relations (licensing), and the evolving global system for protecting intellectual property. Addresses current international treaty system and the ongoing multilateral efforts to strengthen worldwide intellectual property protection. Examines intellectual property regimes worldwide, including regional and bilateral challenges and opportunities, and relevant U.S. law and policy responses. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Recommended Prerequisite: ITRN 500.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ITRN 769: *International Entrepreneurship.* 3 credits.
Introduces practical planning approach for small and medium-size entrepreneurial firms seeking to enter international marketplace. Focuses on key business and financial documents related to doing business overseas; and assesses role of language, technology, and information systems in formulating successful business strategy. Role playing and simulated negotiations provide opportunities for students to sharpen business skills. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ITRN 770: *International Contract Negotiation.* 3 credits.
Reviews growing role of arbitration in international transactions. Examines international, national, and government arbitration bodies, with particular emphasis on how differing cultural characteristics affect negotiating behavior and effectiveness of arbitration. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ITRN 771: *Trade, Investment, and Politics in South and Southeast Asia.* 3 credits.
Focuses on trade and finance issues in the most dynamic countries of South and Southeast Asia. Assesses cultural and political factors, regional trade patterns, and institutions, focusing on implications for regional development and business opportunities for U.S. firms. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Recommended Prerequisite: ITRN 500.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ITRN 772: *International Telecommunications.* 3 credits.
Focuses on developments in international telecommunications and satellite regulation. Examines regulatory environment, and business and financial aspects of global telecommunications industry. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ITRN 773: *International Strategic Management.* 3 credits.
Presents comprehensive approach to international strategy formulation, implementation, and evaluation processes affecting policy and program development within multinational firms and government agencies. Integrates marketing, finance, accounting, and management. Covers techniques for forecasting international business, political, economic,

technological, legal, and sociocultural forces. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ITRN 791: *Advanced Trade Policy.* 3 credits.
Covers international trade theory, trade policy analysis, regional economic integration, and institutional arrangements governing world trade. Examines dispute settlement regimes, and relationship between trade and environment. Includes WTO and constituent agreements in the areas of goods, services, intellectual property, and trade-related investment measures. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

International Year One (INYO)

000 Level Courses

INYO 044: *Business Math Preparation.* 2 credits.
Notes: The successful completion of this course will serve as a prerequisite for MATH 108 in lieu of the Math Placement Test. Offered by INTO Mason. May be repeated within the degree for a maximum 6 credits. Equivalent to MATH 008.

Recommended Prerequisite: AE Level 3 Core AE Level 3 OCS or admission to an INTO Mason Pathway program.

Registration Restrictions:
Enrollment is limited to English Language level students.

Schedule Type: Seminar

Grading:
This course is graded on the ABC/NC Undergraduate Special scale.

INYO 045: *STEM Mathematics Preparation.* 2 credits.
Notes: The successful completion of this course will either: a) Serve as a prerequisite for Math 105 Pre-Calculus in lieu of the Math Placement Test or b)Prepare the student to achieve the necessary score on the Math Placement Test for entry into MATH 113. Offered by INTO Mason. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: AE Level 3 Core AE Level 3 OCS or admission to an INTO Mason Pathway program.

Registration Restrictions:
Enrollment is limited to English Language level students.

Schedule Type: Seminar

Grading:
This course is graded on the ABC/NC Undergraduate Special scale.

INYO 095: *Quantitative Preparation for the Graduate Record Examination.* 0 credits.
Prepares students in the International Graduate Pathways requiring the general Graduate Record Examination test (GRE) for progression to take the computer adaptive version of the exam with primary emphasis on the quantitative section. This course emphasizes test language and the quantitative portion of the exam along with testing strategies; identifying common test-taking errors; and managing test anxiety. Offered by INTO Mason. May be repeated within the degree for a maximum 9 credits. Equivalent to EAP 097, INYO 096, INYO 097.

Registration Restrictions:
Enrollment is limited to English Language level students.

Schedule Type: Seminar

Grading:
This course is graded on the Satisfactory/No Credit scale.

INYO 096: *Verbal and Quantitative Preparation for the Graduate Record Examination.* 0 credits.
Prepares students in International Graduate Pathways requiring the general Graduate Record Examination test for progression to take the exam for students whose pathways require a primary focus on verbal and quantitative sections. This course emphasizes test language and vocabulary, in addition to: testing strategies; practicing logical, rhetorical, and mathematical problem-solving; identifying common test-taking errors; and managing test anxiety. Offered by INTO Mason. May be repeated within the degree for a maximum 0 credits. Equivalent to EAP 097.

Registration Restrictions:
Enrollment is limited to English Language level students.

Schedule Type: Seminar

Grading:
This course is graded on the Satisfactory/No Credit scale.

INYO 097: *Verbal, Quantitative, and Academic Writing Preparation for the Graduate Record Examination.* 0 credits.
Prepares students in International Graduate Pathways requiring the general Graduate Record Examination test (GRE) for progression to take the exam for students whose pathways equal emphasis on all three areas of the exam. This course emphasizes test language and vocabulary, in addition to: testing strategies; academic writing preparation; practicing mathematical problem-solving; identifying common test-taking errors; and managing test anxiety. Offered by INTO Mason. May be repeated within the degree for a maximum 0 credits. Equivalent to EAP 097.

Schedule Type: Lecture

Grading:
This course is graded on the Satisfactory/No Credit scale.

100 Level Courses

INYO 100: *Transition INTO Mason I.* 1 credit.
Assists first-year international and multilingual Year One students with their transition from high school to college life. It helps prepare students for successful progression to their chosen degree plan the

promoting acculturation to academic norms and expectations at Mason, the development of self-efficacy, and engagement with the Mason community. It encourages to seek out and take full advantage of a wide range of campus resources. Offered by INTO Mason. Limited to three attempts. Equivalent to UNIV 100, UNIV 140.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

INYO 101: *Transition INTO Mason II.* 1 credit.
Serves as a continuation of INYO 100. It provides extended first-year transition support for standard pathway students in the second semester. Offered by INTO Mason. May not be repeated for credit. Equivalent to UNIV 101, UNIV 141 Offered by INTO Mason. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: INYO 100^{C} or 100^{XS}.
^{C} Requires minimum grade of C.
^{XS} Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

INYO 103: *Precalculus Support for INTO Mason Year One.* 1 credit.
INYO 103 is a support course for INTO Mason students enrolled in MATH 105. In this course, students will learn to use and identify the language of Precalculus Mathematics and students will be provided guided practice activities to reinforce the MATH 105 lectures. Offered by INTO Mason. Limited to three attempts.

Recommended Corequisite: MATH 105

Registration Restrictions:
Enrollment is limited to English Language level students.

Schedule Type: Lecture

Grading:
This course is graded on the Satisfactory/No Credit scale.

INYO 104: *Linear Modeling Support for INTO Mason Year One.* 1 credit.
INYO 104 is a support course for INTO Mason students enrolled in MATH 111. In this course, students will learn to use and identify the language of Linear Modelling and students will be provided guided practice activities to reinforce the MATH 111 lectures. Offered by INTO Mason. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: MATH 111^{*C} or 111^{XS}.
* May be taken concurrently.
^{C} Requires minimum grade of C.
^{XS} Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Satisfactory/No Credit scale.

INYO 105: *American Cultures.* 3 credits.
This course provides an introduction to US cultures with a focus on diversity within American society. The course uses the concept of culture as a basis for discussing differences in Americans' experience of family life, work, education, the arts, national and ethnic identities, gender, religion and more. Through ethnographic readings, literature, film and field projects, students develop a better understanding of similarities and differences across the American experience. Offered by INTO Mason. Limited to three attempts.

Mason Core: Global Understanding

Recommended Prerequisite: Multilingual students who have limited experience with US Cultures; INTO Mason Standard Year One Students.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Special scale.

INYO 106: *Introduction to Research Methods for International Students.* 3 credits.
Academic research is the fundamental element of university-level education. Despite the variations in research disciplines. they all share basic concepts of academic inquiry. This course is designed to teach the methods. norms and procedures of undergraduate research in the humanities and social sciences. It should equip international students with the essential skills needed to successfully produce a quality academic paper. Offered by INTO Mason. Limited to three attempts.

Specialized Designation: Mason Impact.

Recommended Prerequisite: Admission to the INTO Mason Undergraduate Pathway program.

Schedule Type: Lecture, Recitation

Grading:
This course is graded on the Undergraduate Special scale.

200 Level Courses

INYO 206: *International Peer Learning Partnership.* 0-1 credits.
This course is an experiential credit course for undergrad students partnering with Undergraduate International Pathway Program students to develop academic skills. Offered by INTO Mason. May be repeated within the degree for a maximum 3 credits.

Recommended Prerequisite: Completion of at least 15 credits at Mason with a GPA of 3.0 or higher and a program participation offer from INTO Mason.

Schedule Type: Independent Study

Grading:
This course is graded on the Satisfactory/No Credit scale.

INYO 207: *International Peer Educational Leadership.* 0-3 credits.
This course is an experiential leadership course for students partnering with Undergraduate International Pathway Program students as peer educational mentors. Offered by INTO Mason. May be repeated within the degree for a maximum 3 credits.

Recommended Prerequisite: Sophomore status or higher.

Schedule Type: Internship

Grading:
This course is graded on the Satisfactory/No Credit scale.

500 Level Courses

INYO 501: *Graduate Transitions for International Students I.* 2 credits.
Designed for the Graduate International Pathways program, this course is the first of a two-part transitional course series for international students. This course covers an introduction to the U.S. higher education environment, engagement with university resources and policies, and development of graduate-level academic skills. Notes: This course is for graduate students whose highest degree is from a non-US institution. This course may not count towards academic degree requirements at the graduate level. Enrolled students are required to take INYO 502 the following consecutive semester. Offered by INTO Mason. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to English Language, Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Special scale.

INYO 502: *Graduate Transitions for International Students II.* 2 credits.
Designed for the Graduate International Pathways program, this course is the second of a two-part transitional course series for international students. This course covers academic adjustments to study in the U.S., graduate study and career readiness, and communicating academic progress and career goals through digital portfolios. Notes: This course is for graduate students whose highest degree is from a non-US institution. Offered by INTO Mason. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Special scale.

INYO 504: *Accelerated Graduate Transitions for International Students.* 3 credits.
Designed specifically for international students at INTO Mason who are enrolled in a one-term Graduate International Pathway, this course emphasizes academic adjustments to study in the U.S., engagement with university resources and policies, and communicating academic progress and career goals through digital portfolios. Notes: This course is for graduate students whose highest degree is from a non-US institution. Offered by INTO Mason. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to English Language, Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

INYO 508: *Special Topics Content Support in the Disciplines.* 0-6 credits.
This Special Topics Content Support in the Disciplines course is tailored to international students enrolled in the INTO Mason Graduate Pathways Program. The courses will be designed to support INTO Mason graduate students in their major courses, providing individualized feedback and foundational information for those courses. Offered by INTO Mason. May be repeated within the term for a maximum 6 credits.

Specialized Designation: Topic Varies

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

Italian (ITAL)

100 Level Courses

ITAL 101: *Elementary Italian I.* 3 credits.
Designed for students with no prior knowledge of Italian. Includes elements of grammar, vocabulary, oral skills, listening comprehension, and reading. Notes: Students may not receive credit for ITAL 101 and ITAL 110. Offered by Modern & Classical Languages. Limited to three attempts. Equivalent to ITAL 110.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Italian

ITAL 102: *Elementary Italian II.* 3 credits.
Continuation of ITAL 101. Notes: Students may not receive credit for ITAL 102 and ITAL 110. Offered by Modern & Classical Languages. Limited to three attempts. Equivalent to ITAL 110.

Recommended Prerequisite: ITAL 101.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Italian

ITAL 110: *Elementary Italian.* 6 credits.
Introduces elements of grammar, vocabulary, oral skills, listening comprehension, and reading. Notes: Students may not receive credit for ITAL 110 and ITAL 101 or 102. Offered by Modern & Classical Languages. Limited to three attempts. Equivalent to ITAL 101, ITAL 102.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Italian

200 Level Courses

ITAL 201: *Intermediate Italian I.* 3 credits.
Further development of skills in listening, speaking, and writing. Notes: ITAL 201 and 202 must be taken in sequence. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: ITAL 102, ITAL 110, or permission of department.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Italian

ITAL 202: *Intermediate Italian II.* 3 credits.
Application of language skills to reading, composition, and discussion. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: ITAL 201 or permission of department.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Fulfills Frgn Lng requirment, Taught in Italian

300 Level Courses

ITAL 320: *Topics in Italian Film and Literature.* 3 credits.
Explores Italian history through the lens of literary and cinematic movements from 1911 onwards. Compares the representations of historical movements in different artistic languages, from poetry and prose to the moving image. Topics include neorealism, Fascism, the Resistance, the Mafia and others. Offered by Modern & Classical Languages. Limited to three attempts.

Mason Core: Literature

Specialized Designation: Topic Varies

Recommended Prerequisite: ENGH 101, or equivalent.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ITAL 325: *Major Italian Writers.* 3 credits.
Works of major Italian or Italian-American authors in translation. Writers to be studied vary. Notes: May be repeated for credit when topic is different. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 6 credits.

Mason Core: Literature

Specialized Designation: Topic Varies

Recommended Prerequisite: ENGL 101/ENGH 101 or equivalent or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ITAL 330: *Advanced Italian: Language and Culture I.* 3 credits.
Develops linguistic and critical proficiency in Italian language and culture for students who have completed intermediate studies in Italian. Analyzes authentic texts that reveal the diversity of Italian experience in regional, national and international contexts. Fosters advanced reading, writing, speaking, and listening skills that will enable students to understand and to critique Italian with greater ease and sophistication. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: ITAL 202; appropriate placement score; or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Italian

ITAL 331: *Advanced Italian Language and Culture II.* 3 credits.
An advanced course that emphasizes linguistic fluency and cultural awareness in contemporary Italian realities. Highlights changes in the domestic, regional, and national spheres. Notes: May be repeated for credit when topic is different. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: ITAL 330; placement score or permission of the instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Italian

ITAL 340: *Italian through Arts.* 3 credits.
Develops linguistic proficiency and historical and cultural awareness through the study of a thematic selection of films. Fosters advanced reading, writing, speaking, and listening skills, incorporating advanced-level grammar and vocabulary in a content-based approach. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: ITAL 202, appropriate placement score, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Italian

ITAL 360: *Southern Italy.* 3 credits.
Examines the history and culture of southern Italy with an eye toward cultural and linguistic competence. Students analyze authentic texts ranging from literature to journalism that treat a specific area of southern Italy. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: ITAL 202 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Italian

400 Level Courses

ITAL 420: *Global and Local Italy.* 3 credits.
Examines Italian culture in its urban, regional, national, and diasporic manifestations. Analyzes authentic texts, from literature to journalism, in the spirit of a cultural studies approach. Fosters advanced reading, writing, speaking, and listening skills that will enable students to understand and critique contemporary Italy with greater ease and sophistication. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: ITAL 330.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Italian

Japanese (JAPA)

100 Level Courses

JAPA 101: *Introduction to the Japanese Language.* 3 credits.
Includes basic grammar, oral expression, listening comprehension, and reading and writing. Notes: Students may not receive credit for JAPA 101 and JAPA 110. Offered by Modern & Classical Languages. Limited to three attempts. Equivalent to JAPA 110.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Japanese

JAPA 102: *Introduction to the Japanese Language.* 3 credits.
Includes basic grammar, oral expression, listening comprehension, and reading and writing. Notes: Students may not receive credit for JAPA 102 and JAPA 110. Offered by Modern & Classical Languages. Limited to three attempts. Equivalent to JAPA 110.

Recommended Prerequisite: JAPA 101, appropriate placement score, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Japanese

JAPA 110: *Elementary Japanese.* 6 credits.
Introduces elements of grammar, vocabulary, oral skills, listening comprehension, reading, and writing. Notes: Students may not receive credit for JAPA 110 and JAPA 101, 102. Offered by Modern & Classical Languages. Limited to three attempts. Equivalent to JAPA 101, JAPA 102.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Japanese

200 Level Courses

JAPA 201: *Intermediate Japanese I.* 3 credits.
Further development of skills acquired in JAPA 101 and 102, including grammar, oral expression, listening comprehension, reading and writing. Use of written language (katakana, hiragana, and kanji) emphasized. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: JAPA 102, JAPA 110, or equivalent.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Japanese

JAPA 202: *Intermediate Japanese II.* 3 credits.
Continuation of JAPA 201. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: JAPA 201 or equivalent.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Fulfills Frgn Lng requirment, Taught in Japanese

JAPA 240: *Introduction to Japanese Culture.* 3 credits.
This introductory survey course covers Japanese history, culture, and society from prehistory until the present day. It is designed to familiarize students with key aspects of Japanese culture that inform contemporary viewpoints and social issues. This class will provide a foundation of basic knowledge about Japan that will serve as a springboard for future engagement with the nation, its people, and its cultural legacy. Offered by Modern & Classical Languages. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

300 Level Courses

JAPA 310: *Japanese Culture in a Global World.* 3 credits.
Study of globalizing Japanese cultural phenomena from the 19th through the 21st century. Explores how movements of ideas, technologies and products across borders influence both local and global ideas and practice. Offered by Modern & Classical Languages. Limited to three attempts.

Mason Core: Global Understanding

Specialized Designation: Non-Western Culture

Recommended Prerequisite: ENGL 101/ENGH 101 or equivalent or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

JAPA 320: *Japanese Cinema.* 3 credits.
Comprehensive analysis of Japanese cinema based on cross-cultural perspectives and cultural criticism. Major developments and trends as viewed in selected Japanese films with emphasis on post war and contemporary eras. Knowledge of Japanese history, communication, and cultural studies or film and media studies helpful. Notes: May be repeated when topic is different with approval of department. Offered by Modern & Classical Languages. May be repeated within the term for a maximum 6 credits.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

JAPA 330: *Advanced Reading and Speaking I.* 3 credits.
Designed for students to develop conversational proficiency and reading skills. Students work toward a mastery of linguistic and sociolinguistic rules by incorporating reading and speaking abilities through class discussions, reports, and presentations. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: JAPA 202, appropriate placement score, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Japanese

JAPA 331: *Advanced Reading and Speaking II.* 3 credits.
Designed for students to develop conversational proficiency and reading skills. Students continue to develop mastery of linguistic and sociolinguistic rules by incorporating reading and speaking abilities through class discussions, reports and presentations. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: JAPA 330, appropriate placement score, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Japanese

JAPA 340: *Topics in Japanese Literature.* 3 credits.
Study of selected topics in Japanese literature in English translation. Content varies. Notes: May be repeated when topic is different with permission of department. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 6 credits.

Mason Core: Literature

Specialized Designation: Topic Varies, Non-Western Culture

Recommended Prerequisite: ENGH 101 or equivalent, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

JAPA 350: *Readings in Japanese Culture.* 3 credits.
An integrated content-based Japanese course designed to advance students' oral and writing skills, as well as their critical understanding of Japanese culture and mythology. Introduces a variety of genres, such as rakugo (traditional comical story-telling), shinwa (myths), and mukashi-banashi (folk legends). Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: JAPA 202, appropriate placement score, or permission of department.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Japanese

JAPA 360: *Topics in Japanese Popular Culture.* 3 credits.
In-depth look at anime and manga in order to arrive at a deeper understanding and appreciation of the cultures and histories that generated these art forms, as well as how they continue to shape international entertainment media and fan subcultures. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

JAPA 370: *Video Games and Japan.* 3 credits.
Examines video games as digital works of art, literature, and social engagement within the context of contemporary transnational mediascape. Includes study of the history and development of Japanese video games, as well as the markets and cultures surrounding them. Offered by Modern & Classical Languages. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

JAPA 380: *Japan in Motion.* 3 credits.
This course introduces student to the evolution of Japanese performing arts from representations in Japanese mythology to the various folk and classical styles of performance. Among the aims of this course is to provide the classical foundations of Japanese performance and the ways it influenced modern and contemporary theater, cinema, and popular culture. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Required Prerequisites: (ENGH 101[C] or 101[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:

This course is graded on the Undergraduate Regular scale.

400 Level Courses

JAPA 410: *Readings in Japanese Modern Fiction.* 3 credits.
This course will further develop the student's language skills and advance their Japanese proficiency level through the comprehension of selected Japanese popular fiction. Students will advance their Japanese comprehension (reading, writing, and speaking) and also foster a deeper understanding of Japan through the examination of the emergence of the Japanese modern identity. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: JAPA 300-400 course conducted in Japanese in addition to JAPA 331; appropriate placement score; or permission of instructor

Registration Restrictions:
Required Prerequisites: (JAPA 331[C] or 331[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Japanese

JAPA 420: *Animals and Nature in Japan.* 3 credits.
Serves as an introduction to ecocriticism through the lens of Japanese culture from the late medieval period to the present day. Themes relating to the study of the natural world will be approached from a multidisciplinary perspective, and the class will address topics concerning Japanese history, religion, and folklore. Offered by Modern & Classical Languages. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

JAPA 440: *Integrated Study of Japanese Language and Society I.* 3 credits.
Integrated approach to study of Japanese language and society through grammar review, vocabulary and kanji development, intensive practice in spoken and written Japanese, and sociological and cultural readings and analysis. Includes class discussion, oral and written reports, and out-of-class direct interactions with native speakers. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: JAPA 331, appropriate placement score, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Japanese

JAPA 441: *Integrated Study of Japanese Language and Society II.* 3 credits.
Integrated approach to study of Japanese language and society through grammar review, vocabulary and kanji development, intensive practice in spoken and written Japanese, and sociological and cultural readings and analysis. Includes class discussion, oral and written reports, and out-of-class direct interactions with native speakers. More emphasis on actual use of Japanese language. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: JAPA 440, appropriate placement score, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Japanese

Kinesiology (KINE)

100 Level Courses

KINE 100: *Introduction to Kinesiology.* 3 credits.
Provides overview of the field of kinesiology in the form of an introductory course. Exposes students to the history of the field, and its emphasis on evidence based knowledge. Explains policies and procedures for the major. Explorers career options. Offered by School of Kinesiology. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

KINE 110: *Physical Activity and Wellness.* 3 credits.
Introduces theoretical and practical information related to physical activity and its effect on personal wellness. Through physical activity literacy and personal reflection, this course engages individuals in the dynamics of fitness-wellness across the lifespan. Offered by School of Kinesiology. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

200 Level Courses

KINE 200: *Methods of Exercise Instruction.* 3 credits.
Provides conceptual and practical introduction to performing common exercises with proper technique utilizing free weights, resistance training machines, cardiovascular equipment, body weight and other fitness techniques. Develops exercise leadership skills through the communication, instruction and demonstration of cardiovascular, resistance and flexibility exercises. Offered by School of Kinesiology. Limited to three attempts.

Recommended Corequisite: ATEP 300; KINE 310

Registration Restrictions:
Required Prerequisites: (BIOL 124[C] or 124[XS]) and (BIOL 125[C] or 125[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

KINE 250: *Endurance Sport Program Design.* 3 credits.
Provides students with knowledge necessary to train another individual safely and effectively for endurance sports. Emphasis will be placed on

running; however, cycling and swimming will be covered. Topics covered include: functional, physiology, psychological aspects of endurance competitions, basic nutritional requirements, injury reduction, training techniques, safety, race management, and history of endurance sports. Offered by School of Kinesiology. Limited to three attempts.

Recommended Prerequisite: BIOL 124, BIOL 125, ATEP 300, KINE 200.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

KINE 260: *Behavior Modification for Physical Activity.* 3 credits.
Provides students with basic knowledge of theories associated with health behavior change and exercise psychology. Examines the factors which influence adopting healthy behaviors as well as behavioral interventions to improve adherence to health and fitness programs. Introduces students to the effects of exercise on mental health. Offered by School of Kinesiology. Limited to three attempts.

Recommended Prerequisite: KINE 100

Recommended Corequisite: KINE 200

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

300 Level Courses

KINE 310: *Exercise Physiology I.* 3 credits.
Introduces students to the physiologic, neuroendocrine, and biochemical changes of the human body that are associated with exercise and work. Offered by School of Kinesiology. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (BIOL 124[C] or 124[XS]) and (BIOL 125[C] or 125[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

KINE 311: *Exercise Physiology Lab.* 1 credit.
Demonstrates the body's physiological responses to exercise with specific testing and assessment procedures commonly used in the field of Kinesiology. These laboratory experiences will allow students to apply the theories they are learning in lecture. Offered by School of Kinesiology. Limited to three attempts.

Recommended Prerequisite: ATEP 300

Registration Restrictions:
Required Prerequisites: (BIOL 124[C] or 124[XS]) and (BIOL 125[C] or 125[XS]) and (KINE 310[*C] or 310[XS]).
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

KINE 320: *Principles of Human Nutrition.* 3 credits.
Assesses dietary habits and patterns in relation to nutrient requirements across the age spectrum and for a variety of populations. Emphasizes weight control, diet in relation to physical activity, and current nutritional controversies. Offered by School of Kinesiology. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

KINE 330: *Seminar in Kinesiology.* 3 credits.
Prepares students for the fieldwork experience in KINE 341: Kinesiology Internship I. Topics covered include: professionalism, review of evidence-based position papers, and discussion of contemporary issues in kinesiology. Offered by School of Kinesiology. Limited to three attempts.

Recommended Prerequisite: Junior standing (60 credit hours)

Registration Restrictions:
Required Prerequisites: (KINE 100[C] or 100[XS]) and (KINE 200[C] or 200[XS]) and (KINE 370[C] or 370[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

KINE 341: *Kinesiology Internship I.* 3 credits.
Provides a paid or voluntary supervised professional experience in an approved exercise science professional setting under the supervision of a practicum University Supervisor and Agency Supervisor. Current CPR, AED, and First Aid Certification required. Offered by School of Kinesiology. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (KINE 200[C] or 200[XS]) and (KINE 310[C] or 310[XS]) and (KINE 330[C] or 330[XS]) and (KINE 350[C] or 350[XS]) and (KINE 370[C] or 370[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman or Sophomore may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Special scale.

KINE 350: *Exercise Prescription and Programming.* 3 credits.
Provides study of the design and implementation of exercise programs for the general population. Offered by School of Kinesiology. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (KINE 200[C] or 200[XS]) and (KINE 310[C] or 310[XS]) and (KINE 370[C] or 370[XS]) and (ATEP 300[C] or 300[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

KINE 360: *Strength Training: Concepts and Applications.* 3 credits.
Provides students with an opportunity to develop an in-depth understanding of the principles of strength training and conditioning, including: anatomical and physiological considerations, lifting techniques, equipment selection, program development/evaluation, and weightlifting safety; thus enabling them to teach and train client. Offered by School of Kinesiology. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: ((BIOL 124[C] or 124[XS]) and (BIOL 125[C] or 125[XS]) and (KINE 310[C] or 310[XS])) and (ATEP 300[C] or 300[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

KINE 370: *Exercise Testing and Evaluation.* 3 credits.
Provides students with an opportunity to develop a understanding of the assessment and evaluation process during exercise in the determination of physical fitness. Offered by School of Kinesiology. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: ((BIOL 124[C] or 124[XS]) and (BIOL 125[C] or 125[XS]) and (KINE 310[C] or 310[XS])) and (ATEP 300[C] or 300[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

KINE 380: *Exercise Prescription and Programming for Special Populations.* 3 credits.
Provides the study of the pathophysiology of common diseases and conditions with concentration in the design and implementation of exercise programs. Offered by School of Kinesiology. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (KINE 200[C] or 200[XS]) and (KINE 310[C] or 310[XS]) and (KINE 330[C] or 330[XS]) and (KINE 350[C] or 350[XS]) and (KINE 370[C] or 370[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

KINE 400: *Biomechanics.* 3 credits.
Focuses on kinetic and kinematic concepts and how they apply to the quantitative assessment of human movement. Analyzes human movement and the functional dynamics of tissue such as muscle or bone. Offered by School of Kinesiology. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (BIOL 124[C] or 124[XS]) and (BIOL 125[C] or 125[XS]) and (KINE 360[C] or 360[XS]) and (ATEP 300[C] or 300[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

KINE 410: *Exercise Physiology II.* 3 credits.
Provides study in the advanced theory of exercise physiology. Knowledge related to the physiologic, neuroendocrine, and biochemical changes of the human body associated with both a single bout of exercise and chronic exercise training will be addressed. Offered by School of Kinesiology. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (BIOL 124[C] or 124[XS]) and (BIOL 125[C] or 125[XS]) and (KINE 310[C] or 310[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

KINE 420: *Sport and Exercise Nutrition.* 3 credits.
Explores the fundamental biochemical and physiological rationale for optimal nutrient intake for health, physical fitness, and athletic performance. Specific attention is focused upon the relationship nutrition has with exercise, physical fitness, health, and athletic performance. Offered by School of Kinesiology. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (KINE 310[C] or 310[XS]) and (KINE 320[C] or 320[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

KINE 441: *Kinesiology Internship II.* 3 credits.
Provides a supervised professional experience in two separate approved kinesiology professional settings under the supervision of both a University Supervisor and an Agency Supervisor with emphasis placed upon exercise programming and implementation for both clinical (site 1) and performance (site 2) populations. Current CPR, AED, and First Aid Certification required. Offered by School of Kinesiology. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (KINE 341[C] or 341[XS]) and (KINE 360[C] or 360[XS]) and (KINE 380[C] or 380[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Special scale.

KINE 450: *Research Methods.* 3 credits.
Covers the development of empirical research designs for both practical and theoretical problems in allied health fields such as kinesiology, therapeutic recreation, and athletic training. Includes literature review of hypothesized relationships, and formulation of research proposals. Offered by School of Kinesiology. Limited to three attempts.

Specialized Designation: Writing Intensive in Major

Registration Restrictions:
Required Prerequisites: (STAT 250[C], 250[XS], SOCI 313[C], 313[XS], EDRS 220[C] or 220[XS]) and (ENGH 302[C] or 302[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman or Sophomore may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

KINE 490: *Kinesiology Internship III.* 12 credits.
Provides a directed, field-based experience, in which students observe and participate in conditions, practices, and settings where sought career roles are conducted. The kinesiology fieldwork coordinator must approve placement for the practicum. Both a University supervisor and an approved agency supervisor with recognized professional certifications coordinate and oversee the student's internship experience. Current CPR, AED, and First Aid Certification required. Offered by School of Kinesiology. Limited to three attempts.

Mason Core: Capstone

Registration Restrictions:
Required Prerequisites: (KINE 330[C] or 330[XS]) and (KINE 341[C] or 341[XS]) and (KINE 400[C] or 400[XS]) and (KINE 410[C] or 410[XS]) and (KINE 420[C] or 420[XS]) and (KINE 441[C] or 441[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman, Junior or Sophomore may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Satisfactory/No Credit scale.

KINE 499: *Independent Study in Kinesiology.* 1-3 credits.
Study of a topic regarding theory, research, or practice in kinesiology under the direction of a faculty member. May be repeated, but no more than 3 total credits hours may be earned. Offered by School of Kinesiology. May be repeated within the degree for a maximum 3 credits.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

500 Level Courses

KINE 500: *Special Topics.* 1-6 credits.
Studies selected topics in the field of Kinesiology. Offered by School of Kinesiology. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: Admission to the Kinesiology MS graduate program or approval of course instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

KINE 501: *Independent Study.* 1-3 credits.
Studies problem areas in Kinesiology research, theory, or practice under direction of faculty member. Offered by School of Kinesiology. May be repeated within the term for a maximum 6 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: Admission to the Kinesiology MS graduate program or approval of course instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Regular scale.

KINE 506: *Exercise Psychology.* 3 credits.
Covers psychological and social-psychological antecedents and consequences of exercise, physical activity, and sports participation. Emphasizes theory and research on personality, motivation, arousal, cognition, attributions, attitudes, self-efficacy, leadership effectiveness, and group dynamics. Offered by School of Kinesiology. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to students with a major in Kinesiology.

Enrollment limited to students in a Master of Science degree.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

600 Level Courses

KINE 600: *Scientific Foundation of Applied Kinesiology.* 3 credits.
Examines the sub-fields of Kinesiology and the scientific practice of studying current issues related to physical activity, movement and health. Offered by School of Kinesiology. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to students with a major in Kinesiology.

Enrollment is limited to Graduate level students.

Enrollment limited to students in a Master of Science degree.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

KINE 601: *Advanced Exercise Physiology.* 3 credits.
Explores in-depth topics on the effects of physical activity on physiological function. Includes the examination of exercise physiology concepts through analysis of research publications. Offered by School of Kinesiology. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to students with a major in Kinesiology.

Enrollment limited to students in a Master of Science degree.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

KINE 602: *Movement and Fitness Assessment.* 3 credits.
Covers common movement and fitness assessments that can be used to develop an individualized exercise program for various populations across the lifespan and ability level. Offered by School of Kinesiology. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to students with a major in Kinesiology.

Enrollment is limited to Graduate level students.

Enrollment limited to students in a Master of Science degree.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

KINE 603: *Applied Biomechanics.* 3 credits.
Examines biomechanical theory and the application of mechanics to understand human movement across the lifespan and ability level. Offered by School of Kinesiology. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to students with a major in Kinesiology.

Enrollment limited to students in a Master of Science degree.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

KINE 604: *Motor Control and Learning.* 3 credits.
Appraisal of motor learning theory and the neuromuscular system as it relates to human movement across the lifespan. Offered by School of Kinesiology. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to students with a major in Kinesiology.

Enrollment is limited to Graduate level students.

Enrollment limited to students in a Master of Science degree.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

KINE 605: *Research Methods in Kinesiology.* 3 credits.
Introduces research methodology utilized in the field of Kinesiology to address important health issues related to physical activity across the lifespan. Offered by School of Kinesiology. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to students with a major in Kinesiology.

Enrollment limited to students in a Master of Science degree.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

KINE 606: *Applied Sport and Exercise Nutrition.* 3 credits.
Advanced study of nutrition's relation to physical activity, exercise, and sports. Reviews biochemical, physiological, and behavioral aspects of nutrition in promoting health, fitness, and sports performance. Focuses on nutrient needs during life cycle stages. Offered by School of Kinesiology. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to students with a major in Kinesiology.

Enrollment is limited to Graduate level students.

Enrollment limited to students in a Master of Science degree.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

KINE 607: *Exercise Programming: Movement Selection and Progression.* 3 credits.
Explores how to develop individualized exercise programs based on fitness assessment data, lifestyle, client goals and preferences. Emphasizes movement selection and progression with regards to the individual's movement capabilities. Offered by School of Kinesiology. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to students with a major in Kinesiology.

Enrollment limited to students in a Master of Science degree.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

KINE 608: *Data Science in Kinesiology.* 3 credits.
Introduction to practical and applied aspects of both descriptive and inferential statistics in kinesiology. Offered by School of Kinesiology. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to students with a major in Kinesiology.

Enrollment limited to students in a Master of Science degree.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

KINE 609: *Applied Strength and Conditioning Programming.* 3 credits.
Analyzes exercise techniques, training program designs, organization and administration, and testing and evaluation using scientific principles of strength and conditioning. Offered by School of Kinesiology. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to students with a major in Kinesiology.

Enrollment is limited to Graduate level students.

Enrollment limited to students in a Master of Science degree.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

KINE 610: *Corrective and Preventative Exercise Techniques.* 3 credits.
Explores evidence-based exercise interventions to correct and prevent common movement dysfunctions and/or injuries in a variety of populations. Offered by School of Kinesiology. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to students with a major in Kinesiology.

Enrollment limited to students in a Graduate Certificate or Master of Science degrees.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

KINE 615: *Advanced Technology to Measure Human Movement.* 3 credits.
Explores common methods of measuring human movement and performance in Kinesiology. Offered by School of Kinesiology. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to students with a major in Kinesiology.

Enrollment limited to students in a Master of Science degree.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

700 Level Courses

KINE 798: *Directed Inquiry.* 3 credits.
Studies problem areas in Kinesiology research, theory, or practice under direction of faculty member. Offered by School of Kinesiology. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Enrollment is limited to students with a major in Kinesiology.

Enrollment limited to students in a Master of Science degree.

Schedule Type: Thesis

Grading:
This course is graded on the Satisfactory/No Credit scale.

KINE 799: *Thesis.* 1-6 credits.
Explores a problem in the field of Kinesiology using appropriate research methodology and under the supervision of graduate faculty member. Offered by School of Kinesiology. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Completion of all coursework.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Thesis

Grading:
This course is graded on the Satisfactory/No Credit scale.

800 Level Courses

KINE 890: *Research Experience I.* 6 credits.
Engages student in advanced literature review development, research design, evaluation methods and statistical applications in Kinesiology. Offered by School of Kinesiology. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to students with a major in Kinesiology.

Enrollment limited to students in a Doctor of Philosophy degree.

Schedule Type: Research

Grading:
This course is graded on the Graduate Regular scale.

KINE 891: *Research Experience II.* 3 credits.
Engages student in advanced data collection, management, analysis and interpretation to develop a scholarly product. Prepares students for dissertation proposal in Kinesiology. Offered by School of Kinesiology. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to students with a major in Kinesiology.

Enrollment limited to students in a Doctor of Philosophy degree.

Schedule Type: Research

Grading:
This course is graded on the Graduate Regular scale.

KINE 897: *Independent Study.* 3,6 credits.
Structured learning experience to extend and develop skills and knowledge relative to the field of Kinesiology. Offered by School of Kinesiology. May be repeated within the term for a maximum 9 credits.

Registration Restrictions:

Enrollment is limited to students with a major in Kinesiology.

Enrollment limited to students in a Doctor of Philosophy degree.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Regular scale.

900 Level Courses

KINE 998: *Doctoral Dissertation Proposal.* 1-6 credits.
Provides information and support for students as they develop their dissertation proposal. Note: May be repeated, but no more than 6 credits of KINE 998 may satisfy doctoral degree requirements. Offered by School of Kinesiology. May be repeated within the degree for a maximum 12 credits.

Recommended Prerequisite: Admission to candidacy in PhD program and successful completion of doctoral qualifying exam.

Registration Restrictions:
Enrollment is limited to students with a major in Kinesiology.

Enrollment limited to students in a Doctor of Philosophy degree.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

KINE 999: *Doctoral Dissertation Research.* 1-12 credits.
Focuses on doctoral dissertation research under direction of dissertation chair and committee members and initiation of projects stemming from student research. Offered by School of Kinesiology. May be repeated within the degree.

Recommended Prerequisite: Faculty approval of dissertation proposal.

Registration Restrictions:
Required Prerequisite: KINE 998.

Enrollment limited to students with a class of Advanced to Candidacy.

Enrollment is limited to students with a major in Kinesiology.

Enrollment limited to students in a Doctor of Philosophy degree.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

Korean (KORE)

100 Level Courses

KORE 101: *Intro to the Korean Language.* 3 credits.
Offered by Modern & Classical Languages. Limited to three attempts. Equivalent to KORE 102, KORE 110.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Korean

KORE 102: *Intro to the Korean Language.* 3 credits.
Offered by Modern & Classical Languages. Limited to three attempts. Equivalent to KORE 101, KORE 110.

Recommended Prerequisite: KORE 101 and 102 must be taken in sequence.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Korean

KORE 110: *Elementary Korean.* 6 credits.
Introduces elements of grammar, vocabulary, oral skills, listening comprehension, and reading. Offered by Modern & Classical Languages. Limited to three attempts. Equivalent to KORE 101, KORE 102.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Korean

200 Level Courses

KORE 201: *Intermediate Korean I.* 3 credits.
Continuation of basic Korean listening, speaking, reading, and writing skills. Online and lab work required. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: KORE 102, KORE 110, appropriate placement score, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Korean

KORE 202: *Intermediate Korean II.* 3 credits.
Continuation of KORE 201. Online and lab work required. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: KORE 201, appropriate placement score, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Fulfills Frgn Lng requirment, Taught in Korean

300 Level Courses

KORE 300: *Korean Culture and Society.* 3 credits.
Provides a broad overview of Korean people, society, and culture, mainly focusing on basic culture codes. Starting from the ways of Korean people's interaction, the course explores distinctive features of expression such as joy, excitement, sadness, frustration, and anger. Various authentic materials and course books will offer the framework for students to understand unique Korean cultural phenomena and their

sociohistorical background. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 9 credits.

Specialized Designation: Topic Varies

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

KORE 301: *Advanced Korean Language and Culture.* 3 credits.
Develops advanced level Korean language skills and cultural awareness in interpersonal, interpretive, and presentational modes of communication. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: KORE 202; appropriate placement score; or permission of instructor

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Korean

KORE 305: *Business Korean.* 3 credits.
Develops intermediate- to high- level Korean reading, writing, listening and speaking skills while increasing culture awareness in Korean business settings through authentic materials and hands-on projects with people in the Korean business community. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: KORE 202, appropriate placement score, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Korean

KORE 310: *Traditional Korean Literature in Translation.* 3 credits.
Develops students' advanced knowledge of traditional Korean literature and culture through exploration of pre-modern Korean literary texts (those written before 1900). Students will gain a fundamental understanding of Korean literature and culture and gain a deeper perspective on Korean cultural products by reading traditional Korean literary genres and learning about their social, historical, and cultural backgrounds. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: ENGH 101; or permission of instructor

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

KORE 311: *Modern Korean Literature in Translation.* 3 credits.
Offers an overview of South Korean literature in the twentieth and twenty-first century. Examines the literary representations of modern Korean histories and investigates the origins and evolvement of modern Korean literary genres. Offered by Modern & Classical Languages. Limited to three attempts.

Mason Core: Literature

Recommended Prerequisite: ENGH 101; appropriate placement score; or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

KORE 320: *Korean Popular Culture in a Global World.* 3 credits.
Develops students' critical understanding of transnational and global perspectives of culture flow using various cultural products and art forms of Korea. Provides students with the understanding of the histories and social contexts of Korean popular culture. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Non-Western Culture

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

KORE 321: *Korean Proficiency through Visual Culture.* 3 credits.
Develops Intermediate-high level Korean reading, writing, listening, and speaking skills while increasing understanding of Korean culture through authentic Korean visual culture such as films, TV dramas, commercials, and music videos. Students who complete the course will gain an understanding of local and global Korean visual culture as well as acquire upper level Korean linguistic proficiency. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: KORE 202, appropriate placement score, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Korean

KORE 325: *Major North and South Korean Writers.* 3 credits.
Introduces students to major contemporary and twentieth-century Korean writers from both South and North Korea. Students acquire a balanced knowledge about North and South Korea's representative writers and their influential literary texts along with sociohistorical backgrounds of each society. Offered by Modern & Classical Languages. May be repeated within the term for a maximum 6 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: ENGH 101; appropriate placement score; or permission of instructor

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

KORE 331: *Special Topics in Advanced Korean Reading.* 3 credits.
This course introduces students to advanced-level reading materials. Topics will vary. This course is designed for students who have a high-

intermediate level of Korean proficiency and the goal for this course is developing advanced level Korean proficiency, literacy, and acquiring sociohistorical knowledge of Korean society. Offered by Modern & Classical Languages. May be repeated within the term for a maximum 9 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: KORE 202; appropriate placement score; or permission of instructor

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Korean

KORE 332: *Special Topics in Advanced Korean Speaking.* 3 credits.
Introduces students to advanced-level materials to improve proficiency in speaking. Topics will vary. This course is designed for students who have a high-intermediate level of Korean proficiency and the goal for this course is developing advanced level Korean proficiency in speaking, public speaking, presentation skills and acquiring social-cultural knowledge of contemporary Korean society. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 9 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: KORE 202; appropriate placement score; or permission of instructor

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Korean

KORE 340: *Transformation of Language and Culture in North and South Korea.* 3 credits.
Develops advanced level North and South Korean reading, writing, listening, and speaking skills and increases culture awareness through authentic Korean visual culture. Distinguishes cross-linguistic and cross-cultural differences of North and South Korean language and culture and develops advanced level Korean linguistic proficiency. Offered by Modern & Classical Languages. Limited to three attempts.

Specialized Designation: Topic Varies

Registration Restrictions:
Required Prerequisites: KORE 202[C], 202[XS] or 250[C].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Korean

KORE 370: *Advanced Korean Writing.* 3 credits.
This course is designed to develop students' advanced level Korean writing skills. Students will learn technical, formal, and stylistic writing useful for document preparation and a various professional setting. Offered by Modern & Classical Languages. Limited to three attempts.

Specialized Designation: Topic Varies, Writing Intensive in Major

Recommended Prerequisite: KORE 202; appropriate placement score; or permission of instructor

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Korean

KORE 385: *Introduction to Korean Linguistics.* 3 credits.
Introduces the study of Korean linguistics, including phonetics, phonology, morphology, syntax, semantics, pragmatics as well as its variation and change. Combines the discussion of theoretical issues with the empirical analysis of the Korean language. Offered by Modern & Classical Languages. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

KORE 410: *Special Topics in Korean Linguistics.* 3 credits.
Explores a selected theme in Korean linguistics with a focus on its lexicology, sound system, and language variation. Combines discussion of theoretical issues with the empirical analysis of Korean. Offered by Modern & Classical Languages. May be repeated within the term for a maximum 9 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: KORE 202 or equivalent; appropriate placement score; or permission of instructor

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Korean

KORE 440: *Special Topics in Translation of Korean.* 3 credits.
The objective of this course is introducing basic theories and practices of translation and developing students' professional translation skills using various authentic Korean media texts or literary texts. Students will learn to apply text identification, text analysis, and resolve translation issues while they are practicing translating Korean texts into English. Offered by Modern & Classical Languages. May be repeated within the term for a maximum 9 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: 300 level KORE course conducted in Korean; appropriate placement score; or permission of instructor

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Korean

KORE 450: *Korean Cultural Studies.* 3 credits.
Explores histories and contemporary applications of Korean cultural studies and cultural analyses, including cultural production and consumption in domestic and transnational scopes, reception and fandom, semiotics, postcolonial and postmodern theory, visual and media studies, and quantitative and qualitative methods. Students consider representative Korean cultural products, and also learn about the Western development of Cultural Studies. Offered by Modern & Classical Languages. May be repeated within the term for a maximum 6 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: 300 level KORE course conducted in Korean; appropriate placement score; permission of instructor

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Korean

KORE 490: *Internship in Korean Studies.* 1-9 credits.
On-the-job training using Korean language in diverse settings through approved internship placements. Note: See department for the application process. Offered by Modern & Classical Languages. May be repeated within the term for a maximum 9 credits.

Recommended Prerequisite: KORE 202 and one KORE 300-level core course

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Korean

Latin (LATN)

100 Level Courses

LATN 101: *Elementary Latin.* 3 credits.
Introduction including basic grammar, vocabulary, and development of reading skills, and introduction to Roman civilization. Notes: Must be taken in sequence. Offered by Modern & Classical Languages. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

LATN 102: *Elementary Latin.* 3 credits.
Introduction including basic grammar, vocabulary, and development of reading skills, and introduction to Roman civilization. Notes: Must be taken in sequence. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: LATN 101.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

200 Level Courses

LATN 201: *Intermediate Latin I.* 3 credits.
Intensive review of elementary grammar. Introduces more advanced grammatical constructions and patterns of usage, continued development of reading proficiency, and vocabulary and readings in Latin literature. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: LATN 102 or equivalent.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

LATN 202: *Intermediate Latin II.* 3 credits.
Study of advanced grammatical constructions, vocabulary, and patterns of usage. Reading of selections from Roman authors of late Republic and early Empire, and study of cultural and political backgrounds. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: LATN 201 or equivalent.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Fulfills Frgn Lng requirment

300 Level Courses

LATN 351: *Roman Prose Literature.* 3 credits.
Introduces major work of prose, themes, and literary qualities. Emphasizes interpretation and stylistic analysis. Concentrates on one complete work; topics, authors vary. Notes: Readings in Latin. May be repeated when topic is different. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: LATN 202 or equivalent.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

LATN 352: *Roman Poetry.* 3 credits.
Introduces major work of poetry and themes, meters, and poetic techniques. Emphasizes interpretation, metrical and stylistic analysis, and poet's role in society. Topics and authors vary. Notes: Readings in Latin. May be repeated when topic is different. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: LATN 202 or equivalent.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

LATN 451: *Studies in Roman Literature.* 3 credits.
Focuses on a single Latin author or literary genre. Approaches subject from variety of interpretive perspectives, and uses secondary literature as

well as primary texts. Topics and authors vary. Notes: Readings in Latin. May be repeated when topic is different. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: LATN 351/352 or equivalent or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

LATN 452: *Studies in Roman Literature.* 3 credits.
Focuses on a single Latin author or literary genre. Approaches subject from variety of interpretive perspectives, and uses secondary literature as well as primary texts. Topics and authors vary. Notes: Readings in Latin. May be repeated when topic is different. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: LATN 351, 352 or equivalent or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Latin American Studies (LAS)

400 Level Courses

LAS 499: *Research Seminar in Latin American Studies.* 3 credits.
Research on specialized topic in Latin American Studies culminating in substantial paper and oral presentation. Students expected to integrate knowledge and skills acquired in Mason Core courses. Notes: Must receive passing grade to graduate with a BA in Latin American studies. Offered by Humanities & Social Sciences. Limited to three attempts.

Mason Core: Synthesis

Specialized Designation: Writing Intensive in Major

Recommended Prerequisite: 90 credits

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

Linguistics (LING)

100 Level Courses

LING 100: *Human Language.* 3 credits.
Introduces students to human language, the fundamental role it plays in human communities and interactions, and its complex, systematic inner workings. Dispels common myths about language and ask questions such as: How do babies learn language? Do animals have language? Can humans invent languages? What is a dialect? How do languages differ and change? Offered by English. Limited to three attempts.

Mason Core: Social/Behavioral Sciences

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

300 Level Courses

LING 306: *General Linguistics.* 3 credits.
Overview of grammatical structure of English including world classes, phrases, and complex sentences. Analyzes English grammar using modern syntactic theory. Students engage in language description through problem solving. Offered by English. Limited to three attempts.

Mason Core: Social/Behavioral Sciences

Schedule Type: Lecture, Recitation

Grading:
This course is graded on the Undergraduate Regular scale.

LING 307: *English Grammar.* 3 credits.
Overview of grammatical structure of English including word classes, phrases, and complex sentences. Analyzes English grammar using modern syntactic theory. Students engage in language description through problem solving. Offered by English. Limited to three attempts. Equivalent to ENGH 307.

Schedule Type: Lecture, Recitation

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

LING 450: *Introduction to Sociolinguistics.* 3 credits.
Overview of the study of language variation and change. Topics to be covered include the interaction between language and social factors (age, sex, social class), dialects of English, speech communities, language contact, and language and gender. Offered by English. Limited to three attempts.

Recommended Prerequisite: LING 306.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

LING 480: *RS: First Language Acquisition.* 3 credits.
Examines first language acquisition from a linguistic perspective. Covers the development of a first phonology, syntax, and semantics. Emphasizes research methods in the study of child language. Offered by English. Limited to three attempts.

Mason Core: Capstone

Specialized Designation: Research/Scholarship Intensive

Registration Restrictions:
Required Prerequisites: (LING 306[C] or 306[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

LING 485: *Semantics and Pragmatics.* 3 credits.
Developments in theoretical linguistics that explore how language form is related to meaning and context. Topics include reference, lexical

semantics, logic, quantification, truth conditions and sentential meaning, presuppositions, and speech acts. Offered by English. Limited to three attempts.

Recommended Prerequisite: LING 306.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

LING 486: *Syntax I.* 3 credits.
Nature and form of syntactic theory, and examination and analysis of the properties of several major natural language syntactic structures. Offered by English. Limited to three attempts.

Recommended Prerequisite: LING 306.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

LING 490: *Generative Phonology.* 3 credits.
Sound systems of English and other languages from perspectives of phonological theory. Topics include articulatory phonetics, distinctive features, nature of phonological representations, rhythm and stress, and phonological universals and constraints. Offered by English. Limited to three attempts.

Recommended Prerequisite: LING 306.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

LING 499: *Independent Study.* 1-3 credits.
Intensive study of particular theoretical problem in linguistics conducted by student in close consultation with instructor. Student produces substantial piece of written work on research findings. Notes: May be repeated with permission of instructor. Offered by English. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: LING 326 and 3 other LING credits and permission of instructor.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

500 Level Courses

LING 507: *Field Work in Applied Linguistics.* 3 credits.
Field work providing working experience in language-teaching program or educational research organization. Notes: Contact the department one semester prior to enrollment. Offered by English. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: LING 326, 520, 521, or 582.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

LING 520: *Introduction to Linguistics.* 3 credits.
Introduces terminology and methodology of modern linguistic science, and detailed structural analysis of English phonology, morphology, and syntax. Offered by English. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

LING 521: *Applied Linguistics: Teaching English to Speakers of Other Languages (TESOL).* 3 credits.
Theories and basic principles of teaching a second language, especially as they relate to English language. Introduces students to methods of teaching English to speakers of other languages. Offered by English. May not be repeated for credit.

Recommended Prerequisite: LING 690 or LING 687

Registration Restrictions:
Required Prerequisites: (LING 520[B-] or 520[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

LING 522: *English Grammar and Pedagogy.* 3 credits.
Overview of structure of modern English, and of principles of grammar pedagogy. Begins with word classes and ends with analyses of complex sentences. Students learn to tap intuitions about English for analysis of grammatical structure, and to evaluate pedagogical strategies for teaching English. Offered by English. May not be repeated for credit.

Recommended Prerequisite: One linguistics course or permission of instructor.

Registration Restrictions:

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

LING 523: *English Pronunciation and Pedagogy.* 3 credits.
Description and analysis of sound system of modern English, and principles and strategies for teaching speaking and listening. Topics include segmental phonetics, syllable structure, connected speech, and prosodic phenomena. Offered by English. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (LING 520[B-] or 520[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

LING 525: *Practicum in ESL.* 3 credits.
Involves preparation and presentation of lessons to adult English as second language (ESL) learners under guidance of mentor teacher and practicum professor. Field experience consists of observation and teaching in assigned ESL classroom. Offered by English. May not be repeated for credit. Equivalent to LING 625.

Recommended Prerequisite: LING 521.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Satisfactory/No Credit scale.

LING 534: *Historical Studies of the English Language.* 3 credits.
Either a chronological survey of development of English from Old and Middle English to Modern English and American English, taking into account historical changes in phonology, morphology, syntax, and semantics. Offered by English. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

LING 570: *Computational and Quantitative Methods.* 3 credits.
Introduces programming and quantitative language data analysis. Builds fundamental skills in computational tools such as Python and R. Notes: This course assumes no background in coding. Offered by English. May not be repeated for credit.

Recommended Prerequisite: LING 520 or equivalent

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

LING 580: *First Language Acquisition.* 3 credits.
Examines first language acquisition from a linguistic perspective. Covers the development of a first phonology, syntax, and semantics. Methodology in studying child language is discussed. Offered by English. May not be repeated for credit.

Recommended Prerequisite: LING 520 or one of the following: LING 690, 786, 785 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

LING 581: *Psycholinguistics.* 3 credits.
Study of the psychological aspects of human language. Explores the processes that allow humans to produce and comprehend language, including speech, sign, and writing. Offered by English. May not be repeated for credit.

Recommended Prerequisite: LING 520, 690, or 786; or permission of instructor.

Registration Restrictions:

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

LING 582: *Second Language Acquisition.* 3 credits.
Examines second language (L2) acquisition from linguistic perspective. Compares first and second language acquisition. Explores factors contributing to L2 variation, including linguistic universals, transfer, age, input, and affective considerations. Offered by English. May not be repeated for credit.

Recommended Prerequisite: LING 306, 520, 690, or 786; or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

600 Level Courses

LING 625: *Practicum in TESOL.* 3 credits.
Involves preparation and presentation of lessons to adult English learners under guidance of mentor teacher and practicum professor. Field experience consists of observation and teaching in assigned classroom. Offered by English. May not be repeated for credit. Equivalent to LING 525.

Recommended Prerequisite: LING 522, LING 523

Registration Restrictions:
Required Prerequisites: LING 521[B-] or 521[XS].
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Satisfactory/No Credit scale.

LING 650: *Introduction to Sociolinguistics.* 3 credits.
An overview of the study of language variation and change. Topics to be covered include the interaction between language and social factors (age, sex, social class), dialects of English, speech communities, language contact, and language and gender. Offered by English. May not be repeated for credit.

Recommended Prerequisite: LING 520, 523, or 690.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

LING 675: *Computational Linguistics I.* 3 credits.
Introduction to the central questions and techniques of Natural Language Processing and Computational Linguistics. Topics include language modeling, part of speech tagging, estimating linguistic complexity, and comparison of human and machine learning. Offered by English. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (LING 570[B-] or 570[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

LING 685: *Typology.* 3 credits.
Overview of typological traditions describing the scope of diversity and similarity across languages. Topics include classical and contemporary approaches to human language typology and the place of human language in the broader typology of communication systems. Offered by English. May not be repeated for credit.

Recommended Prerequisite: LING 689 and LING 687

Registration Restrictions:
Required Prerequisites: (LING 520[B-] or 520[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:

This course is graded on the Graduate Regular scale.

LING 686: *Special Topics in Linguistics.* 3 credits.
Detailed advanced study of selected area of linguistics. Notes: Content varies. May be repeated for credit with permission of department. Offered by English. May be repeated within the term for a maximum 12 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

LING 687: *Syntax I.* 3 credits.
Introduction to the nature and form of syntactic theory including major concepts, phenomena, and techniques for analysis. Examines and analyzes properties of natural language syntactic structures. Offered by English. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (LING 520[B-] or 520[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

LING 688: *Semantics and Pragmatics I.* 3 credits.
Developments in theoretical linguistics that explore how language form relates to meaning and context. Topics include reference, lexical semantics, logic, quantification, truth conditions and sentential meaning, presuppositions, and speech acts. Offered by English. May not be repeated for credit.

Recommended Prerequisite: LING 520, LING 690, or LING 687; or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

LING 689: *Morphology.* 3 credits.
Explores word-level patterns of variation in language. Overview of current approaches to morphology, morphological variation in world languages, and the dominant descriptive and theoretical models of this variation. Connections to typology, psycholinguistics, and computational approaches are discussed. Offered by English. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (LING 520[B-] or 520[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

LING 690: *Phonology I.* 3 credits.
Sound systems of languages from the perspective of phonological theory. Topics include distinctive features, nature of phonological representations and processes, rule interaction, and universal constraints. Offered by English. May not be repeated for credit.

Recommended Prerequisite: LING 520 or equivalent

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

LING 691: *Theories of Language.* 3 credits.
Seminar in linguistic metatheory. Examines wide range of theories about language and linguistic theory, including those of Saussure, Bloomfield, Chomsky, and others. Readings from original sources. Offered by English. May not be repeated for credit.

Recommended Prerequisite: LING 520, 690, or 786; or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

LING 692: *Phonology II.* 3 credits.
Recent trends in phonological theory. Topics include stress assignment, tone spreading, and vowel harmony, from within nonlinear framework.

Discusses segmental structure and underspecification. Offered by English. May not be repeated for credit.

Recommended Prerequisite: LING 690.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

LING 693: *Phonetics.* 3 credits.
Introduction to phonetic theory and phonetic representation, including articulatory, acoustic and perceptual characteristics of human speech. Students will learn and practice acoustic analysis, perceptual testing, production and transcription of speech sounds from the world's languages. Offered by English. May not be repeated for credit.

Recommended Prerequisite: LING 520 or equivalent

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

700 Level Courses

LING 770: *Research Methods.* 3 credits.
Conceptualizing and conducting second language research, including process of developing research questions, gathering data, obtaining permission from institutional review board, choosing data collection measures, and coding linguistic and nonlinguistic data. Offered by English. May not be repeated for credit.

Recommended Prerequisite: LING 690 or LING 785 or LING 786, and LING 582, or permission of the instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

LING 775: *Computational Linguistics II.* 3 credits.
Practical introduction to automated data collection and using linguistic resources for computational and quantitative data analysis. Topics include existing resources, licensing and data sharing issues, ethical considerations, and the speed, consistency and precision issues that arise when collecting linguistic data from a variety of corpora. Offered by English. May not be repeated for credit.

Recommended Prerequisite: LING 689

Registration Restrictions:
Required Prerequisites: (LING 675[B-] or 675[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

LING 782: *Second Language Acquisition II.* 3 credits.
Advanced course in second-language acquisition theory. Detailed analysis of internal and external constraints. Variation addressed from linguistic, psychological, and environmental perspectives. Offered by English. May not be repeated for credit.

Recommended Prerequisite: LING 582 or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

LING 785: *Semantics and Pragmatics.* 3 credits.
Developments in theoretical linguistics that explore how language form relates to meaning and context. Topics include reference, lexical semantics, logic, quantification, truth conditions and sentential meaning, presuppositions, and speech acts. Offered by English. May not be repeated for credit.

Recommended Prerequisite: LING 520, 690, or 786; or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

LING 786: *Syntax I.* 3 credits.
Nature and form of syntactic theory. Examines and analyzes properties of several major natural language syntactic structures. Offered by English. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

LING 787: *Syntax II.* 3 credits.
Theoretical treatment of syntactic phenomena that have emerged as standard problems for syntactic analysis. Problems include binding, extraction, and quantification. Extensive reading in primary theoretical literature. Offered by English. May not be repeated for credit.

Recommended Prerequisite: LING 786.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

LING 788: *Semantics and Pragmatics II.* 3 credits.
Advanced course in semantic and pragmatic theory. Study of meaning under truth-conditional, model-theoretic framework explored and related to syntax and pragmatics. Offered by English. May not be repeated for credit.

Recommended Prerequisite: LING 785 or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

LING 790: *Phonology II.* 3 credits.
Recent trends in phonological theory. Topics include laboratory methods, exceptional language sources, and constraint-based theories. Offered by English. May not be repeated for credit.

Recommended Corequisite: LING 690

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

LING 798: *Directed Reading and Research.* 1-3 credits.
Reading, research, and writing on specific project under direction of departmental member. Notes: Open only to students who have completed at least 18 credits of LING courses. Prior approval by faculty member required. Written report required. May be repeated with permission of director. Offered by English. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: 18 credits of linguistics courses.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Thesis

Grading:
This course is graded on the Graduate Special scale.

LING 799: *Thesis.* 1-6 credits.
Students who take LING 798 to develop thesis topic and then elect thesis option receive 3 credits after completing thesis. Students who do not take LING 798, or who take it to work on project unrelated to thesis, receive up to 6 credits after completing thesis. Offered by English. May be repeated within the degree.

Recommended Prerequisite: Open only to students who have completed at least 18 credits of LING courses.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Thesis

Grading:
This course is graded on the Satisfactory/No Credit scale.

800 Level Courses

LING 882: *Seminar in Language Acquisition.* 3 credits.
Advanced topics seminar in current language acquisition theory. Notes: Topics vary. Offered by English. May be repeated within the term for a maximum 9 credits.

Recommended Prerequisite: LING 782 or permission of the instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

LING 886: *Advanced Syntax Seminar.* 3 credits.
Advanced course in current syntactic theory. Notes: Topics vary. Offered by English. May be repeated within the term for a maximum 9 credits.

Recommended Prerequisite: LING 786, LING 787, or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

LING 887: *Advanced Syntax Seminar.* 3 credits.
Advanced course in current syntactic theory. Notes: Topics vary. Offered by English. May be repeated within the term for a maximum 9 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Required Prerequisites: ((LING 786[B-] or 786[XS]) and (LING 787[B-] or 787[XS])).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

LING 890: *Advanced Phonology Seminar.* 3 credits.
Advanced topics seminar in current phonological theory. Notes: Topics vary. Offered by English. May be repeated within the term for a maximum 9 credits.

Recommended Prerequisite: LING 692 or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

LING 897: *Independent study.* 3 credits.
Independent reading on a topic agreed on by student and faculty member. Offered by English. May be repeated within the degree for a maximum 12 credits.

Recommended Prerequisite: PhD rank or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Regular scale.

LING 898: *Advanced Qualifying Seminar.* 3 credits.
Work on PhD qualifying paper. Offered by English. May be repeated within the term for a maximum 6 credits.

Recommended Prerequisite: Completion of 33 credits of core courses in linguistics.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

900 Level Courses

LING 998: *Doctoral Dissertation Proposal.* 1-6 credits.
Work on research proposal that forms basis for the doctoral dissertation. Offered by English. May be repeated within the degree.

Recommended Prerequisite: Advancement to candidacy.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

LING 999: *Doctoral Dissertation.* 1-12 credits.
Doctoral dissertation research and writing under direction of student's dissertation committee. Offered by English. May be repeated within the degree.

Recommended Prerequisite: LING 998.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy.

Enrollment is limited to Graduate level students.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

Management (MGMT)

300 Level Courses

MGMT 303: *Principles of Management.* 3 credits.
Examines managerial work under range of business models. Managerial functions and activities including planning, organizing, balancing conflicting demands, leading and controlling are examined in depth and in context of current organizational examples. Discuss variety of pressures contemporary managers face. Notes: Students cannot receive credit for both MGMT 301 and MGMT 303.School of Business students will not be permitted to make more than three attempts to achieve a C or higher in MGMT 303. the third attempt requires School of Business academic advisor approval. Those who do not successfully complete this course within three attempts will be terminated from their major and will not be eligible to receive a degree from the School of Business. For more information about this, see Academic Policies. Offered by School of Business. Limited to two attempts.

Recommended Prerequisite: BUS 103 and BUS 200.

Registration Restrictions:
Students with a class of Freshman may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take MGMT crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Lecture, Recitation

Grading:
This course is graded on the Undergraduate Regular scale.

MGMT 313: *Organizational Behavior.* 3 credits.
Course expands management knowledge through defined focus on organizational behavior (OB). OB is field of study aimed at predicting, explaining, understanding and changing human behavior as it's reflected in organizations. Science of OB is interdisciplinary in nature and draws from psychology, sociology, social psychology, and group dynamics. Course explores dynamics between individual and organization through this behavioral science lens. Notes: Students cannot receive credit for both MGMT 301 and MGMT 313. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Specialized Designation: Writing Intensive in Major

Registration Restrictions:
Required Prerequisites: MGMT 303[C], 303[XS], L303 or 303T.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take MGMT crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MGMT 321: *Introduction to Human Resource Management.* 3 credits.
The field of human resource management examines what can or should be done to make workers more productive and satisfied. The course builds on MGMT 303 by introducing key concepts and techniques that managers need to attract, retain, develop, compensate, and motivate quality talent. Also emphasizes legal and ethical considerations in human resource management. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Specialized Designation: Mason Impact.

Registration Restrictions:
Required Prerequisites: MGMT 301[C], L301, 303[C], L303 or 303[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take MGMT crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

MGMT 412: *Diversity in Organizations.* 3 credits.
Builds on MGMT 303 by emphasizing intrapersonal, interpersonal, organizational, and societal phenomena relevant to issues of diversity. Examines phenomena and processes in general and with regard to specific dimensions such as gender, race, and ability. Designed to increase students' knowledge of diversity in organizations, understanding of others' perspectives, and ability to work well with people who differ from themselves. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Specialized Designation: Mason Impact.

Registration Restrictions:
Required Prerequisites: MGMT 301[C], L301, 303[C], L303 or 303[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman or Sophomore may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take MGMT crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MGMT 413: *Organizational Development and Management Consulting.* 3 credits.
Introduces theory and practice of organization development. Assumes some basic knowledge of organizational behavior, and addresses how to use knowledge about organizations to change them. Focuses on ways of understanding organizations with attention to theoretical underpinnings of field and diagnostic models, and processes for entering organizations. Later sessions focus on contracting, data collection, organizational diagnosis, data feedback, and change technologies. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: MGMT 301[C], L301, 303[C], L303 or 303[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman or Sophomore may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take MGMT crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MGMT 421: *Advanced Human Resource Management.* 3 credits.
Builds on MGMT 321 by using a case-based approach to deepen understanding of HRM practices. Students conduct projects requiring application of strategic HR processes. Includes discussion of advanced topics not thoroughly covered in MGMT 321. Relevant for management majors, particularly those seeking a human resource management career. Helps prepare for SHRM Professional in Human Resources certification exam. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (MGMT 301[C], L301, L303, 303[XS] or 303[C]) and (MGMT 321[C] or 321[XS]).
[C] Requires minimum grade of C.

XS Requires minimum grade of XS.

Students with a class of Freshman or Sophomore may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take MGMT crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MGMT 431: *The Legal Environment for Employee and Labor Relations.* 3 credits.
Examines the legal aspects of employee and labor relations from a managerial perspective. Topics include the employment at will doctrine; wrongful discharge; federal and state employment discrimination legislation; and regulation of employee welfare. Includes lectures, cases, and readings. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: BULE 302C, L302, 303C, L303 or 303XS.
C Requires minimum grade of C.
XS Requires minimum grade of XS.

Students with a class of Freshman or Sophomore may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take MGMT crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MGMT 441: *International Strategy.* 3 credits.
Course focuses on seven inter-related pillars underpinning international strategy and these areas are: global environment and marketplace, global competitiveness and manufacturing including role of USA, global macroeconomics and financial infrastructure, global management approaches and management of transnational firms, new forces that shape global strategy, and globalization lessons learned and its limitations. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: MGMT 301C, 303C, L301, L303, 301T, 303T or 303XS.
C Requires minimum grade of C.
XS Requires minimum grade of XS.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take MGMT crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MGMT 451: *Introduction to Entrepreneurship.* 3 credits.
Provides students an introduction to key concepts, methods, and frameworks of innovation and entrepreneurship. The experiential component of the course will be supplemented by readings, written work and presentations, and classroom discussion. The course will explore and explain the importance of entrepreneurship, entrepreneurs, and their firms in addition to allowing students to experiment with various entrepreneurial concepts and activities. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: MGMT 301C, L301, 303C, L303 or 303XS.
C Requires minimum grade of C.
XS Requires minimum grade of XS.

Students with a class of Freshman or Sophomore may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take MGMT crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MGMT 452: *Experiential Entrepreneurship.* 3 credits.
Provides students opportunity to experience entrepreneurship at advanced level through hands on development of a new firm, product or service. Students identify an innovative opportunity to work on or will work with local startup or organization developing innovative new product or service. Focuses on opportunity recognition and execution and introduces students to day to day experience of innovators and entrepreneurs. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: MGMT 451C, 451XS, MBUS 304C, 304XS or MGMT L451.
C Requires minimum grade of C.
XS Requires minimum grade of XS.

Students with the Ineligible to take MGMT crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MGMT 453: *Starting a Business.* 3 credits.
Examines the paths to small business ownership, including starting an enterprise or purchasing an existing business. Focus will be on franchising and licensing, as well as family-run enterprises. Students will gain a broad understanding of location choice, facilities and layout, in addition to the legal issues associated with small business creation. Harvesting and exiting options will also be explored. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: MGMT 301C, L301C, 303C, L303C, 303XS, MBUS 304C or 304XS.

[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the Ineligible to take MGMT crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MGMT 454: *Social Impact and Entrepreneurship.* 3 credits.
This course takes a business-oriented multidisciplinary case study approach to exploring the growing field of social innovation and enterprise: that is, the course investigates the historical context of social entrepreneurship, methods and models of social enterprises, marketing social innovation, limits of market-based models, skills needed to tackle wicked problems, and quantitative methods for assessing and measuring impact. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Specialized Designation: Mason Impact.

Registration Restrictions:
Required Prerequisites: MGMT 301[C], 303[C], 303[XS], MBUS 304[C] or 304[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the Ineligible to take MGMT crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MGMT 461: *Cross Cultural and Global Management.* 3 credits.
Explores theory and practice of managing culturally diverse organizations in domestic and international contexts. Topics include management customs and practices in different world regions, cross-cultural communication and learning, and the developing culturally and internationally sophisticated employees and managers. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: MGMT 301[C], L301, 303[C], L303 or 303[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman or Sophomore may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take MGMT crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MGMT 462: *Honors Seminar in Management (Topic Varies).* 3 credits.
Topic and format vary. In-depth study of topic of interest to managers and organizations. Notes: Enrollment limited and competitive. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Specialized Designation: Topic Varies

Recommended Prerequisite: Invitation of professor.

Registration Restrictions:
Students with a class of Freshman or Sophomore may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take MGMT crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MGMT 463: *Negotiations in Organizations.* 3 credits.
Focuses on theory, processes, and practice of negotiation within and across organizations, including attention to ethical issues. Explores systematic ways to increase quality of negotiated agreements, including methods of preparation and use of rational assumption, bidding and decision criteria. Format includes negotiation exercises, lecture, and discussion. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: MGMT 301[C], L301, 303[C], L303 or 303[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman or Sophomore may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take MGMT crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MGMT 464: *Teamwork and Interpersonal Skills.* 3 credits.
Focuses on intensive development of high professional-level skill set for collaboration and leadership in contemporary environments. Builds on content introduced in MGMT 303. Attention to developing personal leadership capabilities, collaborating in traditional and virtual environments, improving group processes, project management, tolerating ambiguity, improving communication, creative problem solving, time management, coaching, and empowering employees. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: MGMT 301[C], L301, 303[C], L303 or 303[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman or Sophomore may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take MGMT crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MGMT 471: *Competitive Strategy.* 3 credits.
Explores industry structures and competitive behavior of firms. Attention to how firm uses tangible, intangible, and human resources to develop sustainable competitive advantage, and how competitors interact in marketplace. Introduces tools and concepts to analyze industry dynamics and competitive interactions of firms in these industries. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: MGMT 301[C], L301, 303[C], L303 or 303[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman or Sophomore may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take MGMT crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MGMT 491: *Current Topics in Management.* 3 credits.
Advanced study of management concepts and selected topics. Incorporates intensive analysis of management problems of long-term strategic significance or current urgency for organizational planning and operations. Includes significant contemporary research findings. Offered by School of Business. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Required Prerequisites: MGMT 312[C], 313[C], L312, L313 or 313[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman or Sophomore may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take MGMT crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MGMT 492: *Internship in Management.* 3 credits.
Opportunity to gain practical, professional experience in conjunction with academic development. An internship is an important part of academic and career preparation. May be used as elective credit, but may not be repeated. Notes: No more than 6 credits of School of Business internship coursework (BUS 492 or MGMT 492) can be applied towards a student's 120 (BU) degree applicable credits. Students must receive departmental approval in order to register for this course; please contact the School of Business Office of Career Services for internal eligibility requirements. Offered by School of Business. May be repeated within the degree for a maximum 6 credits. Equivalent to ACCT 492, BUS 492, FNAN 492, MIS 492, MKTG 492, OM 492, OSCM 492.

Recommended Prerequisite: 75 credit hours

Registration Restrictions:
Required Prerequisites: MGMT 301[B-] or 303[B-].
[B-] Requires minimum grade of B-.

Students with a class of Freshman or Sophomore may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take MGMT crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

MGMT 499: *Independent Study.* 1-3 credits.
Research and analysis of selected problems or topics in management must be arranged with instructor and approved in writing by associate dean for undergraduate programs. Notes: Written report required. Offered by School of Business. May be repeated within the term for a maximum 6 credits.

Recommended Prerequisite: Management majors with at least 9 upper-level management credit hours.

Registration Restrictions:
Students with a class of Freshman or Sophomore may **not** enroll.

Non-Degree or Washington Consortium level students may **not** enroll.

Students with the Ineligible to take MGMT crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

700 Level Courses

MGMT 711: *Seminar in Organizational Behavior.* 3 credits.
This course is designed to expose doctoral students to a broad foundation in organizational behavior research. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MGMT 712: *Seminar in Strategic Management.* 3 credits.
This course is designed to expose doctoral students to a broad foundation in strategic management research. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

800 Level Courses

MGMT 892: *Special Topics in Strategic Management.* 3 credits.
Selected topics reflecting specialized areas in management. Content varies. May be repeated when topic is different. Offered by School of Business. May be repeated within the term for a maximum 9 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MGMT 893: *Special Topics in Organizational Behavior.* 3 credits.
Selected topics reflecting specialized areas in organizational behavior. Offered by School of Business. May be repeated within the term for a maximum 9 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

Management of Information Systems (MIS)

300 Level Courses

MIS 303: *Introduction to Business Information Systems.* 3 credits.
Introduces fundamentals of hardware, software, and networking. Emphasizes role of technology in improving contemporary business processes and competitive advantage. Includes basic relational concepts, hands-on experience in building business database applications and decision support using spreadsheet software. Notes: Students cannot receive credit for both MIS 301 and MIS 303.School of Business students will not be permitted to make more than three attempts to achieve a C or higher in MIS 303. The third attempt requires School of Business academic advisor approval. Those who do not successfully complete this course within three attempts will be terminated from their major and will not be eligible to receive a degree from the School of Business. For more information about this, see the "Termination from the Major" section under Academic Policies. Offered by School of Business. Limited to two attempts.

Mason Core: Info Tech & Computing

Registration Restrictions:
Students with a class of Freshman may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the terminated from BU major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MIS 310: *Database Management Systems.* 3 credits.
Introduces design, implementation and querying relational databases with a focus on business requirements. Theoretical database concepts are accompanied with hands-on experience. Term project includes requirements analysis, design and implementation of a substantial business database application. Notes: School of Business students may not receive credit for both MIS 310 and IT 214. Requires hands-on implementation using software package. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (MIS 301[C] or L301) or MIS 303[C], L303 or 303[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take BUSA crses, Ineligible to take MIS crses, terminated from BU major or terminated from ISOM major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MIS 320: *Networks and Security.* 3 credits.
Introduces students to fundamentals of networking technologies and their role in businesses. Emphasis is on understanding the business implications of different networking technologies and solutions. Students learn to identify and understand the business requirements, and bring together the different technological components to design the required communication solutions. Also focuses on the types of security threats to the business network infrastructure, and approach to tackling such threats through business practices combined with appropriate technological solutions. Notes: The course also includes lab work and exercises. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (MIS 301[C] or L301) or MIS 303[C], L303 or 303[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take MIS crses, terminated from BU major or terminated from ISOM major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MIS 330: *Systems Analysis and Design.* 3 credits.
Understanding systems analysis and design methods is a necessary skill for contemporary business analysts, managers, software engineers and system users. Provides students with the foundations for effectively using modern systems analysis and design tools and methodologies for developing modern software and applications. Topics include systems planning and feasibility analysis, requirements analysis, economics, systems design and project management. Notes: Requires team project. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Specialized Designation: Writing Intensive in Major

Registration Restrictions:
Required Prerequisites: MIS 310[C], 310[XS], IT 214[C] or 214[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take MIS crses, terminated from BU major or terminated from ISOM major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MIS 341: *Cloud Computing Essentials.* 3 credits.
Explores the adoption, applications, benefits, deployment, economics, models, risks, services, strategy, and values of the cloud computing from the business and managerial perspective. Surveys the cloud technology, introduces the characteristics and service models of cloud computing, and examines the impact and value of cloud computing. Students will gain the knowledge of the cloud computing principles and concepts needed to evaluate, adopt, deploy, and manage cloud environments. Offered by School of Business. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (MIS 303[C], L303 or 303[XS]) or (MIS 301[C] or L301).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take MIS crses, terminated from BU major or terminated from ISOM major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MIS 350: *Introduction to Programming for Business Applications.* 3 credits.
This course covers design and implementation of computer programs (Java) to solve business problems using structured and object-oriented programming techniques. Students become familiar with program development life cycle using Java supported by a modern development environment. Students complete assignments involving problem solving and development of business application. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Registration Restrictions:
Students with a class of Freshman may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take MIS crses, terminated from BU major or terminated from ISOM major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

MIS 410: *Advanced Database Systems.* 3 credits.
Covers advanced database development and administration topics including triggers, stored procedures, indexes, performance tuning, and security. Students will use a state-of-the-art industrial strength database management system as a tool to familiarize themselves with database concepts. Students will conduct exercises on business reporting using databases and front-end applications. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: MIS 310[C], 310[XS], IT 214[C] or 214[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take MIS crses, terminated from BU major or terminated from ISOM major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MIS 412: *E-Business Systems Development.* 3 credits.
Introduces students to the development of web-based information systems for E-business. Students learn to develop web-based database applications for eCommerce using ASP.NET. Also covers Web 2.0 technologies and contemporary business trends and issues related to web application development. Emphasizes technologies, methods, and application development tools. Notes: Requires team project and computer lab. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (MIS 301[C] or L301) or MIS 303[C], L303 or 303[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take MIS crses, terminated from BU major or terminated from ISOM major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MIS 415: *Information Systems Audit and Control.* 3 credits.
Covers IT governance, controls, auditing applications, systems development, and operations. It examines trends and define recent advances in technology that impact IT controls and audits - including cloud computing, web-based applications, and server visualizations. It covers IT strategy, business value of IT, as well as controls for IT projects, outsourcing, contracts, cloud computing, etc. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: MIS 301[C], L301[C], 303[C], L303[C] or 303[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the Ineligible to take MIS crses, terminated from BU major or terminated from ISOM major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MIS 420: *Information Security and Assurance.* 3 credits.
Covers technical concepts, and managerial and policy topics in information and cyber security. Lectures, reading, in-class presentations, hands-on exercises, and examinations ensure that students have sufficient technical awareness and managerial competence related to information security and assurance. Examines the nature of threats and vulnerabilities, cryptography, software vulnerabilities, managing risk, and security controls. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: MIS 320[C] or 320[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the Ineligible to take MIS crses, terminated from BU major or terminated from ISOM major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MIS 430: *Data Warehousing.* 3 credits.
Deals with the challenges faced by businesses in managing large amounts of data and making meaningful use of this data for informed decision making. Introduces students to data warehousing fundamentals, practices, and technologies; and their application to solving business problems. Specific emphasis is on designing of data warehouse to meet the business requirements and hands-on learning of the design principles through implementation on commercially used data warehouse technologies. Also introduces students to OLAP solutions and data mining approaches to supporting business decision making. Notes: Term project required. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (MIS 310[C], L310, 310[XS], IT 214[C] or 214[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take BUSA crses, Ineligible to take MIS crses, terminated from BU major or terminated from ISOM major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MIS 431: *Data Mining for Business Applications.* 3 credits.
This course covers data mining methods and tools for business analytics to improve managerial decision making. The objective is to understand data mining methods and their suitability for decision making in a variety of business domains. The students will learn how to apply appropriate analytical tools to gain useful insights from real-life datasets. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Specialized Designation: Writing Intensive in Major

Registration Restrictions:
Required Prerequisites: (MIS 301[C], L301[C], 303[C], 303[XS] or L303[C]) and (BUS 310[C], 310[XS] or OM 210[C]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take BUSA crses, Ineligible to take MIS crses, terminated from BU major or terminated from ISOM major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MIS 432: *Advanced Data Mining.* 3 credits.
This course covers business analytics using advanced data mining methods for developing predictive models. It includes feature selection to identify dimensions for constructing decision making models. More advanced techniques such as decision trees, neural networks, and other classification and prediction methods will be covered. Emphasis on applications will include hands-on experience using commercial data mining software and real business data. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (MIS 431[C] or 431[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the Ineligible to take BUSA crses, Ineligible to take MIS crses, terminated from BU major or terminated from ISOM major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MIS 433: *Programming for Analytics.* 3 credits.
This course will introduce students to solving a broad set of data analysis problems using the popular programming language Python. It will cover basic Python skills and data structures, how to load data from different sources, rearrange and aggregate it, and finally how to analyze and visualize it. The course will also introduce students to several Python libraries. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: BUS 310[C] or 310[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take BUSA crses, Ineligible to take MIS crses, terminated from BU major or terminated from ISOM major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MIS 441: *Cloud System Management.* 3 credits.
Explores managing cloud platforms and deploying applications on cloud platforms from the business and managerial perspective. Students learn to operate, monitor, and manage cloud computing systems, such as Amazon Web Services (AWS), as well as deploy and scale applications in cloud environments. Offered by School of Business. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: MIS 341[C] or 341[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take MIS crses, terminated from BU major or terminated from ISOM major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MIS 462: *Honors Seminar in Management Information Systems (Topic Varies).* 3 credits.
Topic and format vary. In-depth study of a topic in the area of information technology management. Enrollment limited and competitive. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Specialized Designation: Topic Varies

Recommended Prerequisite: Degree status in ISOM (or DMIS) major; permission of department.

Registration Restrictions:
Students with a class of Freshman, Junior or Sophomore may **not** enroll.

Non-Degree or Washington Consortium level students may **not** enroll.

Students with the Ineligible to take BUSA crses, Ineligible to take MIS crses, terminated from BU major or terminated from ISOM major attributes may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

MIS 491: *Seminar in Management Information Systems.* 3 credits.
Analyzes selected topics that highlight latest developments in information resource management field, including contemporary research findings and case studies of information systems in business and other organizations. Offered by School of Business. May be repeated within the term for a maximum 6 credits.

Registration Restrictions:
Required Prerequisites: (MIS 301[C] or L301) or MIS 303[C], L303 or 303[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take MIS crses, terminated from BU major or terminated from ISOM major attributes may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

MIS 492: *Internship in Management Information Systems.* 3 credits.
Opportunity to gain practical, professional experience in conjunction with academic development. An internship is an important part of academic and career preparation. May be used as elective credit. Notes: No more than 6 credits of School of Business internship coursework (BUS 492 or MIS 492) can be applied towards a student's 120 (BU) degree applicable credits. Students must receive departmental approval in order to register for this course; please contact the School of Business Office of Career Services for internal eligibility requirements. Offered by School of Business. May be repeated within the degree for a maximum 6 credits. Equivalent to ACCT 492, BUS 492, FNAN 492, MGMT 492, MKTG 492, OM 492, OSCM 492.

Recommended Prerequisite: 75 credit hours

Registration Restrictions:
Required Prerequisites: (MIS 301[B-] or 303[B-]) and (OM 301[B-] or 303[B-]).
[B-] Requires minimum grade of B-.

Students with a class of Freshman or Sophomore may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take BUSA crses, Ineligible to take MIS crses, terminated from BU major or terminated from ISOM major attributes may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

MIS 499: *Independent Study in Management Information Systems.* 1-3 credits.
Research and analysis of selected problems or topics in information resource management. Offered by School of Business. May be repeated within the term for a maximum 6 credits.

Registration Restrictions:
Required Prerequisites: (MIS 301[C]) or MIS L303[C].
[C] Requires minimum grade of C.

Students with a class of Freshman may **not** enroll.

Non-Degree or Washington Consortium level students may **not** enroll.

Students with the Ineligible to take MIS crses, terminated from BU major or terminated from ISOM major attributes may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

700 Level Courses

MIS 721: *Seminar in Information Systems.* 1.5 credit.
This course is designed to expose doctoral students to academic research in information systems. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to students with a major in Business.

Enrollment is limited to Graduate level students.

Enrollment limited to students in a Doctor of Philosophy degree.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MIS 722: *Seminar in Economics of Information Systems.* 3 credits.
This course is designed to expose doctoral students to a broad foundation in economics of information systems research. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MIS 723: *Seminar in Technology Research in Information Systems.* 3 credits.
This course is designed to expose doctoral students to a broad foundation of technology in information systems research. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

800 Level Courses

MIS 892: *Special Topics in Information Systems.* 3 credits.
This course is designed to expose doctoral students to a specialized topic within the information systems field through theoretical, quantitative and empirical work in the topic area. Offered by School of Business. May be repeated within the degree for a maximum 12 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

Management of Secure Information Systems (MSEC)

500 Level Courses

MSEC 510: *Foundations of Cyber Security.* 2 credits.
Provides an overview of the introductory topics in cyber security, which will be the basis for the other security-related in the MSIS. Topics include basic concepts on CIA (confidentiality, integrity, and availability), risk management, disaster recovery, access control, basic cryptography and software application vulnerabilities. Notes: 4 class sessions will be 3.5 hours long.1 class session will be 2 hours and 20 minutes long.(5 classes; 16 hours and 20 minutes total) Offered by Volgenau School of Engineering. May not be repeated for credit.

Recommended Prerequisite: Admission to MSEC program.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MSEC 511: *Security Practices in the Enterprise.* 2 credits.
Provides the practices and methods currently used by information security professionals to manage and operate the secure IT infrastructures in the enterprise industry and in the US Federal Sector. It

covers tools and knowledge required to design, execute, and/or evaluate the INFOSEC standards and procedures required of government and industry. The topic includes security operation center (SOC), network security, malware countermeasures, operational systems security, risk analysis and incident response practices. Notes: 4 class sessions will be 3.5 hours long.1 class session will be 2 hours and 20 minutes long.(5 classes; 16 hours and 20 minutes total) Offered by Volgenau School of Engineering. May not be repeated for credit.

Recommended Prerequisite: MSEC 510.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MSEC 520: *Networking Principles.* 2 credits.
Introduction to the principles guiding the design and operation of modern communication networks; using the structure provided by layered service models, this course explores systematically the architecture and protocols of large, decentralized networks. Topics include medium access control in local area networks, switching, routing, and addressing, reliable and secure transport, flow and congestion control. Throughout, examples are drawn from the suite of Internet protocols. Offered by Volgenau School of Engineering. May not be repeated for credit.

Recommended Prerequisite: Admission to MSEC program.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

600 Level Courses

MSEC 620: *Networking Security.* 2 credits.
Provides a comprehensive introduction to network security concepts and problems and the mechanisms and tools to secure networks. Focuses on the Internet; discusses the threats to and from the Internet and examines existing Internet security techniques and protocols and their limitations. Topics include secret key and public key cryptography, Hash algorithms, authentication, IPSEC/VPN, IPSEC key exchange, SSL/TLS, firewall, anonymous communication, and VoIP security. Offered by Volgenau School of Engineering. May not be repeated for credit.

Recommended Prerequisite: MSEC 510 and 520.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MSEC 630: *Secure Information System Governance, Regulation, and Compliance.* 2 credits.
Provides insight into secure information system governance, regulations, and compliance including noteworthy legislation, regulations, and compliance issues as well as commonalities and significant differences between departments and agencies within the Federal Executive Branch (FEB). The course is presented as formal lectures complemented by group discussion. Each topic is addressed as part of the larger Secure Information System structure. Notes: 4 class sessions will be 3.5 hours long.1 class session will be 2 hours and 20 minutes.(5 total class sessions; 16 hours and 20 minutes total). Offered by Volgenau School of Engineering. May not be repeated for credit.

Recommended Prerequisite: MSEC 510

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MSEC 641: *Enterprise Security Threats.* 1 credit.
Provides a broad exposition of emerging cyber-security threats for large-scale enterprises: Denial of Service (DoS), insider attacks, remote exploitation. It covers defenses that may mitigate or curtail some aspects of these emerging security threats. Offered by Volgenau School of Engineering. May not be repeated for credit.

Recommended Prerequisite: MSEC 511.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MSEC 642: *Enterprise Security Technologies.* 2 credits.
Provides an overview of enterprise security tools used in advanced security IT departments of enterprises today. In addition to understanding the tools, their capabilities, and their gaps, students participate in hands-on laboratory exercises with enterprise security tools. Notes: 4 class sessions will be 3.5 hours long.1 class session will be 2 hours and 20 minutes long.(5 class sessions; 16 hours 20 minutes total) Offered by Volgenau School of Engineering. May not be repeated for credit.

Recommended Prerequisite: MSEC 511.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MSEC 650: *Seminar: Enterprise Security Case Studies.* 1 credit.
Provides an exposition of large enterprise security systems including operational requirements, threat model, security analysis, economic analysis, and defense posture options that expose the operational and economic trade-offs when architecting Enterprise security. Offered by Volgenau School of Engineering. May not be repeated for credit.

Recommended Prerequisite: MSEC 641.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

MSEC 696: *Directed Studies Management of Secure Information Systems.* 1-3 credits.
Approval by faculty member and program director required prior to registration. Studies specialized topics in business not otherwise available in the curriculum. Offered by Volgenau School of Engineering. May be repeated within the degree for a maximum 3 credits.

Recommended Prerequisite: Admission to the MSIS program or permission of the program director.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Regular scale.

MSEC 697: *Special Topics in Management of Secure Information Systems.* 1-3 credits.
Sections established as necessary to focus on various topical issues that emerge in practice of management of secure information systems. Offered by Volgenau School of Engineering. May be repeated within the term for a maximum 6 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: Admission to the MSIS program or permission of the program director.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

700 Level Courses

MSEC 710: *Global Residency.* 1-4 credits.
Students spend a week in an international residency. Emphasis is on how other nations deal with management of secure information system, the management of those systems, and related public policy issues. Corporate site visits are combined with presentations by professors from universities outside the United States and relevant practitioners. Students are required to write a paper summarizing their observations and attend pre-residency preparatory sessions. Offered by Volgenau School of Engineering. May be repeated within the degree for a maximum 4 credits.

Recommended Prerequisite: Admission to Executive MS in Management of Secure Information Systems.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MSEC 720: *Capstone Project in Management of Secure Information Systems.* 1-3 credits.
Teams undertake a strategic evaluation and plan for the management of secure information systems. They develop plans that include technical, organizational, and policy aspects. A report is produced and presented to the entire cohort for discussion. Offered by Volgenau School of

Engineering. May be repeated within the degree for a maximum 3 credits. Equivalent to TECM 737.

Recommended Prerequisite: Admission to Executive MS in Management of Secure Information Systems.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Special scale.

Marketing (MKTG)

300 Level Courses

MKTG 303: *Principles of Marketing.* 3 credits.
Examines marketing principles and practices for analyzing, creating, delivering, capturing, and communicating value to customers. Focuses on managing customer relationships using market-driven strategies, particularly segmentation, targeting, and positioning. The role of customer satisfaction in achieving organizational objectives and ethical decision making in a global economy are also emphasized. Notes: Students cannot receive credit for both MKTG 301 and MKTG 303. School of Business students will not be permitted to make more than three attempts to achieve a C or higher in MKTG 303. The third attempt requires School of Business academic advisor approval. Those who do not successfully complete this course within three attempts will be terminated from their major and will not be eligible to receive a degree from the School of Business. For more information about this, see the "Termination from the Major" section under Academic Policies. Offered by School of Business. Limited to two attempts.

Registration Restrictions:
Students with a class of Freshman may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the terminated from BU major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MKTG 307: *Federal Government Marketing.* 3 credits.
This course explores the government procurement process and contracting from the perspective of marketers and contractors engaged in the federal community. Students will review and analyze the procurement practices of major government contractors and seek to understand the challenges associated with conducting business with the United States government. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: MKTG 303[C], L303 or 303[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the Ineligible to take MKTG crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MKTG 310: *Consultative Selling.* 3 credits.
The course is designed to help professionals learn consultative selling techniques to apply in their various professions and industries when working with clients and customers. The skills developed help sales associates solve client and customer problems. The goal is to enable professionals with customer- facing responsibilities to effectively build the skills and trust necessary with customers that result in long term and profitable relationships. Offered by School of Business. Limited to two attempts.

Recommended Prerequisite: MKTG 303 or MBUS 303

Registration Restrictions:
Students with a class of Freshman may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the terminated from BU major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MKTG 311: *Sales Management.* 3 credits.
Familiarizes students with marketing-sales interfaces including sales force role and capabilities, personal selling strategies, organizational relationships, and responsibilities of sales managers including training, motivating, and evaluating sales force. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (MKTG 301[C] or L301) or MKTG 303[C], L303 or 303[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take MKTG crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MKTG 312: *Consumer Behavior.* 3 credits.
Marketing strategy implications of internal and external influences on consumer decision making, purchase, and consumption behaviors. Emphasizes demographics, lifestyle, situation, perception, learning, and attitude formation and change, focusing on customer segmentation, satisfaction and loyalty. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (MKTG 301[C] or L301) or MKTG 303[C], L303 or 303[XS].

[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take MKTG crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MKTG 313: *Advertising and Marketing Communications.* 3 credits.
Examines development of integrated communications programs, including advertising, sales promotion, public relations, direct marketing, and other communication tools. Focuses on setting communications objectives and budgets, media planning, creative strategy, execution, and evaluation. Provides skills for analyzing the strengths, weaknesses and synergies of marketing communication tools. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (MKTG 301[C] or L301) or MKTG 303[C], L303 or 303[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take MKTG crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MKTG 315: *Digital Marketing.* 3 credits.
Explores impact of Digital and Internet technology on marketing strategy and practice. Topics include online advertising campaigns (focusing on search marketing), web site usability and content, and the use of social and interactive media to build customer relationships and foster brand loyalty. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (MKTG 301[C] or L301) or MKTG 303[C], L303 or 303[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take MKTG crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MKTG 316: *Social Media Marketing Strategy.* 3 credits.
Examines how marketing has and has not changed due to the rise of social media and changes in various underlying factors, such as the dramatically increased speed of information dissemination across customers and offerings. The emphasis is on understanding consumers' social interactions, examining the various social media channels available to marketers, learning how to build social media marketing strategies, and practicing how to track their effectiveness. Offered by School of Business. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: MKTG 303[C], L303 or 303[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take MKTG crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MKTG 332: *Retailing and E-Commerce Management.* 3 credits.
Examination of retailing as a specialized economic and social institution within the distribution process and as it relates to overall marketing activities. The planning and implementing of store and non-store (catalog, Internet) retail marketing strategies are addressed. Critical decision alternatives, variables, forces, and processes are considered from a managerial perspective. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (MKTG 301[C] or L301) or MKTG 303[C], L303 or 303[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take MKTG crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MKTG 333: *Business to Business Marketing.* 3 credits.
Examines unique challenges and opportunities of marketing systems among suppliers, manufacturers, resellers, and government. Focuses on developing a capability to identify and nurture long-term B2B relationships. Provides tools and techniques commonly leveraged by B2B marketers to develop these relationships with their clients. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Registration Restrictions:

Required Prerequisites: (MKTG 301[C] or L301) or MKTG 303[C], L303 or 303[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take MKTG crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MKTG 335: *Strategic Brand Management.* 3 credits.
This course is designed around the brand management decisions that must be made to build, measure, and manage brand equity. It will teach marketing professionals how to develop a brand, gain an understanding of how to manage a brand and how to conduct a brand audit. The brand management function is a central part of the marketing function which in turn is important for the success of organizations, and this course assists in effectively building the skills needed to develop consumer brand-relationships. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (MKTG 303[C] or 303[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take MKTG crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MKTG 351: *Marketing Research.* 3 credits.
Presents the concepts and techniques underlying the marketing research process and their role in managerial decision making. Focuses on skills required to conduct a marketing research project: qualitative and quantitative research designs, survey methodology, instrument creation, sampling procedures, data collection, data analysis, and reporting of findings. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Specialized Designation: Mason Impact.

Registration Restrictions:
Required Prerequisites: (MKTG 301[C], L301, 303[C], 303[XS] or L303) and (BUS 310[C], L310, 310[XS], STAT 250[C], 250[XS] or L250).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take BUSA crses, Ineligible to take MKTG crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MKTG 352: *Marketing Analytics for New Product Development.* 3 credits.
In today's technology-enabled world, organizations collect lot of information as a part of their business operations and pool it with data acquired from outside sources. Marketing analytics is a systematic approach to harnessing this data/ information to drive effective marketing decision making. Students will learn to analyze historical data, market research data, and competitive information for making strategic marketing decisions. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (MKTG 301[C] or L301) or (MKTG 303[C], 303[XS] or L303) or MBUS 303[C] or 303[XS] and (BUS 310[C], 310[XS], STAT 350[C] or 350[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman may **not** enroll.

Students with the Ineligible to take BUSA crses, Ineligible to take MKTG crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MKTG 353: *New Product Development.* 3 credits.
This course focuses on all aspects of the new product and new service development process, from insight and inspiration through design and product launch. The course also explores current topics and best practices in innovation management, such as open innovation, managing creativity in organizations, and product design, and rapid prototyping. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (MKTG 301[C] or L301) or (MBUS 303[C], L303 or 303[XS]) or (MKTG 303[C], L303 or 303[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman may **not** enroll.

Students with the Ineligible to take MKTG crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MKTG 355: *Direct Marketing.* 3 credits.
Covers the whole process of direct and interactive marketing; planning the campaign, developing the creative approaches, selecting media, offering it to the potential buyers, seeing that the offer is fulfilled and

developing the databases to enable future efforts. Offered by School of Business. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: MKTG 303[C], L303 or 303[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take MKTG crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

MKTG 407: *Global Marketing.* 3 credits.
Multidisciplinary approach to global and international marketing from viewpoint of business management. Examines major marketing issues affecting companies operating in a global environment. Students achieve understanding of economic, political, and cultural differences among nations as they affect marketing opportunities and operations, and develop skills to identify and evaluate global and international marketing opportunities. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (MKTG 301[C] or L301) or (MKTG 303[C], L303 or 303[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman or Sophomore may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take MKTG crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MKTG 455: *Ethnic and Multicultural Marketing.* 3 credits.
Ethnic and Multicultural Marketing examines the critical marketing issues and opportunities that have arisen with the changing U.S. demographics. The focus is domestic markets. The growth in minority populations indicates a need for specialized approaches for the entire marketing mix. Segmentation can be powerful when considering non-mainstream markets if the marketer understands and capitalizes on the different approaches cultural and ethnic groups use as consumers. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (MKTG 301[C] or L301) or (MKTG 303[C], L303 or 303[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take MKTG crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MKTG 462: *Honors Seminar in Marketing (Topic Varies).* 3 credits.
Topic and format vary. In-depth study of topic of interest to managers and organizations. Notes: Enrollment limited and competitive. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Specialized Designation: Topic Varies

Recommended Prerequisite: Degree status in MKTG major; senior standing; permission of department.

Registration Restrictions:
Required Prerequisites: (MKTG 301[B] or L301) or (MKTG 303[B], L303 or 303[XS]).
[B] Requires minimum grade of B.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Senior Plus or Senior.

Enrollment is limited to students with a major in Marketing.

Students with the Ineligible to take MKTG crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

MKTG 471: *Marketing Management.* 3 credits.
Emphasizes managerial aspects of marketing, including developing marketing strategies and plans, and integrating specific elements of marketing process. Emphasizes case analysis. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Specialized Designation: Writing Intensive in Major

Registration Restrictions:
Required Prerequisites: (MKTG 312[C], L312 or 312[XS]) and (MKTG 351[C], L351 or 351[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Senior Plus or Senior.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take MKTG crses or terminated from BU major attributes may **not** enroll.

Enrollment limited to students in the School of Business college.

Schedule Type: Lecture

Grading:

This course is graded on the Undergraduate Regular scale.

MKTG 481: *RS: Marketing in the Nonprofit Sector.* 3 credits.
Examines the unique challenges of applying marketing principles and practices to not-for-profit groups such as human service and philanthropic organizations, museums, health and wellness advocates, educational institutions, industry associations and government. Emphasis on case studies, team work, and projects. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Specialized Designation: Research/Scholarship Intensive

Registration Restrictions:
Required Prerequisites: (MKTG 301[C] or L301) or MKTG 303[C], L303 or 303[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman may **not** enroll.

Enrollment is limited to students with a major in Marketing.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take MKTG crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MKTG 491: *Seminar in Marketing.* 3 credits.
In-depth treatment in seminar format of contemporary topics in marketing. Culminates in preparation of substantial paper and oral presentation. Offered by School of Business. May be repeated within the term for a maximum 6 credits.

Registration Restrictions:
Required Prerequisites: (MKTG 301[C] or L301) or MKTG 303[C], L303 or 303[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take MKTG crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

MKTG 492: *Internship in Marketing.* 3 credits.
Opportunity to gain practical, professional experience in conjunction with academic development. An internship is an important part of academic and career preparation. May be used as elective credit, but may not be repeated. Notes: No more than 6 credits of School of Business internship coursework (BUS 492 or MKTG 492) can be applied towards a student's 120 (BU) degree applicable credits. Students must receive departmental approval in order to register for this course; please contact the School of Business Office of Career Services for internal eligibility requirements. Offered by School of Business. May be repeated within the degree for a maximum 6 credits. Equivalent to ACCT 492, BUS 492, FNAN 492, MGMT 492, MIS 492, OM 492, OSCM 492.

Recommended Prerequisite: 75 credit hours

Registration Restrictions:
Required Prerequisites: MKTG 301[C], 303[C] or 303[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman or Sophomore may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take MKTG crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

MKTG 499: *Independent Study.* 1-3 credits.
Primary research proposal in marketing area. Requires prior approval from instructor and associate dean for undergraduate programs. Offered by School of Business. May be repeated within the term for a maximum 6 credits.

Recommended Prerequisite: 90 hours and a minimum of 24 hours of business courses including principles of marketing, finance, and management.

Registration Restrictions:
Required Prerequisites: (MKTG 301[C] or L301) or (MKTG 303[C], L303 or 303[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman may **not** enroll.

Non-Degree or Washington Consortium level students may **not** enroll.

Students with the Ineligible to take MKTG crses or terminated from BU major attributes may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

600 Level Courses

MKTG 601: *Marketing Essentials.* 0 credits.
The primer course is designed for students with no prior background in marketing. It will introduce students to basic concepts in marketing. The skills developed will help students understand the role of marketing in the organization and get familiar with core marketing principles. The goal is to enable students to get prepared for more in-depth courses in Marketing. Offered by School of Business. May be repeated within the degree for a maximum 0 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Enrollment is limited to students with a major in Marketing.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Satisfactory/No Credit scale.

MKTG 602: *Basic Statistics for Marketing.* 0 credits.
The primer course is designed for students with no prior background in statistics. It will introduce students to basic statistical concepts and their use in marketing. The skills developed will help students understand core statistical topics. The goal is to enable students to get prepared for more in-depth courses in Marketing. Offered by School of Business. May be repeated within the degree for a maximum 0 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Enrollment is limited to students with a major in Marketing.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Satisfactory/No Credit scale.

MKTG 610: *Consultative Sales.* 3 credits.
The course is designed for marketing professionals who consult with clients for the purpose of identifying needs and developing long term sales relationships. Important customer facing skills are applied in the process of identification of new business opportunities, working with clients to identify needs, developing shared goals and objectives, practicing negotiation and sales skills, and implementation of solutions. The skills developed will help professionals solve client and customer problems. The goal is to enable professionals with customer-facing responsibilities to effectively build the skills and trust necessary with customers that result in long term and profitable relationships. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Enrollment is limited to students with a major, minor, or concentration in Marketing.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MKTG 612: *Consumer Behavior.* 3 credits.
Examine concepts, processes, and approaches that inform and answer what, how, when, where, and why people consume and more generally make decisions. Understand how consumer behavior is relevant to one's professional and personal life. Develop current knowledge of how individual psychology, socio-cultural, ethical, and global factors influence consumer behavior and attitudes. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Enrollment is limited to students with a major, minor, or concentration in Marketing.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MKTG 615: *Digital Marketing Strategy.* 3 credits.
This course will provide students with an in-depth understanding of digital marketing strategy and its application for driving organizational performance. It will provide hands on experience in different digital marketing tools, including web design, email and digital display, mobile marketing, organic and paid search, search engine optimization, web analytics, and email marketing. The students will gain proficiency in utilizing different digital tools to formulate and execute an integrated digital marketing strategy for an organization. Emphasis will be placed on ethical professional practices in collecting and analyzing customer and market data that is required for effective digital marketing. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Enrollment is limited to students with a major, minor, or concentration in Marketing.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MKTG 623: *Marketing Strategy.* 3 credits.
Using lectures, readings, cases, and team activities, students are actively involved in hands-on experiences related to marketing strategy decisions. Topics include segmentation, targeting, positioning, new product development, pricing, advertising, distribution, global marketing, corporate social responsibility, sustainability, and resource allocation. The central objective is to develop proficiency in managerial decision-making based on principles in resource advantage theory to positively affect organizational performance. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Enrollment is limited to students with a major, minor, or concentration in Marketing.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MKTG 625: *Marketing Data Visualization and Analysis.* 3 credits.
In today's technology enabled world organizations collect a wealth of marketing information as part of their business operations. Marketing Data Visualization and Analysis is a systematic approach to harnessing this data and information to drive effective marketing decision making that involves sustainable utilization of key marketing resources to improve overall organizational performance. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Enrollment is limited to students with a major, minor, or concentration in Marketing.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MKTG 633: *Business to Business Marketing.* 3 credits.
The objective of this course is to understand Business-to-Business marketing theory and to develop decision making skills needed to build and manage business marketing strategy. Topics to be studied include relationship strategies in business markets, e-commerce strategies for business markets, business market buyer behavior and segmentation, managing product, pricing, communications, and channel strategy for business markets, the role of selling and sales management in these markets, and managing sustainability in B2B markets. It will teach how to develop a B2B marketing strategy for both national and global markets, gain an understanding for developing a B2B marketing plan, and controlling and measuring a B2B strategy. Extensive use of B2B case studies to develop decision-making skills will form part of this course. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Enrollment is limited to students with a major, minor, or concentration in Marketing.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MKTG 637: *Marketing for a Better World.* 3 credits.
This course will provide students with an in-depth understanding of how marketing can be a force for creating a better world. It will introduce students to sustainability trends and dynamics and provide knowledge of how different societal forces affect consumer well-being. Students will also gain skills to develop assessments of the global environment, multiethnic consumer profiles, pressing societal issues, and sustainability trends to derive a more inclusive marketing strategy. To this end, the course will underscore how corporate social responsibility helps shape future success of organizations. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Enrollment is limited to students with a major, minor, or concentration in Marketing.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MKTG 651: *Marketing Research.* 3 credits.
Students are actively involved in the design and development of qualitative and quantitative research studies. Topics include focus groups/interviews, surveys, and experiments. Activities involve training in ethical conduct of research involving humans, design of research instruments, selection of appropriate samples, data collection, data analysis, and reporting. Students critically evaluate research in terms of its quality and provision of useful information. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Enrollment is limited to students with a major, minor, or concentration in Marketing.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MKTG 652: *Customer Analytics.* 3 credits.
This course teaches students how to arrive at strategic decisions using customer analytics. The course covers key concepts such as customer acquisition, retention, customer lifetime value, churn management, customer preference mapping, and conjoint analysis utilizing customer data and statistical analysis. It emphasizes ethical professional practices in the collection and analysis of customer data. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Enrollment is limited to students with a major, minor, or concentration in Marketing.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MKTG 653: *Retailing and Pricing Analytics.* 3 credits.
This course teaches students to arrive at strategic retailing and pricing decisions using a data-driven approach. The course covers key retailing decisions such as loyalty program design and execution, market basket analysis, store location and trade area analysis, forecasting, and merchandising decisions along with foundational aspects of

pricing analytics such as how a firm sets and adjusts pricing and coordinates with different internal and external constraints to maximize its profitability sustainably. The course also aims to familiarize students with the key concepts and applications of quantitative models of demand estimations and consumer responses to pricing decisions. It further covers the various cutting-edge pricing tactics and strategies adopted by marketing managers. Additionally, it gives students an opportunity to work with different data sets to make pricing decisions in simulated environments. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Enrollment is limited to students with a major, minor, or concentration in Marketing.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MKTG 690: *Applied Client Project.* 6 credits.
This course will provide students the framework and opportunity to work on an applied marketing project with a real business. The objective is for students to work on solving marketing problems that the client is facing. Students will work in groups to understand the marketing problem, break it down into meaningful questions, and then engage in a strategic marketing planning exercise to propose actionable solutions. The course will involve active interactions with the client. Students will be expected to utilize all the knowledge and skills they have learnt in the earlier courses in the M.S. in Marketing program, while demonstrating ethical professional practices. After completion of this course, students can expect to have completed an applied client marketing project, which they can showcase on their resumes. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Enrollment is limited to students with a major, minor, or concentration in Marketing.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

Mathematics (MATH)

100 Level Courses

MATH 104: *Trigonometry and Transcendental Functions.* 2 credits.
Exponential and logarithmic functions, trigonometric functions, and analytic trigonometry. This course does not satisfy the university's quantitative reasoning requirement. May not be taken for credit after receiving a C or better in MATH 105 or in any MATH course numbered 113 or higher. May not take MATH 105 for credit after receiving a C or better in MATH 104. Notes: May not be used as credit toward BA or BS in mathematical sciences. Offered by Mathematics. Limited to three attempts.

Registration Restrictions:
Required Prerequisite: minimum score of 07 in 'Math Placement Algebra II'.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MATH 105: *Precalculus Mathematics.* 4 credits.
Reviews mathematics skills essential to studying calculus. Topics include equations, inequalities, absolute values, graphs, functions, exponential and logarithmic functions, and trigonometry. Notes: Call Mathematical Sciences Department at 703-993-1460 for details. May not be used as credit toward BA or BS in mathematical sciences. This course does not satisfy the university's quantitative reasoning requirement for the BA degree. May not be taken for credit after receiving grade of C or better in any MATH course numbered 113 or higher. Offered by Mathematics. Limited to three attempts.

Registration Restrictions:
Required Prerequisite: minimum score of 13 in 'Math Placement Algebra I'.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MATH 106: *Quantitative Reasoning.* 3 credits.
Quantitative skills for real world. Topics include critical thinking, modeling by functions, graphs, growth, scaling, probability, and statistics. Offered by Mathematics. Limited to three attempts.

Mason Core: Quantitative Reasoning

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MATH 108: *Introductory Calculus with Business Applications.* 3 credits.
Functions, limits, derivative, and integral. Applications of differentiation and integration. Notes: Call Mathematical Sciences Department at 703-993-1460 for details. Students who have received credit for MATH 113 or 114 may not receive credit for this course. Offered by Mathematics. Limited to three attempts.

Mason Core: Quantitative Reasoning

Registration Restrictions:
Required Prerequisite: minimum score of 13 in 'Math Placement Algebra I'.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MATH 110: *Introductory Probability.* 3 credits.
Elementary set theory, probability, and statistics. Offered by Mathematics. Limited to three attempts.

Mason Core: Quantitative Reasoning

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MATH 111: *Linear Mathematical Modeling.* 3 credits.
Matrix algebra, systems of linear equations, Markov chains, difference equations, and data fitting. Offered by Mathematics. Limited to three attempts.

Mason Core: Quantitative Reasoning

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MATH 112: *Discrete Mathematics for IT.* 3 credits.
Introduces ideas of discrete mathematics including mathematical induction, sets, logic, graphs, trees, basic counting arguments, and discrete probability. Students who have received credit for MATH 125 may not receive credit for this course. Notes: Intended for IT students; does not count toward a major or minor in mathematics. Offered by Mathematics. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: minimum score of 13 in 'Math Placement Algebra I', MATH 105[C], 105[XS], 108[C], 108[XS], 113[C] or 113[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MATH 113: *Analytic Geometry and Calculus I.* 4 credits.
Functions, limits, the derivative, maximum and minimum problems, the integral, and transcendental functions. Offered by Mathematics. Limited to three attempts. Equivalent to MATH 115, MATH 124.

Mason Core: Quantitative Reasoning

Registration Restrictions:
Required Prerequisites: (minimum score of 07 in 'Math Placement Transcendentals', MATH 105[C], 105[XS] or 104[C]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture, Recitation

Grading:
This course is graded on the Undergraduate Regular scale.

MATH 114: *Analytic Geometry and Calculus II.* 4 credits.
Methods of integration, conic sections, parametric equations, infinite series, and power series. Offered by Mathematics. Limited to three attempts. Equivalent to MATH 116.

Registration Restrictions:
Required Prerequisites: (MATH 113[C], 113[XS] or U113) or ((MATH 123[C] or 123[XS]) and (MATH 124[C] or 124[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture, Recitation

Grading:
This course is graded on the Undergraduate Regular scale.

MATH 115: *Analytic Geometry and Calculus I (Honors).* 4 credits.
More challenging version of MATH 113. Functions, limits, the derivative, maximum and minimum problems, the integral, and transcendental functions. Offered by Mathematics. Limited to three attempts. Equivalent to MATH 113.

Mason Core: Quantitative Reasoning

Recommended Prerequisite: Permission of instructor.

Registration Restrictions:
Required Prerequisite: (minimum score of 65 in 'Math Placement Transcendentals').

Schedule Type: Lecture, Recitation

Grading:
This course is graded on the Undergraduate Regular scale.

MATH 116: *Analytic Geometry and Calculus II (Honors).* 4 credits.
More challenging version of MATH 114. Methods of integration, conic sections, parametric equations, infinite series, and power series. Offered by Mathematics. Limited to three attempts. Equivalent to MATH 114.

Registration Restrictions:
Required Prerequisites: MATH 115[C], 115[XS], U115, 113[A] or 113[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.
[A] Requires minimum grade of A.

Schedule Type: Lecture, Recitation

Grading:
This course is graded on the Undergraduate Regular scale.

MATH 123: *Calculus with Algebra/Trigonometry, Part A.* 3 credits.
Math 123, with 124, is a two semester sequence for students with limited math background who desire careers in the sciences. In two semesters, students progress from algebra through the basic calculus covered in Math 113. Math 123 integrates the beginnings of calculus through the derivative with relevant precalculus algebra and trigonometry. Notes: Students who successfully complete Math 123-124 are considered the same as having successfully completed MATH 113 and can sign up for Math 114, Calculus II. Offered by Mathematics. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (minimum score of 13 in 'Math Placement Algebra I' and minimum score of 07 in 'Math Placement Algebra II') or MATH 105[C], 105[XS] or 104[C].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MATH 124: *Calculus with Algebra/Trigonometry, Part B.* 3 credits.
Math 123, with 124, is a two semester sequence for students with limited math background who desire careers in the sciences. In two semesters, students progress from algebra through the basic calculus covered in

Math 113. Math 124 will review basic differentiation and applications and then proceed to cover integration including transcendental functions. Notes: Students who successfully complete Math 123-124 are considered the same as having successfully completed MATH 113 and can sign up for Math 114, Calculus II. Offered by Mathematics. Limited to three attempts. Equivalent to MATH 113.

Mason Core: Quantitative Reasoning

Registration Restrictions:
Required Prerequisites: MATH 123[C] or 123[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MATH 125: *Discrete Mathematics I.* 3 credits.
Introduces ideas of discrete mathematics and combinatorial proof techniques including mathematical induction, sets, graphs, trees, recursion, and enumeration. Offered by Mathematics. Limited to three attempts.

Mason Core: Quantitative Reasoning

Registration Restrictions:
Required Prerequisites: minimum score of 13 in 'Math Placement Algebra I', MATH 105[C], 105[XS], 108[C], 108[XS], 113[C] or 113[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture, Recitation

Grading:
This course is graded on the Undergraduate Regular scale.

MATH 175: *Mathematics of Cryptography: An Introduction.* 3 credits.
Every day, 143,000 terabytes of data are transferred across the internet, including financial transactions, medical records, and sensitive client data. Half of this traffic is secured through encryption, relying on mathematical algorithms such as the RSA to encode the data in a way that only the recipient can decode. In this class, we will see how cryptography works first-hand. We will start with classical ciphers (Atbash and Caesar ciphers) and develop our mathematical techniques and programming abilities until we are able to implement RSA from scratch. Topics covered in the course lead into the following majors: mathematics, computer science, electrical engineering, and cyber security engineering. Offered by Mathematics. Limited to three attempts.

Recommended Prerequisite: B or better in a calculus course.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

200 Level Courses

MATH 203: *Linear Algebra.* 3 credits.
Systems of linear equations, linear independence, linear transformations, inverse of a matrix, determinants, vector spaces, eigenvalues, eigenvectors, and orthogonalization. Offered by Mathematics. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (MATH 114[C], 114[XS], 114T, 116[C] or 116[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture, Recitation

Grading:
This course is graded on the Undergraduate Regular scale.

MATH 213: *Analytic Geometry and Calculus III.* 3 credits.
Partial differentiation, multiple integrals, line and surface integrals, and three-dimensional analytic geometry. Offered by Mathematics. Limited to three attempts. Equivalent to MATH 215.

Registration Restrictions:
Required Prerequisites: (MATH 114[C], 114[XS], 114T, 116[C] or 116[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture, Recitation

Grading:
This course is graded on the Undergraduate Regular scale.

MATH 214: *Elementary Differential Equations.* 3 credits.
First-order ODEs, higher-order ODEs, Laplace transforms, linear systems, nonlinear systems, numerical approximations, and modeling. Offered by Mathematics. Limited to three attempts. Equivalent to MATH 216.

Registration Restrictions:
Required Prerequisites: MATH 213[C], 213[XS], 213T, 215[C] or 215[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture, Recitation

Grading:
This course is graded on the Undergraduate Regular scale.

MATH 215: *Analytic Geometry and Calculus III (Honors).* 3 credits.
Vectors and vectorvalued functions, partial differentiation, multiple integrals, line integrals, surface integrals, and transformation of coordinates. Offered by Mathematics. Limited to three attempts. Equivalent to MATH 213.

Registration Restrictions:
Required Prerequisites: (MATH 114[C], 114[XS], 116[C] or 116[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture, Recitation

Grading:
This course is graded on the Undergraduate Regular scale.

MATH 216: *Theory of Differential Equations.* 3 credits.
First- and second-order equations, existence uniqueness of solutions, systems of differential equations, and phase plane analysis. Offered by Mathematics. Limited to three attempts. Equivalent to MATH 214.

Registration Restrictions:
Required Prerequisites: (MATH 203[C], 203[XS] or U203) and (MATH 213[C], 213[XS], U213, 215[C], 215[XS] or U215).
[C] Requires minimum grade of C.

[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MATH 271: *Mathematics for the Elementary School Teachers I.* 3 credits.
Concepts and theories underlying elementary school mathematics including problem solving, patterns, sequences, set theory, numeration, number sense, operations and properties of integers, whole, rational, irrational and real numbers, number theory, ratio, proportion, percent and mathematical systems. Notes: Does not count toward major in mathematics. Offered by Mathematics. Limited to three attempts.

Recommended Prerequisite: Grade of C or better in 3 credits of college math.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MATH 272: *Mathematics for the Elementary School Teachers II.* 3 credits.
Continuation of MATH 271. Concepts and theories underlying elementary school mathematics including functions, algebra, geometry, statistics, and probability. Notes: Intended for school educators; does not count toward major in mathematics. Offered by Mathematics. Limited to three attempts.

Mason Core: Quantitative Reasoning

Registration Restrictions:
Required Prerequisites: (MATH 271[C] or 271[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

300 Level Courses

MATH 300: *Introduction to Advanced Mathematics.* 3 credits.
Introduction to proofs and the language of mathematics. Topics include induction, equivalence relations, cardinality, and basic properties of the real numbers. Designated as a writing intensive course for mathematics majors. Notes: Primarily intended for mathematics majors. Offered by Mathematics. Limited to three attempts. Equivalent to MATH 290.

Specialized Designation: Writing Intensive in Major

Registration Restrictions:
Required Prerequisites: ((MATH 114[C], 114[XS], 114T or 116[C]) and (MATH 125[C], 125[XS], 125T or 175[C])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MATH 301: *Number Theory.* 3 credits.
Prime numbers, factorization, congruences, and Diophantine equations. Offered by Mathematics. Limited to three attempts.

Recommended Prerequisite: Completion of 6 hours of MATH.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MATH 302: *Foundations of Geometry.* 3 credits.
Axioms, theorems and proofs of Euclidean, non-Euclidean, and projective geometry. Fundamental concepts of incidence. Offered by Mathematics. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: MATH 114[C], 114[XS], 116[C] or 116[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MATH 307: *Mathematical Modeling.* 3 credits.
Focuses on the development and analysis of mathematical models that make qualitative and quantitative predictions. Students will address particular situations while learning general modeling strategies. Offered by Mathematics. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (MATH 203[C] or 203[XS]) and (MATH 214[C], 214[XS] or 216[C]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MATH 312: *Geometry.* 3 credits.
Two and three dimensional analytic geometry, geometric transformations, projective geometry, conics and quadric surfaces, spherical geometry, vector geometry. Offered by Mathematics. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (MATH 114[C], 114[XS], 116[C] or 116[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MATH 313: *Introduction to Applied Analysis.* 3 credits.
Vector differential calculus, vector integral calculus, and complex analysis. Offered by Mathematics. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (MATH 213[C], 213[XS], 213T, 215[C] or 215[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MATH 314: *Introduction to Applied Mathematics.* 3 credits.
Fourier analysis, series solutions of differential equations, Bessel and Legendre equations, Sturm-Liouville problems, and partial differential equations. Offered by Mathematics. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (MATH 214[C], U214, 214[XS], 216[C] or U216).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MATH 315: *Advanced Calculus I.* 3 credits.
Number system, functions, sequences, limits, continuity, differentiation, integration, transcendental functions, and infinite series. Offered by Mathematics. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: ((MATH 213[C], 213[XS], 215[C] or 215[XS]) and (MATH 300[C] or 300[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MATH 316: *Advanced Calculus II.* 3 credits.
Sequences of functions, Taylor series, vectors, functions of several variables, implicit functions, multiple integrals, and surface integrals. Offered by Mathematics. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (MATH 315[C], 315[XS] or L315).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MATH 321: *Abstract Algebra.* 3 credits.
Theory of groups, rings, fields. Offered by Mathematics. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: ((MATH 213[C], 213[XS], 215[C] or 215[XS]) and (MATH 300[C] or 300[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MATH 322: *Advanced Linear Algebra.* 3 credits.
Abstract vector spaces, linear independence, bases, linear transformations, matrix algebra, inner product, and special topics. Offered by Mathematics. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: ((MATH 203[C], 203[XS] or U203) and (MATH 300[C] or 300[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MATH 325: *Discrete Mathematics II.* 3 credits.
Advanced counting, binomial identities, generating functions, advanced recurrence, inclusion-exclusion, and network flows. Offered by Mathematics. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (MATH 125[C], 125[XS] or 125T).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MATH 351: *Probability.* 3 credits.
Random variables, probability functions, special distributions, and limit theorems. Offered by Mathematics. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: MATH 213[C], 213[XS], 215[C], 215[XS] or 215T.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MATH 352: *Statistics.* 3 credits.
Estimation, decision theory, testing hypothesis, correlation, linear models, and design. Offered by Mathematics. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (MATH 351[C], 351[XS] or L351).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

MATH 400: *History of Math (Topic Varies).* 3 credits.
Explores internal controversies and dynamics of mathematics in larger intellectual and social settings. Topics vary but might include differential equations devised for mechanics and astronomy by Euler, Lagrange, and Laplace; foundation of mathematical analysis from Cauchy to Weierstrass; algebras of Galois and Boole; or creation of non-Euclidean

geometry and Cantor's transfinite sets. Notes: Credits may not be used toward "upper division" math hours required of math majors. Offered by Mathematics. Limited to three attempts.

Mason Core: Synthesis

Specialized Designation: Topic Varies

Registration Restrictions:
Required Prerequisites: MATH 300[C] or 300[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MATH 401: *Mathematics through 3D Printing.* 3 credits.
Incorporates new mathematics from a large variety of fields into the design and creation of 3D printed models, as well as the written and oral communication of these mathematical ideas. Topics vary but might include regular and quasiregular tilings, Platonic and Archimedean solids and their duality, orientable and non-orientable surfaces, fractals, chaotic attractors, Riemann surfaces, and data visualization. Offered by Mathematics. Limited to three attempts.

Mason Core: Capstone

Recommended Prerequisite: MATH 300 and at least 3 credits of Mathematics above MATH 300.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MATH 405: *Honors Thesis in Mathematics I.* 3 credits.
A project, which is intended to result in a thesis, is to be chosen and completed under the guidance of a full-time faculty member. An oral presentation is required for MATH 405. Offered by Mathematics. Limited to three attempts.

Specialized Designation: Mason Impact.

Recommended Prerequisite: MATH 315, three additional credits of MATH above the 300 level (excluding MATH 400) and admission to the Honors Program in Mathematics.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

MATH 406: *RS: Honors Thesis in Mathematics II.* 3 credits.
A project, which is intended to result in a thesis, is to be chosen and completed under the guidance of a full-time faculty member. Oral and written presentations are required in MATH 406. Offered by Mathematics. Limited to three attempts.

Specialized Designation: Research/Scholarship Intensive

Registration Restrictions:
Required Prerequisite: (MATH 405[C]).
[C] Requires minimum grade of C.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

MATH 411: *Functions of a Complex Variable.* 3 credits.
Analytic functions, contour integration, residues, and applications to such topics as integral transforms, generalized functions, and boundary value problems. Offered by Mathematics. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (MATH 214[C], 214[XS] or 214T) or (MATH 216[C] or 216T).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MATH 413: *Modern Applied Mathematics I.* 3 credits.
Synthesis of pure mathematics and computational mathematics. Emphasizes interplay between discrete and continuous mathematics. Mathematical structure revealed from equilibrium models in discrete and continuous systems. Offered by Mathematics. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (MATH 203[C], 203[XS] or 203T) and (MATH 214[C], 214[XS] or 214T) or (MATH 216[C] or 216T).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MATH 414: *Modern Applied Mathematics II.* 3 credits.
Continuation of MATH 413, which involves synthesis of pure mathematics and computational mathematics. Fourier analysis and its role in applied mathematics developed (differential equations and approximations). Discrete aspects emphasized in computational models. Offered by Mathematics. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: MATH 413[C] or 413[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MATH 431: *Topology.* 3 credits.
Metric spaces, topological spaces, compactness, and connectedness. Offered by Mathematics. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (MATH 315[C] or 315[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MATH 441: *Deterministic Operations Research.* 3 credits.
Survey of deterministic methods for solving real-world decision problems. Programming model and simplex method of solution, duality and sensitivity analysis, transportation and assignment problems, shortest path and maximal flow problems, project networks including PERT and CPM, introduction to integer and nonlinear programming, dynamic programming, and game theory. Emphasizes modeling and problem solving. Offered by Mathematics. Limited to three attempts. Equivalent to OR 441.

Registration Restrictions:
Required Prerequisites: (MATH 203[C], 203[XS] or 203T).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MATH 442: *Stochastic Operations Research.* 3 credits.
Survey of probabilistic methods for solving real-world decision problems. Probability review, queuing theory, inventory theory, Markov decision processes, reliability, decision theory, simulation. Emphasizes modeling and problem solving. Offered by Mathematics. Limited to three attempts. Equivalent to OR 442.

Registration Restrictions:
Required Prerequisites: (MATH 351[C] or 351[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MATH 446: *Numerical Analysis I.* 3 credits.
Significant figures, round-off errors, iterative methods of solution of nonlinear equations of a single variable, solutions of linear systems, iterative techniques in matrix algebra, interpolation and polynomial approximation. Offered by Mathematics. Limited to three attempts. Equivalent to OR 481.

Registration Restrictions:
Required Prerequisites: (MATH 203[C], 203[XS] or 203T) and (CS 112[C], 112[XS] or 112T).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MATH 447: *Numerical Analysis II.* 3 credits.
Numerical differentiation and integration, initial-value and boundary-value problems for ordinary differential equations, methods of solution of partial differential equations, iterative methods of solution of nonlinear systems, approximation theory. Offered by Mathematics. Limited to three attempts. Equivalent to CDS 410.

Registration Restrictions:
Required Prerequisites: (MATH 214[C], 214[XS], 214T, 216[C] or 216T) and (MATH 446[C] or 446[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MATH 453: *Advanced Mathematical Statistics.* 3 credits.
Topics from statistics relevant to the field of actuarial science, such as: forecasting and time series, maximum likelihood tests, sufficiency, most powerful tests, distributions of quadratic forms, topics from nonparametric statistics, Bayesian statistics, and linear models. Offered by Mathematics. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: MATH 352[C], 352[XS] or STAT 356[C].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MATH 478: *Introduction to Partial Differential Equations with Numerical Methods.* 3 credits.
Introduces basic facts about partial differential equations, including elliptic equations, parabolic equations and hyperbolic equations. Methods of solution, characteristics, initial/boundary-value problems, and numerical approximation techniques. Offered by Mathematics. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (MATH 203[C], 203[XS] or 203T) and (MATH 214[C], 214[XS] or 214T) or (MATH 216[C] or 216T).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MATH 491: *Reading and Problems.* 1-3 credits.
For mathematical sciences majors only. Independent study in math. Notes: Must be arranged with instructor before registering. Offered by Mathematics. May be repeated within the term.

Recommended Corequisite: For mathematical science majors only.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

MATH 493: *Topics in Applicable Mathematics.* 3 credits.
Topics that have been successfully used in applications of mathematics. Notes: Subject determined by instructor. Offered by Mathematics. May be repeated within the degree for a maximum 12 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: 6 credits of MATH at or above the 310 level.

Schedule Type: Lecture, Recitation

Grading:
This course is graded on the Undergraduate Regular scale.

MATH 494: *Topics in Pure Mathematics.* 3 credits.
Topics of pure math not covered in other courses. Topics might include Galois theory, cardinal and ordinal arithmetic, measure theory, mathematical logic, and differential geometry. Notes: Subject determined by instructor. Offered by Mathematics. May be repeated within the term for a maximum 12 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: 6 hours of MATH at or above the 310 level.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MATH 495: *Undergraduate Seminar.* 1 credit.
Offered by Mathematics. May be repeated within the degree for a maximum 3 credits.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

500 Level Courses

MATH 551: *Regression and Time Series.* 3 credits.
Mathematics of regression, exponential smoothing, time series, and forecasting. Material included in this course constitutes Society of Actuaries Validation by Educational Experience (VEE) for applied statistics and corresponds to part of Casualty Actuary Society Exam 3. Offered by Mathematics. May not be repeated for credit.

Recommended Prerequisite: MATH 352, STAT 652, SOA exam P, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MATH 553: *Advanced Mathematical Statistics in Actuarial Sciences.* 3 credits.
Topics from statistics relevant to the field of actuarial science, such as: forecasting and time series, maximum likelihood tests, sufficiency, most powerful tests, distributions of quadratic forms, topics from nonparametric statistics, Bayesian statistics, and linear models. Offered by Mathematics. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: MATH 352[C], 352[XS], STAT 356[C], 356[XS], MATH 554[C] or 554[XS].

[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MATH 554: *Financial Mathematics.* 3 credits.
Simple and compound interest, annuities, present and future value, yield rates, capital budgeting, amortization schedules, mortgages, bonds. Material corresponds to the Society of Actuaries Exam: Financial Mathematics (FM). Not appropriate for graduate science and engineering majors not considering actuarial or financial career. Cannot be counted toward MS or PhD degree in mathematics. Offered by Mathematics. May not be repeated for credit.

Recommended Prerequisite: MATH 113.

Recommended Corequisite: MATH 114.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MATH 555: *Actuarial Modeling I.* 3 credits.
Two-semester sequence covering portions of the material corresponding to the Society of Actuaries Exam M, Casualty Actuary Society Exam 3, and Joint Board Exam EA1. The remaining material for these exams is covered in MATH 551 and 653. Topics include survival distribution and life tables, life insurance, life annuities, net premiums, net premium reserves, multiple life and multiple decrement models, pensions, insurance models including expense, and nonforfeiture benefits and cash values. Offered by Mathematics. May not be repeated for credit.

Recommended Prerequisite: MATH 554 and either MATH 351 or STAT 344.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MATH 556: *Actuarial Modeling II.* 3 credits.
Two-semester sequence covering portions of the material corresponding to the Society of Actuaries Exam M, Casualty Actuary Society Exam 3, and Joint Board Exam EA1. The remaining material for these exams is covered in MATH 551 and 653. Topics include survival distribution and life tables, life insurance, life annuities, net premiums, net premium reserves, multiple life and multiple decrement models, pensions, insurance models including expense, and nonforfeiture benefits and cash values. Offered by Mathematics. May not be repeated for credit.

Recommended Prerequisite: MATH 554 and either MATH 351 or STAT 344.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MATH 557: *Financial Derivatives.* 3 credits.
Fundamentals of pricing derivative securities, including Black-Scholes formalism and no-arbitrage pricing models. Exotic options, Monte-Carlo simulation, and interest rate models. Material corresponds to the Society of Actuaries Exam MFE: Act. Models and Fin. Econ. Offered by Mathematics. May not be repeated for credit.

Recommended Prerequisite: MATH 554 and either MATH 351 or STAT 344, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

600 Level Courses

MATH 600: *Special Topics in Mathematics.* 1-6 credits.
Mathematical workshops, special courses, or other projects. Offered by Mathematics. May be repeated within the term for a maximum 12 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MATH 601: *Analysis I for Teachers.* 3 credits.
Develops continuous ideas of calculus with particular emphasis on concepts as opposed to computational aspects of calculus. Specific topics include decimal representation of real numbers, sequences, series, and limits; differentiation to find speed, slopes of curves, and tangents; integration to find volumes and distances and area under curves. Optimization problems including maximization of area and volume, and modeling of these concepts. Graphing techniques supported by theory of calculus and graphing utilities such as TI-83 calculator or computer software such as Maple. Notes: Background in mathematics desirable but not necessary. Some topics from college algebra will be reviewed in class, but thorough understanding of high school algebra and trigonometry expected. Offered by Mathematics. May not be repeated for credit.

Recommended Corequisite: Open only to inservice math teachers at the middle or secondary level, or by permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MATH 602: *Analysis II for Teachers.* 3 credits.
Develops continuous ideas of calculus with particular emphasis on concepts as opposed to computational aspects of calculus. Specific topics include decimal representation of real numbers, sequences, series, and limits; differentiation to find speed, slopes of curves, and tangents; integration to find volumes and distances and area under curves. Optimization problems including maximization of area and volume, and modeling of these concepts. Graphing techniques supported by theory of calculus and graphing utilities such as TI-83 calculator or computer software such as Maple. Notes: Background in mathematics desirable but not necessary. Some topics from college algebra will be reviewed in class, but thorough understanding of high school algebra and trigonometry expected. Offered by Mathematics. May not be repeated for credit.

Recommended Corequisite: Open only to inservice math teachers at the middle or secondary level, or by Permission of Instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MATH 604: *Geometry for Teachers.* 3 credits.
Covers standard topics from Euclidean geometry, and includes discussion of non-Euclidean geometries. Emphasizes informal and explorative approach to geometry, and makes use of geometry sketchpad. Other topics include geometric constructions, and role of proof in geometry. Notes: Background in mathematics desirable but not necessary. Offered by Mathematics. May not be repeated for credit.

Recommended Corequisite: Open only to inservice math teachers at the middle or secondary level, or by permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MATH 605: *Discrete/Finite Mathematics for Teachers.* 3 credits.
Thorough understanding of high school algebra assumed. Discusses finite mathematics in juxtaposition to continuous ideas of calculus. Topics may consist of elementary counting and combinatorics including recursion and difference equations and their analogy to calculus; thorough discussion of probability and central measures of statistics; and graph theory and its connection to geometry. Notes: Background in mathematics desirable but not necessary. Offered by Mathematics. May not be repeated for credit.

Recommended Corequisite: Open only to inservice math teachers at the middle or secondary level, or by permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MATH 607: *Algebraic Structure for Teachers.* 3 credits.
Expands on customary operations on integers and rationals to discuss systems that mimic these operations. Emphasizes multiplicative and additive inverses and their corresponding identities as they occur in other systems. Topics might include permutation groups, rigid transformations, groups of symmetry of the plane and connection to geometry, and matrices treated as linear transformations and connections to solutions of systems of equations. Notes: Background in mathematics desirable but not necessary. Thorough understanding of high school algebra assumed. Offered by Mathematics. May not be repeated for credit.

Recommended Corequisite: Open only to inservice math teachers at the middle or secondary level, or by permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MATH 608: *Problem Solving in Mathematics.* 3 credits.
Introduces variety of challenging mathematical problems appropriate for middle school student to analyze, and solving problems using mathematics learned in previous courses. Also asks students to search for such problems and orally present solutions. Notes: Background in mathematics or science desirable but not necessary. Assumes exposure to most of topics covered in MATH 601, 604, 605, and 607. Offered by Mathematics. May not be repeated for credit.

Recommended Corequisite: Open only to inservice math teachers at the middle or secondary level, or by Permission of Instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MATH 610: *Number Systems and Number Theory for K-8 Teachers.* 3 credits.
This course covers the topics: ways of representing numbers, relationships between numbers, number systems, the meanings of operations and how they relate to one another, and computation within the number system as a foundation for algebra. It also includes episodes in history and development of the number system, and will examine the developmental sequence and learning trajectory as children learn this material. Offered by Mathematics. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MATH 611: *Geometry and Measurement for K-8 Teachers.* 3 credits.
The course explores the foundations of informal measurement and geometry 'in one, two, and three dimensions. The van Hiele model for geometric learning is used as a framework for how children build their understanding of length, area, volume, angles, and geometric relationships. Visualization, spatial reasoning, and geometric modeling are stressed. As appropriate, transformational geometry, congruence, similarity, and geometric constructions will be discussed. Offered by Mathematics. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MATH 612: *Probability and Statistics for K-8 Teachers.* 3 credits.
An introduction to probability, descriptive statistics, and data analysis. Topics studied will include the exploration of randomness, data representation, modeling. Descriptive statistics will include measures of central tendency, dispersion, distributions, and regression. The analysis of experiments requiring hypothesizing, experimental design and data gathering will also be discussed. Offered by Mathematics. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MATH 613: *Algebra and Functions for K-8 Teachers.* 3 credits.
The course will examine representing and analyzing mathematical situations and structures using generalization and algebraic symbols and reasoning. Attention will be given to the transition from arithmetic to algebra, working with quantitative change, and the description of and prediction of change. Offered by Mathematics. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MATH 614: *Rational Numbers and Proportional Reasoning for K-8 Teachers.* 3 credits.
This course will cover the basic number strands in fractions and rational numbers, decimals and percents, and ratios and proportions in the school curriculum. Instruction will cover interpretations, computations, and estimation with a coordinated program of activities that develop both rational number concepts and skills and proportional reasoning. Offered by Mathematics. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MATH 619: *Topics in Mathematical Logic.* 3 credits.
Special topics in foundations of mathematics not included in regular mathematics curriculum. May be repeated for credit. Offered by Mathematics. May be repeated within the term for a maximum 12 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MATH 621: *Algebra I.* 3 credits.
Groups, linear algebra, and matrix groups. Offered by Mathematics. May not be repeated for credit.

Recommended Prerequisite: Familiarity with basic properties of groups and rings or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:

This course is graded on the Graduate Regular scale.

MATH 624: *Euclidean Geometry.* 3 credits.
Euclidean space, geometry of k-dimensional planes, the affine structure of Euclidean space, rigid motions and similarities, parallelotopes and volumes, convex polytopes, quadric surfaces, and additional topics by instructor's choice. Offered by Mathematics. May not be repeated for credit.

Recommended Prerequisite: MATH 315 and MATH 322, or equivalent.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MATH 625: *Numerical Linear Algebra.* 3 credits.
Theory and development of numerical algorithms for solving variety of matrix problems: linear systems, least squares problems, eigenvalue problems, and singular value decomposition. Direct and iterative method, analysis of sensitivity to rounding errors, and applications. Offered by Mathematics. May not be repeated for credit. Equivalent to CSI 740.

Recommended Prerequisite: Computer literacy, including some programming experience.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MATH 629: *Topics in Algebra.* 3 credits.
Special topics in pure and applied algebra not covered in regular algebra. May be repeated for credit when topic varies. Offered by Mathematics. May be repeated within the term for a maximum 12 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MATH 631: *Topology I: Topology of Metric Spaces.* 3 credits.
Covers definition and basic examples of metric spaces, open and closed sets, subspaces and finite products, sequences and convergence, compactness and separability, continuous functions, uniform continuity, metric space C(X) and uniform convergence, and homotopy. Offered by Mathematics. May not be repeated for credit.

Recommended Prerequisite: MATH 315 or equivalent.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MATH 639: *Topics in Geometry and Topology.* 3 credits.
Special topics in geometry and topology not covered in regular geometry and topology sequence. May be repeated for credit when topic varies. Offered by Mathematics. May be repeated within the term for a maximum 12 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MATH 641: *Combinatorics and Graph Theory.* 3 credits.
Covers enumerative combinatorics, including partially ordered sets; Moebius inversion and generating functions; and major topics in graph theory such as graph coloring, Ramsey theory, and matching. Offered by Mathematics. May not be repeated for credit.

Recommended Prerequisite: MATH 321 or equivalent.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MATH 644: *Convex and Discrete Geometry.* 3 credits.
Basic properties of Euclidean space, convex sets and convex cones, convex hulls, extremal structure of convex sets, support and separation properties, polyhedra and polytopes, special classes of convex sets, Helly-type theorems, selected problems of discrete geometry. Offered by Mathematics. May not be repeated for credit.

Recommended Prerequisite: MATH 315 and MATH 322, or equivalent.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MATH 649: *Topics in Combinatorics.* 3 credits.
Special topics in combinatorics not covered in regular combinatorics sequence. May be repeated for credit. Offered by Mathematics. May be repeated within the term for a maximum 9 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MATH 653: *Construction and Evaluation of Actuarial Models I.* 3 credits.
Economics of insurance, individual risk models for short term, collective risk models for single period, collective risk models over an extended period, and applications of risk theory. Material included in this course corresponds to portions of the Society of Actuaries Exam M and Casualty Actuary Society Exam 3. The remaining material for these exams is covered in MATH 551, 555, and 556. Offered by Mathematics. May not be repeated for credit.

Recommended Prerequisite: MATH 351 or STAT 644 required. MATH 555 recommended but not required.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MATH 654: *Construction and Evaluation of Actuarial Models II.* 3 credits.
Nature and properties of survival and loss models, methods of estimates from complete and incomplete data, tabular and parametric models, and practical issues in survival model estimation. Material included in this course corresponds to most of the Society of Actuaries Exam C and Casualty Actuary Society Exam 4. Offered by Mathematics. May not be repeated for credit.

Recommended Prerequisite: MATH 556 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MATH 655: *Pension Valuation.* 3 credits.
Basic mathematics used in pension actuarial work without regard to pension law. Material included in this course corresponds to all of the Joint Board Exam EA-2A and portions of the Society of Actuaries Exam 8. This course cannot be counted toward the MS or PhD degree in mathematics. Offered by Mathematics. May not be repeated for credit.

Recommended Prerequisite: MATH 556, SOA Exam EA-1, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MATH 661: *Complex Analysis I.* 3 credits.
Topology of complex numbers, holomorphic functions, series, complex integration. Meromorphic, multivalued, and elliptic functions. Offered by Mathematics. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MATH 671: *Fourier Analysis.* 3 credits.
Study of fundamental ideas in Fourier analysis. Topics include orthonormal systems, Fourier series, continuous and discrete Fourier transform theory, generalized functions, and introduction to spectral analysis. Uses applications to physical sciences, linear systems theory, and signal processing to integrate topics. Offered by Mathematics. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MATH 673: *Dynamical Systems.* 3 credits.
Contemporary topics in nonlinear dynamical systems illustrated in mathematical models from physics, ecology, and population dynamics. Traditional qualitative analysis of difference and differential equations provides background for understanding chaotic behavior when it occurs in these models. Topics include stability theory, fractals, Lyapunov exponents, and chaotic attractors. Offered by Mathematics. May not be repeated for credit. Equivalent to MATH 661.

Recommended Prerequisite: Elementary courses in linear algebra and differential equations.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MATH 674: *Stochastic Differential Equations.* 3 credits.
Introduces stochastic calculus and differential equations. Includes Wiener process, Ito and Stratonovich integrals, Ito formula, martingales, diffusions, and applications, including financial applications. Simulations and numerical approximations of solutions. Offered by Mathematics. May not be repeated for credit.

Recommended Prerequisite: MATH 214 and 351.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MATH 675: *Linear Analysis.* 3 credits.
Metric spaces, normed linear spaces, completeness, compactness, continuous (bounded) linear transformations, Banach spaces, Hilbert spaces, and orthogonal series. Offered by Mathematics. May not be repeated for credit.

Recommended Prerequisite: MATH 315 and MATH 322, or equivalent.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MATH 677: *Ordinary Differential Equations.* 3 credits.
Qualitative and quantitative theory of ordinary differential equations. Phase portrait analysis of linear and nonlinear systems, including classification of stable and unstable equilibrium states and periodic orbits. Poincare-Bendixson theorem, Lyapunov stability and Lyapunov functions, and bifurcation theory. Optional topics include averaging and perturbation methods, numerical solution techniques, and chaos. Offered by Mathematics. May not be repeated for credit.

Recommended Prerequisite: MATH 214 or equivalent.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MATH 678: *Partial Differential Equations.* 3 credits.
Physical examples, characteristics, boundary value problems, integral transforms, and other topics, such as variational, perturbation, and asymptotic methods. Offered by Mathematics. May not be repeated for credit.

Recommended Prerequisite: Elementary differential equations course.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MATH 679: *Topics in Analysis and Potential Theory.* 3 credits.
Special topics not covered in regular analysis or potential theory sequence. May be repeated for credit when topic varies. Offered by Mathematics. May be repeated within the term for a maximum 12 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MATH 680: *Industrial Mathematics.* 3 credits.
Takes examples from industry and goes through complete solution process: formulation of mathematical model of problem; solution, possibly by numerical approximation; and interpretation and presentation of results. Emphasizes working in groups, relating mathematics to concrete situations, and communication and presentation skills. Offered by Mathematics. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MATH 683: *Modern Optimization Theory.* 3 credits.
Introduces basic mathematical ideas and methods for solving linear and nonlinear programming problems, with emphasis on mathematical aspects of optimization theory. Reviews classical topics of linear programming, and covers recent developments in linear programming, including interior point method. Considers basic results in nonlinear programming, including very recent developments in this field. Offered by Mathematics. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MATH 685: *Numerical Analysis.* 3 credits.
Computational techniques for solving problems arising in science and engineering. Includes theoretical development as well as implementation, efficiency, and accuracy issues in using algorithms and interpreting results. Specific topics include linear and nonlinear systems of equations, polynomial interpolation, numerical integration, and introduction to numerical solution of differential equations. Offered by Mathematics. May not be repeated for credit. Equivalent to CSI 690, OR 682.

Recommended Prerequisite: Computer literacy, including some programming experience.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MATH 686: *Numerical Solutions of Differential Equations.* 3 credits.
Finite difference methods for initial value problems, two-point boundary value problems, Poisson equation, heat equation, and first-order partial differential equations. Offered by Mathematics. May not be repeated for credit.

Recommended Prerequisite: MATH 214 and MATH 446 or 685.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MATH 687: *Variational Methods.* 3 credits.
Weak formulation of partial differential equations, energy principles, Galerkin approximations, and finite element methods. Includes review and development of necessary analysis. Offered by Mathematics. May not be repeated for credit.

Recommended Prerequisite: MATH 446 or 685, and elementary differential equations course.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MATH 689: *Topics in Applied and Computational Mathematics.* 3 credits.
Special topics in applied and computational mathematics not covered in the regular applied and computational mathematics sequence. May be repeated for credit when topic varies. Offered by Mathematics. May be repeated within the term for a maximum 12 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MATH 697: *Independent Reading and Research.* 1-6 credits.
In areas of importance, but with insufficient demand to justify a regular course, students may undertake a course of study under the supervision of a consenting faculty member. Written statement of the content of the course and a tentative reading list is normally submitted as part of the request for approval. Literature review, project report, or other written product is normally required. May be repeated for credit. Offered by Mathematics. May be repeated within the term.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Regular scale.

700 Level Courses

MATH 721: *Algebra II.* 3 credits.
Rings, fields, and Galois theory. Offered by Mathematics. May not be repeated for credit.

Recommended Prerequisite: MATH 621.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MATH 722: *Algebraic Topology.* 3 credits.
Covers simplices and simplicial complexes, cycles and boundaries, simplicial homology, homological algebra, homotopy and the fundamental group, cohomology. Offered by Mathematics. May not be repeated for credit.

Recommended Prerequisite: MATH 621 and MATH 631 or equivalent.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MATH 723: *Combinatorial Structures.* 3 credits.
Studies structural properties of objects encountered in pure and applied combinatorics. Topics include partially ordered sets, codes, designs, matroids, buildings, symmetrical structures, permutation groups, and face lattices of polytopes. Offered by Mathematics. May not be repeated for credit.

Recommended Prerequisite: MATH 321 or equivalent.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MATH 724: *Commutative Algebra.* 3 credits.
Study of commutative rings and their ideals, and of modules over commutative rings and their homological properties. More specific topics include Noetherian rings, primary decomposition, completions, graded rings and dimension theory with applications to algebraic geometry. Offered by Mathematics. May not be repeated for credit.

Recommended Prerequisite: MATH 621.

Registration Restrictions:

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MATH 725: *Algebraic Geometry.* 3 credits.
This course is an introduction to Algebraic Geometry. Topic include: Affine Varieties, Projective Varieties, Morphisms, Rational Maps, Nonsingular varieties and curves, Sheaves, Schemes, Divisors, Projective Morphisms, Differentials, and Sheaf Cohomology. Offered by Mathematics. May not be repeated for credit.

Recommended Prerequisite: MATH 724

Registration Restrictions:
Required Prerequisites: (MATH 621[B-] or 621[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MATH 732: *Topology II: Set-Theoretic Topology.* 3 credits.
Topics include review of basic set theory (including cardinal numbers products of sets, the Axiom of Choice), definition of topological spaces, bases for topological spaces, forming new topological spaces by taking subspace, quotients, and products, separation properties (Hausdorff, regular, Tychonoff, and normal spaces) compactness, the Lindelof property, separability, connectedness, continuity and homeomorphism, manifolds. Offered by Mathematics. May not be repeated for credit.

Recommended Prerequisite: MATH 631 or equivalent.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MATH 740: *Differential Topology.* 3 credits.
Differential forms, manifolds, smooth maps, vector fields, the Euler characteristic, integration on manifolds, and de Rham cohomology. Notes: MATH 740 will be an elective course acceptable (but not required) for the PhD Degree in the Mathematical Sciences offered by the Department of Mathematical Sciences. Offered by Mathematics. May not be repeated for credit.

Recommended Prerequisite: MATH 621 and MATH 631, or equivalent.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MATH 741: *Lie Groups.* 3 credits.
The course is an introduction to Lie Theory. Topics include: Lie Groups and Their Lie Algebras, Homomorphisms, Lie Subgroups, Coverings, Simply Connected Lie Groups, Exponential Map, Continuous Homomorphisms, Closed Subgroups, The Adjoint Representation, Correspondence between Lie groups and Lie algebras, Root Systems, Dynkin Diagrams, Classification of simple Lie algebras, Introduction to Representations of Lie Groups. Offered by Mathematics. May not be repeated for credit.

Recommended Prerequisite: MATH 740

Registration Restrictions:
Required Prerequisites: (MATH 621[B-] or 621[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MATH 762: *Complex Analysis II.* 3 credits.
Harmonic functions, generalizations of the maximum principle, entire and meromorphic functions, analytic continuation, and the Riemann mapping theorem. Offered by Mathematics. May not be repeated for credit.

Recommended Prerequisite: MATH 661.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MATH 763: *Functions of Several Complex Variables.* 3 credits.
Covers the important results for analytic functions in several variables, including analyticity in several variables and the differences between the theory of one and the theory of several complex variables. Offered by Mathematics. May not be repeated for credit.

Recommended Prerequisite: MATH 661 and MATH 762 or an equivalent preparation in one complex variable.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MATH 772: *Wavelet Theory.* 3 credits.
Study of the theory and computational aspects of wavelets and the wavelet transform. Emphasizes computational aspects of wavelets, defining the Fast Wavelet Transform in one and two dimensions. Developing the appropriate numerical algorithms. Includes developing the theory of wavelet bases on the real line, discussing multiresolution analysis, splines, time-frequency localization, and wavelet packets. Offered by Mathematics. May not be repeated for credit.

Recommended Prerequisite: MATH 315 or equivalent.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MATH 776: *Measure and Integration.* 3 credits.
Lebesque measure and integration. Theory of Lp spaces with p between one and infinity on the real line. Theory of linear operators on Banach spaces, including the Hahn-Banach theorem, open mapping theorem, closed graph theorem and the uniform boundedness principle. Offered by Mathematics. May not be repeated for credit.

Recommended Prerequisite: MATH 675.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MATH 781: *Advanced Methods in Applied Mathematics.* 3 credits.
Bifurcation theory and perturbation methods for solutions in ordinary and partial differential equations. This course will develop and apply these mathematical tools in current scientific fields, such as biology, materials science, or financial mathematics. Offered by Mathematics. May not be repeated for credit.

Recommended Prerequisite: MATH 677 or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MATH 784: *Nonlinear Functional Analysis.* 3 credits.
Techniques in nonlinear functional analysis with applications. Contraction mapping principle, Frechet and higher derivatives, the implicit function theorem, Lyapunov-Schmidt method, and bifurcation theory. Finite and infinite dimensional degree theory with applications in partial differential equations. Notes: Different backgrounds may be appropriate, but generally, a student is expected to be an upper level graduate student who has already taken Linear Analysis. Since the applications given in the course are for differential equations, some familiarity with differential equations is extremely useful. Offered by Mathematics. May not be repeated for credit.

Recommended Prerequisite: MATH 675 or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MATH 790: *Classical Potential Theory.* 3 credits.
Potential theory of Laplace's equation in Euclidean space. Harmonic functions, superharmonic functions, potentials, polar sets and capacity, the Dirichlet problem, the Martin boundary, boundary behavior of superharmonic functions using real variable techniques, and minimal fine limit techniques. Offered by Mathematics. May not be repeated for credit.

Recommended Prerequisite: MATH 675 and MATH 776.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MATH 795: *Graduate Seminar.* 1 credit.
Mandatory for all PhD students. Weekly seminar graded on presentations and attendance. Faculty presentations on potential thesis topics and presentations by students. Offered by Mathematics. May be repeated within the degree for a maximum 9 credits.

Recommended Prerequisite: Enrolled in the PhD program in Mathematics.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

MATH 799: *MS Thesis.* 1-6 credits.
Original or compilatory work evaluated by committee of three faculty members. Offered by Mathematics. May be repeated within the degree.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Thesis

Grading:
This course is graded on the Satisfactory/No Credit scale.

800 Level Courses

MATH 800: *Studies for the Doctor of Philosophy in Education.* 1-6 credits.
Program of studies designed by student's discipline director and approved by student's doctoral committee, which brings the student to participate in current research of discipline director and results in paper reporting the original contributions of student. Enrollment may be repeated. Offered by Mathematics. May not be repeated for credit.

Recommended Prerequisite: Admission to the Ph.D. in Education program to study in mathematical sciences.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Special scale.

900 Level Courses

MATH 998: *Doctoral Dissertation Proposal.* 1-9 credits.
Work on research proposal that forms basis for doctoral dissertation. May be repeated for credit. No more than 24 credit hours of 998 and 999 may be applied to doctoral degree requirements. Offered by Mathematics. May be repeated within the degree.

Recommended Prerequisite: Successful completion of qualifying exam.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

MATH 999: *Doctoral Dissertation.* 1-12 credits.
Formal record of commitment to doctoral dissertation research under the direction of a faculty member. May be repeated for credit. No more than 24 credit hours of 998 and 999 may be applied to doctoral degree requirements. Offered by Mathematics. May be repeated within the degree.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy.

Enrollment is limited to Graduate level students.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

MBA--Interdisciplinary (MBA)

600 Level Courses

MBA 601: *Online MBA Orientation.* 0 credits.
The main objective of this course is to help students understand program expectations and time commitment and prepare themselves for online communication and technology requirements necessary to successfully complete their online MBA degree. Offered by School of Business. May not be repeated for credit.

Recommended Prerequisite: Enrollment in the online MBA program or permission of the MBA academic director.

Registration Restrictions:
Enrollment limited to students in a Master of Business Admin degree.

Schedule Type: Lecture

Grading:
This course is graded on the Satisfactory/No Credit scale.

MBA 603: *Managerial Economics and Decisions of the Firm.* 3 credits.
Provides fundamental understanding of applying microeconomics concepts to managerial decision making. Explores principles of microeconomic theory, including market supply and demand, production and cost functions, industry structure, and product and resource pricing. Offered by School of Business. May be repeated within the degree for a maximum 3 credits. Equivalent to MSF 603.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Enrollment is limited to students with a major in Accounting, Business Administration or Business Admin - Fast Track.

Enrollment is limited to Graduate or Undergraduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture, Recitation

Grading:
This course is graded on the Graduate Special scale.

MBA 612: *Managing Costs and Evaluating Performance.* 3 credits.
Examines impact of cost and cost allocation on performance and evaluation. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: MBA 613^{B-}, 613^{XS}, GBUS 613^{B-} or 613^{XS}.
$^{B-}$ Requires minimum grade of B-.
^{XS} Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Enrollment is limited to students with a major in Accounting, Business Administration or Business Admin - Fast Track.

Enrollment is limited to Graduate or Undergraduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture, Recitation

Grading:
This course is graded on the Graduate Regular scale.

MBA 613: *Financial Reporting and Decision Making.* 3 credits.
Foundation course focusing on economics and analysis of business transactions and related financial reporting issues. Topics include

introduction to accounting framework used in financial reporting; and analysis of financial statements, economic events and their impact on financial reports, and impact of accounting methods on financial reports. Offered by School of Business. May be repeated within the degree for a maximum 3 credits. Equivalent to GBUS 613.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Enrollment is limited to students with a major in Accounting, Business Administration or Business Admin - Fast Track.

Enrollment is limited to Graduate or Undergraduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture, Recitation

Grading:
This course is graded on the Graduate Special scale.

MBA 623: *Marketing Management.* 3 credits.
Develops market-based knowledge and skills for effective marketing decision making, strategy design, implementation, and evaluation in wide variety of institutional and competitive situations. Addresses the importance of companies being market-driven and customer-focused. Emphasis on case studies, team work, and projects. Offered by School of Business. May be repeated within the degree for a maximum 3 credits. Equivalent to GBUS 623.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Enrollment is limited to students with a major in Accounting, Business Administration or Business Admin - Fast Track.

Enrollment is limited to Graduate or Undergraduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture, Recitation

Grading:
This course is graded on the Graduate Special scale.

MBA 633: *Statistics for Business Decision Making.* 3 credits.
Uses statistical methods as analytical tools for understanding and solving business problems and supporting business decision making. Includes descriptive statistics, sampling, inferencing and regression. Extensive use of applied business scenarios to illustrate concepts and computer software for data analysis. Offered by School of Business. May be repeated within the degree for a maximum 3 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Enrollment is limited to students with a major in Accounting, Business Administration or Business Admin - Fast Track.

Enrollment is limited to Graduate or Undergraduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture, Recitation

Grading:
This course is graded on the Graduate Special scale.

MBA 638: *Operations Management.* 3 credits.
Focuses on design, planning, and control activities to produce and deliver goods and services in modern organizations. Introduces wide range of operations management decisions, such as operations strategy, process analysis and design, capacity planning, supply chain management, total quality management, and project management. Uses quantitative modeling, case studies, and computer software to analyze and solve operations management problems. Offered by School of Business. May be repeated within the degree for a maximum 3 credits.

Registration Restrictions:
Required Prerequisites: (MBA 633[B-] or 633[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Enrollment is limited to students with a major in Accounting, Business Administration or Business Admin - Fast Track.

Enrollment is limited to Graduate or Undergraduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture, Recitation

Grading:
This course is graded on the Graduate Special scale.

MBA 643: *Managerial Finance.* 3 credits.
Introduces theory and practice of finance within corporations. Topics include intertemporal choice, valuation, capital budgeting and structure, working capital management, and risk and return analysis. Offered by School of Business. May be repeated within the degree for a maximum 3 credits. Equivalent to GBUS 643.

Registration Restrictions:
Required Prerequisites: (MBA 613[B-], GBUS 613[B-], MBA 613[XS] or GBUS 613[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Enrollment is limited to students with a major in Accounting, Business Administration or Business Admin - Fast Track.

Enrollment is limited to Graduate or Undergraduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture, Recitation

Grading:

This course is graded on the Graduate Special scale.

MBA 653: *Organizational Behavior.* 3 credits.
Emphasizes development of conceptual tools for understanding and analyzing individual and group behavior in organizations and organizational processes. Considerable focus on developing relevant skills for working in groups and teams. Lectures, discussions, case analyses, and class exercises. Offered by School of Business. May be repeated within the degree for a maximum 3 credits. Equivalent to GBUS 653.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Enrollment is limited to students with a major in Accounting, Business Administration or Business Admin - Fast Track.

Enrollment is limited to Graduate or Undergraduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture, Recitation

Grading:
This course is graded on the Graduate Special scale.

MBA 662: *Management of Information Technology.* 3 credits.
The strategic, economic and managerial aspects of managing an organization's IT assets are covered. The business value of IT is understood and assessed in context of its impact on the organization's structure and strategy. The course includes discussion on major issues pertaining management of IT infrastructure. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Enrollment is limited to students with a major in Accounting or Business Administration.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture, Recitation

Grading:
This course is graded on the Graduate Regular scale.

MBA 678: *Strategic Management.* 3 credits.
Capstone course focusing on strategy development at business unit and corporate level. Cases, readings, and project format familiarize students with strategic management function and help them develop analytical, organizational, and managerial skills to analyze complex business situations. Provides opportunities to integrate knowledge gained in prior course work. Offered by School of Business. May be repeated within the degree for a maximum 3 credits.

Registration Restrictions:
Required Prerequisites: ((MBA 643[B-], 643[XS], GBUS 643[B-] or 643[XS]) and (MBA 603[B-] or 603[XS]) and (MBA 613[B-], 613[XS], GBUS 613[B-] or 613[XS]) and (MBA 638[B-] or 638[XS]) and (MBA 653[B-], 653[XS], GBUS 653[B-] or 653[XS]) and (MBA 623[B-], 623[XS], GBUS 623[B-] or 623[XS])).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Enrollment is limited to students with a major in Accounting, Business Administration or Business Admin - Fast Track.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture, Recitation

Grading:
This course is graded on the Graduate Special scale.

700 Level Courses

MBA 701: *Business Valuation.* 0-3 credits.
Develops framework for business analysis and valuation using financial statement data. Analyzes management decisions such as equity valuation, creditworthiness, merger valuation, corporate financial structure, and management communication strategy. Offered by School of Business. May be repeated within the degree for a maximum 3 credits. Equivalent to ACCT 701.

Registration Restrictions:
Required Prerequisites: MBA 613[B] or GBUS 613[B].
[B] Requires minimum grade of B.

Enrollment is limited to students with a major in Accounting, Business Administration or Business Admin - Fast Track.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

MBA 702: *Corporate Financial Policy.* 3 credits.
Applies theories and methods of corporate financial management to series of complex cases. Topics include capital projects as real options, cost of capital and capital structure, firm valuation, project finance, and merger and acquisition analysis. Offered by School of Business. May be repeated within the degree for a maximum 3 credits.

Recommended Prerequisite: Completion of MBA core or permission of instructor.

Registration Restrictions:
Required Prerequisites: (MBA 643[B-], 643[XS], GBUS 643[B-] or 643[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major in Business Administration or Business Admin - Fast Track.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture, Recitation

Grading:
This course is graded on the Graduate Special scale.

MBA 703: *Financial Markets.* 3 credits.
Explores relationship among financial markets including global equity markets, U.S. Treasury securities, and exchange-traded and over-the-counter financial derivative instruments such as futures, options, swaps, and asset-backed securities. Offered by School of Business. May not be repeated for credit.

Recommended Prerequisite: Completion of MBA core or permission of instructor and MBA 643 with a grade of B or better.

Registration Restrictions:
Enrollment is limited to students with a major in Business Administration or Business Admin - Fast Track.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture, Recitation

Grading:
This course is graded on the Graduate Special scale.

MBA 705: *Venture Capital and Private Finance.* 0-3 credits.
Considers market microstructure of venture capital and private finance: costs and benefits from employing private financing, interaction between the financiers and entrepreneurs, financial analysis of potential ventures, and investor exit strategies. Offered by School of Business. May be repeated within the degree for a maximum 3 credits.

Recommended Prerequisite: Completion of MBA core or permission of instructor.

Registration Restrictions:
Enrollment is limited to students with a major in Business Administration or Business Admin - Fast Track.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

MBA 706: *Investment Analysis.* 3 credits.
Focuses on analyzing equity securities and debt instruments given implications of efficient market hypothesis and modern capital market theory. Offered by School of Business. May not be repeated for credit.

Recommended Prerequisite: Completion of MBA core or permission of instructor.

Registration Restrictions:
Required Prerequisites: MBA 643[B-], 643[XS], GBUS 643[B-] or 643[XS].
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major in Business Administration or Business Admin - Fast Track.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture, Recitation

Grading:
This course is graded on the Graduate Special scale.

MBA 707: *Futures, Options and Other Derivatives.* 3 credits.
This course focuses on the mechanics of derivatives markets, with a strong emphasis on identifying and managing risks in financial products. Topics include: rationale behind the major pricing models and their application to derivatives securities, arbitrage and pricing, hedging, common trading strategies with options, and the fundamental concepts of risk measures and risk management. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to students with a major in Business Administration.

Enrollment is limited to Graduate level students.

Enrollment limited to students in a Master of Business Admin degree.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MBA 708: *Taxes and Business Strategy.* 0-3 credits.
Provides framework for making managerial decisions in global tax environment. Examines business decisions such as location of facilities, employee compensation, mergers and acquisitions, capital and asset structure, and business form. Offered by School of Business. May be repeated within the degree for a maximum 3 credits. Equivalent to ACCT 708.

Recommended Prerequisite: Completion of MBA core or permission of instructor.

Registration Restrictions:
Enrollment is limited to students with a major in Accounting, Business Administration or Business Admin - Fast Track.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

MBA 709: *Risk and Portfolio Management.* 3 credits.
This course is focused on asset allocation and portfolio construction, with a strong emphasis on measuring performance and managing risk. Topics include: the rationale behind the most commonly used performance and risk measures and models for portfolio construction, stress testing, scenario analysis, derivative securities, trading strategies, and hedging impact those risk measures and models, and the consequences of those interactions. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:

Enrollment is limited to students with a major in Business Administration.

Enrollment is limited to Graduate level students.

Enrollment limited to students in a Master of Business Admin degree.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MBA 711: *Entrepreneurship.* 3 credits.
Considers fundamental aspects of entrepreneurship and process of new venture creation. Draws on broad range of business disciplines including management, marketing, finance, and accounting to develop evaluation and execution skills. Offered by School of Business. May not be repeated for credit.

Recommended Prerequisite: Completion of MBA core or permission of instructor, and MBA 643 and MBA 653

Registration Restrictions:
Enrollment is limited to students with a major in Accounting, Business Administration or Business Admin - Fast Track.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture, Recitation

Grading:
This course is graded on the Graduate Special scale.

MBA 712: *Project Management.* 3 credits.
Focuses on designing, planning, monitoring, and controlling projects. Involves practical examination of how projects should be managed from start to finish, including specific emphasis on how to avoid common pitfalls. Includes hands-on experience with a common project management software package. Offered by School of Business. May be repeated within the degree for a maximum 3 credits.

Recommended Prerequisite: Completion of MBA core or permission of instructor.

Registration Restrictions:
Enrollment is limited to students with a major in Accounting, Business Administration, Business Admin - Fast Track or Information Security Mgmt.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture, Recitation

Grading:
This course is graded on the Graduate Special scale.

MBA 713: *Managing Human Capital.* 0-3 credits.
Effective management of human capital drives values for the firm and, in today's business environment, is a source of competitive advantage. Course prepares managers and entrepreneurs to leverage human capital by aligning practices with strategic objectives. Course provides systems perspective noting interrelationships between practices designed to attract, retain, & motivate human capital. Opportunities provided for personal skill-building on topics; interviewing, providing performance feedback, rewards, career development and termination. Offered by School of Business. May be repeated within the degree for a maximum 3 credits.

Recommended Prerequisite: Completion of MBA core or permission of instructor.

Registration Restrictions:
Enrollment is limited to students with a major in Accounting, Business Administration or Business Admin - Fast Track.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

MBA 714: *Managing Growth of Small Businesses.* 0-3 credits.
Focuses on unique challenges faced by small and entrepreneurial firms that seek long-term growth. Builds on concepts and knowledge of creating start-up company, and introduces processes and strategies required to become significant player in industry segment. Designed for students interested in understanding opportunities and problems in their own businesses, employment in small or entrepreneurial businesses, or exploring corporate entrepreneurship within large firms. Offered by School of Business. May be repeated within the degree for a maximum 3 credits.

Recommended Prerequisite: Completion of MBA or MSA core requirements or permission of the program director.

Registration Restrictions:
Enrollment is limited to students with a major in Accounting, Business Administration or Business Admin - Fast Track.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

MBA 715: *Advanced Project and Program Management.* 0-3 credits.
Examines advanced topics in project and program management with specific attention to issues and skills that managers needs to effectively manage multiple projects and programs. Topics include project selection, multiple project resource allocation, and organization of project office. Offered by School of Business. May be repeated within the degree for a maximum 3 credits.

Recommended Prerequisite: Completion of MBA core or permission of instructor.

Registration Restrictions:
Required Prerequisite: MBA 712[B].
[B] Requires minimum grade of B.

Enrollment is limited to students with a major in Accounting, Business Administration, Business Admin - Fast Track or Information Security Mgmt.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

MBA 716: *International Business Strategy.* 3 credits.
Focuses on the globalization of business activities, the strategic challenges faced by companies in global competition, and how companies strategically respond to these new competitive challenges. Offered by School of Business. May not be repeated for credit.

Recommended Prerequisite: Completion of MBA core requirements and concurrent enrollment in MBA 678.

Registration Restrictions:
Enrollment is limited to students with a major in Accounting, Business Administration or Business Admin - Fast Track.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture, Recitation

Grading:
This course is graded on the Graduate Special scale.

MBA 717: *International Finance.* 0-3 credits.
Advanced analysis of managing firm's international financial operations. Topics include currency risk, political risk, returns and funding of international projects, international markets and accounting, and cost of capital. Lecture, discussion, readings, and cases. Offered by School of Business. May be repeated within the degree for a maximum 3 credits.

Recommended Prerequisite: Completion of MBA or MSA core requirements or permission of the program director.

Registration Restrictions:
Required Prerequisites: (MBA 643^{B-}, 643^{XS}, GBUS 643^{B-} or 643^{XS}).
$^{B-}$ Requires minimum grade of B-.
^{XS} Requires minimum grade of XS.

Enrollment is limited to students with a major in Accounting, Business Administration or Business Admin - Fast Track.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

MBA 718: *International Marketing.* 0-3 credits.
Addresses marketing process for products and services within major international markets. Topics include marketing mix strategies using standardization, localization, or globalization approaches. Emphasizes the introduction of service innovations and new products in the global market. Offered by School of Business. May be repeated within the degree for a maximum 3 credits.

Recommended Prerequisite: Completion of MBA or MSA core requirements or permission of the program director.

Registration Restrictions:
Required Prerequisites: MBA 623^{B-}, 623^{XS}, GBUS 623^{B-} or 623^{XS}.
$^{B-}$ Requires minimum grade of B-.
^{XS} Requires minimum grade of XS.

Enrollment is limited to students with a major in Accounting, Business Administration or Business Admin - Fast Track.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

MBA 720: *Marketing Analytics.* 3 credits.
Marketing analytics is a systematic approach to harnessing data/information to drive effective marketing decision making. The objective of this course is to equip you with tools required to address fundamental marketing decision problems using a data-driven approach. It will train students to view the marketing processes and relationships systematically and analytically. Offered by School of Business. May not be repeated for credit. Equivalent to GBUS 720.

Recommended Prerequisite: MBA 738 or equivalent.

Registration Restrictions:
Required Prerequisites: (MBA 738^{B-}, 738^{XS}, GBUS 738^{B-} or 738^{XS}).
$^{B-}$ Requires minimum grade of B-.
^{XS} Requires minimum grade of XS.

Enrollment is limited to students with a major in Business Administration.

Enrollment is limited to Graduate level students.

Enrollment limited to students in a Master of Business Admin degree.

Schedule Type: Lecture, Recitation

Grading:
This course is graded on the Graduate Regular scale.

MBA 721: *Marketing Research.* 3 credits.
Develops skills to plan and implement effective marketing research studies. Topics include research design, data collection, statistical analysis, and use of database systems. Offers perspective on how managers can use market data to develop successful product or service strategies. Offered by School of Business. May not be repeated for credit. Equivalent to GBUS 721.

Recommended Prerequisite: Completion of MBA core or permission of instructor.

Registration Restrictions:
Required Prerequisites: MBA 633[C], 633[XS] or 633[XP].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.
[XP] Requires minimum grade of XP.

Enrollment is limited to students with a major in Accounting, Business Administration or Business Admin - Fast Track.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture, Recitation

Grading:
This course is graded on the Graduate Special scale.

MBA 722: *Consumer Behavior.* 0-3 credits.
An integrated analysis of internal and external influences on consumer decision making, purchase, and consumption behaviors with attention to marketing strategy implications. Emphasizes demographics, lifestyle, situation, perception, learning, and attitude formation and change, focusing on customer segmentation, satisfaction, loyalty, and product-person relationships. Offered by School of Business. May be repeated within the degree for a maximum 3 credits.

Recommended Prerequisite: Completion of MBA core or permission of instructor.

Registration Restrictions:
Enrollment is limited to students with a major in Accounting, Business Administration or Business Admin - Fast Track.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

MBA 723: *Supply Chain Management.* 0-3 credits.
Examines logistics of supply chain systems, including inventory management, distribution channels, and information systems. Emphasizes strategic alliances and international issues. Offered by School of Business. May be repeated within the degree for a maximum 3 credits.

Recommended Prerequisite: Completion of MBA core or permission of instructor.

Registration Restrictions:
Enrollment is limited to students with a major in Accounting, Business Administration or Business Admin - Fast Track.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

MBA 724: *Marketing Communications.* 0-3 credits.
Examines all forms of communication and sources of brand or company contacts as potential message channels in building relationship with customers. Focuses on integrated planning process for all communication elements, including consumer and trade advertising, public relations, direct and database marketing, promotions, and sales presentations to achieve synergy in communicating with various constituencies. Offered by School of Business. May be repeated within the degree for a maximum 3 credits.

Recommended Prerequisite: Completion of the MBA core or permission of instructor.

Registration Restrictions:
Enrollment is limited to students with a major in Accounting, Business Administration or Business Admin - Fast Track.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

MBA 725: *Leadership.* 3 credits.
Overview of major conceptualizations of leadership and motivation in organizations. Integrates theory, research, and applications. Students apply principles of leadership and motivation to their own work situations and case evaluation. Offered by School of Business. May not be repeated for credit.

Recommended Prerequisite: Completion of MBA core or permission of instructor and MBA 653.

Registration Restrictions:
Enrollment is limited to students with a major in Accounting, Business Administration or Business Admin - Fast Track.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture, Recitation

Grading:
This course is graded on the Graduate Special scale.

MBA 726: *Negotiations.* 3 credits.
Focuses on theory, processes, and practice of negotiation within and across organizations, including attention to ethical issues. Explores systematic ways to increase quality of negotiated agreements, including methods of preparation, effective communication, and various strategies to increase power. Format includes negotiation exercises, lecture, and discussion. Offered by School of Business. May not be repeated for credit.

Recommended Prerequisite: Completion of MBA core.

Registration Restrictions:

Enrollment is limited to students with a major in Accounting, Business Administration or Business Admin - Fast Track.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture, Recitation

Grading:
This course is graded on the Graduate Special scale.

MBA 727: *Management Consulting.* 3 credits.
Management Consulting is a practice-based course designed to provide a fundamental background in consulting, both from the perspective of the outside management consultant, and the inside (in-house) corporate consultant. Students will examine best practices in consulting to address complex organizational challenges and opportunities within a medium-to-large sized corporate setting. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to students with a major in Business Administration.

Enrollment is limited to Graduate level students.

Enrollment limited to students in a Master of Business Admin degree.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MBA 728: *Organizational Change.* 3 credits.
Organizational Change Management (MBA 728) presents a systems view of organizational change that includes intervention strategies, data collection, diagnosis, and the integration and management of system-wide organizational change. The course begins with the investigation of previously defined organizational change management theories and explores the relevance of those theories in the 21st century organization. MBA 728 is designed to expose the student to an array of academic theories and models that challenge the intellectual perception of organizational change. The objective of this challenge is to introduce the student to the unique nature of all organizational change initiatives while creating a foundation that will support the real-time integration of more successful change within their respective organization. Offered by School of Business. May not be repeated for credit.

Recommended Prerequisite: Completion of MBA core or permission of instructor.

Registration Restrictions:
Enrollment is limited to students with a major in Accounting, Business Administration or Management.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

MBA 730: *Management of Technology and Innovation Processes.* 0-3 credits.
Students will develop a strong conceptual foundation for managing technological innovation. It introduces frameworks for analyzing how firms can create, commercialize and capture value from products and services. Topics covered comprise the formulation of innovation strategies, the process of developing new products and services, and how to create and manage an innovative organization to drive revenue growth. Offered by School of Business. May be repeated within the degree for a maximum 3 credits.

Recommended Prerequisite: Admission to the MBA program or permission of the program director.

Registration Restrictions:
Enrollment is limited to students with a major in Accounting or Business Administration.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

MBA 738: *Data Mining for Business Analytics.* 3 credits.
Examines data driven decision making. Covers both predictive and descriptive analytics techniques commonly used in businesses. Offered by School of Business. May not be repeated for credit. Equivalent to GBUS 738.

Recommended Prerequisite: Completion of MBA core or permission of instructor.

Registration Restrictions:
Required Prerequisites: MBA 633[C], 633[XS] or 633[XP].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.
[XP] Requires minimum grade of XP.

Enrollment is limited to students with a major in Accounting, Business Administration or Business Admin - Fast Track.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture, Recitation

Grading:
This course is graded on the Graduate Special scale.

MBA 739: *Advanced Data Mining for Business Analytics.* 3 credits.
This course covers business analytics using advanced data mining methods for the purposes of developing predictive models and forecasting. The course will develop concept of feature selection to identify what dimensions to best use for constructing decision making models. Offered by School of Business. May not be repeated for credit. Equivalent to GBUS 739.

Recommended Prerequisite: Grade of B or higher in MBA 738 or equivalent.

Registration Restrictions:
Required Prerequisites: (MBA 738[B-], 738[XS], GBUS 738[B-] or 738[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major in Business Administration.

Enrollment is limited to Graduate level students.

Enrollment limited to students in a Master of Business Admin degree.

Schedule Type: Lecture, Recitation

Grading:
This course is graded on the Graduate Regular scale.

MBA 740: *People Analytics.* 3 credits.
This course seeks to develop business leaders who understand how people data can be leveraged to improve firm performance. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (MBA 738[B] or GBUS 738[B]).
[B] Requires minimum grade of B.

Enrollment is limited to students with a major in Business Administration.

Enrollment is limited to Graduate level students.

Enrollment limited to students in a Master of Business Admin degree.

Schedule Type: Lecture, Recitation

Grading:
This course is graded on the Graduate Regular scale.

MBA 742: *Governance and Ethics.* 0-3 credits.
Focuses on developing understanding of corporate governance issues and ethical decision-making. Topics include examination of internal and external and international governance issues, and ethical analysis in current business environment. Offered by School of Business. May be repeated within the degree for a maximum 3 credits. Equivalent to ACCT 742.

Registration Restrictions:
Enrollment is limited to students with a major in Accounting, Business Administration or Business Admin - Fast Track.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

MBA 744: *Fraud Examination.* 0-3 credits.
Introduces strategies and techniques for fraud prevention and detection. Focuses on financial fraud such as bribery, contract rigging and kickbacks, embezzlement, fraudulent financial reporting, payroll fraud, and misappropriation of inventory and other assets. Offered by School of Business. May be repeated within the degree for a maximum 3 credits. Equivalent to ACCT 636, GBUS 744.

Registration Restrictions:
Enrollment is limited to students with a major in Accounting, Business Administration or Business Admin - Fast Track.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

MBA 745: *International Financial Reporting.* 0-3 credits.
Examines accounting from an international perspective, including the study of various functional areas of accounting across countries and the reporting requirements encountered by companies engaged in international trade and making foreign direct investments. Offered by School of Business. May be repeated within the degree for a maximum 3 credits.

Recommended Prerequisite: Completion of MBA or MSA core requirements, or permission of program director.

Registration Restrictions:
Enrollment is limited to students with a major in Accounting or Business Administration.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

MBA 746: *Real Estate Analysis and Valuation.* 0-3 credits.
Overview of real estate assets, markets, and decisions. Emphasizes development of analytical techniques and information required for implementation. Includes legal, economic, and public policy perspectives. Offered by School of Business. May be repeated within the degree for a maximum 3 credits.

Recommended Prerequisite: Completion of MBA or MSA core requirements or permission of the program director.

Registration Restrictions:
Enrollment is limited to students with a major in Accounting or Business Administration.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

MBA 748: *Real Estate Investment.* 0-3 credits.
Develops frameworks for analyzing decisions about investing in real estate assets. Focuses on acquisition and analysis of information required to evaluate potential performance of assets. Applications of theories and techniques through case studies. Offered by School of Business. May be repeated within the degree for a maximum 3 credits.

Recommended Prerequisite: Completion of MBA or MSA core requirements or permission of the program director.

Registration Restrictions:
Enrollment is limited to students with a major in Accounting or Business Administration.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

MBA 752: *Turning Ideas into Successful Companies.* 0-3 credits.
An advanced course in entrepreneurship focused on discovery and development of an achievable business concept. The centerpiece of the course is development of the formal business plan and associated presentation materials. Students are assigned to teams and must hypothesize a new business, research and test their hypothesis, and develop a comprehensive written business plan. The plan must be for an actual business that the students intend to start upon the successful completion of the course. Technology-based projects are encouraged, but not required. Because the course is cross-listed with IT&E and the School of Business, most teams will include both engineering and business students. Weekly presentations of the team's progress are required. Offered by School of Business. May be repeated within the degree for a maximum 3 credits.

Recommended Prerequisite: Completion of MBA or MSA core requirements or permission of the program director.

Registration Restrictions:
Enrollment is limited to students with a major in Accounting, Business Administration or Business Admin - Fast Track.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

MBA 795: *Global Business Perspectives.* 3 credits.
Applies MBA core courses to global business enterprise through site visits to facilities located outside the United States. Offered by School of Business. May be repeated within the degree for a maximum 3 credits.

Registration Restrictions:
Required Prerequisites: (MBA 678^{*B-} or 678^{XS}).
* May be taken concurrently.
$^{B-}$ Requires minimum grade of B-.
^{XS} Requires minimum grade of XS.

Enrollment is limited to students with a major in Accounting or Business Administration.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture, Recitation

Grading:
This course is graded on the Graduate Special scale.

MBA 796: *Directed Studies in Business Administration.* 1-3 credits.
Approval by faculty member and MBA program director required prior to registration. Studies specialized topics in business administration not otherwise available in curriculum. Offered by School of Business. May be repeated within the degree for a maximum 3 credits.

Recommended Prerequisite: Completion of MBA or MSA program or permission of the program director.

Registration Restrictions:
Enrollment is limited to students with a major in Accounting, Business Administration or Business Admin - Fast Track.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Regular scale.

MBA 797: *Special Topics in Business.* 1-3 credits.
Sections established as necessary to focus on various topical issues that emerge in practice of business administration. Offered by School of Business. May be repeated within the term for a maximum 6 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment is limited to students with a major in Accounting or Business Administration.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

Mechanical Engineering (ME)

100 Level Courses

ME 151: *Practicum in Engineering.* 2 credits.
This course provides students with experiences in algorithmic thinking, visualization and communications. An essential component of this course is preparation of students for the National Academy of Engineering Grand Challenge Scholars Program. Offered by Mechanical Engineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (CS 112[C], 112[XS] or ENGR 125T) and (ENGH 100[C], 100[XS], 101[C], 101[XS], HNRS 110[C] or 110[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

200 Level Courses

ME 211: *Statics.* 3 credits.
An initial course in applied vector mechanics with emphasis on static equilibrium. Topics include forces, moments, couples, equivalent force-couple systems, centroids, distributed forces, and Coulomb friction. The application of the free body diagram in the analysis of static equilibrium of frames, machines and trusses is stressed. Offered by Mechanical Engineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (PHYS 160[C] or 160[XS]) and (PHYS 161[C] or 161[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ME 212: *Solid Mechanics.* 3 credits.
A first course in mechanics of deformable bodies with emphasis on the engineering approach to the responses of these bodies to various types of loadings. Topics include stress-strain relationships, stress-strain analysis, stress and strain transformation (Mohr's circle), load-deflection, bending, torsion, buckling, and thermal effects. Offered by Mechanical Engineering. Limited to two attempts.

Recommended Corequisite: MATH 214.

Registration Restrictions:
Required Prerequisites: ME 211[C] or 211[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ME 221: *Thermodynamics.* 3 credits.
A basic thermodynamics course in which the first and second laws of thermodynamics are studied primarily from the classical macroscopic viewpoint and applied to both closed and open systems. Working substances include perfect gases, real gases and vapors in addition to solids and liquids. Offered by Mechanical Engineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: MATH 113[C], 113[XS], 115[C], 115[XS], 124[C] or 124[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman may **not** enroll.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ME 231: *Dynamics.* 3 credits.
A course in classical vector dynamics. Topics include vector algebra and calculus, kinematics and kinetics of particles and rigid bodies, as well as energy and momentum methods. Extensive problem solving involving particle and rigid body motion is required. Offered by Mechanical Engineering. Limited to two attempts.

Recommended Corequisite: MATH 214.

Registration Restrictions:
Required Prerequisites: ME 211[C] or 211[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

300 Level Courses

ME 311: *Mechanical Experimentation I.* 1 credit.
Experimental measurements in solid mechanics and materials science. Involves technical report writing. Offered by Mechanical Engineering. Limited to two attempts.

Recommended Corequisite: ME 313.

Registration Restrictions:
Required Prerequisites: ME 212[C] or 212[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major in Mechanical Engineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

ME 313: *Material Science.* 3 credits.
An introductory course in physical and mechanical properties of engineering design materials, ceramics and plastics, their structures, use in engineering applications and failure phenomena. Offered by Mechanical Engineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: ((((CHEM 211[C] or 211[XS]) and (CHEM 213[C] or 213[XS])) or CHEM 251[C] or 251[XS] or ((CHEM 271[C] or 271[XS]) and (CHEM 272[C] or 272[XS]))) and (ME 212[C], 212[XS], BENG 230[C] or 230[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Bioengineering or Mechanical Engineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ME 321: *Mechanical Experimentation II.* 1 credit.
Experimental measurements in fluid mechanics and heat transfer. Involves technical report writing. Offered by Mechanical Engineering. Limited to two attempts.

Recommended Corequisite: ME 323.

Registration Restrictions:
Required Prerequisites: (ME 322[C] or 322[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major in Mechanical Engineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

ME 322: *Fluid Mechanics.* 3 credits.
An introductory course in fluid dynamics stressing both the integral and differential forms of the conservation laws of fluid flow. Engineering applications are made to hydrostatics and to ideal and real fluid flows. Offered by Mechanical Engineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (ME 221[C] or 221[XS]) and (ME 231[C] or 231[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Mechanical Engineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ME 323: *Heat Transfer.* 3 credits.
Study of thermal radiation, steady and transient conduction, laminar and turbulent convection, internal and external flow, boundary layers and empirical correlations. Applications address fins, nuclear reactor cooling, heat exchangers and interactive computing. Offered by Mechanical Engineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (ME 322[C] or 322[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Mechanical Engineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ME 331: *Mechatronics.* 3 credits.
Study of electromechanical systems, utilizing the fundamentals of circuit theory to design, build, and control mechanical devices. Topics include electrical devices, sensors, microcontrollers, data acquisition, instrumentation and interfaces. Offered by Mechanical Engineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: ECE 330[C] or 330[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major in Mechanical Engineering.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ME 341: *Design of Mechanical Elements.* 3 credits.
Fundamentals of mechanical design. Introduction to the fundamentals of static and fatigue failure theories, design of basic machine elements such as fasteners, bearings, gearing and shafts. Builds on the fundamentals of design introduced in earlier courses by introducing the concepts of customer requirements, specification development, reverse engineering, functional decomposition, and design for manufacturing. Offered by Mechanical Engineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (ME 212[C] or 212[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Mechanical Engineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ME 342: *Design of Thermal Systems.* 3 credits.
A study of equipment which operates on principles of thermodynamics and fluid mechanics is used to reinforce analyses and design of gas and vapor power cycles, refrigeration and air conditioning, propulsion systems, combustion, energy conversion and compressible flow. Offered by Mechanical Engineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (ME 221[C] or 221[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Mechanical Engineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ME 351: *Analytical Methods in Engineering.* 3 credits.
Survey of advanced mathematics topics needed in the study of engineering. Topics include vector differential and integral calculus, matrix analysis, partial differential equations, complex variables, numerical methods, data analysis using statistics and probability theory. Offered by Mechanical Engineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (ME 151[C] or 151[XS]) and (MATH 214[C], 214[XS], 216[C] or 216[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Mechanical Engineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ME 352: *Entrepreneurship in Engineering.* 3 credits.
Introduces students to the concept of entrepreneurship and how to translate technical skill sets to commercial success. Topics include creating a business plan, pitching ideas, risk mitigation, and selecting investment alternatives. Emerging technology related to Mechanical Engineering will be analyzed in this context. Offered by Mechanical Engineering. Limited to two attempts.

Recommended Prerequisite: Completion of at least 15 credits hours in major courses.

Registration Restrictions:
Enrollment limited to students with a class of Junior, Senior Plus or Senior.

Enrollment is limited to students with a major, minor, or concentration in Mechanical Engineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

ME 414: *Fatigue Analysis.* 3 credits.
This course is an introduction to some of the main concepts of deformation processes leading to fracture; linear elastic fracture mechanics and fatigue crack propagation. Fatigue and fracture of a wide variety of materials including metals, composites, and biomaterials will be covered. Particular attention will be given to fatigue analysis of metals and composites used in aerospace structures, natural biomaterials such as bone and additively manufactured metals (metal 3D printing)ina and laminated materials. Offered by Mechanical Engineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (ME 313[C] or 313[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Senior Plus or Senior.

Enrollment is limited to students with a major, minor, or concentration in Mechanical Engineering.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ME 415: *Composite Materials.* 3 credits.
This course will develop an understanding of the structural mechanics of composite materials and applications in aerospace, civil, and mechanical engineering. Students will identify fundamental relationships for predicting the mechanical response of multi layered materials and structures and micromechanical and macromechanical relationships for lamina and laminated materials. Offered by Mechanical Engineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (ME 313[C] or 313[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Senior Plus or Senior.

Enrollment is limited to students with a major, minor, or concentration in Mechanical Engineering.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ME 421: *HVAC Design.* 3 credits.
Included in this course is an introduction to thermodynamics, fluid mechanics and heat transfer as they apply to Heating, Ventilation, and Air Conditioning (HVAC). Emphasis is on understanding the refrigeration cycle, psychrometrics, building heating, cooling, and ventilation load estimation, duct design including insulation material selection, vibration and noise control, building energy efficiency concepts, building system controls, and system component selection. Offered by Mechanical Engineering. Limited to two attempts.

Recommended Prerequisite: ME 342

Registration Restrictions:
Required Prerequisites: (ME 323[C] or 323[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Senior Plus or Senior.

Enrollment is limited to students with a major, minor, or concentration in Mechanical Engineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ME 425: *Renewable Energy Engineering.* 3 credits.
Study of renewable resources and the technology used to convert these to usable forms of energy. Solar PV, Solar Thermal, Wind, Hydro, Tidal, Geothermal, Biomass and the economics driving the system design process will be discussed. Offered by Mechanical Engineering. Limited to two attempts.

Recommended Prerequisite: ME 352 or CEIE 301

Registration Restrictions:
Required Prerequisites: (PHYS 260[C] or 260[XS]) and (ME 322[C], 322[XS], CEIE 240[C] or 240[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Senior Plus or Senior.

Enrollment is limited to students with a major, minor, or concentration in Civil and Infrastructure Engr, Environmental Engineering or Mechanical Engineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ME 431: *Systems Dynamics.* 3 credits.
A first course which deals with the mathematical modeling of dynamic systems and response analysis of these systems. Topics include state variable and transfer functions, mathematical analysis of systems response, and the use of computational tools for modeling, design, and simulation. Offered by Mechanical Engineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (ME 231[C] or 231[XS]) and (PHYS 260[C], 260[XS], 261[C] or 261[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Mechanical Engineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ME 432: *Control Engineering.* 4 credits.
Introduces fundamentals of feedback and modern control theory. Topics include analysis of mechanical and thermal systems by root locus and frequency response techniques. Use of sensors and transducers in control systems, data acquisition and analysis. Offered by Mechanical Engineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (ME 351[C] or 351[XS]) and (ECE 285[C], 285[XS], 330[C] or 330[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Mechanical Engineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ME 443: *Mechanical Design I.* 3 credits.
The first course in a two-semester capstone design sequence. Topics include the engineering design process, project management, codes and standards, engineering ethics, and computer-aided design. Students form design teams, select a capstone design project and progress through the proposal and preliminary design stages of the project. The capstone design project continues in ME 444. Offered by Mechanical Engineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (ME 212[C] or 212[XS]) and (ME 313[C] or 313[XS]) and (ME 323[C] or 323[XS]) and (ME 341[C], 341[XS], 342[C] or 342[XS]) and (ME 351[C] or 351[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major in Mechanical Engineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ME 444: *Mechanical Design II.* 3 credits.
The second of the two-semester capstone design course sequence. Students continue with concept selection, detail design, prototyping and evaluation of their major design projects. Formal presentations and reports are prepared to review and document the designs. Offered by Mechanical Engineering. Limited to two attempts.

Mason Core: Capstone

Specialized Designation: Writing Intensive in Major

Registration Restrictions:
Required Prerequisites: ME 443[C] or 443[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major in Mechanical Engineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ME 445: *Finite Element Analysis.* 3 credits.
This course will develop an understanding of how finite element analysis (FEA) can be applied to mechanics and thermal fluids problems. Students will apply the mathematics of FEA to solve engineering problems and utilize software packages to aid in analysis. Offered by Mechanical Engineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (ME 351[C] or 351[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Senior Plus or Senior.

Enrollment is limited to students with a major, minor, or concentration in Mechanical Engineering.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ME 446: *Energetics.* 3 credits.
This course will develop an understanding of the basic science of energetic systems. Basic properties of explosives, propellants, and pyrotechnics will be discussed; as well as basics systems and safety engineering using energetic materials. Application of energetic materials in different industries (i.e. automotive air bags as well as oil/gas industries) will be discussed. Offered by Mechanical Engineering. Limited to two attempts.

Recommended Prerequisite: ME 313

Registration Restrictions:
Enrollment limited to students with a class of Senior Plus or Senior.

Enrollment is limited to students with a major, minor, or concentration in Mechanical Engineering.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ME 447: *Computer Design.* 3 credits.
This is an introductory course to tools used in computer-aided design. Students will explore the role of Computer Design in mechanical component and system design by creating geometric models and engineering drawings. Offered by Mechanical Engineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisite: ME 151[C].
[C] Requires minimum grade of C.

Enrollment limited to students with a class of Senior Plus or Senior.

Enrollment is limited to students with a major, minor, or concentration in Mechanical Engineering.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ME 453: *Developing the Societal Engineer.* 2 credits.
A course which highlights, through speakers, discussions and workshops, the professional responsibility of a being a mechanical engineer. Additional topics that will be covered include ethical issues, current events and trends in the profession. Engineering case studies will be explored. Offered by Mechanical Engineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: ME 443[*C] or 443[*XS].
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major in Mechanical Engineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ME 454: *Project Mgmt for Engineers.* 3 credits.
Introduction to the fundamentals of project management. Students will understand the proposal process, apply decision-making and analysis tools to select a winning proposal, perform network scheduling techniques to identify the critical path for a project, and understand and apply the interpersonal skills to lead and manage highly effective project teams. Offered by Mechanical Engineering. Limited to two attempts.

Registration Restrictions:
Enrollment limited to students with a class of Senior Plus or Senior.

Enrollment is limited to students with a major, minor, or concentration in Bioengineering, Civil and Infrastructure Engr or Mechanical Engineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ME 471: *Introduction to Astronautics.* 3 credits.
Astronautics is the study of space and its uses. This course will introduce the student to multiple aspects of space and space sciences, such as orbital mechanics, satellite subsystems, space systems engineering, launch, and re-entry. Offered by Mechanical Engineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (ME 231[C] or 231[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Senior Plus or Senior.

Enrollment is limited to students with a major, minor, or concentration in Mechanical Engineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ME 472: *Spacecraft Subsystems.* 3 credits.
Spacecraft are complex systems of systems made up of many separate subsystems. In this course we shall study the various types of subsystems, learn their functions and major components, and understand the interaction between them to make a functional spacecraft. Offered by Mechanical Engineering. Limited to two attempts.

Recommended Corequisite: ME 471

Registration Restrictions:
Required Prerequisites: (ME 231[C] or 231[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Senior Plus or Senior.

Enrollment is limited to students with a major, minor, or concentration in Mechanical Engineering.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ME 473: *Spacecraft Propulsion.* 3 credits.
Analysis of aircraft and missile propulsion systems; fundamentals of jet propulsion including air breathing and rocket engines. Introduction to advanced propulsion systems for space flights such as nuclear, thermonuclear. Offered by Mechanical Engineering. Limited to two attempts.

Recommended Prerequisite: ME 471

Registration Restrictions:
Required Prerequisites: (ME 221[C] or 221[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ME 475: *Aeronautics I.* 3 credits.
Aeronautics I will expose students to the applied science of atmospheric flight. The course focuses on aircraft and introduces elements that are incorporated into design, manufacture and performance of flight-capable, air-breathing machines operating within the troposphere Offered by Mechanical Engineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: ((ME 212[C] or 212[XS]) and (ME 322[C] or 322[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Senior Plus or Senior.

Enrollment is limited to students with a major, minor, or concentration in Mechanical Engineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ME 476: *Aeronautics II.* 3 credits.
Aeronautics II is the second course of the two course sequence and extends the principles and topics covered in Aeronautics I regarding the applied science of atmospheric flight. The course focuses on the air transportation environment, aircraft flight vehicle performance, rotary wing aircraft, stability and control within the troposphere and . Offered by Mechanical Engineering. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (ME 475[C] or 475[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Senior Plus or Senior.

Enrollment is limited to students with a major, minor, or concentration in Mechanical Engineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

ME 498: *Independent Study in Mechanical Engineering.* 0-4 credits.
Directed self-study of topics of special interest. Offered by Mechanical Engineering. May be repeated within the term for a maximum 6 credits.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

ME 499: *Special Topics in Mechanical Engineering.* 0-4 credits.
Topics of special interest to undergraduates. Notes: May be repeated for credit when topic is different. Offered by Mechanical Engineering. May be repeated within the term for a maximum 24 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Senior Plus or Senior.

Enrollment is limited to students with a major, minor, or concentration in Mechanical Engineering.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

500 Level Courses

ME 500: *Special Topics.* 0-4 credits.
Select contemporary topics in Engineering and Computing. Offered by Mechanical Engineering. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

ME 521: *Energy Transfer.* 3 credits.
Study of thermal fluid sciences related to energy systems. Provides foundations in thermodynamics, mass transfer, fluid mechanics, and heat transfer in steady systems. Covers modelling and analysis of engineering devices such as pumps, heat exchangers, turbines, and airfoils which

constitute energy systems. Offered by Mechanical Engineering. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ME 531: *Energy Transmission.* 3 credits.
Introduces analysis of local and national electrical grids used for power transmission and develops understanding of economic constraints on energy systems. Students will model energy transmission systems with dynamic loads ensuring energy security and optimal performance. Advanced topics such as forecasting for renewable energy integration, smart grid implementation, and utilization of emerging energy storage technology are covered. Offered by Mechanical Engineering. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ME 541: *Power Generation.* 3 credits.
Study of traditional and advanced power generation technology. Builds upon conservation principles of mass, energy, and momentum to analyze, model and optimize energy systems based on physical principles. Specific attention will be paid to site specific conditions for generation. Advanced cycles will be covered which utilize fossil fuel, renewable, and nuclear energy. Offered by Mechanical Engineering. May not be repeated for credit.

Recommended Prerequisite: ME 521.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ME 542: *Energy Utilization.* 3 credits.
Covers energy utilization by end users. Technology and system integration are covered for applications such as combined heat power units and transportation. Students will use energy audit techniques to identify and minimize energy losses from the demand side. Investment, payback, and subsidies for purchasing energy system updates will be evaluated. Offered by Mechanical Engineering. May not be repeated for credit.

Recommended Prerequisite: ME 521.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ME 551: *Naval Engineering.* 3 credits.
This course will provide learners exposure to specific needs of naval vessels. Through understanding a design's concept of operations and mission, students will learn how to identify needed vessel capabilities and integration, such as radar and sonar, combat systems, damage control, and special mission systems to support unmanned and manned air, surface, sub-surface vessels and other payloads. Offered by Mechanical Engineering. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ME 552: *Fundamentals of Naval Architecture.* 3 credits.
Students learn the fundamentals of naval architecture including ship geometry and definitions, intact, damaged, and submarine stability and trim, structural fundamentals, resistance and propulsion, seakeeping, maneuverability, and control. Case studies are utilized to provide a real-world grounding to the academic work in this class. Offered by Mechanical Engineering. May not be repeated for credit.

Registration Restrictions:

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ME 553: *Ship Design Process and Tools.* 3 credits.
Students are taught the theory and practice of ship design. Topics will include the development of requirements, the design spiral, set-based design, application of computational tools to efficient evaluation of the design space, ship classification, and cost. The class culminates in a ship design project. Offered by Mechanical Engineering. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (ME 551[B-] and 552[B-]).
[B-] Requires minimum grade of B-.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ME 554: *Naval Project Management.* 3 credits.
Students will be taught key concepts in program and project management for defense acquisition, maintenance, and modernization efforts. Through lectures, case studies, and practical exercises, learners will better understand how to bring a design from the drafting table to the fleet. Offered by Mechanical Engineering. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

600 Level Courses

ME 620: *Mechanical Engineering Decision Making.* 3 credits.
Fundamentals of decision making with applications to mechanical engineering product and systems design, system reliability, and system operation and maintenance; product/system evaluation and optimization; design and systems theory; and social choice theory. This course takes the view that engineers are decision makers and presents the fundamentals of good decision making in the context of mechanical engineering. Offered by Mechanical Engineering. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ME 621: *Foundations of Fluid Mechanics.* 3 credits.
Derivation of the fundamental equations of fluid mechanics, including the Navier-Stokes equations, conservation of mass, and the vorticity transport equations. Vector and Cartesian tensor notation are used throughout. Equations of motion are applied to incompressible viscous and inviscid flows. Some aspects of turbulence are discussed. Offered by Mechanical Engineering. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ME 698: *Research Study in Selected Mechanical Engineering Topics.* 3 credits.
This is a research based course that allows graduate students to work on a special research topic. Offered by Mechanical Engineering. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Graduate Student Standing and Permission of the Instructor

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Regular scale.

ME 699: *Advanced Special Topics in Mechanical Engineering.* 3 credits.
Advanced topics in mechanical engineering will be taught in this course. Offered by Mechanical Engineering. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Permission of the Instructor

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Regular scale.

700 Level Courses

ME 714: *Fracture Mechanics.* 3 credits.
Investigation of linear elastic and elastic-plastic fracture mechanics. Topics include: theory of elasticity and plasticity, energy and stress approach to fracture mechanics, methods to determine the stress intensity factor, fracture mechanics testing, fatigue crack growth. Develop a basic understanding of how crack-like defects impact performance in structures and learn how to select materials to ensure damage tolerance. Offered by Mechanical Engineering. May not be repeated for credit.

Recommended Prerequisite: Introductory graduate level course in advanced strength of materials or theory of elasticity, or consent of the instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ME 715: *Impact Dynamics.* 3 credits.
Includes advanced dynamics of impact, impact biomechanics, as well as vehicle crashworthiness standards and accident data analysis. Students will learn about FMVSS and NCAP crash tests. FARS and NASS real world accident databases, and methods to analyze crash and accident data. Offered by Mechanical Engineering. May not be repeated for credit.

Recommended Prerequisite: ME 231, ME 212 or equivalent courses.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ME 721: *Advanced Fluid Mechanics.* 3 credits.
The course is intended to provide engineering students with the opportunity to apply theoretical ideas developed in ME 621 to specific problems in inviscid and viscous flows, including turbulence. We will be exclusively concerned with incompressible flows. Although this is not a CFD course, a full understanding of theoretical aspects of fluid mechanics is a prerequisite for understanding and using CFD-simulations. Models used in CFD such as k-epsilon, Reynolds-averaged Navier-Stokes (RANS), Large-eddy (LES), and Direct (DNS) will be discussed. Specially designed projects are intended to enable students to apply what they have learned to different flow situations. Offered by Mechanical Engineering. May not be repeated for credit.

Recommended Prerequisite: ME 621

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ME 722: *Introduction to Turbulence.* 3 credits.
Introduces beginning graduate students to the theory of turbulence. The theory of homogeneous-isotropic turbulence is introduced, followed by a discussion of sheared and wall-bounded turbulence. Some aspects of coherent structures in turbulence will be introduced as well as models used in computing turbulence. Specially designed projects are intended to enable students to apply what they have learned to different flow situations. Offered by Mechanical Engineering. May not be repeated for credit.

Recommended Prerequisite: ME 621.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ME 723: *Compressible Flow.* 3 credits.
This course is intended to provide engineering students with the opportunity to study the fluid mechanics of a compressible gas. Topics of interest include one-dimensional gas flows, flow of gas in convergent-divergent ducts, choked flows, high speed flows, physical acoustics, and shock waves. Offered by Mechanical Engineering. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ME 724: *Viscoelastic Flow.* 3 credits.
Many flows in nature behave very differently than air or water. Such flows may possess elasticity, or may have complex viscosities. Examples include blood, corn starch solutions, and solutions of high molecular weight polymers. This course will introduce the students to the theoretical methods that are needed to model the behavior of such viscoelastic fluids. Offered by Mechanical Engineering. May not be repeated for credit.

Recommended Prerequisite: ME 621

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ME 728: *Foundations of Heat Transfer.* 3 credits.
This course provides an introduction to the mechanisms of heat transfer. The course first covers the fundamentals of conduction, natural and forced convection, radiation, and phase-change heat transfer. Modeling of thermal systems, such as thermosyphons or heat exchangers, will be emphasized. The semester concludes with important and emerging application areas, including heat transfer in biological systems, sustainable power generation, and nanoscale heat transfer. Grades are determined by performance on homework, journal article review, final project, and take-home midterm and final examinations. Offered by Mechanical Engineering. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ME 732: *Advanced Thermodynamics.* 3 credits.
An advanced thermodynamics course for graduate students in engineering, incorporating both classical and statistical thermodynamics. Explores the origins of thermodynamic parameters and equations such as equations of state, heat capacities, and Maxwell Relations. Students develop the ability to apply these principles to challenges in modern engineering research in fields such as molecular simulation, materials, biotechnology, and mechanics. Offered by Mechanical Engineering. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ME 740: *Introduction to Continuum Mechanics.* 3 credits.
This course covers tensor analysis, state of stress, material and spatial descriptions of motion of a continuous medium, kinematics of deformation, general principles of solid mechanics, fluid mechanics and thermomechanics and balance principles: mass, momentum, and energy. Constitutive equations of large-deformation elasticity, and an introduction to inelasticity are also covered. Offered by Mechanical Engineering. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ME 741: *Theory of Elasticity.* 3 credits.
This course is intended to introduce graduate students to the field of linear elasticity. The governing equations of linear elasticity are developed before solving the problems of plane elasticity. The course also covers boundary value problems and the Airy stress function method associated with plane elasticity. Specialized topics may include: three-dimensional problems, energy and numerical methods. Offered by Mechanical Engineering. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ME 742: *Finite Element Analysis for Solids.* 3 credits.
This course focuses on numerical solutions of elasticity/inelasticity and heat transfer. Strong and weak forms as general solution processes for differential equations are presented. Formulation of finite elements and interpolation functions and overall solution processes with the finite element method are covered. MATLAB programing is used for coding and in addition a modern (commercial) finite element code is discussed. Offered by Mechanical Engineering. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ME 745: *Mechanics and Properties of Materials.* 3 credits.
This course is intended to introduce graduate students to the field of solid mechanics. The theories of elastic stress and strain are covered before moving on to inelastic behavior. Torsion and bending of solid and thin-walled bars are covered. Specialized topics include: buckling, fatigue and fracture mechanics. Offered by Mechanical Engineering. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ME 750: *Nanomaterials Enabled Renewable Energy.* 3 credits.
This course is intended to introduce beginning graduate students to the advanced nanomaterials, as well as their applications in renewable energy, i.e. photovoltaics and energy storage devices. Students will investigate how nano-materials can be used to harness renewable energy. Offered by Mechanical Engineering. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ME 751: *Advanced Materials for Water Treatment.* 3 credits.
This course is intended to introduce graduate students to the specific advanced materials which play an important role in the water treatment. In particular, the course will focus on water desalination and water purification. Offered by Mechanical Engineering. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ME 753: *Tribology.* 3 credits.
Tribology is the study and application of the friction, lubrication and wear principles in engineering and design. This course covers the contact of surfaces, mechanics of friction, surface failures/wear, boundary lubrication, fluid properties, thin/thick film (elastohydrodynamic/hydrodynamic) lubrication, and an introduction to emerging tribology (micro/nanotribology and biotribolgy). Tribology is an interdisciplinary area, and most importantly still has many unknowns. Offered by Mechanical Engineering. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ME 754: *Introduction to Nano-Materials.* 3 credits.
Introduction to the properties of nanomaterials, nanotechnology and their applications in energy, environmental, biology, and medicine. General discussion of nanotechnology, from multidisciplinary fundamental research to consumer products, suitable for all levels and specializations. This course provides an opportunity for students to learn the superior properties of nanomaterials, the evolving nanotechnology which lies at the interfaces of chemistry, physics and biology, and their broader impact nowadays. Offered by Mechanical Engineering. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ME 755: *Optofluidics.* 3 credits.
Optofluidics is an emerging field which seeks to understand fluids and optics at micro and nanoscale. This course provides an overview of the fundamental physics of optics and fluid mechanics (e.g. the Maxwell equations and the Navier-Stokes equations) and discusses how they interact at small scales to create many new applications. Offered by Mechanical Engineering. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ME 762: *Biosensors.* 3 credits.
The objective of this course is to introduce the fundamentals and applications of biosensors including concepts of biosensors, physics and mechanisms of sensing signal transduction, device fabrications/engineering principles, system integrations, chemistry and materials science of nanomaterials, biomolecules associated with detection strategies, and various applications. Offered by Mechanical Engineering. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

900 Level Courses

ME 990: *Dissertation Topic Presentation.* 1 credit.
Students put together a professional presentation of a research proposal and present it for critique to fellow students and interested faculty. Notes: May be repeated with change of research topic, but credit toward doctoral degree is given once. Offered by Mechanical Engineering. May not be repeated for credit.

Recommended Prerequisite: Completion of all coursework for the PhD in Mechanical Engineering, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Research

Grading:
This course is graded on the Satisfactory/No Credit scale.

ME 998: *Doctoral Dissertation Proposal.* 1-12 credits.
Work on research proposal that forms basis for doctoral dissertation. Notes: No more than 24 credits of ME 998 and 999 may be applied to doctoral degree requirements. Offered by Mechanical Engineering. May be repeated within the degree for a maximum 12 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

ME 999: *Doctoral Dissertation.* 1-12 credits.
Admission to Doctoral candidacy. Students must submit the Doctoral proposal and have it approved prior to registering for this course. Students may not take ME 998 and 999 at the same time. NOTE: Students must contact the department to receive approval and CRN to register. Offered by Mechanical Engineering. May be repeated within the degree for a maximum 12 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

Medical Laboratory Science (MLAB)

200 Level Courses

MLAB 200: *Introduction to Medical Laboratory Science.* 1 credit.
Introduction to the profession of Medical Laboratory Science. Offered by Biology. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

300 Level Courses

MLAB 300: *Science Writing.* 2 credits.
Intensive practice in biological science writing. Science Writing will fulfill the university's writing intensive requirement as well as prepare Medical Laboratory Science students for the types of writing that they will encounter in the industry including, but not limited to: writing, resumes, grants, cover letters, etc. A transfer student who has previously taken an equivalent course to BIOL 308 that did not meet the writing intensive requirements in the major may pair this with the transferred BIOL 308 to L308 and meet the writing intensive experience in the Biology major. Offered by Biology. Limited to three attempts.

Specialized Designation: Writing Intensive in Major

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

MLAB 401: *Orientation to the Problems and Practices of the Clinical Laboratory.* 1-2 credits.
Orientation to clinical lab; specimen collection and record keeping; management principles and problems; educational theories as they apply to the teaching of clinical laboratory procedures; and quality control principles. Notes: Not offered on campus. Offered by Biology. May be repeated within the term.

Recommended Prerequisite: Completion of requirements for BS with major in medical technology except for 30 credits of professional study, and admission to school of medical technology approved by National Accrediting Agency for Clinical Laboratories.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

MLAB 402: *Clinical Hematology and Coagulation.* 2-3 credits.
Morphology of blood cells in health and disease; theories of hematopoiesis and coagulation; techniques for measurement of hematologic parameters; and hematologic pathologies and their lab evaluation. Notes: Not offered on campus. Offered by Biology. May be repeated within the term.

Recommended Prerequisite: Completion of requirements for BS with major in medical technology except for 30 credits of professional study, and admission to school of medical technology approved by National Accrediting Agency for Clinical Laboratories.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

MLAB 403: *Clinical Microscopy.* 1-3 credits.
Methods for the routine examination of urine, feces, and certain other body fluids, especially the microscopic identification of normal and pathologic components. Includes a study of the kidney and theories of microscopy. Notes: Not offered on campus. Offered by Biology. May be repeated within the term.

Recommended Prerequisite: Completion of requirements for BS with major in medical technology except for 30 credits of professional study, and admission to school of medical technology approved by National Accrediting Agency for Clinical Laboratories.

Schedule Type: Independent Study

Grading:

This course is graded on the Undergraduate Regular scale.

MLAB 404: *Serology and Immunohematology.* 1-7 credits.
Clinical lab procedures involving antigen-antibody reactions, and theoretical bases of such procedures. Includes both diagnostic and blood bank techniques. Notes: Not offered on campus. Offered by Biology. May be repeated within the term.

Recommended Prerequisite: Completion of requirements for BS with major in medical technology except for 30 credits of professional study, and admission to school of medical technology approved by National Accrediting Agency for Clinical Laboratories.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

MLAB 405: *Clinical Microbiology.* 1-8 credits.
Biology and pathology of bacteria, rickettsia, fungi, parasites, and viruses of clinical importance and their culture and identification. Notes: Not offered on campus. Offered by Biology. May be repeated within the term.

Recommended Prerequisite: Completion of requirements for BS with major in medical technology except for 30 credits of professional study, and admission to school of medical technology approved by National Accrediting Agency for Clinical Laboratories.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

MLAB 406: *Clinical Chemistry.* 1-10 credits.
Chemical reactions and procedures used in clinical determinations on blood, urine, and cerebral spinal fluid. Includes manual, automated methods of chemical analyses. Notes: Not offered on campus. Offered by Biology. May be repeated within the term.

Recommended Prerequisite: Completion of requirements for BS with major in medical technology except for 30 credits of professional study, and admission to school of medical technology approved by National Accrediting Agency for Clinical Laboratories.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

MLAB 407: *Clinical Molecular Biology.* 1-15 credits.
Course presents advanced methods in nucleic acid testing to human medico-legal, forensic, and pathology applications. Topics include but are not limited to: Polymorphisms, Paternity Testing, Single Nucleotide Polymorphisms, Bone Marrow Engraftment, Mitochondrial DNA Polymorphisms and Disorders, Chromosomal Abnormalities, Single Gene Disorders, Lysosomal Storage Disorders, Cystic Fibrosis, and Quality Assurance in the Molecular Biology laboratory. Offered by Biology. May be repeated within the degree.

Recommended Prerequisite: Complete of requirements for BS with a major in Medical Laboratory Science except for the 30 credits professional study.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

MLAB 408: *Clinical Histology.* 1-15 credits.
Introduction to the field of Histotechnology including lectures on tissue fixation, processing and embedding, microtomy, and staining. Offered by Biology. May be repeated within the term.

Recommended Prerequisite: completion of requirements for BS with major in Medical Laboratory Science except for the 30 credits of professional study.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

MLAB 409: *Clinical Histology Practicum.* 1-15 credits.
Hands-on rotations in histologic fixations, tissue processing, slide preparation and staining. Offered by Biology. May be repeated within the term.

Recommended Prerequisite: Completion of requirements for BS with major in Medical Laboratory Science except for the 30 credits of professional study.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

MLAB 410: *Medical Virology.* 1-2 credits.
This course is a survey of the characteristics, pathogenicity, and laboratory diagnosis of important human viruses. Topics include viral taxonomy and classical virology. Special emphasis is placed on the epidemiology and the laboratory's role in influenza pandemics. Offered by Biology. May be repeated within the degree for a maximum 10 credits.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MLAB 411: *Board Exam Preparation.* 1-4 credits.
This course is a structured review and practice in preparation for the American Society for Clinical Pathology Technologist in Microbiology Board of Certification Exam. Practice tests and questions from a variety of published and authoritative sources are used to reinforce the content of the Technologist in Microbiology program. Offered by Biology. May be repeated within the degree for a maximum 10 credits.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MLAB 412: *Medical Mycology.* 1-2 credits.
This course is a comprehensive presentation of medically important fungi. Emphasis is placed on clinical presentation and laboratory identification of pathogenic species and opportunistic pathogens. Topics include general mycology methods, yeasts, susceptibility testing, molds (Hyaline, Mucor, Dematiaceous), Dermatophytes, Systemic infections, and Pneumocystis. Offered by Biology. May be repeated within the degree for a maximum 10 credits.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

MLAB 413: *Medical Parasitology.* 1-4 credits.
This course is a comprehensive presentation of human parasites. Emphasis is placed on clinical presentation and laboratory identification. Topics include Flagellates, Ciliates, Coccidians, Malaria and Babesia, Other Blood Born and Tissue Born parasites, Nematodes, Cestodes, Trematodes, and Arthropods. Offered by Biology. May be repeated within the degree for a maximum 10 credits.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

MLAB 414: *Molecular Detection of Infectious Disease.* 1-4 credits.
This course examines the advances in using molecular methods to detect human infectious disease. Careful attention is given to the comparison of molecular technologies with traditional microbiology methods. Topics include molecular methods and applications, including PCR, sequencing, TMA, and PEGE; specimens of choice, sample preparation, Quality Control, primer selection; Molecular methods in selecting antimicrobial agents; molecular epidemiology, and target organisms: fungi, bacteria, parasites, and viruses. Offered by Biology. May be repeated within the degree for a maximum 10 credits.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MLAB 415: *Medical Bacteriology.* 1-10 credits.
This course is a comprehensive presentation of bacteria isolated in the clinical laboratory. Emphasis is placed on the laboratory identification of isolates from a variety of specimen sources, and pathogenic species. Topics include Instrumentation and MALDI, Gram Positive Cocci, Gram Positive Baccili, Enterics, non-fermenters, Moraxella, Neisseria, Pasteurella, Haemophilus and HACEK, Camphylobacter, Helicobacter, Legionella, CDC Select Agents, Chlamdydia, Mycoplasm, Ureaplasm, Spirochetes, Anaerobes, Antibiotics and Susceptibility testing, and Acid Fast Bacilli. Offered by Biology. May be repeated within the degree for a maximum 10 credits.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

MLAB 417: *Advanced Methods in Clinical Molecular Biology.* 1-11 credits.
This course applies the fundamentals of nucleic acid testing to advanced methods commonly used in the contemporary clinical and research laboratory. Topics include PCR, Transcription-Based Amplification, Probe Amplification, Branched DNA, Hybrid Capture; Amplification: Signal , Cleavage-Based, Cycling Probe; Sequencing: Direct, Next Gen, Pyrosequencing, Bisulfite, RNA Sequencing; and Bioinformatics; Human Genome Project. Offered by Biology. May be repeated within the degree for a maximum 11 credits.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MLAB 418: *Human Molecular and Chromosomal Applications and Pathology.* 1-3 credits.
This course presents advanced methods in nucleic acid testing to human medico-legal, forensic, and pathology applications. Topics include: Polymorphisms, RFLP, Paternity Testing, Linkage, Single Nucleotide Polymorphisms, Bone Marrow Engraftment, Mitochondrial DNA Polymorphisms and Disorders, Chromosomal Abnormalities, Patterns of Inheritance, Single Gene Disorders, Lysosomal Storage Disorders, Cystic Fibrosis, Trinucleotide Repeats, Genomic Imprinting , Array CGH, Molecular Oncology, HLA and Transplantation. Offered by Biology. May be repeated within the degree for a maximum 10 credits.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Middle East and Islamic Studies (MEIS)

500 Level Courses

MEIS 500: *Critical Issues and Debates in Middle East and Islamic Studies.* 3 credits.
Introduces the interdisciplinary study of the Middle East and the Islamic world through an examination of recent seminal works and debates in the field representing the disciplinary perspectives of history, religious studies, political science, and sociology.Offered by Middle East/Islamic Studies. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Middle East Islamic Studies.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

MEIS 599: *Issues in Middle East and Islamic Studies.* 3 credits.
In-depth study of current issues and debates in Middle East and Islamic studies in theoretical and historical context.Offered by Middle East/ Islamic Studies. May be repeated within the term for a maximum 9 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

700 Level Courses

MEIS 794: *Graduate Internship in Middle East and Islamic Studies.* 3 credits.
Internship credit for completion of Middle East and/or Islamic studies related work at an approved government, nonprofit, or private institution.Offered by Middle East/Islamic Studies. May not be repeated for credit.

Recommended Prerequisite: MEIS 500, HIST 575, RELI 644.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Graduate Regular scale.

MEIS 796: *Directed Readings in Middle East and Islamic Studies.* 3 credits.
Directed readings in the field of Middle East and Islamic Studies.Offered by Middle East/Islamic Studies. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: MEIS 500, RELI 644, HIST 575.

Registration Restrictions:
Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Regular scale.

MEIS 798: *Research Project in Middle East and Islamic Studies.* 3 credits.
Research project related to Middle East and Islamic studies taken under supervision of faculty adviser.Offered by Middle East/Islamic Studies. May not be repeated for credit.

Recommended Prerequisite: Completion of 21 credit hours toward MA in Middle East and Islamic Studies degree; satisfactory completion of a research methods course approved as a core course for the MA MEIS.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Thesis

Grading:
This course is graded on the Satisfactory/No Credit scale.

MEIS 799: *Thesis Research and Writing in Middle East and Islamic Studies.* 1-6 credits.
Original research and thesis writing for students in the Middle East and Islamic Studies MA program.Offered by Middle East/Islamic Studies. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Completion of MEIS 500, HIST 535, GOVT 731, GOVT 733, RELI 644; and 27 credit hours toward MA in MEIS degree; permission of MEIS director.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Thesis

Grading:
This course is graded on the Satisfactory/No Credit scale.

Military Science (MLSC)

100 Level Courses

MLSC 100: *Introduction to Army/ROTC.* 1 credit.
Introduces leadership values and ethics; responsibilities of officership; the organization, customs, and traditions of the U.S. Army; time management; and physical well-being. Includes a laboratory in applied leadership, common military tasks, and physical fitness. Offered by Military Science. Limited to three attempts.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MLSC 102: *Leadership Skills II.* 1 credit.
Introduces leadership principles, dimensions, styles, and assessment, among other varied topics. Includes a laboratory in applied leadership, common military tasks, and physical fitness. Offered by Military Science. Limited to three attempts.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

200 Level Courses

MLSC 200: *Self/Team Development.* 1 credit.
Covers leadership skills, such as values and ethics. Also teaches how to influence, how to communicate, how and when to make decisions, how to engage in creative problem solving, and how to plan and organize. Includes a laboratory in applied leadership, common military tasks, and physical fitness. Offered by Military Science. Limited to three attempts.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MLSC 202: *Leadership Skills IV.* 1 credit.
Builds on the leadership skills developed in Leadership Skills III with additional emphasis on communication, team building, and team leadership. Includes a laboratory in applied leadership, common military tasks, and physical fitness. Offered by Military Science. Limited to three attempts.

Recommended Prerequisite: MLSC 100 level completion/dual enrollment.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

300 Level Courses

MLSC 300: *Applied Leadership I.* 1 credit.
Applied leadership with an introduction to the principles of physical fitness and healthy lifestyle; counseling as means of subordinate development; problem solving; operational analysis, development,

and execution; and methods for preparing and presenting instruction. Students are given an introduction to the Leader Development Program that is used to evaluate their leadership performance and provide students with developmental feedback. Some weekend training required. Includes a laboratory in applied leadership, common military tasks, and physical fitness. Offered by Military Science. Limited to three attempts.

Recommended Prerequisite: MLSC 100, 101, 200, or veterans status, or permission of instructor.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MLSC 302: *Applied Leadership II.* 1 credit.
Applied leadership covering the models of communications (verbal and nonverbal), technology to communicate, how to prepare and conduct formal briefings, an introduction to the Army branches, diversity and equal opportunity training, ethical decision making, & group cohesion and dysfunction. Some weekend training required. Includes a laboratory in applied leadership, common military tasks, and physical fitness. Notes: Enrollment in MLSC 300 level course is restricted to students who are contracted or are pre-approved by department/Army ROTC as pending contracting. Offered by Military Science. Limited to three attempts.

Recommended Prerequisite: MLSC 100 & 200 level completion or military credit exemption.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

MLSC 400: *Leadership and Management.* 3 credits.
Considered the "transition to lieutenant" phase in which managerial theories are applied to personnel, training, and logistics management situations. Students have command and staff responsibilities for the Mason cadet corps and receive hands-on experience operating as a management team. There are several briefing and writing requirements as well. Includes a laboratory in applied science, common military tasks, and physical fitness. Offered by Military Science. Limited to three attempts.

Recommended Prerequisite: MLSC 300 and 301 or permission of instructor.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MLSC 402: *Leadership and Ethics.* 3 credits.
Continuing the "transition to lieutenant" phase of ROTC, examines ethics of military environment to include customs, ethical codes & decision making, constraints, and appeals to moral principles. American judicial system is also examined, with emphasis on the Uniform Code of Military Justice. Command and staff responsibilities are assigned to students for hands-on experience operating as a management team for Mason cadet corps. Includes a laboratory in applied leadership, common military tasks, and physical fitness. Offered by Military Science. Limited to three attempts.

Recommended Prerequisite: MLSC 300 & 302.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MLSC 499: *Senior Advanced Military Studies.* 0 credits.
Offered by Military Science. May be repeated within the degree.

Schedule Type: Independent Study

Grading:
This course is graded on the Satisfactory/No Credit scale.

Minor in Business (MBUS)

300 Level Courses

MBUS 300: *Accounting in a Global Economy.* 3 credits.
Focuses on using basic concepts of accounting and financial management to make investment, credit, and operating decisions for an organization. Emphasizes financial reports to aid planning and control of organizational activities. Notes: May not be taken for credit by School of Business majors. Students who have received credit for both ACCT 203 and FNAN 303 cannot also receive credit for MBUS 300. Offered by School of Business. Limited to three attempts.

Recommended Prerequisite: Completion of 30 credits (sophomore standing).

Registration Restrictions:
Non-Degree level students may **not** enroll.

Students in the School of Business college may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MBUS 301: *Managing People and Organizations in a Global Economy.* 3 credits.
Introduces key issues in management, organizational behavior, and human resource management. Special attention to best practices used by effective managers. Notes: May not be taken for credit by School of Business majors. Students cannot receive credit for both MGMT 303 and MBUS 301. Offered by School of Business. Limited to three attempts.

Recommended Prerequisite: Completion of 30 credits (sophomore standing).

Registration Restrictions:
Students with a class of Freshman may **not** enroll.

Non-Degree level students may **not** enroll.

Students in the School of Business college may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MBUS 303: *Marketing in a Global Economy.* 3 credits.
Presents marketing principles, concepts, strategies, and analytical tools used by profit and nonprofit organizations to market ideas, products, and services to selected target groups. Emphasizes how to develop, promote, distribute, and price firm's offerings in dynamic economic,

social, political, and global environment. May not be taken for credit by School of Business majors. Students cannot receive credit for both MKTG 303 and MBUS 303. Offered by School of Business. Limited to three attempts.

Registration Restrictions:
Students with a class of Freshman may **not** enroll.

Non-Degree level students may **not** enroll.

Students in the School of Business college may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MBUS 304: *Entrepreneurship: Starting and Managing a New Enterprise.* 3 credits.
Explores behaviors required to successfully launch a new business, tools to identify and evaluate opportunities, and the issues critical to a new firm. Issues include organizational structure, effective marketing strategy, operational logistics, legal issues, financial projections, financing options, and available support structures. May not be taken for credit by School of Business majors. Students cannot receive credit for both MKTG 303 and MBUS 304. Offered by School of Business. Limited to three attempts.

Registration Restrictions:
Students with a class of Freshman may **not** enroll.

Non-Degree level students may **not** enroll.

Students in the School of Business college may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MBUS 305: *Introduction to International Business.* 3 credits.
Multidisciplinary approach to global economy from the viewpoint of managing international business. Introduces various aspects of managing business in a global economy including theories and practices of international trade, investment, and business strategies. Notes: May not be taken for credit by School of Business majors. Offered by School of Business. Limited to three attempts.

Mason Core: Global Understanding

Registration Restrictions:
Students with a class of Freshman may **not** enroll.

Non-Degree level students may **not** enroll.

Students in the School of Business college may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MBUS 306: *Managing Projects and Operations.* 3 credits.
Introduces project management and operations management concepts and tools including project planning, scheduling, monitoring, and control; process design, selection and improvement; supply chain management; inventory management; and quality assurance. May not be taken for credit by School of Business students. Students cannot receive credit for both OSCM 303 and MBUS 306. Offered by School of Business. Limited to three attempts.

Registration Restrictions:
Students with a class of Freshman may **not** enroll.

Non-Degree level students may **not** enroll.

Students in the School of Business college may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MBUS 308: *Corporate Finance and Investments in a Global Economy.* 3 credits.
Presents an introduction to corporate finance and investment topics within an international context and emphasis on time-value of money, interest rates, stock and bond valuation, and the risk/return relationship in financial markets. May not be taken for credit by School of Business majors. Students may not receive credit for both FNAN 303 and MBUS 308. Offered by School of Business. Limited to three attempts.

Registration Restrictions:
Students with a class of Freshman may **not** enroll.

Students in the BU-BPRE-UNDE program may **not** enroll.

Non-Degree level students may **not** enroll.

Students in the School of Business college may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

MBUS 491: *Special Topics: Business Minor.* 3 credits.
Topics related to a minor in business will vary on the focus of the course and by discipline. May not be taken for credit by School of Business majors. Offered by School of Business. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Students with a class of Freshman may **not** enroll.

Non-Degree level students may **not** enroll.

Students in the School of Business college may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Music (MUSI)

100 Level Courses

MUSI 100: *Fundamentals of Music.* 3 credits.
Study of musical notation, interval and triad construction, reading of treble and bass clefs, scale construction, rhythm, elementary sight singing and ear training, and application at keyboard. Notes: Cannot be

applied toward degree in music. Offered by Dewberry School of Music. Limited to three attempts.

Mason Core: Arts

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 101: *Introduction to Classical Music.* 3 credits.
Introduces art-music tradition of West. Techniques for expanding listening skills developed through study of musical elements, styles, and selected masterworks of musical literature. Notes: Music majors may take only as free elective. Offered by Dewberry School of Music. Limited to three attempts.

Mason Core: Arts

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 102: *Popular Music in America.* 3 credits.
Investigates popular music styles and development in the United States with particular emphasis on the past 50 years. Lectures, recordings, and video enhance critical listening skills and examine stylistic and social contexts of popular music. Notes: Music majors may take only as free elective. Offered by Dewberry School of Music. Limited to three attempts.

Mason Core: Arts

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 103: *Musics of the World.* 3 credits.
Study and comparison of musical structure and expression in several world cultures, with special attention to social context and function. Studies selected Asian, Middle Eastern, African, and American (Latin, Native, African) cultures. Notes: For non-music majors only. Offered by Dewberry School of Music. Limited to three attempts.

Mason Core: Global Understanding

Specialized Designation: Non-Western Culture

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 106: *Fundamentals of Rock, Blues, and Jazz.* 3 credits.
Fundamentals of Blues, Rock, and Jazz is designed for students without formal training in music theory. The course focuses on Afro-centric concepts in twentieth-century American musical culture including improvisation, emphasis on rhythm and groove, and use of multiple and integrated tonalities, such as major and minor in the blues. Offered by Dewberry School of Music. Limited to three attempts.

Mason Core: Arts

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 107: *Jazz and Blues in America.* 3 credits.
Historical, analytical, and aural survey of jazz from inception to present day. Looks at trends resulting from synthesis of jazz with other musical idioms. Notes: Music majors may take as free elective or part of jazz studies concentration. Offered by Dewberry School of Music. Limited to three attempts.

Mason Core: Arts

Registration Restrictions:
Students with the terminated from MUSI major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 113: *Aural Skills I.* 1 credit.
Students taught to sing a line of music without accompaniment of instrument. Matching tones, major and minor scales, key signatures, intervals, rhythm, treble and bass clefs, and rhythmic and melodic dictation. Offered by Dewberry School of Music. Limited to three attempts.

Registration Restrictions:
Enrollment is limited to students with a major in Music.

Students with the terminated from MUSI major attribute may **not** enroll.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 114: *Aural Skills II.* 1-2 credits.
Continuation of MUSI 113. Alto and tenor clefs, modulation, various modes, and melodic and harmonic dictation. Offered by Dewberry School of Music. Limited to three attempts.

Recommended Prerequisite: MUSI 113.

Registration Restrictions:
Enrollment is limited to students with a major in Music.

Students with the terminated from MUSI major attribute may **not** enroll.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 115: *Introduction to Music Theory.* 3 credits.
Music notation, rhythm and meter, scales, key signatures, intervals, chords, cadences, and figured bass. Offered by Dewberry School of Music. Limited to three attempts.

Recommended Prerequisite: Student must be able to read music, be able to pass a fundamentals of music test (administered during first week of classes), and have some proficiency on a musical instrument or in voice.

Registration Restrictions:
Enrollment is limited to students with a major in Music.

Students with the terminated from MUSI major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 116: *Theory II.* 3 credits.
First- and second-inversion chords, modulation, nonharmonic tones, figured bass, seventh chords. Analysis of Bach chorales; composition of four-part chorales in 18th-century style. Offered by Dewberry School of Music. Limited to three attempts.

Recommended Prerequisite: MUSI 115 or permission of instructor.

Registration Restrictions:
Enrollment is limited to students with a major in Music.

Students with the terminated from MUSI major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 171: *Keyboard Skills I.* 1 credit.
Study of piano keyboard as it relates to various clefs in music. Emphasis on solution of basic stylistic and technical problems. Offered by Dewberry School of Music. Limited to three attempts.

Registration Restrictions:
Enrollment is limited to students with a major in Music.

Students with the terminated from MUSI major attribute may **not** enroll.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 172: *Keyboard Skills II.* 1 credit.
Study of piano keyboard as it relates to intermediate song and combined in various music forms. Notes: Nonmusic majors must have permission of instructor. Offered by Dewberry School of Music. Limited to three attempts.

Registration Restrictions:
Enrollment is limited to students with a major in Music.

Students with the terminated from MUSI major attribute may **not** enroll.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

200 Level Courses

MUSI 213: *Aural Skills III.* 2 credits.
Continuation of Music 114. Emphasizes modulation, chromatic and nontonal melodies, various modes, melodic and harmonic dictation, c clefs, and improvisation. Offered by Dewberry School of Music. Limited to three attempts.

Registration Restrictions:
Students with the terminated from MUSI major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 214: *Aural Skills IV.* 2 credits.
Continuation on MUSI 213 with emphasis on chromatic and non-tonal harmonies. Offered by Dewberry School of Music. Limited to three attempts.

Recommended Prerequisite: MUSI 213, or permission of instructor.

Registration Restrictions:
Students with the terminated from MUSI major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 215: *Theory for Pop and Jazz Music.* 3 credits.
A study of diatonic and chromatic harmony, rhythm, and form in the context of jazz, blues, and popular music in the US and UK in the 20th and 21st centuries. Analysis and composition in each of these three styles. Offered by Dewberry School of Music. Limited to three attempts.

Recommended Prerequisite: MUSI 115 or permission of instructor.

Registration Restrictions:
Enrollment is limited to students with a major in Music.

Students with the terminated from MUSI major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 216: *Theory for 20th- and 21st-Century Music.* 3 credits.
Study of melodic, harmonic, rhythmic, and formal processes in 20th-/21st-c. Western concert music. Covers atonal music and set theory, triadic post-tonal music, and other miscellaneous approaches. Analysis and composition in various 20th-/21st-c. styles. Offered by Dewberry School of Music. Limited to three attempts.

Recommended Prerequisite: MUSI 115 or permission of instructor.

Registration Restrictions:
Enrollment is limited to students with a major in Music.

Students with the terminated from MUSI major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 217: *Theory for 18th-Century Music.* 3 credits.
Covers diatonic harmony, modulation, non-harmonic tones, and small forms in the style of 18th-century Western concert music. Analysis and composition of 18th-century music. Offered by Dewberry School of Music. Limited to three attempts.

Recommended Prerequisite: MUSI 115, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 221: *Applied Music I.* 1 credit.
Applied music studies 1. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 8 credits.

Recommended Prerequisite: Audition or portfolio.

Schedule Type: Private Music Instruction

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 222: *Applied Music in Keyboard.* 1 credit.
Applied music studies in Keyboard.. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 8 credits.

Recommended Prerequisite: Audition.

Schedule Type: Private Music Instruction

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 223: *Applied Music in Voice.* 1 credit.
Applied music studies in Voice. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 8 credits.

Recommended Prerequisite: Audition.

Recommended Corequisite: MUSI 381, 384, or 385.

Schedule Type: Private Music Instruction

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 224: *Applied Music in Woodwind.* 1 credit.
Applied music studies in Woodwind. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 8 credits. Equivalent to MUSI 221.

Recommended Prerequisite: Audition.

Schedule Type: Private Music Instruction

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 225: *Applied Music in Brass.* 1 credit.
Applied music studies in Brass. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 8 credits. Equivalent to MUSI 221.

Recommended Prerequisite: Audition.

Schedule Type: Private Music Instruction

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 226: *Applied Music in String.* 1 credit.
Applied music studies in String. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 8 credits. Equivalent to MUSI 221.

Recommended Prerequisite: Audition.

Schedule Type: Private Music Instruction

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 227: *Applied Music in Percussion.* 1 credit.
Applied music studies in Percussion. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 8 credits. Equivalent to MUSI 221.

Recommended Prerequisite: Audition.

Schedule Type: Private Music Instruction

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 228: *Applied Music in Composition.* 1 credit.
Applied music studies in Composition. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 8 credits. Equivalent to MUSI 221.

Recommended Prerequisite: Portfolio of recent compositions.

Schedule Type: Private Music Instruction

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 229: *Non-Major Applied Music I.* 1 credit.
Applied music studies I. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 8 credits.

Recommended Prerequisite: Audition or portfolio.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 241: *Applied Music II.* 2 credits.
Applied music studies 2. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 16 credits.

Recommended Prerequisite: Audition or portfolio.

Schedule Type: Private Music Instruction

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 242: *Applied Music in Keyboard.* 2 credits.
Applied music studies in Keyboard. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 16 credits.

Recommended Prerequisite: Audition.

Schedule Type: Private Music Instruction

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 243: *Applied Music in Voice.* 2 credits.
Applied music studies in Voice. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 16 credits.

Recommended Prerequisite: Audition.

Recommended Corequisite: MUSI 381, 384, or 385.

Schedule Type: Private Music Instruction

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 244: *Applied Music in Woodwind.* 2 credits.
Applied music studies in Woodwind. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 16 credits.

Recommended Prerequisite: Audition.

Schedule Type: Private Music Instruction

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 245: *Applied Music in Brass.* 2 credits.
Applied music studies in Brass. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 16 credits.

Recommended Prerequisite: Audition.

Schedule Type: Private Music Instruction

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 246: *Applied Music in String.* 2 credits.
Applied music studies in String. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 16 credits.

Recommended Prerequisite: Audition.

Schedule Type: Private Music Instruction

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 247: *Applied Music in Percussion.* 2 credits.
Applied music studies in Percussion. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 16 credits.

Recommended Prerequisite: Audition.

Schedule Type: Private Music Instruction

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 248: *Applied Music in Composition.* 2 credits.
Applied music studies in Composition. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 16 credits.

Recommended Prerequisite: Portfolio or recent compositions.

Schedule Type: Private Music Instruction

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 249: *Non-Major Applied Music II.* 2 credits.
Applied music studies II. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 16 credits.

Recommended Prerequisite: Audition or portfolio.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 251: *Musical/Oral Communication.* 3 credits.
Introduces theories, processes, and practices to achieve effective oral communication; connects those principles with expressive musical performance. Explores parallels between grammer, logic, and rhetoric and musical structure, design, and performance. Critically analyzes time, tonality, and texture, applies these concepts in pedagogical contexts related to effective performance, practice habits, communication styles, and identifying/preventing performance-related repetitive overuse injuries. Notes: Requires observing professionals in the field. Offered by Dewberry School of Music. Limited to three attempts.

Registration Restrictions:
Enrollment is limited to students with a major, minor, or concentration in Music.

Students with the terminated from MUSI major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 252: *Popular Music Arranging.* 3 credits.
This course explores popular music styles and genres. Using this information to analyze popular music and arrange the music for various ensembles. Offered by Dewberry School of Music. Limited to three attempts.

Specialized Designation: Mason Impact.

Recommended Prerequisite: MUSI 215.

Registration Restrictions:
Students with the terminated from MUSI major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 254: *Music and Technology.* 3 credits.
Study of technology related to music, including audio synthesis and computer-based hardware and software. Offered by Dewberry School of Music. Limited to three attempts. Equivalent to MUSI 315.

Specialized Designation: Mason Impact.

Registration Restrictions:
Students with the terminated from MUSI major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 259: *Music in Computer Technology.* 3 credits.
Overview of ways computer is used in music. Topics include principles of musical instrument digital interface (MIDI); various kinds of synthesis; acoustics and sound processing; and musical composition using the computer. Explores music resources of internet and surveys current multimedia applications in music history, theory, ear training, improvisation, and notation. Offered by Dewberry School of Music. Limited to three attempts. Equivalent to MUSI 415.

Mason Core: Info Tech & Computing

Registration Restrictions:
Students with the terminated from MUSI major attribute may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 273: *Keyboard Skills III.* 1 credit.
Continuation of MUSI 172. Study of techniques of harmonization at the piano keyboard. Notes: Nonmusic majors must have permission of instructor. Offered by Dewberry School of Music. Limited to three attempts.

Recommended Prerequisite: MUSI 172.

Registration Restrictions:
Enrollment is limited to students with a major in Music.

Students with the terminated from MUSI major attribute may **not** enroll.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 274: *Jazz/Commercial Piano.* 1 credit.
Introduces students to the rudiments of Jazz and commercial piano playing. After a brief review of chord construction, students will learn voicings for both pop and Jazz piano styles, ways to navigate standard chord progressions, and, ultimately, to apply the material learned to lead sheets. Offered by Dewberry School of Music. Limited to three attempts.

Recommended Prerequisite: MUSI 273 or permission of instructor

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 280: *Athletic and Ceremonial Ensemble.* 0-1 credits.
Students gain an understanding of American popular and other musics developing personal expression via performance and creative design. Students also learn and develop leadership and management skills. An understanding of the vital role of community outreach and service is gained through first-hand experience. Offered by Dewberry School of Music. May be repeated within the term.

Mason Core: Arts

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

300 Level Courses

MUSI 300: *Recital Attendance.* 0 credits.
Students attend 10 student recitals to be selected from departmental and music education recitals, and junior, senior, and graduate recitals. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 8 credits.

Schedule Type: Studio

Grading:
This course is graded on the Satisfactory/No Credit scale.

MUSI 301: *Music in Motion Pictures.* 3 credits.
Intensive study and analysis of using music tracks in motion pictures to introduce the picture, set a scene, create moods, or for musical numbers. From the silent film scores of the 1920s to the present (including electronic music). Offered by Dewberry School of Music. Limited to three attempts.

Mason Core: Arts

Recommended Prerequisite: Completion of 30 credits. Music and non-music majors welcome.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 302: *American Musical Theater.* 3 credits.
Intensive study of the musical elements in the American musical theater from its European and later African roots to its evolution between the wars into a native form, and its continual assimilation of external influences such as new forms of jazz and rock to the eclectic form of the present day. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 6 credits.

Mason Core: Arts

Recommended Prerequisite: 30 credit hours or permission of the instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 303: *Topics in Ethnomusicology.* 3 credits.
Advanced study of theory and method in ethnomusicology with specific thematic or geographic focus. Course emphasizes critical thinking, listening, and research in the study of music from around the world. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 9 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: MUSI 103, or MUSI 431, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 304: *Topics in Musicology.* 3 credits.
Designed for students with no music theory background, the course explores the intersection of music and culture in relation to specific topics. Issues addressed may include race, class, gender, economic context, aesthetics, etc. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 9 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: 30 hours completed.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 311: *Jazz Studies.* 3 credits.
Musicianship course integrating jazz improvisation, theory, composition, and arranging. Focuses on concepts unique to our time in style, form, and harmony. Offered by Dewberry School of Music. Limited to three attempts.

Recommended Prerequisite: MUSI 379 or permission of instructor.

Registration Restrictions:
Students with the terminated from MUSI major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 315: *Music Technology.* 3 credits.
Study of technology related to music, including audio synthesis and computer-based hardware and software. Notes: There is a course fee beyond tuition charges. Offered by Dewberry School of Music. Limited to three attempts. Equivalent to MUSI 254.

Recommended Prerequisite: MUSI 100 or MUSI 115

Registration Restrictions:
Students with the terminated from MUSI major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 316: *Topics in Music Technology.* 3 credits.
Selected topics in music technology with an emphasis on musical creativity. Includes consideration of recent developments in areas such as electronic composition, the science of music, recording industry and practices, and music industry. Notes: There is a course fee beyond tuition charges. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 9 credits. Equivalent to MUSI 359.

Specialized Designation: Topic Varies

Recommended Prerequisite: MUSI 315

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 317: *Baroque and Classical Forms.* 3 credits.
Involves the student in the study of the architecture of music. Investigates the structural properties of small forms and eventually the organizational principles of larger forms mainly from the Baroque and Classical periods through lecture and discussion, presentation, aural comprehension, writing, analysis, and performance. Offered by Dewberry School of Music. Limited to three attempts.

Recommended Prerequisite: MUSI 115 and MUSI 217

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 319: *Class Composition and Arranging.* 3 credits.
Students write original compositions for specified instruments, voices, or combinations. They then apply compositional principles to the creative arrangement of existing music of various styles. Offered by Dewberry School of Music. Limited to three attempts.

Recommended Prerequisite: MUSI 214, 216 or permission of instructor.

Registration Restrictions:
Enrollment is limited to students with a major in Music.

Students with the terminated from MUSI major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 323: *Music Education Recital.* 0 credits.
Recital on major instrument given by student during junior or senior year. Notes: Recital must be at least 25 minutes long. All recitals by arrangement. Students must consult with director of applied music studies to register and schedule dates. Offered by Dewberry School of Music. Limited to three attempts.

Recommended Prerequisite: A minimum of 8 credits in Applied music instruction in major instrument.

Recommended Corequisite: Concurrent enrollment in the appropriate 2-credit Applied music course.

Registration Restrictions:
Students with the terminated from MUSI major attribute may **not** enroll.

Schedule Type: Private Music Instruction

Grading:
This course is graded on the Satisfactory/No Credit scale.

MUSI 324: *Junior Recital.* 1 credit.
Public recital by student during junior year. Notes: Junior recital must be at least 25 minutes long. All recitals by arrangement. Students must consult with director of applied music studies to register and schedule dates. Offered by Dewberry School of Music. Limited to three attempts.

Mason Core: Capstone

Recommended Corequisite: Concurrent enrollment in 2-credit Applied music course.

Registration Restrictions:
Students with the terminated from MUSI major attribute may **not** enroll.

Schedule Type: Private Music Instruction

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 325: *Performance Seminar and Vocal Literature for Singers and Accompanists I.* 2 credits.
Students assigned vocal literature in Italian, English, German, and French from Baroque to 21st century, and perform in a weekly master class format. Designed for vocal performance and piano and accompanying majors; develops and improves artistic and performance skills, repertoire preparation and execution, diction, interpretation, style, and overall stage

presence. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 4 credits.

Recommended Prerequisite: Admission to the Music major program or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 326: *Performance Seminar and Vocal Literature for Singers and Accompanists II - German and French.* 2 credits.
Students assigned vocal literature in Italian, English, German, and French from Baroque to 21st century, and perform in a weekly master class format. Designed for vocal performance and piano and accompanying majors; develops and improves artistic and performance skills, repertoire preparation and execution, diction, interpretation, style, and overall stage presence. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 4 credits.

Recommended Prerequisite: Admission to the Music major program or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 331: *Music History in Society I.* 3 credits.
Historical survey of Western music from Greek times through the late Baroque era, with emphasis on specific musical genres and composers who developed them. Musical developments are related to other aspects of society. Instruction conducted by lectures, recordings, and video. Learning process enhanced by reading, listening, writing, and analytical assignments. Offered by Dewberry School of Music. Limited to three attempts.

Recommended Prerequisite: MUSI 215 or permission of instructor.

Registration Restrictions:
Students with the terminated from MUSI major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 332: *Music History in Society II.* 3 credits.
Historical survey of Western music from the early Classical era through mid-19th century, with emphasis on specific musical genres and composers who developed them. Musical developments related to other aspects of society. Lectures, recordings, video. Learning process enhanced by reading, listening, writing, and analytical assignments. Offered by Dewberry School of Music. Limited to three attempts.

Specialized Designation: Writing Intensive in Major

Recommended Prerequisite: MUSI 216 and 331 or permission of instructor.

Registration Restrictions:
Enrollment is limited to students with a major in Music.

Students with the terminated from MUSI major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 338: *Music History in Society A.* 3 credits.
Historical survey of Western music from the late Renaissance through the Romantic era, with emphasis on specific musical genres and composers who developed them. Musical developments are related to other aspects of society. Instruction conducted by lectures, recordings, and video. Learning process enhanced by reading, listening, writing, and analytical assignments. Offered by Dewberry School of Music. Limited to three attempts.

Recommended Prerequisite: MUSI 215, or permission of instructor.

Registration Restrictions:
Students with the terminated from MUSI major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 341: *Diction for Singers I: Italian Diction and English Diction.* 2 credits.
Increases proficiency in singing in Italian and English by teaching International Phonetic Alphabet (IPA), and strengthens performance of Italian and English art songs and operatic repertoire. Focuses on intensified, systematic study of phonetics as it applies to singing in Italian and English. Offered by Dewberry School of Music. Limited to three attempts.

Recommended Prerequisite: Admission to the Music major program or permission of instructor.

Registration Restrictions:
Enrollment is limited to students with a major in Music.

Students with the terminated from MUSI major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 342: *Diction for Singers II: German Diction and French Diction.* 2 credits.
Increases proficiency in singing in German and French by teaching International Phonetic Alphabet (IPA), and strengthens performance of German and French art songs and operatic repertoire. Focuses on intensified, systematic study of phonetics as it applies to singing in German and French. Offered by Dewberry School of Music. Limited to three attempts.

Recommended Prerequisite: Restricted to MUSI majors and minors. Non majors need permission of instructor.

Registration Restrictions:
Students with the terminated from MUSI major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 351: *Keyboard Pedagogy.* 3 credits.
Investigates methods, theories, techniques, and materials to teach keyboard to children and adults in individual and group situations. Offered by Dewberry School of Music. Limited to three attempts.

Recommended Prerequisite: MUSI 214, 216, 273 and 8 credits in piano, harpsichord, organ or permission of instructor.

Registration Restrictions:
Students with the terminated from MUSI major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 352: *Vocal Pedagogy and Lab.* 3 credits.
Instruction in teaching of voice through systematic study of vocal physiology and its implications for pedagogical methods. Includes theoretical and systematic study of processes, procedures, and practices to develop art of singing. Offers technical, physiological, theoretical, and practical principals of the singing art, with emphasis on the importance of vocal health. Offered by Dewberry School of Music. Limited to three attempts. Equivalent to MUSI 552.

Recommended Prerequisite: 8 credits Applied Music in Voice, or permission of instructor.

Registration Restrictions:
Students with the terminated from MUSI major attribute may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 353: *Instrumental Pedagogy and Literature.* 3 credits.
Instruction in teaching instrumental music techniques for all levels through study of pedagogical methods, standard literature, and musical instruments produced by present-day manufacturers. Offered by Dewberry School of Music. Limited to three attempts.

Recommended Prerequisite: Junior standing in instrumental private music instruction or permission of instructor.

Registration Restrictions:
Students with the terminated from MUSI major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 354: *Electronic Composition.* 3 credits.
This course explores the techniques used in recording music with current software and hardware to edit, modify, and market music. Offered by Dewberry School of Music. Limited to three attempts.

Specialized Designation: Mason Impact.

Recommended Prerequisite: MUSI 254.

Registration Restrictions:
Students with the terminated from MUSI major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 355: *Recording Techniques.* 3 credits.
Explores the techniques used in recording music with current software and hardware to edit, modify, and market music. Offered by Dewberry School of Music. Limited to three attempts.

Specialized Designation: Mason Impact.

Recommended Prerequisite: MUSI 254.

Registration Restrictions:
Students with the terminated from MUSI major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 358: *Music Programming.* 3 credits.
The purpose of the class is to learn basic programming skills and concepts and to apply them directly to musical concepts and ideas. Offered by Dewberry School of Music. Limited to three attempts.

Recommended Prerequisite: MUSI 254, MUSI 354, and MUSI 355.

Registration Restrictions:
Students with the terminated from MUSI major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 359: *Topics in Music Technology.* 3 credits.
Selected topics in music technology with an emphasis on musical creativity. Includes consideration of recent developments in areas such as electronic composition, the science of music, recording industry and practices, and music industry. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 9 credits. Equivalent to MUSI 316.

Specialized Designation: Topic Varies

Recommended Prerequisite: MUSI 354, MUSI 355.

Registration Restrictions:
Students with the terminated from MUSI major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 361: *Class Strings.* 1 credit.
Study of playing and teaching string instruments with emphasis on violin and cello through beginning method book. Study of fingerings and bowing techniques to teach and play viola and bass at beginning levels. Survey of string playing techniques to conduct rehearsals at intermediate-,advanced-, and artist-level ensembles. Notes: Three hours per week studying violin, viola, cello, and bass; one hour per week in laboratory ensemble. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 2 credits.

Registration Restrictions:

Enrollment is limited to students with a major in Music.

Students with the terminated from MUSI major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 363: *Class Woodwinds.* 1 credit.
Study of Techniques of playing and teaching Woodwind instruments, including flute, clarinet, saxophone, oboe, and bassoon. Survey of instructional materials, and mouthpiece and instrument selection. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 2 credits.

Recommended Prerequisite: Admission to the Music major program or permission of instructor.

Registration Restrictions:
Enrollment is limited to students with a major in Music.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 364: *Class Woodwinds: Oboe and Bassoon.* 1 credit.
Study of techniques of playing and teaching oboe and bassoon. Survey of instructional materials, instrument selection, and reed adjustment. Notes: Three hours per week studying oboe and bassoon; one hour per week in laboratory ensemble. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 2 credits.

Registration Restrictions:
Enrollment is limited to students with a major in Music.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 365: *Class Brass.* 1 credit.
Study of techniques of playing and teaching trumpet and French horn. Survey of instructional materials, and mouthpiece and instrument selection. Notes: Three hours per week studying trumpet and French horn; one hour per week in laboratory ensemble. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 2 credits.

Recommended Prerequisite: Admission to the Music major program or permission of instructor.

Registration Restrictions:
Students with the terminated from MUSI major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 366: *Class Percussion.* 1 credit.
Study of techniques of playing and teaching percussion instruments. Survey of instructional materials and instrument selection. Notes: Three hours per week studying percussion instruments; one hour per week in laboratory ensemble. Offered by Dewberry School of Music. Limited to three attempts.

Recommended Prerequisite: Admission to the Music major program or permission of instructor. Students must register for studio and lab.

Registration Restrictions:
Students with the terminated from MUSI major attribute may **not** enroll.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 367: *Class Guitar.* 1 credit.
Study of techniques of playing and teaching guitar. Survey of instructional materials and instrument selection. Notes: Three hours per week studying guitar; one hour per week in laboratory ensemble. Offered by Dewberry School of Music. Limited to three attempts.

Recommended Prerequisite: Admission to the Music major program or permission of instructor.

Registration Restrictions:
Students with the terminated from MUSI major attribute may **not** enroll.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 368: *Class Voice.* 1 credit.
Study of the human voice in artistic singing. Emphasizes practical application of basic principles. Notes: Three hours per week studying voice; one hour per week in laboratory ensemble. Offered by Dewberry School of Music. Limited to three attempts.

Recommended Prerequisite: Admission to the Music major program or permission of instructor.

Registration Restrictions:
Students with the terminated from MUSI major attribute may **not** enroll.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 370: *Laboratory Ensemble.* 0 credits.
This class an extension of the music education techniques and methods classes. Students will meet together once a week to perform on a secondary instrument or voice. In addition, this course provides student conductors with the opportunity to teach and/or rehearse a novice ensemble. A lab fee is assessed for this course. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 0 credits.

Recommended Prerequisite: Admission to music major program or permission of instructor.

Schedule Type: Laboratory

Grading:
This course is graded on the Satisfactory/No Credit scale.

MUSI 371: *Techniques of Accompanying I.* 1 credit.
Development of accompanying skills through collaboration with solo singers, instrumentalists, and small ensembles. Students perform for each other; observe lectures, demonstrations, and performances by professionals; and participate in master classes. Offered by Dewberry School of Music. Limited to three attempts.

Recommended Prerequisite: Restricted to piano majors and minors, or to those with permission of instructor.

Registration Restrictions:
Students with the terminated from MUSI major attribute may **not** enroll.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 372: *Techniques of Accompanying II.* 1 credit.
Development of accompanying skills through collaboration with solo singers, instrumentalists, and small ensembles. Students perform for each other; observe lectures, demonstrations, and performances by professionals; and participate in master classes. Offered by Dewberry School of Music. Limited to three attempts.

Recommended Prerequisite: Audition on a keyboard instrument for admission to a music degree program, 4 credits in undergraduate Applied Music Instruction on a keyboard instrument, or permission of instructor.

Registration Restrictions:
Students with the terminated from MUSI major attribute may **not** enroll.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 373: *Advanced Accompanying and Musicianship Skills.* 3 credits.
Advanced study and techniques for accompanying choirs, vocal soloists, and instrumentalists. Additional instruction in keyboard reduction of orchestral scores for concertos, continuo/figured bass reading, lead-sheet reading, transposition, improvisation, transcription, and "playing by ear." Offered by Dewberry School of Music. Limited to three attempts.

Recommended Prerequisite: MUSI 372 (concurrent enrollment is permitted) or permission of instructor.

Registration Restrictions:
Students with the terminated from MUSI major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 379: *Jazz Improvisation.* 1 credit.
Study of improvisation techniques and styles, with emphasis on common practice period of jazz. Application on the student's major instrument or voice to develop creativity and personal expression. Offered by Dewberry School of Music. Limited to three attempts.

Recommended Prerequisite: MUSI 116 or permission of instructor.

Registration Restrictions:
Students with the terminated from MUSI major attribute may **not** enroll.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 380: *Wind Symphony.* 1 credit.
Students develop an understanding of major artistic works, including a consideration of how theoretical and historical insights find expression via performance. Highly selective group of instrumentalists perform works from wind symphony repertoire. Notes: Public concerts required. Offered by Dewberry School of Music. May be repeated within the term for a maximum 12 credits.

Mason Core: Arts

Recommended Prerequisite: Audition.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 381: *University Chorale.* 1 credit.
Students develop an understanding of major artistic works, including a consideration of how theoretical and historical insights find expression via performance. Performance of works from choral repertoire. Notes: Public concerts required. Offered by Dewberry School of Music. May be repeated within the term for a maximum 12 credits.

Mason Core: Arts

Recommended Prerequisite: Audition.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 382: *Piano Ensemble.* 1 credit.
Students develop an understanding of major artistic works, including a consideration of how theoretical and historical insights find expression via performance. Study and performance of original four-hand works for one and two pianos. Notes: Public performances required. Offered by Dewberry School of Music. May be repeated within the term for a maximum 12 credits.

Mason Core: Arts

Recommended Prerequisite: 4 hours of PMI (Piano) and audition.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 383: *Symphonic Band.* 1 credit.
Students develop an understanding of major artistic works, including a consideration of how theoretical and historical insights find expression via performance. Performance of works from band repertoire. Notes: Public concerts required. Offered by Dewberry School of Music. May be repeated within the term for a maximum 12 credits.

Mason Core: Arts

Recommended Prerequisite: Audition.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 385: *Chamber Singers.* 1 credit.
Students develop an understanding of major artistic works, including a consideration of how theoretical and historical insights find expression via performance. Students explore their levels of artistic development through discovery, interpretation, and performance of choral music for vocal chamber music ensembles from multiple historical periods. Students bring to Mason and surrounding community musical compositions not readily accessible in regular concert repertoire. Offered by Dewberry School of Music. May be repeated within the term for a maximum 12 credits.

Mason Core: Arts

Recommended Prerequisite: Audition.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 387: *Symphony Orchestra.* 1 credit.
Students develop an understanding of major artistic works, including a consideration of how theoretical and historical insights find expression via performance. Performance of works from symphony orchestra repertoire. Notes: Public concerts required. Offered by Dewberry School of Music. May be repeated within the term for a maximum 12 credits.

Mason Core: Arts

Recommended Prerequisite: Audition.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 388: *Fundamental Techniques of Stagecraft for Opera and Music Theater.* 2 credits.
Study of basic to intermediate stage movement techniques necessary to the performance of opera and music theater roles. Emphasis on acting, improvisation, theater production, musical theater, and operatic role study. Offered by Dewberry School of Music. Limited to three attempts.

Recommended Prerequisite: Admission to the Music major program or permission of instructor.

Registration Restrictions:
Students with the terminated from MUSI major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 389: *Jazz Ensemble.* 1 credit.
Students develop an understanding of major artistic works, including a consideration of how theoretical and historical insights find expression via performance. Provides practical experience in various aspects of jazz performance: section work within a large aggregation, combo work, and improvisation. Notes: Public concerts required. Offered by Dewberry School of Music. May be repeated within the term for a maximum 12 credits.

Mason Core: Arts

Recommended Prerequisite: Audition.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 391: *Conducting I.* 2 credits.
Study of basic techniques of conducting a musical ensemble. Offered by Dewberry School of Music. Limited to three attempts.

Recommended Prerequisite: MUSI 214, 216, 273 or permission of instructor

Registration Restrictions:
Students with the terminated from MUSI major attribute may **not** enroll.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 393: *Music Administration and Management.* 2 credits.
Prepares students to address aspects of administration and management of music programs in public and private schools. Investigates principles and concepts of management styles and planning. Covers curriculum, budget, student recruitment and retention, external relations of the music unit, and legal issues for music educators. Offered by Dewberry School of Music. Limited to three attempts.

Recommended Prerequisite: MUSI 116 or permission of instructor.

Registration Restrictions:
Students with the terminated from MUSI major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 394: *Ethnomusicology Internship.* 1-4 credits.
Option A) Professional internship with an organization dedicated to activities related to the field of ethnomusicology; Option B) Teaching internship in an undergraduate ethnomusicology course at Mason, supervised by the minor coordinator. Notes: All internships must be approved and all arrangements made prior to he beginning of the semester in which the internship is to take place. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 8 credits.

Recommended Prerequisite: MUSI 103, or MUSI 431; Permission of the Ethnomusicology Minor Coordinator.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 395: *Teaching Internship.* 1-4 credits.
Internship with a professional individual or organization in teaching. Introduction to teaching or augmentation of teaching skills. Students develop individual contracts defining the learning and competencies

to be gained from the experience. Notes: Maximum of 9 internship credits (MUSI 395, 495, 496) can be applied toward a degree. Offered by Dewberry School of Music. May be repeated within the term for a maximum 4 credits.

Recommended Prerequisite: MUSI 251.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 396: *Conducting II.* 2 credits.
Advanced conducting course emphasizing techniques for instrumental and choral conducting. Refining gestures, full score analysis and interpretation, rehearsal techniques, and changing meters. Offered by Dewberry School of Music. Limited to three attempts.

Recommended Prerequisite: MUSI 391 or permission of instructor.

Registration Restrictions:
Students with the terminated from MUSI major attribute may **not** enroll.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 397: *Music Technology Internship.* 1-4 credits.
Internship with a professional individual or organization in music technology. Develops facility with applications of music technology in various professional contexts. Students develop individual contracts defining the learning and competencies to be gained from the experience. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 4 credits.

Recommended Prerequisite: MUSI 254 or permission of instructor

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

MUSI 415: *Music in Computer Technology.* 3 credits.
Overview of ways computer is used in music. Topics include principles of musical instrument digital interface (MIDI); various kinds of synthesis; acoustics and sound processing; and musical composition using the computer. Explores music resources of Internet and surveys current multimedia applications in music history, theory, ear training, improvisation, and notation. Offered by Dewberry School of Music. Limited to three attempts. Equivalent to MUSI 259.

Recommended Prerequisite: MUSI 319 or permission of instructor.

Registration Restrictions:
Enrollment is limited to students with a major in Music.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 419: *Orchestration.* 3 credits.
Principles of combining and balancing instruments in orchestral and chamber contexts. Attention to orchestral terminology and general notation as well as timbre, range, clefs, transposition, special effects, and scoring procedures. Offered by Dewberry School of Music. Limited to three attempts.

Recommended Prerequisite: MUSI 214, 216 and 319, or permission of instructor.

Registration Restrictions:
Students with the terminated from MUSI major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 421: *Applied Music III.* 1 credit.
Applied music studies 3. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 8 credits.

Recommended Prerequisite: Audition or portfolio of recent compositions.

Schedule Type: Private Music Instruction

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 424: *Senior Recital.* 1 credit.
Public recital by student during senior year. Notes: Senior recital must be at least 50 minutes long. All recitals by arrangement. Students must consult with director of applied music studies to register and schedule dates. Offered by Dewberry School of Music. Limited to three attempts.

Mason Core: Capstone

Recommended Corequisite: Concurrent enrollment in 2-credit Applied music course.

Registration Restrictions:
Students with the terminated from MUSI major attribute may **not** enroll.

Schedule Type: Private Music Instruction

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 431: *Music History in Society III.* 3 credits.
Studies contributions to the world of music in selected cultures such as India, Indonesia, China, Japan, Africa, Middle East, and Americas. Emphasizes comparative musical characteristics as well as sociological function. Lectures, recordings, and video. Learning process enhanced by reading, listening, writing, and analytical assignments. Offered by Dewberry School of Music. Limited to three attempts.

Mason Core: Global Understanding

Recommended Prerequisite: MUSI 216, 331, 332, or permission of instructor.

Registration Restrictions:
Students with the terminated from MUSI major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 432: *Music History in Society IV.* 3 credits.
Historical survey of Western music from late 19th century to present, with emphasis on specific musical genres and composers who developed them. Relates musical developments to other aspects of society, and considers interaction between world music. Lectures, recordings, and video. Learning process enhanced by reading, listening, writing, and analytical assignments. Offered by Dewberry School of Music. Limited to three attempts.

Recommended Prerequisite: MUSI 216, 331, 332, 431, or permission of instructor.

Registration Restrictions:
Enrollment is limited to students with a major in Music.

Students with the terminated from MUSI major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 438: *Music History in Society B.* 3 credits.
Historical survey of Western vernacular and classical music from 1877 to 1945, with emphasis on musical genres, composers, and performers. Musical developments are related to other aspects of society. Instruction conducted by lectures, recordings, and video.Fulfills writing intensive requirement in the BA in music with a concentration in Music Technology. Offered by Dewberry School of Music. Limited to three attempts.

Specialized Designation: Writing Intensive in Major

Recommended Prerequisite: MUSI 338 or permission of instructor.

Registration Restrictions:
Students with the terminated from MUSI major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 439: *Music History in Society C.* 3 credits.
Historical survey of Western vernacular and classical music from 1945 to present, with emphasis on specific musical genres, composers, and performers. Musical developments are related to other aspects of society. Instruction conducted by lectures, recordings, and video. Learning process enhanced by reading, listening, writing, and analytical assignments. Offered by Dewberry School of Music. Limited to three attempts.

Recommended Prerequisite: MUSI 438, or permission of instructor.

Registration Restrictions:
Students with the terminated from MUSI major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 441: *Private Music Instruction III.* 2-3 credits.
Applied music studies 3. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 27 credits.

Recommended Prerequisite: Audition or portfolio of recent compositions.

Schedule Type: Private Music Instruction

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 442: *Applied Music in Keyboard.* 2-3 credits.
Applied music studies in Keyboard. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 27 credits.

Recommended Prerequisite: Audition.

Schedule Type: Private Music Instruction

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 443: *Applied Music in Voice.* 2-3 credits.
Applied music studies in Voice. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 27 credits.

Recommended Prerequisite: Audition.

Recommended Corequisite: MUSI 381, 384, or 385.

Schedule Type: Private Music Instruction

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 444: *Applied Music in Woodwind.* 2-3 credits.
Applied music studies in Woodwind. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 27 credits.

Recommended Prerequisite: Audition.

Schedule Type: Private Music Instruction

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 445: *Applied Music in Brass.* 2-3 credits.
Applied music studies in Brass. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 27 credits.

Recommended Prerequisite: Audition.

Schedule Type: Private Music Instruction

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 446: *Applied Music in String.* 2-3 credits.
Applied music studies in String. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 27 credits.

Recommended Prerequisite: Audition.

Schedule Type: Private Music Instruction

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 447: *Applied Music in Percussion.* 2-3 credits.
Applied music studies in Percussion. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 27 credits.

Recommended Prerequisite: Audition.

Schedule Type: Private Music Instruction

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 448: *Applied Music in Composition.* 2-3 credits.
Applied music studies in Composition. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 27 credits.

Recommended Prerequisite: Portfolio of recent compositions.

Schedule Type: Private Music Instruction

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 450: *Jazz Improvisation I.* 2 credits.
Emphasizes improvisational materials and language developed in common practice period of jazz. Offered by Dewberry School of Music. Limited to three attempts.

Recommended Prerequisite: MUSI 379 or permission of instructor.

Registration Restrictions:
Students with the terminated from MUSI major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 451: *Keyboard Pedagogy II.* 3 credits.
Intensive study of methods, theories, techniques, and materials to teach keyboard to children and adults in individual and group situations. Offered by Dewberry School of Music. Limited to three attempts.

Recommended Prerequisite: MUSI 351 or permission of instructor.

Registration Restrictions:
Students with the terminated from MUSI major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 452: *Jazz Improvisation II.* 2 credits.
Emphasis on advanced improvisational techniques and contemporary tunes. Offered by Dewberry School of Music. Limited to three attempts.

Recommended Prerequisite: MUSI 379 or permission of instructor.

Registration Restrictions:
Students with the terminated from MUSI major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 454: *Jazz Arranging.* 3 credits.
Transcription, analysis, and scoring for small and large jazz ensembles. Offered by Dewberry School of Music. Limited to three attempts.

Recommended Prerequisite: MUSI 311 or permission of instructor.

Registration Restrictions:
Students with the terminated from MUSI major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 455: *Music as a Healing Art.* 3 credits.
Study of the relationship between musical vibrations and the natural rhythms of the body. Topics include history of music and healing, theory of sound, cymatics, toning, and performance practice as well as a survey of vibrational healing modalities and related therapies. Considers listening examples as they apply to healing with music. Students sing and play instruments in directed improvisatory performance. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Basic proficiency with instrument or voice or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 456: *Pedagogy II.* 2 credits.
Fundamental practical study of methods, literature, sequencing of instruction, and developmental psychology for instrumental or vocal pedagogy. Offered by Dewberry School of Music. Limited to three attempts.

Specialized Designation: Topic Varies

Recommended Prerequisite: MUSI 351 or MUSI 352 or MUSI 353 or Permission of Instructor.

Registration Restrictions:
Students with the terminated from MUSI major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 457: *Pedagogy III.* 2 credits.
Intermediate practical study of methods, literature, sequencing of instruction, and developmental psychology for instrumental or vocal pedagogy. Offered by Dewberry School of Music. Limited to three attempts.

Specialized Designation: Topic Varies

Recommended Prerequisite: MUSI 456 or Permission of Instructor

Registration Restrictions:
Students with the terminated from MUSI major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 458: *Pedagogy IV.* 2 credits.
Advanced practical study of methods, literature, sequencing of instruction, and developmental psychology for instrumental or vocal

pedagogy. Offered by Dewberry School of Music. Limited to three attempts.

Specialized Designation: Topic Varies

Recommended Prerequisite: MUSI 451 or MUSI 457 or Permission of Instructor

Registration Restrictions:
Students with the terminated from MUSI major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 461: *The Teaching of General Music in the Elementary and Middle School.* 3 credits.
Studies theory, methods, practice, and materials to teach general music in elementary and middle school. Students spend three hours per week in class and one hour per week observing and teaching in laboratory ensemble. Students also participate in field observation of music classes in the public schools. Notes: For music majors only. Offered by Dewberry School of Music. Limited to three attempts.

Recommended Prerequisite: MUSI 114, 216, 273 and acceptance into the Music Education concentration.

Registration Restrictions:
Enrollment is limited to students with a major in Music.

Students with the terminated from MUSI major attribute may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 463: *The Teaching of Vocal Music in the Secondary School.* 3 credits.
Survey of repertoire and methods for teaching high school choral groups, small ensembles, and voice classes. Students spend three hours per week in class, and one hour per week observing and teaching in laboratory ensemble. Students also participate in field observation of music classes in public schools. Notes: For music majors only. Offered by Dewberry School of Music. Limited to three attempts.

Recommended Prerequisite: MUSI 214, 216, 273, 391 and acceptance into the Music Education concentration.

Registration Restrictions:
Students with the terminated from MUSI major attribute may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 464: *Instrumental Music Methods I.* 3 credits.
Prepares students to successfully plan, organize, and administer marching band and jazz ensemble programs in secondary public school music curriculum. Students spend three hours per week in class, and one hour per week observing and teaching in laboratory ensemble. Students also participate in field observation of music classes in public schools. Notes: For music majors only. Offered by Dewberry School of Music. Limited to three attempts.

Recommended Prerequisite: MUSI 214, 216, 273, and acceptance into the Music Education concentration.

Registration Restrictions:
Enrollment is limited to students with a major in Music.

Students with the terminated from MUSI major attribute may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 466: *Instrumental Music Methods II.* 3 credits.
Prepares students to teach instrumental music in elementary, middle, and secondary schools. Students spend three hours per week in class, and one hour per week observing and teaching in laboratory ensemble. Students also participate in field observation of music classes in public schools. Notes: For music majors only. Offered by Dewberry School of Music. Limited to three attempts.

Recommended Prerequisite: MUSI 214, 216, 273, 391 and acceptance into the Music Education concentration.

Registration Restrictions:
Students with the terminated from MUSI major attribute may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 467: *Instrumental Music Methods I: Orchestra.* 3 credits.
Prepares students to successfully plan, organize, and administer string classes from the beginning levels through performing ensembles (grades 4-12), and explore teaching materials appropriate for individual and class instruction. Students spend three hours per week in class, and one hour per week observing and teaching in laboratory ensemble. Students also participate in field observation of music classes in public schools. Notes: For music majors only. Offered by Dewberry School of Music. Limited to three attempts.

Recommended Prerequisite: MUSI 214, 216, 273, 361 and acceptance into the Music Education concentration.

Registration Restrictions:
Students with the terminated from MUSI major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 477: *Music and Consciousness.* 3 credits.
A study of the ways music has affected the mind and brain from throughout history to the present. By using principles of entrainment and resonance, the course demonstrates experientially the various methods by which music is used to alter consciousness. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Basic proficiency with an instrument or voice or permission of instructor.

Schedule Type: Lecture

Grading:

This course is graded on the Undergraduate Regular scale.

MUSI 485: *Chamber Ensembles.* 1 credit.
Students develop an understanding of major artistic works, including a consideration of how theoretical and historical insights find expression via performance. Performance of works from chamber music repertoire. Notes: Public performances required. Offered by Dewberry School of Music. May be repeated within the term for a maximum 17 credits.

Mason Core: Arts

Specialized Designation: Mason Impact.

Recommended Prerequisite: Audition.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 489: *Music Technology Capstone.* 3 credits.
This course synthesizes information gained throughout the students' tenure at George Mason, specifically garnering the ideas and techniques found in the music technology sequence. The student will create a large scale project interfacing technology and music, present this project in a variety of different ways to different audiences, and create a portfolio for future opportunities. Offered by Dewberry School of Music. Limited to three attempts.

Specialized Designation: Research/Scholarship Intensive

Registration Restrictions:
Enrollment is limited to students with a concentration in Music Technology.

Students with the terminated from MUSI major attribute may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 490: *RS: Musical Communication in Context.* 3 credits.
Explains nature of musical communication in a variety of contexts, and combines knowledge gained in Mason Core courses with knowledge and skills specific to the major to serve as a capstone course synthesizing both areas. How does music itself communicate, and how do musicians communicate about it with each other and with the world around them? Students address these through essays in the style of a journal or portfolio, substantial paper, and oral presentation of paper before faculty and student panel. Offered by Dewberry School of Music. Limited to three attempts.

Mason Core: Capstone

Recommended Prerequisite: Must be in senior year of the B.A. program in Music and have completed all other Mason Core requirements.

Registration Restrictions:
Enrollment is limited to students with a major in Music.

Students with the terminated from MUSI major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 491: *Musical Communication in Performance.* 1 credit.
Helps student conceive of musical performance as communication in a variety of contexts, and combines knowledge in Mason Core courses with knowledge and skills specific to the major to serve as a capstone course synthesizing both areas. Students consider various aspects of musical communication to prepare senior recital. Students explore social, historical, analytical, and aesthetic aspects of the music they are to perform by composing essays in the style of a journal or portfolio. Students prepare a substantial paper on recital repertoire and present that paper before a faculty and student panel. Offered by Dewberry School of Music. Limited to three attempts.

Mason Core: Capstone

Recommended Prerequisite: Completion of all other Mason Core courses for the BM performance concentration.

Recommended Corequisite: Concurrent enrollment in the appropriate 3-credit PMI course and in MUSI 424.

Registration Restrictions:
Students with the terminated from MUSI major attribute may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 492: *Selected Topics in Music.* 1-3 credits.
Topics of practical interest to students in composition, music history and literature, world music, jazz studies, and performance practices. Offered by Dewberry School of Music. May be repeated within the term.

Specialized Designation: Topic Varies

Recommended Prerequisite: 45 credits or permission of instructor.

Registration Restrictions:
Enrollment is limited to students with a major in Music.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 493: *Topics in Music Theory.* 3 credits.
Intensive exploration of selected topics in music theory and analysis. Offered by Dewberry School of Music. Limited to three attempts.

Specialized Designation: Topic Varies

Recommended Prerequisite: MUSI 216 or permission of the instructor.

Registration Restrictions:
Students with the terminated from MUSI major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 494: *Pedagogy Internship.* 2 credits.
Internship with a professional pedagogue or educational organization with focus on private music instruction. Students develop individual

contracts defining the competencies to be gained from the experience. Offered by Dewberry School of Music. Limited to three attempts.

Recommended Prerequisite: MUSI 451 or MUSI 457 or Permission of Instructor

Registration Restrictions:
Students with the terminated from MUSI major attribute may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 495: *Internship in Music Education.* 6-12 credits.
Full semester of intensive student teaching experience in approved Virginia schools. Offered by Dewberry School of Music. Limited to three attempts.

Mason Core: Capstone

Recommended Prerequisite: Completion of all other courses required for the B.M. with a concentration in music education.

Registration Restrictions:
Enrollment is limited to students with a major in Music.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 496: *Internship.* 2-6 credits.
Contact the department one semester before enrollment. Internships are approved work-study programs with specific employers or agencies. Notes: Credit is determined by the department. Maximum 9 internship credits (MUSI 395, 495, 496) can be applied toward degree. Offered by Dewberry School of Music. Limited to three attempts.

Recommended Prerequisite: Completion of 90 hours.

Registration Restrictions:
Enrollment is limited to students with a major in Music.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 497: *Independent Study.* 1-3 credits.
Individual research and study of selected subject in close consultation with instructor. Student may choose from the musicological, ethnomusicological, theoretical, compositional, or educational areas, and produce at least one major written work based on research. Offered by Dewberry School of Music. Limited to three attempts.

Recommended Prerequisite: Completion of 90 hours.

Registration Restrictions:
Enrollment is limited to students with a major in Music.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

MUSI 498: *Independent Study.* 1-3 credits.
Individual research and study of selected subject in close consultation with instructor. Student may choose from the musicological, ethnomusicological, theoretical, compositional, or educational areas, and produce at least one major written work based on research. Offered by Dewberry School of Music. Limited to three attempts.

Recommended Prerequisite: Completion of 90 hours.

Registration Restrictions:
Enrollment is limited to students with a major in Music.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

500 Level Courses

MUSI 501: *Graduate Theory Review.* 3 credits.
Vocabulary and conceptual review of diatonic and chromatic harmony, part writing, form, harmonization, 20th-century techniques. Notes: Does not count toward required credits of a graduate music degree. Offered by Dewberry School of Music. May not be repeated for credit.

Recommended Prerequisite: Baccalaureate degree in music, graduate placement exam.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MUSI 502: *Graduate Aural Skills Review.* 3 credits.
Music reading and aural skills including intervals, dictation (melodic and harmonic), scales, chords, rhythms, and meter. Notes: Does not count toward required credits of a graduate music degree. Offered by Dewberry School of Music. May not be repeated for credit.

Recommended Prerequisite: Baccalaureate degree in music, graduate placement exam.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MUSI 515: *Music in Computer Technology.* 3 credits.
Overview computer use in music. Topics include principles of musical instrument digital interface (MIDI); synthesis; acoustics and sound

processing; and musical composition using the computer. Explores music resources of Internet, and surveys multimedia applications in music history, theory, ear training, improvisation, and notation. Offered by Dewberry School of Music. May not be repeated for credit.

Recommended Prerequisite: Baccalaureate degree in music or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Graduate Regular scale.

MUSI 516: *Keyboard Skills.* 3 credits.
Enhance keyboard skills for the non-keyboard major, including technique, harmonization, transposition, reading, and accompanying. Offered by Dewberry School of Music. May not be repeated for credit.

Recommended Prerequisite: Baccalaureate degree in music, graduate placement exam.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Studio

Grading:
This course is graded on the Graduate Regular scale.

MUSI 525: *Performance Seminar and Vocal Literature for Singers and Accompanists I.* 2 credits.
Students assigned art songs or operatic arias in Italian, German, French, and English, from Baroque to 21st century, and perform in weekly master class format. Develops and improves musical and artistic preparation and performance, increases repertoire, and establishes dependable methods for creating consistently high standards of artistic performance. Offered by Dewberry School of Music. May not be repeated for credit.

Recommended Prerequisite: Audition.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

MUSI 526: *Performance Seminar and Vocal Literature for Singers and Accompanists II.* 2 credits.
Students assigned art songs or operatic arias in Italian, German, French, and English, from Baroque to 21st century, and perform in weekly master class format. Develops and improves musical and artistic preparation and performance, increases repertoire, and establishes dependable methods for creating consistently high standards of artistic performance. Offered by Dewberry School of Music. May not be repeated for credit.

Recommended Prerequisite: Audition.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

MUSI 532: *Music History Review I.* 3 credits.
Enhance understanding of music history and the context of musical style, chronologically through the mid-18th century. Notes: Does not fulfill courses requirements for graduate degrees in music. Offered by Dewberry School of Music. May not be repeated for credit.

Recommended Prerequisite: Baccalaureate degree in music, graduate placement exam.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MUSI 533: *Music History Review II.* 3 credits.
Enhance understanding of music history and the context of musical style, from the mid-18th century to today. Notes: Does not fulfill course requirements for graduate music degrees. Offered by Dewberry School of Music. May not be repeated for credit.

Recommended Prerequisite: Baccalaureate degree in music, graduate placement exam.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MUSI 541: *Diction for Singers I: Italian Diction and English Diction.* 2 credits.
Increases proficiency in singing in Italian and English by teaching International Phonetic Alphabet (IPA), and strengthens performance of Italian and English art song and operatic repertoire. Intensified, systematic study of phonetics as it applies to Italian and English. Offered by Dewberry School of Music. May not be repeated for credit.

Recommended Prerequisite: Graduate status in applied voice or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MUSI 542: *Diction for Singers II: German Diction and French Diction.* 2 credits.
Increases proficiency in singing in German and French by teaching International Phonetic Alphabet (IPA), and strengthens performance of German and French art songs and operatic repertoire. Intensified, systematic study of phonetics as it applies to singing in German and French. Offered by Dewberry School of Music. May not be repeated for credit.

Recommended Prerequisite: Graduate status in applied voice or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MUSI 551: *Keyboard Pedagogy.* 3 credits.
Intensive study of methods, theories, techniques, and materials to teach keyboard to children and adults in individual and group situations. Offered by Dewberry School of Music. May not be repeated for credit.

Recommended Prerequisite: Graduate status in applied piano or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MUSI 552: *Vocal Pedagogy and Lab.* 3 credits.
Instruction in teaching voice through systematic study of vocal physiology and its implications for pedagogical methods. Includes theoretical and systematic study of processes, procedures, and practices to develop art of singing. Offers technical, physiological, theoretical, and practical principals of the singing art, with emphasis on vocal health. Offered by Dewberry School of Music. May not be repeated for credit. Equivalent to MUSI 352.

Recommended Prerequisite: Graduate status in applied voice or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Graduate Regular scale.

MUSI 553: *Instrumental Pedagogy and Literature.* 3 credits.
Instruction in teaching of instrumental music techniques for all levels through the study of pedagogical methods, standard literature, and musical instruments produced by present-day manufacturers. Offered by Dewberry School of Music. May not be repeated for credit.

Recommended Prerequisite: Baccalaureate in music, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MUSI 555: *Music as a Healing Art.* 3 credits.
Study of the relationship between musical vibrations and the natural rhythms of the body. Topics include history of music and healing, theory of sound, cymatics, toning, and performance practice as well as a survey of vibrational healing modalities and related therapies. Considers

listening examples as they apply to healing with music. Students sing and play instruments in directed improvisatory performance. Offered by Dewberry School of Music. May not be repeated for credit.

Recommended Prerequisite: Basic proficiency with instrument or voice, and bachelor's degree in music.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MUSI 557: *Kodaly I.* 3 credits.
In depth study of Kodaly, concentrating in four areas: Methodology, Materials, Solfege, and Conducting Offered by Dewberry School of Music. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MUSI 558: *Kodaly II.* 3 credits.
Continues to build on and expand Kodaly knowledge and skills in the four areas: Methodology, Materials, Solfege, and Conducting Offered by Dewberry School of Music. May not be repeated for credit.

Recommended Prerequisite: MUSI 557 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MUSI 559: *Kodaly III.* 3 credits.
Completion of Kodaly training, finishing Kodaly Methodology, Materials, Solfege, and Conducting Offered by Dewberry School of Music. May not be repeated for credit.

Recommended Prerequisite: MUSI 558 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MUSI 561: *Music Curriculum and Instructional Procedures.* 3 credits.
This graduate course is designed to prepare students for a job in the elementary or middle school general music classroom. Classes will equip students with the competencies necessary to plan, create, implement, and evaluate a general music curriculum. Current trends, materials, methods, and approaches in music education will be reviewed. Offered by Dewberry School of Music. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MUSI 563: *Orff Schulwerk I.* 3 credits.
Intensive introduction to Orff teaching philosophy with practical and theoretical instruction and immersion in the method itself. Students learn concepts of rhythm, harmony, solfege, modes, improvisation, and pedagogy. Students learn basic performance technique on soprano recorder, and learn to apply movement and dance in their teaching. Offered by Dewberry School of Music. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MUSI 564: *Orff Schulwerk II.* 3 credits.
Continues intensive study of Orff teaching philosophy with practical and theoretical instruction and immersion. Teaches further concepts of rhythm and meter including asymmetrical patterns. Reviews pentatonic modes and their transpositions, studies pentachordal and hexachordal scales, and begins intensive work with diatonic modes. Students work with a variety of percussion instruments including body percussion, unpitched instruments, and barred instruments. They sing and play

soprano, alto, tenor, and bass recorders. Movement studies continue with intensive study of vocabulary of dance and mime. Offered by Dewberry School of Music. May not be repeated for credit.

Recommended Prerequisite: MUSI 563 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MUSI 565: *Orff Schulwerk III.* 3 credits.
Continues intensive study of Orff teaching philosophy to complete certification process in Orff Schulwerk. Students continue intensive work in rhythm, melody, harmony, timbre, form, and pedagogy. Tenor, bass, and soprano recorders introduced. Movement and rhythmic studies concentrate on mixed meters and non-Western source materials and styles. Offered by Dewberry School of Music. May not be repeated for credit.

Recommended Prerequisite: MUSI 563 and 564 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MUSI 566: *Instrumental Methods for Band.* 3 credits.
This course prepares students to teach instrumental music in elementary and secondary schools. Students spend three hours per week in class, and one hour per week observing and teaching in laboratory ensemble. Students also participate in field observation of music classes in public schools. Offered by Dewberry School of Music. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MUSI 567: *Instrumental Methods, Strings.* 3 credits.
Prepares students to successfully plan, organize, and administer string classes from the beginning levels through performing ensembles (grades 4-12), and to explore teaching materials appropriate for individual and class instruction. Three hours per week spent in class, one hour per week observing and teaching in laboratory ensemble. Students also participate in field observation of music classes in public schools. Offered by Dewberry School of Music. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MUSI 568: *Vocal and Choral Methods.* 3 credits.
A Survey course that introduces repertoire and methods for teaching middle and high school choral groups, small ensemble and voice classes. Students spend three hours per week in class, and one hour per week observing and teaching in laboratory ensemble. Students also participate in field observation of music classes in the public schools. Offered by Dewberry School of Music. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MUSI 571: *Techniques of Accompanying I.* 1 credit.
Development of accompanying skills through collaboration with solo singers, instrumentalists, and small ensembles. Students perform for each other; observe lectures, demonstrations and performances by professionals; and participate in master classes. Offered by Dewberry School of Music. May not be repeated for credit.

Recommended Prerequisite: Admission to graduate-level Private Music Instruction in a keyboard instrument or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MUSI 572: *Techniques of Accompanying II.* 1 credit.
Development of accompanying skills through collaboration with solo singers, instrumentalists, and small ensembles. Students perform for each other; observe lectures, demonstrations and performances by professionals; and participate in master classes. Offered by Dewberry School of Music. May not be repeated for credit.

Recommended Prerequisite: Admission to graduate-level Private Music Instruction in a keyboard instrument or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MUSI 573: *Accompanying and Musicianship III.* 3 credits.
For piano majors or students with significant keyboard skills. Offered by Dewberry School of Music. May not be repeated for credit.

Recommended Prerequisite: MUSI 572.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MUSI 577: *Music and Consciousness.* 3 credits.
A Study of the ways music has affected the mind and brain from throughout history to the present day. By using the principles of entrainment and resonance, it will be demonstrated experientially the various methods by which music is used to alter consciousness. Offered by Dewberry School of Music. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MUSI 592: *Topics in Music.* 1-6 credits.
Intensive study of selected topics in performance, composition, or conducting. Individual research, group discussions, and participation in related activities. Notes: May be repeated as topics change. Offered by Dewberry School of Music. May be repeated within the term for a maximum 12 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: Baccalaureate degree in music.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Studio

Grading:
This course is graded on the Graduate Regular scale.

MUSI 593: *Foundations of Music Education.* 3 credits.
This course prepares students to address aspects of administration management of music programs in public and private schools. Various principles and concepts of management styles and planning are investigated. Topics addressed include: curriculum, budget, student recruitment and retention, music facilities, external relations of the music unit and legal issues for music educators. Offered by Dewberry School of Music. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MUSI 595: *Internship in Music Education.* 6-9 credits.
This course prepares students to successfully plan and implement pedagogical strategies for the effective teaching of instrumental music. Students will also gain experience administering a music program in the elementary and secondary school music curriculum. Students will participate in class teaching modules and field experiences in the public schools. Offered by Dewberry School of Music. May not be repeated for credit.

Recommended Prerequisite: 1. Completion of all courses required for the Graduate Certificate in Music Education Licensure for PK-12. 2. Successful completion of the Music Education "Instrumental Proficiency Exam" requirements listed in the Music Education Handbook. 3.

Successful completion of the Praxis I Examination (or equivalency), and VCLA (or Praxis I equivalency).

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Graduate Regular scale.

600 Level Courses

MUSI 610: *Topics in Music Theory.* 3 credits.
Uses music analytical theories to examine repertoire from a given time period or style. Notes: May be repeated as topics change. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 9 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: MUSI 501, 502, and 516 or appropriate score on graduate placement exam.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MUSI 611: *Analytical Techniques.* 3 credits.
Detailed formal and stylistic examination of music selected from the major style periods. Development of graduate-level analytical skills. Offered by Dewberry School of Music. May not be repeated for credit.

Recommended Prerequisite: MUSI 501, 502, and 516 or appropriate score on graduate placement exam.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MUSI 613: *Graduate Orchestration.* 3 credits.
Intensive study of instrumentation through analysis and arrangement. Includes contemporary techniques and scoring for large forces. Offered by Dewberry School of Music. May not be repeated for credit.

Recommended Prerequisite: MUSI 501, 502, and 516 or appropriate score on the graduate placement exam.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MUSI 614: *Music Theory Pedagogy.* 3 credits.
Study of materials and procedures in the teaching of undergraduate-level music theory subjects. Offered by Dewberry School of Music. May not be repeated for credit.

Recommended Prerequisite: Baccalaureate degree in music, graduate placement exam.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MUSI 615: *Advanced Jazz Improvisation.* 3 credits.
Advanced techniques and applications of jazz improvisation. Offered by Dewberry School of Music. May not be repeated for credit.

Recommended Prerequisite: Graduate placement exam or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MUSI 621: *Graduate Applied Music.* 1 credit.
Graduate Applied music studies Offered by Dewberry School of Music. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Audition or portfolio.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Private Music Instruction

Grading:
This course is graded on the Graduate Regular scale.

MUSI 622: *Applied Music in Keyboard.* 1 credit.
Applied music studies in Keyboard. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Audition.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Private Music Instruction

Grading:
This course is graded on the Graduate Regular scale.

MUSI 623: *Applied Music in Voice.* 1 credit.
Applied music studies in Voice. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Audition.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Private Music Instruction

Grading:
This course is graded on the Graduate Regular scale.

MUSI 624: *Applied Music in Woodwind.* 1 credit.
Applied music studies in Woodwind. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Audition.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Private Music Instruction

Grading:
This course is graded on the Graduate Regular scale.

MUSI 625: *Applied Music in Brass.* 1 credit.
Applied Music studies in Brass. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Audition.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Private Music Instruction

Grading:
This course is graded on the Graduate Regular scale.

MUSI 626: *Applied Music in String.* 1 credit.
Applied Music studies in String. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Audition.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Private Music Instruction

Grading:
This course is graded on the Graduate Regular scale.

MUSI 627: *Applied Music in Percussion.* 1 credit.
Applied Music studies in Percussion. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Audition.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Private Music Instruction

Grading:
This course is graded on the Graduate Regular scale.

MUSI 628: *Applied Music in Composition.* 1 credit.
Applied Music studies in Composition. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Portfolio of recent compositions.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Private Music Instruction

Grading:
This course is graded on the Graduate Regular scale.

MUSI 629: *Applied Music in Conducting.* 1 credit.
Applied Music studies in Conducting. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Audition.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Private Music Instruction

Grading:
This course is graded on the Graduate Regular scale.

MUSI 630: *Topics in Music History and Literature.* 3 credits.
Examination of a musical style, genre, composer, compositional school, or historical development. Primary and secondary source materials studied in historical and analytical contexts. Notes: May be repeated as topics change. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 9 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: MUSI 532 and 533 or appropriate score on the graduate placement exam.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MUSI 640: *Topics in World Musics.* 3 credits.
Study of musics from selected cultures. Students will study structural, social, and cognitive foundations of the music. Notes: May be repeated as topics change. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 9 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: Baccalaureate degree in music, graduate placement exam.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MUSI 650: *Topics in Jazz Studies.* 3 credits.
Study of selected topics in performance, composition, arranging and analysis. May be repeated for up to 9 credits as topics change. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 9 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: Graduate placement exam or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MUSI 651: *Keyboard Pedagogy II.* 3 credits.
Develop effective teaching strategies, business practices, and investigative/diagnostic approaches in repertoire exploration to prepare/improve teaching abilities in independent studio. Examine professional role of independent piano teacher, investigate scope and sequence of repertoire development, explore creative activities and computer use in the studio, develop understanding of technical skill development, examine intermediate/advanced keyboard repertoire, explore various teaching strategies/philosophies. Offered by Dewberry School of Music. May not be repeated for credit.

Recommended Prerequisite: Keyboard Pedagogy I.

Registration Restrictions:

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MUSI 652: *Vocal Pedagogy II.* 3 credits.
A continuation of vocal pedagogy I, which focused on teaching voice through the rudimentary and systematic study of vocal physiology and pedagogical methods, and included the process, procedures, development and practice of the art of singing. Pedagogy II provides students the opportunity to apply this information to real life situations through use of four specific scenarios and practical teaching experience. Offered by Dewberry School of Music. May not be repeated for credit.

Recommended Prerequisite: Vocal Pedagogy I.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MUSI 653: *Instrumental Pedagogy II.* 3 credits.
Prepares students for teaching string techniques of their major instrument for all levels through study of pedagogical methods and standard literature. Develop sound business practices/policies to ensure success in setting up a private studio; become familiar with local/national professional organizations serving the string teaching community; explore teaching abilities through a case study project involving one or more students. Offered by Dewberry School of Music. May not be repeated for credit.

Recommended Prerequisite: Instrumental Pedagogy I.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MUSI 654: *Graduate Conducting.* 3 credits.
Classroom study of conducting, including refining gestures, rehearsal leadership, and the communication of musical style. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 9 credits.

Recommended Prerequisite: Baccalaureate degree in music, graduate placement exam.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MUSI 660: *Topics in Music Education.* 1-6 credits.
Examination of specific areas of concern to music educators. Individual research, group discussions, and participation in related activities. Notes: May be repeated as topics change. Offered by Dewberry School of Music. May be repeated within the term for a maximum 9 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: Baccalaureate degree in music; graduate placement exam.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MUSI 661: *Psychology of Music Teaching and Learning.* 3 credits.
Study of the learner's musical behaviors (affective, cognitive, and psychomotor) in an effort to devise an empirically based teaching method founded on learning principles. Offered by Dewberry School of Music. May not be repeated for credit.

Recommended Prerequisite: Baccalaureate degree in music; graduate placement exam.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MUSI 662: *Introduction to Research in Music.* 3 credits.
Development of skills, attitudes, and understanding to conduct and report research in music, including philosophical bases, scope and organization, stylistic practices in writing research reports, study of materials and resources in music and music education, and proper use of library and other research services. Offered by Dewberry School of Music. May not be repeated for credit.

Recommended Prerequisite: Baccalaureate degree in music or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MUSI 663: *Aesthetics of Music Education.* 3 credits.
Study of philosophical foundations of contemporary music education, and critical examination of music programs and activities in aesthetic education and efforts by music education establishment to enhance them. Offered by Dewberry School of Music. May not be repeated for credit.

Recommended Prerequisite: Baccalaureate degree in music or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MUSI 664: *Advanced Pedagogy.* 3 credits.
Advanced instruction in pedagogy including study of methods, theories, techniques, and materials for teaching children and adult students. Offered by Dewberry School of Music. May not be repeated for credit.

Recommended Prerequisite: MUSI 551, or MUSI 552, or MUSI 553, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MUSI 681: *Graduate Choral Ensembles.* 1 credit.
Performance of works from the choral repertoire. Notes: Public concerts are given. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Audition.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Studio

Grading:
This course is graded on the Graduate Regular scale.

MUSI 682: *Wind Symphony.* 1 credit.
Highly selective group of instrumentalists performing works from the wind repertoire. Notes: Public concerts are given. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Audition.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Studio

Grading:
This course is graded on the Graduate Regular scale.

MUSI 683: *Symphonic Band.* 1 credit.
Performance of works from band repertoire. Notes: Public concerts are given. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 9 credits.

Recommended Prerequisite: Audition.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Studio

Grading:

This course is graded on the Graduate Regular scale.

MUSI 685: *Graduate Chamber Ensemble.* 1 credit.
Performance of works from chamber music repertoire. Notes: Public concerts are given. Offered by Dewberry School of Music. May be repeated within the term for a maximum 6 credits.

Recommended Prerequisite: Audition.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Studio

Grading:
This course is graded on the Graduate Regular scale.

MUSI 687: *Symphony Orchestra.* 1 credit.
Performance of works from orchestral repertoire. Notes: Public concerts are given. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Audition.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Studio

Grading:
This course is graded on the Graduate Regular scale.

MUSI 688: *Opera and Musical Theater Ensemble.* 3 credits.
Solo-vocal, performance-oriented ensemble class that presents operatic works or excerpts from them, from Baroque to 21st century, as well as works or excerpts from American musical theater. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 12 credits.

Recommended Prerequisite: Audition.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MUSI 689: *Jazz Ensemble.* 1 credit.
Provides practical experience in aspects of jazz performance. Participation in section rehearsals and small and large jazz groups. Jazz improvisation expected. Notes: Public concerts are given. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Audition.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Studio

Grading:
This course is graded on the Graduate Regular scale.

MUSI 690: *Graduate Lecture Recital.* 1-3 credits.
Combination of musical performance and scholarly presentation on a well-defined topic. Notes: Public presentation required. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Baccalaureate degree in music, audition.

Recommended Corequisite: MUSI 621 (3-credit level).

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Regular scale.

MUSI 695: *Teaching Internship.* 2 credits.
Teaching beginner, intermediate, and early advanced students in private or group lessons under faculty supervision. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 4 credits.

Recommended Prerequisite: MUSI 660.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Regular scale.

MUSI 698: *Comprehensive Exit Exam/Portfolio.* 0 credits.
Comprehensive exit exam/portfolio submitted during the graduation semester or, in the case of students selecting the thesis option in the music education concentration, on completion of 24 credits of course work and immediately before beginning work on the thesis. For all students other than those enrolled in the online MM in music education, this exam is usually a three-hour written test, with questions based primarily on course work the student has taken toward the degree at Mason. Students enrolled in the online MM in music education submit a comprehensive electronic portfolio in place of a comprehensive exit exam. Offered by Dewberry School of Music. May not be repeated for credit.

Recommended Prerequisite: Permission of Director of Graduate Studies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Satisfactory/No Credit scale.

MUSI 699: *Independent Study.* 1-3 credits.
Individual research and study a concentration available in the master of music. Offered by Dewberry School of Music. May be repeated within the term for a maximum 6 credits.

Recommended Prerequisite: Baccalaureate degree in music and permission of graduate coordinator. Individualized section form required.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Regular scale.

700 Level Courses

MUSI 710: *Advanced Topics in Music Theory.* 3 credits.
Advanced study of specific styles and repertoire from the perspective of various analytical approaches. Notes: May be repeated as topics change. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 9 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: MUSI 501, 502, and 516 or appropriate score on graduate placement exam.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MUSI 712: *Composition for Conductors and Performers.* 3 credits.
Advanced study of new music for various media. Notes: This course is not for students in the composition concentration. Offered by Dewberry School of Music. May not be repeated for credit.

Recommended Prerequisite: Baccalaureate degree in music, graduate placement exam.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MUSI 720: *Advanced Topics in Applied Music.* 3 credits.
Advanced study of concepts in applied music. Notes: May be repeated as topics change. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: Baccalaureate degree in music, graduate placement exam.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MUSI 721: *Applied Music.* 2-3 credits.
Applied Music studies. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 18 credits.

Recommended Prerequisite: Audition or portfolio.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Private Music Instruction

Grading:
This course is graded on the Graduate Regular scale.

MUSI 722: *Applied Music in Keyboard.* 2-3 credits.
Applied music studies in Keyboard. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 18 credits.

Recommended Prerequisite: Audition.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Private Music Instruction

Grading:
This course is graded on the Graduate Regular scale.

MUSI 723: *Applied Music in Voice.* 2-3 credits.
Applied music in Voice. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 18 credits.

Recommended Prerequisite: Audition.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Private Music Instruction

Grading:
This course is graded on the Graduate Regular scale.

MUSI 724: *Applied Music in Woodwind.* 2-3 credits.
Applied music studies in Woodwind. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 18 credits.

Recommended Prerequisite: Audition.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Private Music Instruction

Grading:
This course is graded on the Graduate Regular scale.

MUSI 725: *Applied Music in Brass.* 2-3 credits.
Applied music studies in Brass. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 18 credits.

Recommended Prerequisite: Audition.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Private Music Instruction

Grading:
This course is graded on the Graduate Regular scale.

MUSI 726: *Applied Music in String.* 2-3 credits.
Applied music studies in String. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 18 credits.

Recommended Prerequisite: Audition.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Private Music Instruction

Grading:
This course is graded on the Graduate Regular scale.

MUSI 727: *Applied Music in Percussion.* 2-3 credits.
Applied music studies in Percussion. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 18 credits.

Recommended Prerequisite: Audition.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Private Music Instruction

Grading:
This course is graded on the Graduate Regular scale.

MUSI 728: *Applied Music in Composition.* 2-3 credits.
Applied music studies in Composition. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 18 credits.

Recommended Prerequisite: Portfolio of recent compositions.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Private Music Instruction

Grading:
This course is graded on the Graduate Regular scale.

MUSI 729: *Applied Music in Conducting.* 2-3 credits.
Applied music studies in Conducting. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 18 credits.

Recommended Prerequisite: Audition.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Private Music Instruction

Grading:
This course is graded on the Graduate Regular scale.

MUSI 730: *Advanced Topics in Music History.* 3 credits.
Advanced study of specific genres, composers, or repertoire from a historically analytical perspective. Notes: May be repeated as topics change. Offered by Dewberry School of Music. May be repeated within the term for a maximum 9 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: MUSI 532 and 533 or appropriate score on the graduate placement exam.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:

This course is graded on the Graduate Regular scale.

MUSI 760: *Advanced Topics in Music Education.* 3 credits.
Advanced study of selected issues in music education. Notes: May be repeated as topics change. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 9 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: Baccalaureate degree in music, graduate placement exam.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MUSI 770: *Advanced Topics in Pedagogy.* 3 credits.
Advanced study of a specific topic in the pedagogy of music. Notes: May be repeated as topics change. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: Baccalaureate degree in music, graduate placement exam.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MUSI 777: *Music and Consciousness 2.* 3 credits.
The scientific mechanisms behind vibrational healing are uncovered showing how energy medicine affects Well -Being in a positive way. Offered by Dewberry School of Music. May not be repeated for credit.

Recommended Prerequisite: MUSI 577 or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MUSI 780: *Doctoral Research Methods in Music.* 3 credits.
Development of analytical skills to design and create an original contribution to music scholarship at the doctoral level, by making students aware of the varied tools available to them to write a mock dissertation proposal. Offered by Dewberry School of Music. May not be repeated for credit.

Recommended Prerequisite: Graduate Placement exam.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

MUSI 790: *Graduate Recital.* 1 credit.
Public performance. Repertoire and performance standards as approved by faculty. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 4 credits.

Recommended Prerequisite: At least three credits of graduate PMI in the appropriate instrument or voice.

Recommended Corequisite: MUSI 700-level PMI (3-credits).

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Private Music Instruction

Grading:
This course is graded on the Graduate Regular scale.

MUSI 796: *Directed Reading/Research.* 1-3 credits.
Individualized study on a topic approved by faculty. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Baccalaureate degree in music, graduate placement exam.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Special scale.

MUSI 799: *Thesis.* 1-6 credits.
Supervised research on approved thesis topic. Offered by Dewberry School of Music. May be repeated within the degree.

Recommended Prerequisite: Completion of at least 12 hours of graduate study including MUSI 511 and approval of the topic. Students in the music education concentration must also have taken MUSI 562 and successfully passed the comprehensive exit examination.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Thesis

Grading:
This course is graded on the Satisfactory/No Credit scale.

800 Level Courses

MUSI 800: *Studies for the Doctor of Philosophy in Education.* 1-6 credits.
Program of studies designed by the student's discipline director and approved by student's doctoral committee that brings student to participate in research, performance, or creative activity of discipline director and results in a paper reporting original contributions. Offered by Dewberry School of Music. May be repeated within the degree.

Recommended Prerequisite: Open only to PhD Education students admitted to study in music.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Regular scale.

MUSI 810: *Doctoral Seminar in Analysis.* 3 credits.
Seminar study of a specific genre or repertoire from various analytical perspectives. Notes: May be repeated as topics change. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 9 credits.

Recommended Prerequisite: Graduate placement examination.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

MUSI 821: *Doctoral Private Music Instruction.* 2-3 credits.
Private instruction in performance, conducting, or composition. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 18 credits.

Recommended Prerequisite: Audition or portfolio.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Private Music Instruction

Grading:
This course is graded on the Graduate Regular scale.

MUSI 822: *Doctoral Applied Music in Keyboard.* 2-3 credits.
Doctoral applied music studies in Keyboard. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 18 credits.

Recommended Prerequisite: Audition.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Private Music Instruction

Grading:
This course is graded on the Graduate Regular scale.

MUSI 823: *Doctoral Applied Music in Voice.* 2-3 credits.
Doctoral applied music studies in Voice. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 18 credits.

Recommended Prerequisite: Audition.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Private Music Instruction

Grading:
This course is graded on the Graduate Regular scale.

MUSI 824: *Doctoral Applied Music in Woodwind.* 2-3 credits.
Doctoral applied music studies in Woodwind. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 18 credits.

Recommended Prerequisite: Audition.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Private Music Instruction

Grading:
This course is graded on the Graduate Regular scale.

MUSI 825: *Doctoral Applied Music in Brass.* 2-3 credits.
Doctoral applied music studies in Brass. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 18 credits.

Recommended Prerequisite: Audition.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Private Music Instruction

Grading:
This course is graded on the Graduate Regular scale.

MUSI 826: *Doctoral Applied Music in String.* 2-3 credits.
Doctoral applied music studies in String. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 18 credits.

Recommended Prerequisite: Audition.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Private Music Instruction

Grading:
This course is graded on the Graduate Regular scale.

MUSI 827: *Doctoral Applied Music in Percussion.* 2-3 credits.
Doctoral applied music studies in Percussion. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 18 credits.

Recommended Prerequisite: Audition.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Private Music Instruction

Grading:
This course is graded on the Graduate Regular scale.

MUSI 828: *Doctoral Applied Music in Composition.* 2-3 credits.
Doctoral applied music studies in Composition. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 18 credits.

Recommended Prerequisite: Portfolio of recent compositions.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Private Music Instruction

Grading:
This course is graded on the Graduate Regular scale.

MUSI 829: *Doctoral Applied Music in Conducting.* 2-3 credits.
Doctoral applied music studies in Conducting. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 18 credits.

Recommended Prerequisite: Audition.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Private Music Instruction

Grading:
This course is graded on the Graduate Regular scale.

MUSI 830: *Doctoral Seminar in Music History.* 3 credits.
Seminar study of a specific genre, composer, or repertoire from a historically analytical perspective. Notes: May be repeated as topics change. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 9 credits.

Recommended Prerequisite: Graduate placement exam.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

MUSI 860: *Doctoral Seminar in Music Education.* 3 credits.
Seminar study of a specific issue in music education. Notes: May be repeated as topics change. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 12 credits.

Recommended Prerequisite: Graduate placement exam.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

MUSI 880: *Doctoral Major Ensemble.* 1 credit.
Selective ensemble experience for doctoral students in music. Notes: Public concerts are given. Offered by Dewberry School of Music. May be repeated within the term for a maximum 6 credits.

Recommended Prerequisite: Audition.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Studio

Grading:
This course is graded on the Graduate Regular scale.

MUSI 890: *Doctoral Recital.* 1 credit.
Public performance. Repertoire and performance standards as approved by faculty. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 4 credits.

Recommended Prerequisite: At least three credits of MUSI 821 in the appropriate instrument or voice.

Recommended Corequisite: MUSI 821 for 3 credits.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Private Music Instruction

Grading:
This course is graded on the Graduate Regular scale.

900 Level Courses

MUSI 998: *Dissertation Proposal.* 1-3 credits.
Preparation of a proposal for a dissertation study in music under the supervision of music faculty members. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Admission to a doctoral program in music, permission of faculty.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

MUSI 999: *Dissertation.* 1-12 credits.
Preparation of a dissertation in music under the supervision of music faculty members. Offered by Dewberry School of Music. May be repeated within the degree for a maximum 12 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy.

Enrollment is limited to Graduate level students.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

Native American and Indigenous Studies (NAIS)

200 Level Courses

NAIS 201: *Introduction to Native American and Indigenous Studies.* 3 credits.
Introduction to the history, social organization, political experience, and artistic expression of indigenous peoples of the western hemisphere, focusing primarily on American Indians, using methods and materials from a number of disciplines. Offered by English. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

NAIS 499: *Independent Study.* 3 credits.
Intensive study of a particular area, topic, or critical or theoretical problem related to Native American and Indigenous Studies to be conducted in close consultation with an instructor. At least one substantial, researched piece of written work required. Offered by English. Limited to three attempts.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

Neuroscience (NEUR)

100 Level Courses

NEUR 101: *Introduction to Neuroscience.* 3 credits.
This course is for students interested in the science of the brain from its evolutionary origins to its role in health and behavior. We examine systems that make up the brain from neurons to circuits. We explore trends in neuroscience experimentation including neuroimaging, computational neuroscience and neuropharmacology. May not be taken for major or minor credit after 300-level PSYC or NEUR courses. Offered by Neuroscience. Limited to three attempts.

Mason Core: Natural Science Overview

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

300 Level Courses

NEUR 327: *Cellular, Neurophysiological, and Pharmacological Neuroscience.* 3 credits.
Basic concepts of cellular and molecular level neuroscience, including neuronal functions, cellular anatomy and membrane functions, electrical properties of neurons, and cellular basis of plasticity. Offered by Neuroscience. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (CHEM 211[C] or 211[XS]) and (CHEM 213[C] or 213[XS]) and (BIOL 213[C] or 213[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

NEUR 335: *Molecular, Developmental, and Systems Neuroscience.* 3 credits.
In-depth survey of genetic and embryological development of the brain and introduction to systems neuroscience, including sections on patterning gene expression, generation and migration of neurons, axonal and dendritic outgrowth, and basic neuroanatomy. Offered by Neuroscience. Limited to three attempts.

Recommended Prerequisite: PSYC 373 (may also be enrolled concurrently), PSYC 376.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

NEUR 405: *RS: Laboratory Methods in Behavioral Neuroscience.* 3 credits.
Introduction to experimental methods used in behavioral neuroscience research. Laboratory work includes surgical, histological and behavioral techniques. Proper use and handling of animals, ethical issues, evaluation of neuroscience literature, experimental design and data analysis are addressed. This requires working with laboratory rodents. Offered by Neuroscience. Limited to three attempts.

Specialized Designation: Research/Scholarship Intensive

Recommended Prerequisite: PSYC 300, BIOL 312 or equivalent. PSYC 372 or PSYC 376 or permission of instructor.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

NEUR 406: *Zebrafish Neurodevelopment Laboratory.* 3 credits.
Introduction to experimental methods used in neurodevelopment research, using zebrafish as a model system. Includes zebrafish embryo manipulation, microscopy, and histology, with a focus on vertebrate nervous system development and disease. Experimental design, research methods, data analysis and ethical issues are addressed. Scholarly research projects are incorporated. Notes: This requires working with live zebrafish embryos. Offered by Neuroscience. Limited to three attempts.

Specialized Designation: Research/Scholarship Intensive

Recommended Prerequisite: PSYC 300, BIOL 312 or equivalent. BIOL 213, NEUR 327 and NEUR 335.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

NEUR 407: *Lab Investigations Using Voltage Clamp Electrophysiology.* 3 credits.
Introduction to neurophysiology using two electrode voltage clamp. Basic and advanced concepts of neurophysiology such as membrane potentials and neuronal channel and receptor function are covered. Includes theory of bioelectrical amplifiers, properties of biological

membranes, and principles of physiological software and hardware. Students will learn skills such as making physiological solutions, using micromanipulators, basic molecular biology techniques, and obtaining and handling oocytes from the African clawed toad Xenopus Laevis depending on the students' chosen projects. Students will read primary literature, design, and execute scholarly research projects. Notes: This course requires working with live amphibians. Offered by Neuroscience. Limited to two attempts.

Specialized Designation: Mason Impact.

Recommended Prerequisite: PHYS 245

Registration Restrictions:
Required Prerequisites: NEUR 327[C] or 327[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

NEUR 410: *Current Topics in Neuroscience.* 3 credits.
Overview of current topics in neuroscience, focusing on research at Mason. Offered by Neuroscience. Limited to three attempts.

Specialized Designation: Topic Varies, Writing Intensive in Major

Recommended Prerequisite: PSYC 375, 376, ENGH 302. NSCI 327 recommended.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

NEUR 411: *Seminar in Neuroscience.* 3 credits.
Advanced seminar on a selected topic in neuroscience. Includes in depth reading and discussion of current research in human and nonhuman animals, with an emphasis on critical evaluation. Notes: Course may be repeated if selected topic is different. Offered by Neuroscience. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Writing Intensive in Major

Registration Restrictions:
Required Prerequisites: (ENGH 302[C] or 302[XS]) and (NEUR 327[C], 327[XS], 335[C] or 335[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

NEUR 422: *Glutamatergic Systems.* 3 credits.
A survey of molecular and clinical neuroscience from the perspective of glutamatergic systems. This course will use the reading of primary scientific literature to guide students to learn a variety of neural systems, methods in neuroscience, and levels of analysis. Students will develop critical thinking skills through communicating and critiquing papers. Offered by Neuroscience. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (NEUR 327[C] or 327[XS]) and (NEUR 335[C] or 335[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

NEUR 440: *Independent Study in Neuroscience.* 1-3 credits.
Independent research based a laboratory or field investigation under the guidance of a faculty member, assisting with research on faculty projects, or reviewing the literature on a specific research topic. Notes: A maximum of 6 hours of independent study may be applied towards the major. Offered by Neuroscience. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: NEUR 327, 30 hours of course work with a grade point average of 3.0, or permission of instructor.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

NEUR 450: *Honors Thesis Proposal.* 2-3 credits.
Work on proposal for thesis based a laboratory or field investigation under the guidance of a faculty member. Notes: A total of 6 hours must be taken in NEUR 450 and 451. A minimum of 2 hours and a maximum of 3 hours may be taken in NEUR 450. Offered by Neuroscience. Limited to three attempts.

Recommended Prerequisite: NEUR 327; 335; 410 or 411, may be taken as co-requisites. PSYC 300 or equivalent statistics course. Permission of NAC undergraduate committee and thesis director.

Schedule Type: Independent Study

Grading:
This course is graded on the Satisfactory/No Credit scale.

NEUR 451: *Honors Thesis.* 3-4 credits.
Thesis based a laboratory or field investigation under the guidance of a faculty member. Notes: A total of 6 hours must be taken in NEUR 450 and 451. A minimum of 3 hours and a maximum of 4 hours may be taken in NEUR 451. Offered by Neuroscience. Limited to three attempts.

Recommended Prerequisite: NEUR 450.

Schedule Type: Independent Study

Grading:
This course is graded on the Satisfactory/No Credit scale.

NEUR 461: *Special Topics in Neuroscience.* 1-3 credits.
Selected topics reflecting in specialized areas of neuroscience. Notes: May be repeated for credit when topic is different. Offered by Neuroscience. May be repeated within the term for a maximum 12 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: PSYC 372, 375, or equivalent or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

NEUR 480: *Biological Bases of Alzheimer's Disease.* 3 credits.
A survey of the causes, symptoms, drug treatments, risk factors and preventative measures associated with Alzheimer's disease. Offered by Neuroscience. Limited to three attempts.

Recommended Prerequisite: PSYC 375; PSYC 376; PSYC 375 or equivalent or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

500 Level Courses

NEUR 592: *Special Topics in Neuroscience.* 3 credits.
Special topics in neuroscience reflecting specialized areas or new subfields that not covered in fixed-content neuroscience courses. Course may be repeated for credit as needed. Offered by Neuroscience. May be repeated within the degree for a maximum 9 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: NEUR 327, NEUR 335 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

600 Level Courses

NEUR 600: *Chemistry and the Brain.* 3 credits.
Fundamentals of general chemistry, atoms, molecules, and reactions, with emphasis on water solutions. Organic compounds and functional groups, biosynthesis and properties, and examples from nervous system. Also includes biopolymers and their roles in cellular and neuronal organization, ionic channels, neurotransmitter receptors, and psychoactive substances. Offered by Neuroscience. May not be repeated for credit.

Recommended Prerequisite: Admission to neuroscience PhD program or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

NEUR 601: *Developmental Neuroscience.* 3 credits.
Introduction to developmental neurobiology with overview of embryological development of the nervous system. Topics include neural induction, patterning/cell fate specification, and neural circuit assembly together with modern molecular methods for exploring neural development. Offered by Neuroscience. May not be repeated for credit.

Recommended Prerequisite: Completion of 60 credits, including PSYC 372 or BIOL 213 or BIOL 303.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

NEUR 602: *Cellular Neuroscience.* 3 credits.
Detailed overview of the functioning and interactions of the cellular elements of the central nervous system. Topics include structure and function relationships, the chemical, physical, and electrical basis of neural signaling, local versus long-distance signaling, generation of action potentials, and essentials of synaptic communication. Offered by Neuroscience. May not be repeated for credit.

Recommended Prerequisite: Admission to the PhD program in Neuroscience or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

NEUR 603: *Mammalian Neuroanatomy.* 3 credits.
Focus on mammalian brain organization and function, emphasizing human neurobiology. Modern experimental and clinical tools explain: gross and microscopic brain organization; functional brain circuits for sensory and motor processing; higher brain organization and function; and development of selected brain areas. The knowledge gained is then used to explain the clinical symptoms occurring after specific brain insults. Offered by Neuroscience. May not be repeated for credit.

Recommended Prerequisite: One course in neuroscience (or equivalent biology course), or permission of instructor.

Registration Restrictions:

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

NEUR 604: *Ethics in Scientific Research.* 1-3 credits.
Reflects on purpose of scientific research and reviews foundational principles for evaluating ethical issues. Offers skills for survival in scientific research through training in moral reasoning and teaching of responsible conduct. Discusses ethical issues in research, and teaches how to apply critical thinking skills to design, execution, and analysis of experiments. Issues include using animals and humans in research, ethical standards in computer community, and research fraud. Currently accepted guidelines for behavior in data ownership, manuscript preparation, and conduct of persons in authority may be presented and discussed in terms of relevant ethical issues. Offered by Neuroscience. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree, Undergraduate or Washington Consortium level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

NEUR 611: *Philosophical Foundation of Neuroscience.* 3 credits.
This course presents the joint histories of the nature of thought, the philosophy of science, the construct of self, and the nature of mind. Offered by Neuroscience. May not be repeated for credit.

Recommended Prerequisite: Any course in neuroscience or permission of the instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

NEUR 612: *Neuroethics.* 3 credits.
Neuroethics explores the implications of developments in basic and clinical neuroscience on social and ethical issues. This course will survey emerging questions raised by recent neuroscientific discoveries on genetic and environmental factors that influence human behavior, decision-making, personality traits, and mental states. Grades will be based on article presentation, class participation, and final written report. Offered by Neuroscience. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

NEUR 621: *Synaptic Plasticity.* 3 credits.
Course on activity-dependent modification of functional connectivity in the central nervous system as it relates to development, cognition, and disease. Offered by Neuroscience. May not be repeated for credit.

Recommended Prerequisite: NEUR 602.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

NEUR 634: *Neural Modeling.* 3 credits.
Introduces the objectives, philosophy, and methodology of neuronal modeling. Instructs students in the use of some of the more popular neural modeling software packages. Students learn the syntax of several software packages, how to create neurons from subcellular components, and how to create networks by connecting neuron models. Offered by Neuroscience. May not be repeated for credit.

Recommended Prerequisite: NEUR 602 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

NEUR 651: *Molecular Neuropharmacology.* 3 credits.
Presents key concepts in cellular and molecular neuropharmacology Provides an in-depth survey of receptor driven cell function, which includes recent topics in cell structure, membrane function, electrical

properties of neurons and intracellular signaling. Enables an introduction to research tools and rends in study of neuronal systems via a reading and an analysis of the primary literature. Offered by Neuroscience. May not be repeated for credit.

Recommended Prerequisite: NEUR 602 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

NEUR 689: *Topics in Neuroscience.* 3 credits.
Selected topics in neuroscience reflecting specialized areas or new subfields not covered in fixed-content neuroscience courses. Offered by Neuroscience. May be repeated within the term for a maximum 12 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

700 Level Courses

NEUR 701: *Neuroscience Laboratory.* 3 credits.
Advanced training in experimental techniques used in current neuroscience research. Acquaints students with the theoretical basis of multiple techniques and trains the student in the laboratory skills necessary to perform each technique. Includes work in model systems or cell culture, microscopy, histology and data analysis. Notes: This lab requires working with live zebrafish embryos. Offered by Neuroscience. May not be repeated for credit.

Recommended Prerequisite: NEUR 601 and admission to neuroscience PhD program, or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory

Grading:
This course is graded on the Graduate Regular scale.

NEUR 702: *Research Methods.* 3 credits.
Trains students in research methodologies for life sciences. Covers the four aspects of biological research projects: experimental design, data collection, data analysis and research ethics. Offered by Neuroscience. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

NEUR 703: *Laboratory Rotation and Readings.* 3 credits.
Intensive introduction to a research laboratory in neuroscience. The student will read background material pertinent to the problem under study, learn and practice research methods of the laboratory, and formulate a short final project, which may be a proposal or an actual project, demonstrating some mastery of the techniques and approaches employed. Offered by Neuroscience. May be repeated within the term for a maximum 9 credits.

Recommended Prerequisite: Admission to the PhD program in Neuroscience.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Regular scale.

NEUR 709: *Neuroscience Seminars.* 1 credit.
Special seminar series for first year neuroscience PhD students. Detailed overview of neuroscience research at Mason. Each week, a different neuroscience laboratory and principal investigator lectures to students. The lecture includes the neuroscience basics necessary to appreciate the laboratory research theme and mission, and a more practical description of the active research program, possibly including a visit to the laboratory. Offered by Neuroscience. May not be repeated for credit.

Recommended Prerequisite: Admission to the Neuroscience PhD program.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

NEUR 710: *Special Topics in Neuroscience.* 1 credit.
Examines topics in neurosciences, including neurogenetics, neural imaging, and the competing computational and biological approaches to understanding the mind. Offered by Neuroscience. May not be repeated for credit.

Specialized Designation: Topic Varies

Recommended Prerequisite: Admission to the Neuroscience PhD program.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

NEUR 734: *Computational Neurobiology.* 3 credits.
Intense review of neurobiology for graduate students interested in studying how nerve cells integrate and transmit signals, and how behavior emerges from integrated actions of populations or circuits of nerve cells. Covers electrical and biochemical properties of single neurons, and electrical and chemical communication between neurons. Emphasizes mathematical descriptions and computational techniques to study and understand neurons and networks of neurons. Offered by Neuroscience. May not be repeated for credit.

Recommended Prerequisite: NEUR 602 and MATH 214, or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

NEUR 735: *Computational Neuroscience Systems.* 3 credits.
Intensive introduction to systems neuroscience from quantitative perspective. Covers computational techniques used to study function of networks of neurons. Uses spike train statistics, neural encoding, and information theory to investigate behaviors that emerge from integrated actions of networks of neurons. Offered by Neuroscience. May not be repeated for credit.

Recommended Prerequisite: NEUR 734 or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

NEUR 741: *Introduction to Neuroimaging.* 3 credits.
Introduction to physics and techniques of magnetic resonance imaging (MRI) and their applications to clinical and basic neuroscience. Students learn about the protocols used in the acquisition of images in both structural and functional contexts, and experimental paradigms applied to the exploration of cognition, learning, and development. Students gain experience with creating an experimental design for a study and understanding practical logistics involved in imaging, such as MRI safety and subject screening. Offered by Neuroscience. May not be repeated for credit.

Recommended Prerequisite: NEUR 602 or 603, or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

NEUR 742: *Cognitive Neuroscience.* 3 credits.
Introduces cognitive neuroscience topics, including aspects of cognitive science covering an array of perceptual, sensory, cognitive, and affective processes. Incorporates studies of brain lesions, brain imaging, and animal and computational models. Offered by Neuroscience. May not be repeated for credit.

Recommended Prerequisite: NEUR 602 or NEUR 603 or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

NEUR 751: *Applied Dynamics in Neuroscience.* 3 credits.
Covers recent developments in the application of applied dynamics to neuroscience. Emphasizes dynamical system approach to the understanding of neural processes. Topics include neural synchrony and control; formation of waves; oscillations; patterns within neural ensembles; network topology and dynamics of neurons; and decoding and encoding of neural signals. Offered by Neuroscience. May not be repeated for credit.

Recommended Prerequisite: CSI 734, PSYC 531, or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

NEUR 752: *Modern Instrumentation in Neuroscience.* 3 credits.
Builds on knowledge of how and what things are measured and controlled in modern bioinstrumentation. Topics include fundamental instrumentation; principles of sensing; basic electronics; computer interfaces and data acquisition; signals in biological systems; biopotential and ionic concentration measurements; and optical techniques. Offered by Neuroscience. May not be repeated for credit.

Recommended Prerequisite: NEUR 602 or 734, or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

800 Level Courses

NEUR 851: *Advanced Computation and Brain Dynamics.* 3 credits.
In-depth study of open issues and the state-of-the-art in advanced brain dynamics. Using mathematical and physical models, the course covers the neurodynamical aspects of neural nets, receptive fields, ion-channels, intercortical interactions, phase-locking, synchronicity, and the possible nontrivial role of quantum effects. Offered by Neuroscience. May not be repeated for credit.

Recommended Prerequisite: CSI 734, PSYC 531.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

900 Level Courses

NEUR 996: *Doctoral Reading and Research.* 3,6 credits.
Reading and research on specific topic in neuroscience under direction of faculty member. Offered by Neuroscience. May be repeated within the degree for a maximum 12 credits.

Recommended Prerequisite: Admission into the NEUR doctoral program and permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Regular scale.

NEUR 998: *Dissertation Proposal.* 1-6 credits.
Covers development of a research proposal under guidance of dissertation director and doctoral committee. Proposal forms the basis for the doctoral dissertation. Notes: No more than a total of 24 credits in NEUR 998 and 999 may be applied toward satisfying doctoral degree requirements. Out of the 24, no more than 12 credits of NEUR 998 may be applied. Offered by Neuroscience. May be repeated within the degree.

Recommended Prerequisite: Admission to the Neuroscience Ph.D. program.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

NEUR 999: *Doctoral Dissertation.* 1-12 credits.
Doctoral research performed under the direction of the dissertation director. Notes: No more than a total of 24 credits in NEUR 998 and 999 may be applied toward satisfying doctoral degree requirements. Students must email mhayes5@gmu.edu for permission and CRN to register. Offered by Neuroscience. May be repeated within the degree.

Recommended Prerequisite: Advancement to candidacy in the Neuroscience Ph.D. program. Students must email mhayes5@gmu.edu for permission and CRN to register.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy.

Enrollment is limited to Graduate level students.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

Nursing (NURS)

300 Level Courses

NURS 305: *Application of Basic Nursing Techniques.* 1 credit.
To be taken fall semester of accelerated second degree program. Introduces basic nursing technologies, and provides opportunities to apply these skills in simulated technology lab. Offered by Nursing. Limited to two attempts.

Recommended Prerequisite: Acceptance into accelerated nursing pathway.

Registration Restrictions:
Enrollment is limited to students with a major in Nursing.

Enrollment limited to students in a Bach of Science in Nursing degree.

Schedule Type: Laboratory

Grading:
This course is graded on the Satisfactory/No Credit scale.

NURS 309: *Introduction to Basic Nursing Care.* 3 credits.
Enrollment restricted to second-degree students only. Introduces basic fundamentals of nursing care across the life span. Emphasis on nursing process, critical thinking, and foundational technologies and skills required to practice in the health care setting. Notes: Enrollment restricted to second-degree students only. Requires acceptance into the accelerated nursing pathway. Offered by Nursing. Limited to two attempts.

Registration Restrictions:
Enrollment is limited to students with a major in Nursing.

Enrollment limited to students in a Bach of Science in Nursing degree.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

NURS 310: *Application of Basic Nursing Care.* 4 credits.
Application of basic nursing care in acute care settings utilizing the nursing process. Note: Open only to second degree students. Enrollment is controlled. Offered by Nursing. Limited to two attempts.

Registration Restrictions:
Enrollment is limited to students with a major in Nursing.

Enrollment limited to students in a Bach of Science in Nursing degree.

Schedule Type: Laboratory

Grading:
This course is graded on the Satisfactory/No Credit scale.

NURS 312: *Basic Nursing Care of Adults.* 4 credits.
Provides the student the opportunity to practice health assessment and fundamental nursing skills with adult medical/surgical clients, including those who are culturally diverse, vulnerable, and experiencing physiological, psychological, and social health problems. Offered by Nursing. Limited to two attempts.

Registration Restrictions:
Enrollment is limited to students with a major in Nursing.

Enrollment limited to students in a Bach of Science in Nursing degree.

Schedule Type: Laboratory

Grading:
This course is graded on the Satisfactory/No Credit scale.

NURS 319: *Pathophysiological Basis for Nursing Care of Individuals and Small Groups.* 4 credits.
Focuses on pathophysiological, psychological, sociocultural, and risk-reduction factors related to nursing care for clients with psychiatric conditions, as well as for child-bearing women, infants, children, and adolescents with acute health care needs. Offered by Nursing. Limited to two attempts.

Recommended Prerequisite: Acceptance into accelerated nursing pathway. Enrollment is controlled.

Registration Restrictions:
Enrollment is limited to students with a major in Nursing.

Enrollment limited to students in a Bach of Science in Nursing degree.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

NURS 330: *Nursing Fundamentals.* 3 credits.
Introduces nursing process and communication skills as the foundation for beginning health assessment and fundamental nursing care for culturally diverse individuals throughout the life span. Offered by Nursing. Limited to two attempts.

Recommended Corequisite: NURS 312.

Registration Restrictions:
Enrollment is limited to students with a major in Nursing.

Enrollment limited to students in a Bach of Science in Nursing degree.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

NURS 334: *Nursing as a Health Profession and Discipline.* 2 credits.
Introduces nursing as a dynamic and caring health profession. Explores nursing's impact through health promotion and disease prevention activities on the health status of culturally diverse and vulnerable individuals, families, small groups, and communities across the life span. Incorporates nursing theory and critical thinking processes as they apply to the art and science of nursing. Provides historical perspectives on ethical, legal, political, and social issues. Offered by Nursing. Limited to two attempts.

Registration Restrictions:
Enrollment is limited to students with a major in Nursing.

Enrollment limited to students in a Bach of Science in Nursing degree.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

NURS 336: *Concepts in Professional Nursing as a Discipline.* 3 credits.
Provides an analysis of the profession and explores nursing philosophies and theories. Explores legal, ethical, political, and technological issues in health care at various nursing levels. Addresses critical thinking and its application to the collaborative nursing process. Utilizes the American Psychological Association formatting style for professional writing within the nursing profession. Notes: Must be admitted to the RN-to-BSN program. Offered by Nursing. Limited to two attempts.

Registration Restrictions:
Enrollment is limited to students with a major in Nursing.

Enrollment limited to students in a Bach of Science in Nursing degree.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

NURS 337: *Application of Nursing Fundamental Technologies.* 1 credit.
Opportunity to practice health assessment and fundamental nursing technologies while using communication skills with culturally diverse and vulnerable populations in a variety of settings. Offered by Nursing. Limited to two attempts.

Recommended Prerequisite: Junior standing.

Recommended Corequisite: NURS 312.

Registration Restrictions:
Enrollment is limited to students with a major in Nursing.

Enrollment limited to students in a Bach of Science in Nursing degree.

Schedule Type: Laboratory

Grading:
This course is graded on the Satisfactory/No Credit scale.

NURS 343: *Pharmacology.* 3 credits.
Covers principles of pharmacokinetics, pharmadynamics of selected drug classifications, and nursing responsibilities related to drug administration

to individuals throughout life span. Offered by Nursing. Limited to two attempts.

Registration Restrictions:
Enrollment is limited to students with a major in Nursing.

Enrollment limited to students in a Bach of Science in Nursing degree.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

NURS 344: *Intermediate Nursing Technologies.* 1 credit.
Laboratory course to assist students in acquiring therapeutic nursing interventions. Technologies presented are asepsis and wound care, administration of medications including dosage calculations, and management of intravenous therapy. Offered by Nursing. Limited to two attempts.

Recommended Prerequisite: NURS 312, 330, 337, 347, 425.

Registration Restrictions:
Enrollment is limited to students with a major in Nursing.

Enrollment limited to students in a Bach of Science in Nursing degree.

Schedule Type: Laboratory

Grading:
This course is graded on the Satisfactory/No Credit scale.

NURS 347: *Adult Pathophysiology and Nursing Care.* 3 credits.
Explores pathophysiology of a variety of commonly encountered diseases/disorders/illnesses in the adult population. Analyzes appropriate nursing, medical and surgical interventions. Introduces preventive strategies, including patient and family education, that maintain and maximize wellness. Offered by Nursing. Limited to two attempts.

Recommended Prerequisite: Acceptance into junior standing.

Registration Restrictions:
Enrollment is limited to students with a major in Nursing.

Enrollment limited to students in a Bach of Science in Nursing degree.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

NURS 348: *Maternal-Newborn Physiology, Pathophysiology, and Nursing Care.* 2 credits.
Introduces normal and abnormal processes with maternal-infant clients including cultural diversity and vulnerable populations. Focuses on normal physiological, pathophysiological, psychological, sociocultural, risk reduction, and nursing care of these clients. Offered by Nursing. Limited to two attempts.

Recommended Prerequisite: Acceptance into junior standing.

Registration Restrictions:
Enrollment is limited to students with a major in Nursing.

Enrollment limited to students in a Bach of Science in Nursing degree.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

NURS 349: *Pediatric Pathophysiology and Nursing Care.* 2 credits.
Focuses on changing health needs of culturally diverse and vulnerable populations. Includes nursing care, pathophysiological, psychological, sociocultural, and risk-reduction implications of frequently experienced health problems in pediatric population. Offered by Nursing. Limited to two attempts.

Recommended Prerequisite: Acceptance into junior standing.

Registration Restrictions:
Enrollment is limited to students with a major in Nursing.

Enrollment limited to students in a Bach of Science in Nursing degree.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

NURS 350: *Application of Nursing Care for Individuals and Small Groups.* 4 credits.
Includes five weeks of clinical experience in each specialty area, with focus on obstetric and family nursing, pediatric, and psychiatric mental health nursing. Students may also follow selected clients in clinics or home situations. Clinical consists of two full days per week in acute-care agencies. Notes: Open to accelerated second degree students Offered by Nursing. Limited to two attempts.

Recommended Corequisite: NURS 319, 353 and 419.

Registration Restrictions:
Enrollment is limited to students with a major in Nursing.

Enrollment limited to students in a Bach of Science in Nursing degree.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

NURS 351: *Application of Intermediate Nursing Technologies.* 1 credit.
Introduces intermediate nursing technologies and provides opportunities to apply these skills in simulated technology lab. Offered by Nursing. Limited to two attempts.

Recommended Prerequisite: NURS 305, 309, 310, 334, 419 and 425.

Recommended Corequisite: NURS 350.

Registration Restrictions:
Enrollment is limited to students with a major in Nursing.

Enrollment limited to students in a Bach of Science in Nursing degree.

Schedule Type: Laboratory

Grading:
This course is graded on the Satisfactory/No Credit scale.

NURS 358: *Health Promotion and Disease Prevention in Maternal/Infant Nursing.* 2 credits.
Provides the student an opportunity to perform nursing care to the maternal/infant client, including those who are culturally diverse and vulnerable, and experiencing physiological, psychological, and social health problems in a variety of settings. Contact the department for meeting dates and times. Notes: Enrollment is controlled. Offered by Nursing. Limited to two attempts.

Recommended Prerequisite: NURS 348. Concurrent enrollment is also permitted.

Registration Restrictions:
Enrollment is limited to students with a major in Nursing.

Enrollment limited to students in a Bach of Science in Nursing degree.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

NURS 359: *Health Promotion and Disease Prevention in Pediatric Nursing.* 2 credits.
Provides the student an opportunity to perform nursing care to the pediatric client, including those who are culturally diverse and vulnerable, and experiencing physiological, psychological, and social health problems in a variety of settings. Contact department for meeting dates/times. Notes: Enrollment is controlled. Offered by Nursing. Limited to two attempts.

Recommended Prerequisite: NURS 349. Concurrent enrollment is also permitted.

Registration Restrictions:
Enrollment is limited to students with a major in Nursing.

Enrollment limited to students in a Bach of Science in Nursing degree.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

NURS 388: *Problem-Based Clinical Inquiry.* 3 credits.
Focuses on analyzing clinical problems and attempts to resolve issues using critical thinking. Students examine the data in the cases, draw inferences, make deductions, identify assumptions, generate interpretations, evaluate weakness and strengths of arguments, and document their findings. Offered by Nursing. Limited to two attempts.

Registration Restrictions:
Enrollment is limited to students with a major in Nursing.

Enrollment limited to students in a Bach of Science in Nursing degree.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

NURS 410: *Nursing Care of Clients with Pathological Conditions.* 3 credits.
Encompasses complex health problems of culturally diverse and vulnerable populations throughout the life span. Focuses on nursing care needs and pathophysiological, psychological, and sociocultural implications of complicated health problems. Offered by Nursing. Limited to two attempts.

Recommended Prerequisite: Completion of all junior year nursing courses.

Registration Restrictions:
Enrollment is limited to students with a major in Nursing.

Enrollment limited to students in a Bach of Science in Nursing degree.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

NURS 419: *Pathophysiological Basis for Nursing Care of Individuals and Small Groups II.* 4 credits.
Enrollment restricted to second degree students only. Explores the nursing care of adults and the implications of acute and chronic conditions on the physiological, psychological, and socio-cultural aspects of individuals and families. Analyzes medical and surgical interventions for a variety of commonly encountered diseases/disorders/illnesses. Evaluates primary, secondary and tertiary prevention strategies in order to assist adults in maximizing wellness and introduces patient teaching strategies. Offered by Nursing. Limited to two attempts.

Recommended Prerequisite: NURS 305, 309, 310, 319, 334, 425. Note: Open only to Second Degree students.

Registration Restrictions:
Enrollment is limited to students with a major in Nursing.

Enrollment limited to students in a Bach of Science in Nursing degree.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

NURS 425: *Comprehensive Health Assessment.* 3 credits.
Open only to RNs and LPNs. Introduces systematic health assessment across the life span, and expands that knowledge base to include knowledge and skills necessary to perform comprehensive health assessments with culturally diverse and vulnerable populations. Offered by Nursing. Limited to two attempts.

Registration Restrictions:
Enrollment is limited to students with a major in Nursing.

Enrollment limited to students in a Bach of Science in Nursing degree.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

NURS 427: *Advanced Technologies for the Accelerated Pathway.* 1 credit.
Advanced technology course developing knowledge base related to acquisition of advanced skills in nursing practice. Refinement of assessment skills associated with selected advanced technologies integrated into this laboratory course. Offered by Nursing. Limited to two attempts.

Registration Restrictions:
Enrollment is limited to students with a major in Nursing.

Enrollment limited to students in a Bach of Science in Nursing degree.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

NURS 428: *Community Health Clinical for the Accelerated Pathway.* 2 credits.
Clinical experience with a focus on collaborative nursing care with individuals, families, and large groups in the community. Emphasis on health promotion and disease prevention for well populations, and community-based care for individuals and families with acute and chronic illness. Offered by Nursing. Limited to two attempts.

Recommended Prerequisite: NURS 436, 440.

Registration Restrictions:
Enrollment is limited to students with a major in Nursing.

Enrollment limited to students in a Bach of Science in Nursing degree.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

NURS 429: *Preceptorship for the Accelerated Pathway.* 3 credits.
Opportunity to deliver collaborative nursing care to culturally diverse and vulnerable populations. Notes: Concentrated clinical experiences available in selected institutional settings. Offered by Nursing. Limited to two attempts.

Recommended Prerequisite: NURS 309, 310, 320, 343, 419, 436.

Registration Restrictions:
Enrollment is limited to students with a major in Nursing.

Enrollment limited to students in a Bach of Science in Nursing degree.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

NURS 434: *Vulnerable Populations.* 3 credits.
Focuses on the care of vulnerable and aging populations. Students will examine health disparities, health literacy, and multicultural issues that impact the delivery of health care. Students will analyze health care policies and health care delivery models that offer potential interventions for the identified needs of these populations. Offered by Nursing. Limited to two attempts.

Recommended Prerequisite: RN to BSN students.

Recommended Corequisite: NURS 336.

Registration Restrictions:
Enrollment is limited to students with a major in Nursing.

Enrollment limited to students in a Bach of Science in Nursing degree.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

NURS 435: *Public Health Preceptorship for Nurses.* 3 credits.
Expands nursing students' understanding of population-focused health care. Emphasis will be on prevention principles in primary, secondary, and tertiary care of health problems. Students will be exposed to concepts of community, public health, and health policy affecting culturally diverse and vulnerable populations in a selection of community and public health settings. Offered by Nursing. Limited to two attempts.

Schedule Type: Internship

Grading:
This course is graded on the Satisfactory/No Credit scale.

NURS 436: *Leadership and Management of Health Care.* 3 credits.
Introductory course in the leadership and management of health-related organizations. Reviews administrative issues in health-related services with particular emphasis on developing organizational strategies for effective interfacing of medical, nursing, allied health, and administrative staff. Offered by Nursing. May be repeated within the degree for a maximum 6 credits. Equivalent to HAP 416.

Recommended Prerequisite: Completion of all junior year nursing courses or admission to RN to BSN program.

Registration Restrictions:
Enrollment is limited to students with a major in Nursing.

Enrollment limited to students in a Bach of Science in Nursing degree.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

NURS 440: *Community Health and Epidemiology.* 3 credits.
Addresses population-focused health care. Emphasis is on primary, secondary, and tertiary prevention of health problems. Concepts of community, public health, and health policy affecting culturally diverse and vulnerable populations are examined. Offered by Nursing. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Admission to the Second degree or RN to BSN program.

Registration Restrictions:
Enrollment is limited to students with a major in Nursing.

Enrollment limited to students in a Bach of Science in Nursing degree.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

NURS 451: *Advanced Clinical Preceptorship.* 5 credits.
Opportunity to provide complex, collaborative nursing care to culturally diverse and vulnerable populations. Notes: Concentrated clinicals available in selected institutional settings. See http:chhs.gmu.edu for information about specific clinical locations. Offered by Nursing. Limited to two attempts.

Registration Restrictions:
Enrollment is limited to students with a major in Nursing.

Enrollment limited to students in a Bach of Science in Nursing degree.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

NURS 453: *Research in Nursing.* 3 credits.
Introductory research course designed to present basic concepts and methods of research. The research process is examined as a foundation for scholarship. Emphasis on critique and use of current nursing and research in clinical practice. Offered by Nursing. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Mason Impact.

Recommended Prerequisite: STAT 250 or equivalent; acceptance into one of BSN nursing pathway.

Registration Restrictions:
Enrollment is limited to students with a major in Nursing.

Enrollment limited to students in a Bach of Science in Nursing degree.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

NURS 455: *Advanced Technologies in Nursing.* 1 credit.
Opportunity to acquire advanced skills in nursing practice. Refinement of assessment skills associated with selected advanced technologies integrated into this laboratory course. Offered by Nursing. Limited to two attempts.

Recommended Corequisite: NURS 451.

Registration Restrictions:
Enrollment is limited to students with a major in Nursing.

Enrollment limited to students in a Bach of Science in Nursing degree.

Schedule Type: Laboratory

Grading:
This course is graded on the Satisfactory/No Credit scale.

NURS 457: *Introduction to Nursing Informatics.* 3 credits.
This introductory course focuses on the use of computer technology in nursing and healthcare. The student evaluates software applications and assesses the merit of health-related information on the Internet. Students will engage in projects aimed at solving patient care problems in a variety of technologically-enhanced health care settings. Offered by Nursing. Limited to two attempts.

Recommended Prerequisite: Admission to the RN to BSN program.

Registration Restrictions:
Enrollment is limited to students with a major in Nursing.

Enrollment limited to students in a Bach of Science in Nursing degree.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

NURS 465: *Examination and Integration of Professional and Health Care Issues.* 3 credits.
Provides students with opportunities to examine issues in health care through reflection on the natural and behavioral sciences, humanities and other prerequisite coursework. -Selected topics are examined through reading, writing and discussion. Formal and informal writing on issues is expected. Students receive written self-evaluation as well as formal review by peers and faculty members involved in teaching the course. Offered by Nursing. Limited to two attempts. Equivalent to HAP 465.

Mason Core: Synthesis

Specialized Designation: Writing Intensive in Major

Recommended Prerequisite: Required Mason Core courses (including ENGL 302/ENGH 302).

Registration Restrictions:
Enrollment is limited to students with a major in Nursing.

Enrollment limited to students in a Bach of Science in Nursing degree.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

NURS 466: *Community Health Nursing.* 2 credits.
This course addresses population-focused health care. Concepts of public health, epidemiology, environmental health, extended roles in nursing and health policy affecting culturally diverse and vulnerable populations are examined. Offered by Nursing. Limited to two attempts.

Recommended Prerequisite: Completion of all junior year nursing courses.

Registration Restrictions:
Enrollment is limited to students with a major in Nursing.

Enrollment limited to students in a Bach of Science in Nursing degree.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

NURS 467: *Clinical in Community Health Nursing.* 2 credits.
Clinical experience with a focus on collaborative nursing care with individuals, families, and large groups in the community. Emphasis is on health promotion and disease prevention for well populations and community-based care for individuals and families with acute chronic diseases. Offered by Nursing. Limited to two attempts.

Recommended Prerequisite: Completion of all junior year nursing courses.

Registration Restrictions:
Enrollment is limited to students with a major in Nursing.

Enrollment limited to students in a Bach of Science in Nursing degree.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

NURS 468: *Psychiatric and Mental Health Nursing.* 2 credits.
Focuses on the nursing care, pathophysiological and psychological, social-cultural, and risk reduction implications of health problems in the area of mental health and psychiatric nursing. Offered by Nursing. Limited to two attempts.

Recommended Prerequisite: Completion of all junior year nursing courses.

Registration Restrictions:
Enrollment is limited to students with a major in Nursing.

Enrollment limited to students in a Bach of Science in Nursing degree.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

NURS 469: *Clinical in Psychiatric and Mental Health Nursing.* 2 credits.
Clinical experience with a focus on collaborative nursing care with individuals, families, and large groups in the community. Emphasis is on health promotion and disease prevention for well populations and community-based care for individuals and families with acute chronic diseases. Notes: Open to traditional and LPN students only. Offered by Nursing. Limited to two attempts.

Registration Restrictions:
Enrollment is limited to students with a major in Nursing.

Enrollment limited to students in a Bach of Science in Nursing degree.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

NURS 488: *Inquiry-Based Clinical Seminar.* 2 credits.
Students focus on a selected client they have provided care for during their NURS 451 clinical preceptorship. Students examine the data in the case, draw inferences, make deductions, identify assumptions, and generate interpretations regarding the client's problems. The class will participate as a group in the inquiry process to identify strengths and weaknesses of the arguments presented. Offered by Nursing. Limited to two attempts.

Recommended Prerequisite: Completion of Junior Level Nursing Courses, NURS 410 and NURS 436.

Registration Restrictions:
Enrollment is limited to students with a major in Nursing.

Enrollment limited to students in a Bach of Science in Nursing degree.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

NURS 491: *Critical Thinking and Analysis of Test Taking Strategies.* 3 credits.
Increases test-taking abilities and improves critical-thinking skills related to nursing situations. Also guides the student to analyze and organize content to assist in decision making about nursing interventions. With faculty supervision, students work independently based on their learning needs. Offered by Nursing. Limited to two attempts. Equivalent to NURS 493.

Registration Restrictions:
Enrollment is limited to students with a major in Nursing.

Enrollment limited to students in a Bach of Science in Nursing degree.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

NURS 493: *Clinical Reasoning and Test Taking Analysis.* 3 credits.
Provides the student with competencies and strategies to enhance the transition from student to to a baccalaureate prepared nurse. The course focuses on developing clinical reasoning and decision-making applied to patient care scenarios. Students will prepare for success on the Nursing licensure examination by reviewing content, identifying and addressing stressors associated with test taking, and demonstrating mastery on exam preparation materials. Offered by Nursing. Limited to two attempts. Equivalent to NURS 491.

Registration Restrictions:
Required Prerequisites: (NURS 330[C] or 330[XS]) and (NURS 347[C] or 347[XS]) and (NURS 425[C] or 425[XS]) and (NURS 343[C] or 343[XS]) and (NURS 348[C] or 348[XS]) and (NURS 349[C] or 349[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major in Nursing.

Enrollment limited to students in a Bach of Science in Nursing degree.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

NURS 499: *Independent Study in Nursing.* 1-3 credits.
Provides individual study of a particular problem area in nursing research, theory development, or education under the direction of faculty. Clinical practice may be arranged. Offered by Nursing. May be repeated within the term for a maximum 6 credits.

Recommended Prerequisite: Permission of instructor and Assistant Dean for the Undergraduate Program.

Registration Restrictions:
Enrollment is limited to students with a major in Nursing.

Washington Consortium level students may **not** enroll.

Enrollment limited to students in a Bach of Science in Nursing degree.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

500 Level Courses

NURS 571: *HIV/AIDS: Concepts, Principles, and Interventions.* 3 credits.
Provides overview of all aspects of HIV disease to include retrospective and current concepts and analyses of the epidemic, global, and societal impact, and cutting-edge research. Examines development of therapeutic tools and skills to educate, reduce risks, control infection, and affect care

and healing of client, family, and community; and issues of increasing dilemma for health care professionals. Offered by Nursing. May not be repeated for credit. Equivalent to GCH 571.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

600 Level Courses

NURS 605: *Clinical Nurse Educator Academy.* 3 credits.
Integrates knowledge and skills from clinical practice with new knowledge and skills needed as a clinical nurse educator. Narratives are used to teach essential skills for clinical nurse educators, such as assessment of learning needs, writing of objectives, teaching strategies, clinical simulation, and performance evaluation. Offered by Nursing. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

NURS 632: *Pathogenesis of Mental Disorders.* 3 credits.
Explores biological correlates of mental illness, including neuronal function, structure and connectivity, and peripheral alterations in biological functioning that contribute to mental disorders across the lifespan. Reviews genetic heritability and specific theories of etiology and diagnostic classifications. Develops interview and differential diagnostic skills. Notes: Required course in Psychiatric Mental Health Nurse Practitioner (PMHNP) or Clinical Nurse Specialist (PMHCNS) concentrations. Offered by Nursing. May not be repeated for credit.

Recommended Prerequisite: Admission to the Doctor of Nursing Practice program or with permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

NURS 633: *Individual Psychotherapy.* 3 credits.
Explores major approaches to individual psychotherapy such as psychodynamic, humanistic, interpersonal, behavioral, cognitive, dialectical behavioral, brief, crisis, and multicultural therapies as they relate to advanced nursing practice in mental health. Applications of individual psychotherapies across the lifespan and among diverse populations are critically examined. Notes: Required course in Psychiatric Mental Health Nurse Practitioner (PMHNP) or Clinical Nurse Specialist (PMHCNS) concentrations. Offered by Nursing. May not be repeated for credit.

Recommended Prerequisite: Admission to the Doctor of Nursing Practice program or with permission of instructor; NURS 632.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

NURS 634: *Group, Family and Couple Psychotherapy.* 1 credit.
Explore the major psychotherapeutic approaches for groups, families, and couples. Emphasis is placed on the application of theories and models of group, family, and couple psychotherapy across the lifespan and among diverse populations. Notes: Required course in Psychiatric Mental Health Nurse Practitioner (PMHNP) or Clinical Nurse Specialist (PMHCNS) concentrations. Offered by Nursing. May not be repeated for credit.

Recommended Prerequisite: Admission to the Doctor of Nursing Practice Program or with permission of instructor; NURS 632.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

NURS 643: *Community-Oriented Primary Care.* 3 credits.
Theoretical and clinical application of community-oriented primary care concepts with a focus on health promotion and disease prevention. Offered by Nursing. May not be repeated for credit.

Recommended Prerequisite: Admission to MSN or DNP Program or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Graduate Regular scale.

NURS 648: *Aging and Health.* 3 credits.
Provides an overview of normal aging and explores factors that affect health and well being in older adults; demonstrates strategies for maintaining health and managing chronic illness in older adults; examines common misconceptions about aging and healthcare issues; and explores the process of normal aging and the presentation of common health conditions in older adults. Offered by Nursing. May not be repeated for credit. Equivalent to HHS 648.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

NURS 654: *Nursing Administration Financial Management.* 3 credits.
Investigates managerial technologies related to financial planning and control functions of mid-level nurse administrators. Content develops knowledge and skills necessary for effective participation in financial management as related to business plan development, program budget planning, and control. Offered by Nursing. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

NURS 660: *Seminar in the Ethics of Health Care.* 3 credits.
Examines moral dilemmas in the health care profession, with special emphasis on patients' rights, professionals' obligations to other professionals, and issues of social justice in health care. Methods of moral deliberation based on ethical knowledge and justification are applied to ethical dilemmas in health care. Offered by Nursing. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

NURS 665: *Theoretical and Ethical Foundations Related to Nursing.* 3 credits.
Selected nursing and related discipline theories which impact nursing practice are analyzed and evaluated with special attention given to ethical aspects of practice and ethical decision-making frameworks. Moral dilemmas in the health care profession, with emphasis on patients' rights, professionals' obligations to other professionals, issues of social justice in health care, and methods of moral deliberation are examined. Offered by Nursing. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

NURS 680: *Theoretical Foundations Related to Nursing.* 2 credits.
Examination and evaluation of assumptions, concepts, and propositions inherent in selected nursing and related discipline theories. Offered by Nursing. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

NURS 685: *Advanced Nursing Research Methods.* 3 credits.
Examines principles and methods of research in problem identification, theoretical framework, design, data collection, and analysis. Students develop a nursing research proposal. Offered by Nursing. May not be repeated for credit.

Recommended Prerequisite: Admission to the graduate nursing program and a graduate level bivariate statistics course and NURS 680.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

NURS 686: *Projects in Nursing Research.* 2 credits.
Applies knowledge gained in NURS 790 to implement research proposal designed in NURS 790. Offered by Nursing. May not be repeated for credit.

Recommended Prerequisite: NURS 685.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

NURS 688: *Organization of Nursing and Health Care Delivery Systems.* 3 credits.
Provides foundational overview of U.S. nursing and health care delivery systems. Surveys key concepts, frameworks, processes, and structures related to health care delivery organizations. Notes: Lecture, discussion. Offered by Nursing. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

NURS 690: *Independent Study in Nursing.* 1-3 credits.
Studies in-depth a selected area of nursing theory, research, or practice under direction of faculty. Offered by Nursing. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Admission to the Graduate Nursing Program and permission of Associate Dean for Academic Programs.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Special scale.

700 Level Courses

NURS 704: *Nursing Administrative Leadership Academy.* 3 credits.
Uses a leadership competency framework to integrate knowledge, skills, values, and best practices of innovative nursing leadership. Lectures, interactive collaborative discussion, written projects, and leadership self-assessment identify and teach the proficiencies specific to the administrative executive role. Offered by Nursing. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

NURS 713: *Decision Making and Pharmacologic Management in Practice.* 3 credits.
Analyzes clinical cases using student participation in decision-making formulation. Correlates pathophysiology with symptom manifestations across the lifespan, from prenatal to old age, including death. Evaluates family, medical and social history, physical findings, laboratory data and radiographic studies as they contribute to the decision making process. Examine the theoretical basis for selecting pharmacological and non-pharmacological therapies is explored. Offered by Nursing. May not be repeated for credit.

Recommended Prerequisite: Admission to MSN or DNP Program Nurse Practitioner Concentration

Recommended Corequisite: NURS 769; NURS 761.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

NURS 714: *Health Assessment in Clinical Practice.* 2 credits.
Application of advanced health assessment skills for all body systems and clinical decision making with clients across the lifespan. Students will formulate differential diagnoses and use advanced communication techniques to motivate and change health behaviors. Offered by Nursing. May not be repeated for credit.

Recommended Prerequisite: Admission to MSN or DNP Program or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

NURS 715: *Nursing Informatics Inquiry.* 3 credits.
This course introduces theoretical and practice components of nursing and healthcare informatics for the graduate level nurse. Computer systems will be analyzed. The systems life cycle will be explored. Health care data standards, classification schemes, and the electronic health record (EHR) will be introduced. Students will evaluate informatics as it applies to patient safety, outcomes measurement, complex decision-making, consumer use, and legal and ethical issues. Offered by Nursing. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Graduate Regular scale.

NURS 716: *Principles of Assessment and Evaluation in Nursing Education.* 3 credits.
Presents techniques of assessment, measurement, and evaluation of nursing knowledge and skills in classroom and clinical settings. Provides opportunities for the informal assessment of learning; formal construction, analysis, and evaluation of tests; and the evaluation of standardized tests. Examines the current research and the legal and ethical principles related to assessment and evaluation in nursing education. Offered by Nursing. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

NURS 720: *Practicum in Family Primary Care Nursing I.* 4 credits.
Performance of beginning-level nurse practitioner clinical decision-making skills in assessment and management of families and individuals across the life span, with emphasis on health maintenance and health promotion. Seminar, lab, and clinical practicum. Offered by Nursing. May not be repeated for credit.

Recommended Prerequisite: NURS 719, 723, 745, 747, and 756.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory

Grading:
This course is graded on the Graduate Special scale.

NURS 721: *Practicum in Assessment and Management of the Developing Family.* 8 credits.
Theoretical and clinical application of health assessment, health maintenance and promotion, anticipatory guidance, diagnosis, and management of common primary health care concerns through clinical decision-making skills focused on childrearing and childbearing families. Seminar, lab, clinical practicum. Offered by Nursing. May not be repeated for credit.

Recommended Prerequisite: NURS 720.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

NURS 722: *Practicum in Family Primary Care Nursing II.* 8 credits.
Students perform advanced clinical decision making in the role of family nurse practitioner. Family primary care problems throughout the life span are assessed and managed, particularly families with elderly and medically underserved members. Seminar, lab, and clinical practicum. Offered by Nursing. May not be repeated for credit.

Recommended Prerequisite: NURS 720 and 721.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

NURS 724: *Health Assessment Practicum.* 1 credit.
Acquisition of advanced health assessment skills for all systems across the lifespan. The student will perform advanced techniques and clinical decision making that is necessary for a comprehensive health assessment in a structured practicum environment. Offered by Nursing. May not be repeated for credit.

Recommended Prerequisite: Admission to MSN or DNP Program or permission of instructor.

Recommended Corequisite: NURS 714.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Graduate Regular scale.

NURS 725: *Hermeneutic Research Methodologies in Health Care.* 3 credits.
Uses seminar/discussion for in-depth exploration of interpretive phenomenology, philosophical background for hermeneutics, and hermeneutics as method in context of conducting research in health care. Uses readings from philosophers such as Heidegger, Merleau-Ponty,

and Gadamer to situate hermeneutical methodologies in philosophy of science. Offered by Nursing. May not be repeated for credit.

Recommended Prerequisite: Graduate level qualitative research course. Concurrent enrollment is also permitted.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

NURS 726: *Perspectives in Nursing Education.* 3 credits.
Uses seminar approach to provide an overview of nursing education. Provides the foundation for teaching and learning in nursing with emphasis on relevant research. Offered by Nursing. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

NURS 727: *Application of Nursing Education Principles to Curriculum and Program Development.* 3 credits.
Uses seminar and discussion forums to analyze and apply theoretical principles and teaching and learning strategies in planning, developing, and evaluating nursing programs. Examines the overall creative, planned, and collaborative process of program development and evaluation. Offered by Nursing. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

NURS 728: *Practicum and Seminar in Nursing Education I.* 3 credits.
Uses seminar/discussion approach and practicum experience to analyze the role and functions of the nurse educator in the academic classroom. Emphasis is on the application of teaching/learning strategies, legal and ethical issues in nursing education, and role development as a nurse educator. Offered by Nursing. May not be repeated for credit.

Recommended Prerequisite: NURS 714, NURS 761, NURS 769.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

NURS 729: *Practicum and Seminar in Nursing Education II.* 3 credits.
Uses seminar/discussion approach and practicum experience to analyze the role and functions of the nurse educator in the clinical setting. Application of research-based teaching and evaluation strategies in the clinical setting are emphasized. Offered by Nursing. May not be repeated for credit.

Recommended Prerequisite: NURS 714, NURS 761, NURS 769.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

NURS 730: *Leadership Strategies for the Clinical Nurse Leader.* 2 credits.
Explores aspects of horizontal and vertical leadership central to clinical nurse leader (CNL) role. Emphasizes quality management and improvement, communication processes, evidenced-based practice initiatives in microsystem, and strategies for efficient use of resources while maintaining safe and effective patient care. Offered by Nursing. May not be repeated for credit.

Recommended Prerequisite: NURS 597 and 685. Concurrent enrollment is also permitted.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

NURS 733: *Introduction to Forensic Science.* 3 credits.
Examines the introductory concepts of forensic science including the various professional roles of forensic scientists and practitioners. This course provides a broad overview of the forensic science profession. Different types of violence, as well as prevention and reduction strategies, are discussed. The forensic professional's role in policy and legal processes are explored. Forensic research is introduced. Professional certification options are explored. Offered by Nursing. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

NURS 734: *Role of the Sexual Assault Nurse Examiner and Interpersonal Violence.* 3 credits.
Focuses on the incidence and consequences of interpersonal violence across the lifespan. Identifies the role of sexual assault nurse examiner (SANE) as a member of the Sexual Assault Response Team (SART).

Examines forensic techniques used to collect evidence. The role of the SANE in the judicial process is explored. Offered by Nursing. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

NURS 735: *Crime Lab and Crime Scene Investigation.* 3 credits.
Examines the components of the crime lab and the crime scene analysis process. Explores the role of the forensic scientist in crime scene investigation. This course covers the initial crime scene response and initial assessment measures needed to properly collect and handle evidence. Documentation and preservation efforts are reviewed for various types of evidence collected. Offered by Nursing. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

NURS 736: *Psychological and Legal Aspects of Forensic Science.* 3 credits.
Evaluates the psychological and legal aspects of forensic science. Reviews victimology and the role of the forensic professional when dealing with victimized individuals. This course reviews various types of violence and identifies the assessment criteria needed to pursue prosecution. Examines the legal process and the role of the forensic professional in providing testimony in a court of law. Offered by Nursing. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

NURS 737: *Investigation of Injury and Death.* 3 credits.
Explores the role of the forensic scientist in death investigation. Examines death, manners of death, and causes of death, along with the death certification process. The role of the medical office professional and autopsy procedures will be reviewed. DNA evidence and the CODIS system will be analyzed. Offered by Nursing. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

NURS 738: *Family Primary Care I.* 2 credits.
Theoretical application of health assessment, health management/promotion, anticipatory guidance, diagnosis and management of common primary care health care concerns through clinical decision making skills for families with a focus on adults. Lecture, student presentations and seminar. Notes: Required course in Family Nurse Practitioner concentration. Offered by Nursing. May not be repeated for credit.

Recommended Prerequisite: NURS 713, NURS 724, NURS 714, NURS 643.

Recommended Corequisite: NURS 742.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

NURS 739: *Family Primary Care II.* 4 credits.
Theoretical application of health assessment, health maintenance/promotion, anticipatory guidance, diagnosis and management of common primary health care concerns through clinical decision making skills focused on childbearing and childbearing families. Seminar, student presentations and lectures. Notes: Required course in Family Nurse Practitioner concentration. Offered by Nursing. May not be repeated for credit.

Recommended Prerequisite: NURS 738, NURS 742.

Recommended Corequisite: NURS 744

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

NURS 740: *Clinical Nurse Specialist Internship.* 3 credits.
A continuation of clinical application of theory from NURS 775 to a selected clinical specialty with attention to the health illness continuum of individuals, families, and community. Offered by Nursing. May be repeated within the term for a maximum 6 credits.

Recommended Corequisite: Contact the department for meeting dates and times.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Internship

Grading:

This course is graded on the Graduate Regular scale.

NURS 741: *Family Primary Care III.* 3 credits.
Theoretical application of assessment, diagnosis and management of primary health care problems which will enable the nurse practitioner student to assume increased responsibility in the delivery of primary care to families and individuals across the life span. Special emphasis is given to the primary care needs of families with elderly and medically underserved members. Seminar, student presentations and lectures. Notes: Required course in Family Nurse Practitioner concentration. Offered by Nursing. May not be repeated for credit.

Recommended Prerequisite: NURS 739, NURS 744.

Recommended Corequisite: NURS 749.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

NURS 742: *Family Primary Care Practicum I.* 2 credits.
Demonstrates the ability to function at a beginning level in the role of the nurse practitioner. Performance of advanced skills in assessment and the development of plans for health maintenance and promotion for families with a focus on the adult. Clinical practicum, lab and seminar. Offered by Nursing. May not be repeated for credit.

Recommended Prerequisite: NURS 713, NURS 724, NURS 714, NURS 643.

Recommended Corequisite: NURS 738.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Graduate Regular scale.

NURS 743: *Clinical Psychopharmacology.* 3 credits.
Introduce psychotropic medications, including neurochemical basis, mode of action and clinical application. Discuss principles of pharmacological medication selection and use based on clinical indicators. Notes: Required course in Psychiatric Mental Health Nurse Practitioner (PMHNP) or Clinical Nurse Specialist (PMHCNS) concentrations. Admission to the Doctor of Nursing Practice program or with permission of instructor. Offered by Nursing. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

NURS 744: *Family Primary Care Practicum II.* 4 credits.
Clinical application of health assessment, health maintenance/promotion, anticipatory guidance, diagnosis and management of common primary health care concerns through clinical decision making skills focused on childrearing and childbearing families. Clinical practicum, seminar, lab. Offered by Nursing. May not be repeated for credit.

Recommended Prerequisite: NURS 738, NURS 742.

Recommended Corequisite: NURS 739.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Graduate Regular scale.

NURS 746: *Practicum in Adult Primary Care Nursing I.* 6 credits.
Demonstration of the ability to function at a beginning level in the role of the nurse practitioner. Performance of advanced skills in assessment and the development of plans for health maintenance and promotion for adults. Offered by Nursing. May not be repeated for credit.

Recommended Prerequisite: NURS 719, 723, 745, 747, and 756.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory

Grading:
This course is graded on the Graduate Special scale.

NURS 748: *Practicum in Adult Primary Care Nursing II.* 8 credits.
Enables nurse practitioner student to assume increased responsibility in the delivery of primary care to adults. Special emphasis on primary care needs of elderly and medically underserved groups. Offered by Nursing. May not be repeated for credit.

Recommended Prerequisite: NURS 746.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory

Grading:
This course is graded on the Graduate Special scale.

NURS 749: *Family Primary Care Practicum III.* 4 credits.
This practicum enables the nurse practitioner student to assume increased responsibility in the delivery of primary care to families. Family primary care problems across the life span are assessed and managed, particularly families with elderly and medically underserved members. Practicum, clinical lab and seminar. Offered by Nursing. May not be repeated for credit.

Recommended Prerequisite: NURS 739, NURS 744.

Recommended Corequisite: NURS 741.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Graduate Regular scale.

NURS 757: *Nursing Research and Biostatistics I.* 3 credits.
Provides a broad framework for understanding and applying commonly used research designs and data analysis techniques in nursing and health care research. Exposed to an overview of qualitative and quantitative research methods integrated with appropriate data analyses techniques. Univariate and bivariate statistical techniques will be used to address research questions or hypothese as appropriate. Offered by Nursing. May not be repeated for credit.

Recommended Prerequisite: Admission to the graduate nursing program, and an undergraduate statistics course.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

NURS 758: *Nursing Research and Biostatistics II.* 3 credits.
Empirically address practice related problems using complex bivariate and multivariate statistical analysis. Using an established data set as a basis for simulation of the research process, student will identify clinical problems in research traditions to provide evidence for nursing practice. Emphasis is on evaluating the quality of research for its strength as evidence for nursing practice. Offered by Nursing. May not be repeated for credit.

Recommended Prerequisite: NURS 757.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

NURS 761: *Pharmacotherapeutics.* 3 credits.
Describes the pharmacologic principles and pharmacodynamic actions for all broad categories of agents. Distinguishes between the major drug classes by the pharmacologic properties of drugs on the cellular, organ and whole organism level. Study of indications and contraindications of appropriate therapeutic entities for health deviations based on a thorough knowledge of drugs and their fate in the human body. Offered by Nursing. May not be repeated for credit.

Recommended Prerequisite: Admission to MSN or DNP Program or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

NURS 763: *Administrative Theory in Nursing.* 3 credits.
Uses administrative theory and management principles and processes as related to roles and functions of the nurse in management in health-related agencies. Offered by Nursing. May not be repeated for credit.

Recommended Prerequisite: Admission to Graduate Nursing Program or master's degree. NURS 680 and Management/Organizational Theory (concurrent enrollment is also permitted).

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

NURS 765: *Practicum in Nursing Administration I.* 3 credits.
Applies administrative theory and management principles and processes in a selected health-related agency. Roles and functions of the nurse in management are explored. Notes: Lab arranged. One hour of seminar and eight hours of practicum weekly. Offered by Nursing. May not be repeated for credit.

Recommended Prerequisite: Admission to Graduate Nursing Program, NURS 680. NURS 763 (concurrent enrollment is also permitted).

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory

Grading:
This course is graded on the Graduate Regular scale.

NURS 766: *Administrative Strategies in Nursing.* 3 credits.
Explores roles and functions of the nurse in management as the nurse manager develops patterns of nursing care, articulating nursing education, and nursing service. Offered by Nursing. May not be repeated for credit.

Recommended Prerequisite: NURS 763 and 765.

Recommended Corequisite: NURS 768.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

NURS 768: *Practicum in Nursing Administration II.* 3 credits.
Implements and integrates roles and functions of the nurse in management. Emphasizes using appropriate management principles and processes in a selected health-related agency. Notes: Lab arranged. Offered by Nursing. May not be repeated for credit.

Recommended Prerequisite: NURS 763, NURS 765, NURS 766 (concurrent enrollment also permitted for 766).

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory

Grading:
This course is graded on the Graduate Regular scale.

NURS 769: *Physiology and Pathophysiology in Advanced Practice.* 3 credits.
Analyze health deviations in the physiologic and pathophysiologic aspects of systems functioning across the life span. Students assimilate the process of systematic assessment and management of health deviations foundational for making clinical decisions. Offered by Nursing. May not be repeated for credit.

Recommended Prerequisite: Admission to MSN or DNP or permission of instructor.

Recommended Corequisite: NURS 713.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

NURS 773: *Clinical Applications of Theory in Advanced Clinical Nursing.* 3 credits.
Foundational theory relevant to the emerging roles in advanced clinical nursing, focusing on therapeutic nursing interventions in a variety of clinical specialties, with attention to health-illness continuum of individuals, families, and communities. Offered by Nursing. May not be repeated for credit.

Recommended Prerequisite: Admission to Graduate Nursing Program. NURS 550, 680 (Concurrent enrollment is also permitted for either course).

Registration Restrictions:
Enrollment is limited to Graduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

NURS 775: *Advanced Specialty Practice I.* 3 credits.
Focuses on clinical application of theory from NURS 773 to a selected clinical specialty with attention to the health illness continuum of individuals, families, and communities. Notes: One hour of seminar and eight hours of practicum. Lab meets every other week. Offered by Nursing. May be repeated within the term for a maximum 17 credits.

Recommended Prerequisite: NURS 665.

Recommended Corequisite: NURS 768.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory

Grading:
This course is graded on the Graduate Regular scale.

NURS 776: *Development of Advanced Practice Nursing Role.* 3 credits.
Expansion of selected content included in NURS 773 for the delivery of advanced nursing care in a variety of settings. Emphasizes development and evaluation of the advanced practice nursing role in complex health care systems. Offered by Nursing. May not be repeated for credit.

Recommended Prerequisite: NURS 773.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

NURS 778: *Advanced Specialty Practice II.* 3 credits.
Applies concepts of the advanced practice nursing role from NURS 776 to a selected clinical specialty. Offered by Nursing. May not be repeated for credit.

Recommended Prerequisite: NURS 665.

Recommended Corequisite: NURS 773. Electronic strategies will be used and course will meet every other week.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory

Grading:
This course is graded on the Graduate Regular scale.

NURS 782: *Psychiatric Nurse Practitioner Practicum I.* 4 credits.
Develops clinical competence in comprehensive assessment, diagnosis, and management of mental health problems and psychiatric and co-morbid medical disorders, referring when appropriate. Demonstrates effective clinical interviewing skills. Applies principles of pharmacology including complementary and alternative therapies. Develops culturally

sensitive plans for health maintenance, promotion and treatment. Evaluates outcomes of treatment. Manages psychiatric emergencies. Advocates for patients and families. Notes: Five clinical hours per week are required for each credit. Required course in the Family Psychiatric Mental Health Nurse Practitioner (FPMHNP) concentration. Offered by Nursing. May not be repeated for credit.

Recommended Prerequisite: Admission to the Doctor of Nursing Practice program or Psychiatric Mental Health Nurse Practitioner Certificate. NURS 632, NURS 633, NURS 634 and NURS 743.

Recommended Corequisite: NURS 783.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Graduate Regular scale.

NURS 783: *Psychiatric Nurse Practitioner Seminar I.* 2 credits.
Analyzes the professional role of family psychiatric mental health nurse practitioners. Students share assessment, diagnostic, intervention, evaluation, teaching-coaching, cultural competence, and therapeutic relationship development techniques through case studies from their practica. Management of client cases are evaluated and discussed. Students analyze the impact of advocacy actions, including duty to report, on the therapeutic relationship. Notes: Required course in the Family Psychiatric Mental Health Nurse Practitioner (FPMHNP) concentration. Offered by Nursing. May not be repeated for credit.

Recommended Prerequisite: Admission to the Doctor of Nursing Practice program or Psychiatric Mental Health Nurse Practitioner Certificate. NURS 632, NURS 633, NURS 634 and NURS 743.

Recommended Corequisite: NURS 782.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

NURS 784: *Psychiatric Nurse Practitioner Practicum II.* 5 credits.
Builds on Family Psychiatric Nurse Practitioner Practicum I, improving diagnostic and clinical reasoning ability and competence in assessment, diagnosis, and management of psychiatric disorders. Enables the student to assume increased responsibility in the delivery of comprehensive mental health care. Participates in professional and community organizations to promote the health of patients while enhancing the role of practitioner. Notes: Five clinical hours per week are required for each credit. Required course in Family Psychiatric Mental Health Nurse Practitioner (FPMHNP) concentration. Offered by Nursing. May not be repeated for credit.

Recommended Prerequisite: Admission to the Doctor of Nursing Practice program or Psychiatric Mental Health Nurse Practitioner Certificate. NURS 782.

Recommended Corequisite: NURS 785.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Graduate Regular scale.

NURS 785: *Psychiatric Nurse Practitioner Seminar II.* 2 credits.
Discusses role transition and development of advanced practice psychiatric mental health nurses. Regulatory and economic policies affecting advanced psychiatric mental health nursing practice in the evolving health care system are discussed. Students demonstrate competence in comprehensive management of acute and chronic psychiatric disorders through case presentations from their practica. Performs a comprehensive assessment of the mental health needs of a community. Notes: Required course in the Family Psychiatric Mental Health Nurse Practitioner (FPMHNP) concentration. Offered by Nursing. May not be repeated for credit.

Recommended Prerequisite: Admission to Doctor of Nursing Practice program or Psychiatric Mental Health Nurse Practitioner Certificate. NURS 783.

Recommended Corequisite: NURS 784.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

NURS 786: *Adult Gerontology Primary Care Practicum I.* 2 credits.
Application of health assessment, health maintenance/promotion, anticipatory guidance, genetics/genomics, diagnosis and management of common primary health care concerns, including women's health issues. Focus is on care of adolescents and adults across the life. Clinical Practicum, lab and seminar. Offered by Nursing. May not be repeated for credit.

Recommended Prerequisite: NURS 713, NURS 714, NURS 724, NURS 643.

Recommended Corequisite: NURS 787.

Registration Restrictions:
Enrollment is limited to students with a concentration in Adult Ger. Nurse Pract. PC.

Enrollment is limited to Graduate level students.

Schedule Type: Internship

Grading:
This course is graded on the Graduate Regular scale.

NURS 787: *Adult Gerontology Primary Care I.* 2 credits.
Theoretical application of health assessment, health maintenance/promotion, anticipatory guidance, diagnosis and management of common primary health care concerns, including women's health,

through clinical decision making skills in adolescents, adults and older adults. Offered by Nursing. May not be repeated for credit.

Recommended Prerequisite: NURS 713, NURS 724, NURS 714, NURS 643.

Recommended Corequisite: NURS 786.

Registration Restrictions:
Enrollment is limited to students with a concentration in Adult Ger. Nurse Pract. PC.

Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

NURS 788: *Adult Gerontology Primary Care Practicum II.* 4 credits.
Demonstration of the ability to function at a beginning level in the role of the nurse practitioner. Performance of advanced skills in assessment and the development of plans for health maintenance and promotion for adolescents, adults and older adults. Clinical practicum, lab and seminar. Offered by Nursing. May not be repeated for credit.

Recommended Prerequisite: NURS 786, NURS 787.

Recommended Corequisite: NURS 789.

Registration Restrictions:
Enrollment is limited to students with a concentration in Adult Ger. Nurse Pract. PC.

Enrollment is limited to Graduate level students.

Schedule Type: Internship

Grading:
This course is graded on the Graduate Regular scale.

NURS 789: *Adult Gerontology Primary Care II.* 3 credits.
This course consists of the application of health assessment, health management/promotion, genetics and genomics, anticipatory guidance, diagnosis and management of common primary care health care concerns of the adolescent, adult and older adult through clinical decision making skills. Lecture, student presentations and seminar. Offered by Nursing. May not be repeated for credit.

Recommended Prerequisite: NURS 786, NURS 787.

Recommended Corequisite: NURS 788.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

NURS 790: *Adult Gerontology Primary Care Practicum III.* 4 credits.
This practicum enables the nurse practitioner student to assume increased responsibility in the delivery of primary care to adults of all ages, adolescents through older adults. Special emphasis is given to the primary care needs of elderly and medically underserved groups. Practicum, clinical lab and seminar. Offered by Nursing. May not be repeated for credit.

Recommended Prerequisite: NURS 788, NURS 789.

Recommended Corequisite: NURS 791.

Registration Restrictions:
Enrollment is limited to students with a concentration in Adult Ger. Nurse Pract. PC.

Enrollment is limited to Graduate level students.

Schedule Type: Internship

Grading:
This course is graded on the Graduate Regular scale.

NURS 791: *Adult Gerontology Primary Care III.* 4 credits.
Theoretical application of assessment, diagnosis and management of primary health care problems which will enable the adult gerontology nurse practitioner student to assume increased responsibility in the delivery of primary care. Focus will be on the primary care needs of older adult and medically underserved. Lectures, student presentations and seminars. Offered by Nursing. May not be repeated for credit.

Recommended Prerequisite: NURS 788, NURS 789.

Recommended Corequisite: NURS 790.

Registration Restrictions:
Enrollment is limited to students with a concentration in Adult Ger. Nurse Pract. PC.

Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

800 Level Courses

NURS 804: *Advanced Quantitative Data Analysis for Healthcare Research I.* 3 credits.
Covers principles and methods of statistical data analysis and inference. Emphasizes the use and application of various data analysis techniques and their assumptions. Examines factorial ANOVA, factorial ANCOVA, repeated measures ANOVA, ANOVA and ANCOVA via regression approachs, and linear and logistic regression analysis. Students apply statistical techniques in analyzing health-releated data sets. Offered by Nursing. May not be repeated for credit.

Recommended Prerequisite: A graduate-level statistics course (by instructor approval).

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

NURS 805: *Advanced Quantitative Data Analysis for Healthcare Research II.* 3 credits.
Builds upon principles and methods of statistical analysis and inference. Emphsizes the use and application of various data analysis techniques

and their assumptions. Examines multivariate analysis of variance (MANOVA), multivariate analysis of covariance (MANCOVA), multiple regression, and logistic regression, and factor analysis. Students apply statistical techniques in analyzing health-related data sets. Offered by Nursing. May not be repeated for credit.

Recommended Prerequisite: GCH/NURS 804 or an equivalent statistics course (by instructor approval).

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

NURS 806: *Advanced Multivariate Statistics and Data Analysis for Health Care Research.* 3 credits.
Examines canonical correlation, discriminant analysis, factor analysis, and causal analysis (path models and structural equation modeling). Students analyze and interpret data using these statistical techniques. Offered by Nursing. May not be repeated for credit. Equivalent to GCH 806.

Recommended Prerequisite: GCH 805 or NURS 805, or equivalent multivariate statistics course.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

NURS 808: *Translating Nursing and Health Care Research into Evidence-Based Policy.* 3 credits.
This course prepares students to assess the policy dimensions of nursing issues in clinical practice, education, and research environments and translate nursing research into policy. Offered by Nursing. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

NURS 810: *Evaluation Research in Nursing Education.* 3 credits.
Uses seminar/discussion to analyze and apply theoretical models for implementing evaluation research in nursing education. Examines quantitative approaches for evaluating process and outcomes of domestic or international nursing education programs, including role of accreditation guidelines. Offered by Nursing. May not be repeated for credit.

Recommended Prerequisite: NURS 920, NURS 930. Concurrent enrollment is also permitted.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

NURS 811: *Nurse as Educator and Scholar.* 2 credits.
Uses seminar/discussion to explore role of nurse educator in meeting research and scholarship expectations of college, university, or service setting. Addresses approaches to scholarship in relation to types of evidence appropriate for various scholarly expectations in academic setting. Offered by Nursing. May not be repeated for credit.

Recommended Prerequisite: NURS 920; NURS 930.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

NURS 814: *Theory and Design in Health Science.* 3 credits.
Analyze existing theoretical and conceptual frameworks in nursing and other biological, social, and behavioral sciences. Enables the doctoral student to critique, use, test, integrate, translate, and develop conceptual frameworks to guide scientific inquiry in a focused area of research interest. Offered by Nursing. May not be repeated for credit.

Recommended Prerequisite: Master's degree in nursing, social work, or health-related discipline.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

NURS 820: *Human Genetics Concepts for Health Care.* 4 credits.
The study of human genetics, principles of heredity, and disease risks. Offered by Nursing. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

NURS 860: *Measurement Theories in Healthcare Research.* 3 credits.
Synthesize measurement theories and principles as a foundation for the development and evaluation of instruments for use in healthcare research. The course includes review of statistical techniques required for understanding measurement theory, reliability, validity, responsiveness, item analysis, and instrument construction. Students design, construct, administer, analyze, and evaluate an original instrument and evaluate an existing instrument in healthcare research. Offered by Nursing. May not be repeated for credit.

Recommended Prerequisite: NURS 805 or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

NURS 870: *Nursing and Health Care Administration I.* 3 credits.
Examines the theoretical basis of scholarship and practice in leadership and management of health systems and nursing organizations. Includes discovery of concepts and forces influencing the organization and performance of health care systems. Offered by Nursing. May not be repeated for credit.

Recommended Prerequisite: Admission to the PhD or DNP program.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

NURS 871: *Nursing and Health Care Administration II.* 2 credits.
Analyzes and applies selected concepts related to nursing and health system leaders and managers as well as factors influencing the performance of health systems and organizations. Offered by Nursing. May not be repeated for credit.

Recommended Prerequisite: NURS 870.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

NURS 874: *Internship in Health Care Administration/Policy/Education.* 4 credits.
Internship experience of at least 126 hours with leader in field of nursing, health care administration, policy, or education. Participatory activities require integration and application of principles, frameworks, and science related to executive preceptor role. Offered by Nursing. May not be repeated for credit.

Recommended Prerequisite: Completion of all coursework, except NURS 998.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Internship

Grading:
This course is graded on the Graduate Regular scale.

NURS 883: *Evidence-Based Practice in Nursing and Healthcare.* 4 credits.
Building on knowledge of research methodologies and personal expertise, student will identify practice and system problems, analyze the variations of processes and outcomes, evaluate research studies and systematic reviews, and develop a proposal to address issues related to the design of new model of care, translation of evidence into practice, or evaluation of current programs in the context of evidence-based practice. Emphasis is placed on the development of strategies to ensure quality improvement. Offered by Nursing. May not be repeated for credit.

Recommended Prerequisite: NURS 757 and NURS 758.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

900 Level Courses

NURS 920: *Qualitative Research in Nursing and Health Care.* 3 credits.
Provides the philosophical assumptions underlying qualitative research in nursing and health care. Students will examine the principles of study design, data collection, data analysis, and interpretation associated with phenomenology, grounded theory, and ethnography. Description and mixed-methods designs will be introduced. Qualitative research will be analyzed within the scholarship of discovery, integration, and application. Offered by Nursing. May not be repeated for credit.

Recommended Prerequisite: NURS 804.

Registration Restrictions:
Enrollment limited to students in a Doctor of Philosophy degree.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

NURS 921: *Clinical Practicum I.* 1-10 credits.
Students, in consultation with their academic advisor, complete supervised practicum hours to meet both the post-baccalaureate and post-masters DNP practicum requirement. A practicum course that prepares students to perform clinical decision making in their role as advance practice nurses in individualized specialty areas. They will work with advanced practice nurse preceptors to develop clinical expertise, and to develop an understanding of leadership roles in the clinical setting that can enhance the system of health care delivery. One credit hour of seminar with the remaining hours in clinical practice. Offered by Nursing. May be repeated within the degree for a maximum 20 credits.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Internship

Grading:
This course is graded on the Graduate Regular scale.

NURS 922: *Clinical Practicum II.* 1-10 credits.
Students, in consultation with their academic advisor, complete supervised practicum hours to meet both the post-baccalaureate and post-masters DNP practicum requirement. A practicum course that continues to prepare students to practice in an expanded, advanced clinical practice role. Students will learn to become change agents in the clinical setting with a focus on health care delivery systems. The student will apply advanced health assessment skills and clinical decision making in an area of specialty practice, correlating pathophysiology with symptom manifestations. One credit hour of seminar with the remaining hours in clinical practice. Offered by Nursing. May be repeated within the degree for a maximum 20 credits.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Internship

Grading:
This course is graded on the Graduate Regular scale.

NURS 930: *Quantitative Methods in Nursing and Health Care.* 3 credits.
Guides the student in applying principles in the design of an innovative quantitative research study to address a significant problem in nursing and/or health care. Offered by Nursing. May not be repeated for credit.

Recommended Prerequisite: NURS 805.

Registration Restrictions:
Enrollment limited to students in a Doctor of Philosophy degree.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

NURS 940: *Independent Study for the Doctoral Student.* 1-6 credits.
Studies in depth a selected area of nursing theory, research, or practice under direction of faculty. Offered by Nursing. May not be repeated for credit.

Recommended Prerequisite: Admission to a doctoral nursing program. Individualized section form required.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Regular scale.

NURS 950: *Special Topics in Nursing.* 3 credits.
Presents selected topics analyzing specialized areas in nursing. Content varies. Lecture, seminar, laboratory, workshop. Offered by Nursing. May not be repeated for credit.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

NURS 980: *Practice Inquiry I.* 4 credits.
Synthesize the literature related to the problem. Analyze the environmental factors impacting the problem. Identify the standard of care related to the clinical problem. Assess the quality of evidence that supports the standard of care. Develop a proposal that will impact the delivery of care in the identified area of practice inquiry. Develop the appropriate outcome measures to address the specific practice inquiry area. Offered by Nursing. May be repeated within the degree for a maximum 8 credits.

Recommended Prerequisite: Completion of DNP core courses.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

NURS 981: *Practice Inquiry II.* 4 credits.
Implement the proposal developed in Practice Inquiry I. Maintain an ongoing process analysis of the project. Collect data. Analyze the findings from the practice inquiry. Disseminate the findings from the practice inquiry in a scholarly manner. Offered by Nursing. May be repeated within the degree for a maximum 8 credits.

Recommended Prerequisite: NURS 980.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

NURS 998: *Doctoral Dissertation Proposal.* 1-9 credits.
A seminar for doctoral students to accompany the development of a doctoral dissertation proposal. Development of the research problem with analysis and critique of methodology discussed. Notes: Students must enroll in the course for 3-credits the first time they take the course. Offered by Nursing. May be repeated within the degree.

Recommended Prerequisite: Completion of all other coursework except NURS 999 and completion of doctoral comprehensive examination.

Registration Restrictions:
Enrollment limited to students in a Doctor of Philosophy degree.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

NURS 999: *Doctoral Dissertation.* 1-9 credits.
Provides continued faculty assistance on an individual basis toward completion of approved dissertation. Note: Students must contact the department at (703) 993-1961 to receive approval and a CRN to register via Patriot Web. Offered by Nursing. May be repeated within the degree.

Recommended Prerequisite: NURS 998.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy.

Enrollment is limited to Graduate level students.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

Nutrition and Food Studies (NUTR)

200 Level Courses

NUTR 295: *Introduction to Nutrition.* 3 credits.
Introduces students to nutrition as a scientific discipline, providing a working knowledge of basic nutrition including the sources and functions of the nutrients, the components of a healthy diet, and the relationship between diet and overall health. Students will learn about the processes

of digestion, absorption, and metabolism of nutrients, and several 'hot topics' in the field of nutrition. Offered by Nutrition and Food Studies. Limited to three attempts.

Mason Core: Natural Science Overview

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

300 Level Courses

NUTR 312: *Experimental Foods.* 3 credits.
Introduces the composition and structure of food through exploration of chemical, physical, nutritional, sensory and safety aspects, with emphasis on how these aspects relate to food preparation methods. Offered by Nutrition and Food Studies. Limited to three attempts.

Recommended Corequisite: NUTR 313.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

NUTR 313: *Experimental Foods Lab.* 1 credit.
Explores the chemical, physical, nutritional, sensory, and safety aspects of food through hands-on food preparation labs. Offered by Nutrition and Food Studies. Limited to three attempts.

Recommended Corequisite: NUTR 312.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

NUTR 315: *Fundamentals of Cooking.* 3 credits.
Exposes students to the fundamental concepts of food and its preparation. Students will learn and experience culinary basics, including knife skills, mother sauces, basic cooking techniques, function of ingredients, food safety, and chemical and physical transformation of food during cooking and storage. Offered by Nutrition and Food Studies. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

NUTR 318: *Global Nutrition and Food Security.* 3 credits.
An overview of the major concepts and perspectives of food security at the local, regional, and global levels. Explore and apply the definitions, means of measurement, and policy implications of food security from a multidisciplinary approach. Offered by Nutrition and Food Studies. Limited to three attempts.

Recommended Prerequisite: NUTR 295.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

NUTR 326: *Food Systems.* 3 credits.
Taking a systems approach, this course provides an overview of the food system from production through consumption and waste. Students will consider the complexity of issues confronting the creation of just and sustainable food systems and access to healthy food for all. Offered by Nutrition and Food Studies. Limited to three attempts.

Specialized Designation: Writing Intensive in Major

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

NUTR 330: *Food Composition.* 3 credits.
Explores the nutritional, functional, structural, and undesirable components in food, with a primary focus on the selection and use of food composition tables to obtain this data. Factors impacting food composition will be discussed, including agricultural, manufacturing, and biotechnologies. Offered by Nutrition and Food Studies. Limited to three attempts.

Recommended Prerequisite: NUTR 295, NUTR 312, NUTR 313, CHEM 313

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

NUTR 383: *Taste and Place.* 3 credits.
Examines how dietary patterns have developed and evolved in specific geographic locations. Students will analyze the role of geography, history, politics, culture and taste as essential elements in distinctive local, regional, and national foodways. Offered by Nutrition and Food Studies. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

NUTR 408: *Food Security.* 3 credits.
Examines the human health aspects of food security at the local, regional, and global levels. Offered by Nutrition and Food Studies. Limited to three attempts.

Recommended Prerequisite: NUTR 295.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

NUTR 410: *Introduction to Food Safety and Defense.* 3 credits.
Examines the critical roles that food safety and food defense have on the food supply in the US and globally. Students will explore common foodborne illnesses, their causes and their means of control from both a scientific and policy perspective. Students also will gain an understanding of basic food safety practices in both commercial food production and in home food preparation. Offered by Nutrition and Food Studies. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

NUTR 414: *Food, Culture, Nutrition and the Mediterranean Diet.* 6 credits.
Combines an understanding of foodways, culture, and sustainability with the Mediterranean diet pattern and its role in public health through classroom and experimental learning. History, traditions and contemporary issues will be explored to understand the place of Mediterranean foodways. Excursions to several cities in a Mediterranean region will explore distinctive regional specialties including tours of a wineries, farms, food factories and producers as well as cooking classes with local gourmet chefs and visits to food markets. Offered by Nutrition and Food Studies. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

NUTR 420: *Strategies for Nutrition Education.* 3 credits.
Examines methods and techniques for educating individuals about nutrition. Addresses nutrition education issues from variety of populations with respect to culture, age, religion, and specific disease states. Offered by Nutrition and Food Studies. Limited to three attempts.

Recommended Prerequisite: NUTR 295 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

NUTR 421: *Community Nutrition.* 3 credits.
Focuses on nutrition and health problems of specific community settings, and examines practices of nutrition services in various communities. Offered by Nutrition and Food Studies. Limited to three attempts.

Recommended Prerequisite: NUTR 295 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

NUTR 422: *Nutrition throughout the Life Cycle.* 3 credits.
Focuses on nutrient needs and food habits throughout life cycle. Emphasizes nutrient needs prior, during, and after pregnancy, and nutritional requirements of infants, children, adolescents, adults, and elderly. Offered by Nutrition and Food Studies. Limited to three attempts.

Recommended Prerequisite: NUTR 295 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

NUTR 423: *Nutrition and Chronic Illnesses.* 3 credits.
Examines nutrient needs related to specific chronic illnesses, including cardiovascular disease, cancer, obesity, and diabetes. Focuses on principles of nutritional therapy and prevention. Offered by Nutrition and Food Studies. Limited to three attempts.

Recommended Prerequisite: NUTR 295 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

NUTR 430: *Introduction to Wine and Beer.* 3 credits.
Takes a multidisciplinary approach to understanding alcohol across time and space. Students will learn about alcohol production as well as the social and cultural dimensions of alcohol in a variety of cultures. Topics that might be covered in class include prohibition and neoprohibition, the health effects of alcohol, craft versus industrial production, among others. Students must be 21 to enroll. Notes: Fees apply. Offered by Nutrition and Food Studies. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

NUTR 435: *Urban Agriculture.* 3 credits.
Introduces students to the opportunities, limits, and barriers of growing food in cities. Utilizing case studies from the area and around the globe, students will study the social, historical, political, environmental, and practical aspects urban agriculture. Offered by Nutrition and Food Studies. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

NUTR 440: *Nutrition Policy.* 3 credits.
Explores US and international food and nutrition policies and programs. It is intended for undergraduate students who are interested in an in-depth analysis of policy related approaches to improving nutritional status within populations in the US and around the world. Offered by Nutrition and Food Studies. Limited to three attempts.

Recommended Prerequisite: NUTR 295

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

NUTR 442: *Advanced Nutrition I.* 3 credits.
Explores the biological roles of the macronutrients through application of advanced nutritional concepts relating to digestion, absorption and metabolism of carbohydrates, proteins and lipids. Practical implications in the diet are emphasized. Offered by Nutrition and Food Studies. Limited to three attempts.

Recommended Prerequisite: NUTR 295 and a biochemistry class

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

NUTR 444: *Advanced Nutrition II.* 3 credits.
Examines the biological roles of the micronutrients through application of advanced nutritional concepts relating to digestion, absorption, transport and metabolism of vitamins and minerals. Practical implications in the diet are emphasized. Offered by Nutrition and Food Studies. Limited to three attempts.

Recommended Prerequisite: NUTR 442

Schedule Type: Lecture

Grading:

This course is graded on the Undergraduate Regular scale.

NUTR 451: *Nutrition Assessment.* 3 credits.
Introduces students to methods and tools used in assessing individuals' nutritional status. Methods of interpretation of nutrition-related information will be examined. Offered by Nutrition and Food Studies. Limited to three attempts.

Recommended Prerequisite: NUTR 295 or equivalent course.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

NUTR 466: *Nutrition and Weight Management: Obesity, Anorexia, and Bulimia.* 3 credits.
Focuses on the physiological, emotional, genetic, and societal and cultural factors that influence the relationship between eating and weight regulation. Offered by Nutrition and Food Studies. Limited to three attempts.

Recommended Prerequisite: NUTR 295, GCH 332 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

NUTR 494: *Special Topics in Nutrition and Food Studies.* 3 credits.
In-depth study of contemporary areas of nutrition and food studies. Topics vary each semester. Students may take to apply up to 6 credits of NUTR 494 to their degree program. Offered by Nutrition and Food Studies. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

NUTR 495: *Nutrition and Food Studies Capstone.* 3 credits.
Students will integrate and apply skills and knowledge learned across the curriculum to conduct research on current food and nutrition-related issues, in order to develop new food and nutrition knowledge. Offered by Nutrition and Food Studies. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (NUTR 420[C] or 420[XS]) and (NUTR 421[C] or 421[XS]) and (NUTR 444[C]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

NUTR 499: *Independent Study in Nutrition and Food Studies.* 1-6 credits.
Readings or research on a pertinent topic in nutrition and food studies. Must be arranged with instructor before registering. Offered by Nutrition and Food Studies. May be repeated within the degree for a maximum 6 credits.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

500 Level Courses

NUTR 514: *Food, Culture, Nutrition and the Mediterranean Diet.* 6 credits.
Combines an understanding of foodways, culture, and sustainability with the Mediterranean diet pattern and its role in public health through classroom and experimental learning. History, traditions and contemporary issues will be explored to understand the place of Mediterranean foodways. Excursions to several cities in a Mediterranean region will explore distinctive regional specialties including tours of a wineries, farms, food factories and producers as well as cooking classes with local gourmet chefs and visits to food markets. Offered by Nutrition and Food Studies. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

NUTR 515: *Fundamentals of Cooking.* 3 credits.
Introduces students to the fundamental concepts of food and its preparation. The biological components, the chemical transformation, and sensorial properties of food are explored throughout the course. Offered by Nutrition and Food Studies. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

NUTR 522: *Nutrition Across the Lifespan.* 3 credits.
Explores the nutrient needs and food habits across the lifespan. Focuses on nutrition policies, programs, and interventions across the lifespan. Offered by Nutrition and Food Studies. May not be repeated for credit.

Recommended Prerequisite: NUTR 295.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:

This course is graded on the Graduate Regular scale.

NUTR 530: *Introduction to Wine and Beer.* 3 credits.
Takes a multidisciplinary approach to understanding alcohol across time and space. Students will learn about alcohol production as well as the social and cultural dimensions of alcohol in a variety of cultures. Topics that might be covered in class include prohibition and neoprohibition, the health effects of alcohol, craft versus industrial production, among others. Students must be 21 to enroll. Notes: Fees apply. Offered by Nutrition and Food Studies. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

NUTR 535: *Urban Agriculture.* 3 credits.
Introduces students to the opportunities, limits, and barriers of growing food in cities. Utilizing case studies from the area and around the globe, students will study the social, historical, political, environmental, and practical aspects urban agriculture. Offered by Nutrition and Food Studies. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Graduate, Non-Degree, Senior Plus or Senior.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

NUTR 566: *Nutrition and Weight Management.* 3 credits.
Focuses on the physiological, emotional, genetic, and societal/cultural factors that influence the relationship between eating and weight regulation. Offered by Nutrition and Food Studies. May not be repeated for credit.

Recommended Prerequisite: GCH 295 or other introductory nutrition course.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

NUTR 570: *Food Science for Nutritionists.* 3 credits.
Explores selected topics in food science and technology as relevant to the field of nutrition. Coverage includes various food processing and preservation methods, ingredient functionality, nutrient analysis, sensory analysis, food safety considerations, toxicology, and biotechnology. Offered by Nutrition and Food Studies. May not be repeated for credit.

Recommended Prerequisite: NUTR 295 or equivalent.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

NUTR 583: *Food and Culture.* 3 credits.
Examines food and eating behaviors, diet, and nutrition from cross-cultural perspective. Focuses on how and why people choose what to eat, range and significance of cross-cultural variability in diet, how diets have changed, and health and social implications of those changes. Offered by Nutrition and Food Studies. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

NUTR 594: *Special Topics in Nutrition and Food Studies.* 3 credits.
In-depth study of contemporary areas of nutrition and food studies. Topics vary each semester. Students may take up to 6 credits of NUTR 594 within their degree program. Offered by Nutrition and Food Studies. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: Graduate level course.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

600 Level Courses

NUTR 608: *Perspectives on Food Security.* 3 credits.
Overview of the major concepts and perspectives of food security. Explores and applies the definitions, means of measurement, and policy implications of food security from a multidisciplinary approach. Offered by Nutrition and Food Studies. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

NUTR 610: *Food Safety and Defense.* 3 credits.
Focuses on the possible sources of unintentional and intentional contamination of the food supply and on the roles and guiding policies of the various levels of government and the food industry, as well as individual responsibility in managing risk to ensure a safe food supply. Notes: Fees may apply. Offered by Nutrition and Food Studies. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

NUTR 611: *Food and Nutrition Security Policy.* 3 credits.
In-depth analysis of food security and nutrition policies and programs aimed at reducing hunger and malnutrition among individuals and populations. Offered by Nutrition and Food Studies. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

NUTR 620: *Nutrition Education.* 3 credits.
An overview of current nutrition education research, theories, programs, and policies. Explores how nutrition education can influence dietary behavior and food choice. Offered by Nutrition and Food Studies. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

NUTR 626: *Food Systems.* 3 credits.
Survey of issues surrounding food production from a processing perspective. Students will gain an understanding various forms of food processing and the issues that surround industrial food systems. Offered by Nutrition and Food Studies. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

NUTR 630: *Global Nutrition.* 3 credits.
Directed at students from a variety of disciplines, this course examines what malnutrition is and how it occurs by looking at several situations from around the world. It looks at the impact of nutrition on a society and community and examines the benefits of a well-nourished population. Offered by Nutrition and Food Studies. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

NUTR 642: *Macronutrients.* 3 credits.
Expands understanding of the biological roles of the macronutrients through application of advanced nutritional concepts relating to digestion, absorption and metabolism of carbohydrates, proteins, and lipids. Practical implications in the diet are emphasized, and particular attention is placed on the etiology and prevention of macronutrient-

related diseases, including atherosclerosis, diabetes, and metabolic syndrome. Offered by Nutrition and Food Studies. May not be repeated for credit.

Recommended Prerequisite: NUTR 295 and undergraduate biochemistry course.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

NUTR 644: *Micronutrients.* 3 credits.
Expands understanding of the biological roles of the micronutrients through application of advanced nutritional concepts relating to digestion, absorption, transport, and metabolism of vitamins and minerals. Practical implications in the diet are emphasized, with particular attention on the etiology and prevention of micronutrient-related diseases, including nutritional anemia and osteoporosis. Offered by Nutrition and Food Studies. May not be repeated for credit.

Recommended Prerequisite: NUTR 295 and Undergraduate biochemistry equivalent.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

NUTR 651: *Nutrition Assessment, Monitoring and Surveillance.* 3 credits.
Introduces students to methods and tools used in assessing nutritional status and, the practice and application of these to monitoring among individuals and population groups. Methods of interpretation of nutrition-related information will be examined. Will include off campus practice. Notes: Will include off campus practice Offered by Nutrition and Food Studies. May not be repeated for credit.

Recommended Prerequisite: NUTR 630 or an introductory nutrition course.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

NUTR 670: *Nutrition Research Methods.* 3 credits.
Introduction to the fundamentals of research design and data collection methods. Students will learn about quantitative, qualitative, mixed method, participatory approaches, and ethical issues in nutrition-related research and evaluation. Offered by Nutrition and Food Studies. May not be repeated for credit.

Recommended Prerequisite: GCH 601 or GCH 712, NUTR 651 OR equivalent courses.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

NUTR 675: *Nutrition Program Development, Interventions and Assessments.* 3 credits.
Provides students with the knowledge and skills for planning, developing and evaluation of community nutrition programs and interventions. Offered by Nutrition and Food Studies. May not be repeated for credit.

Recommended Prerequisite: NUTR 670, GCH 601 and NUTR 651 OR equivalent courses.

Registration Restrictions:
Required Prerequisites: (NUTR 620[B-] or 620[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

NUTR 690: *Independent Study in Nutrition and Food Studies.* 1-6 credits.
Readings or research on a pertinent topic in nutrition and food studies. Must be arranged with instructor before registering. Offered by Nutrition and Food Studies. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Regular scale.

700 Level Courses

NUTR 788: *Pre-Practicum Seminar.* 0 credits.
Provides guidance and preparation for engaging in the capstone practicum. Offered by Nutrition and Food Studies. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Satisfactory/No Credit scale.

NUTR 790: *Nutrition Practicum.* 3 credits.
An in-depth supervised experience in an approved nutrition-related organization. Includes a project related to a nutrition issue within the organization. Offered by Nutrition and Food Studies. May not be repeated for credit.

Recommended Prerequisite: NUTR 788.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Graduate Special scale.

NUTR 799: *Thesis Research.* 1-6 credits.
Thesis research and writing. Offered by Nutrition and Food Studies. May be repeated within the degree.

Recommended Prerequisite: Core courses in MS program.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Thesis

Grading:
This course is graded on the Satisfactory/No Credit scale.

Operations & Supply Chain Management (OSCM)

300 Level Courses

OSCM 303: *Operations Management.* 3 credits.
Examines an organization's operations, including design, management and improvement processes, projects and supply chains, in both product and service environments. Uses analytical models to support key planning and control activities. Notes: Students cannot receive credit for both OM 303 and OSCM 303. Those who do not successfully complete this course within three attempts will be terminated from their major and will not be eligible to receive a degree from the School of Business. The third attempt will require academic advisor approval. For more information about this, see the "Termination from the Major" section under Academic Policies. Offered by School of Business. Limited to two attempts. Equivalent to OM 303.

Recommended Prerequisite: BUS 103 and BUS 200.

Registration Restrictions:
Required Prerequisites: (BUS 210[C], U210 or 210[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take OSCM crses, terminated from BU major or terminated from ISOM major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

OSCM 320: *Supply Chain Management in a Global Economy.* 3 credits.
Design, development, and management of supply chain systems, including production and inventory management, distribution channels, and information systems that support them. Emphasizes impact of e-business on companies and industries, including Internet's impact on the way goods and services flow through value chain from providers to customers. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts. Equivalent to OM 320.

Registration Restrictions:
Required Prerequisites: OM 301[C], L301, 303[C], OSCM 303[C], 303[XS], OM L303, 303[XS], MBUS 306[C], 306[XS] or L306.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take OSCM crses, terminated from BU major or terminated from ISOM major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

OSCM 330: *Service Operations.* 3 credits.
The services sector contributes about 80% of the gross domestic product of the US economy. This sector also provides employment to nearly 80% of the working population across diverse industries such as financial services, hospitality, retail, health care, airlines, and public sector. In short, the service sector affects almost every aspect of our day-to-day lives. However, understanding service operations is not easy due to service characteristics such as intangibility, variability, inability to be stored, highly geographically distributed, and a significant amount of customer contact. In light of these factors, this course in Service Operations focuses on how firms in the services sector design and manage their businesses. Specifically, we will explore key concepts in service operations such as services delivery, service encounter, service quality, and management of capacity and demand. Further, this course will explore how these concepts apply across a diverse range of industries. Offered by School of Business. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: OM 301[C], L301, 303[C], L303, OSCM 303[C], 303[XS], OM 303[XS], MBUS 306[C], 306[XS] or L306.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take OSCM crses, terminated from BU major or terminated from ISOM major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

OSCM 352: *Management Science.* 3 credits.
Introduces operation research and management sciences (OR/MS) techniques for supporting business management decisions. Specific mathematical programming and probabilistic topics include linear programming, integer programming, goal programming, network flow models, decision analysis, game theory, queuing models, and Monte Carlo simulation. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts. Equivalent to OM 352.

Registration Restrictions:
Required Prerequisites: OM 301[C], L301, 303[C], L303, OSCM 303[C], 303[XS], OM 303[XS], MBUS 306[C] or 306[XS] and MBUS L306.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take OSCM crses, terminated from BU major or terminated from ISOM major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

OSCM 430: *Design Thinking for Innovative Operations.* 3 credits.
This course introduces students to an approach to decision making called design thinking. Design thinking is a way of working with user-centered innovation to address problems. Design thinking emphasizes deep user understanding, iteration, and a focus on possibilities as a way to enhance value creation for stakeholders. Design thinking has gained in popularity both in industry and in governments in the last decade and is an important contrast to the more traditional linear view of problem solving. The course will study the concepts and applications of design thinking and will allow students to engage in the design thinking process in an operational innovation context. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: OM 301[C], L301, 303[C], L303, OSCM 303[C], 303[XS], OM 303[XS], MBUS 306[C], 306[XS] or L306.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman or Sophomore may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take OSCM crses, terminated from BU major or terminated from ISOM major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

OSCM 435: *Business Process Analysis and Simulation.* 3 credits.
Introduces concepts and tools used in designing, modeling, analyzing, and improving business processes. Various business process analysis and simulation methods, such as process mapping/flowcharting, process flow and capacity analysis, service process design, theory of constraints, process modeling and simulation, and business process reengineering are discussed. Introduces methods and analytical tools such as queue theory and computer simulation used to design, model, analyze, and improve business processes. Discusses methods such as process mapping/diagramming, service process design, process modeling, and business process reengineering. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts. Equivalent to OM 435.

Registration Restrictions:
Required Prerequisites: OM 301[C], L301, 303[C], L303, OSCM 303[C], 303[XS], OM 303[XS], MBUS 306[C], 306[XS] or L306.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman or Sophomore may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take OSCM crses, terminated from BU major or terminated from ISOM major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

OSCM 440: *Public Sector Operations.* 3 credits.
Public sector organizations such as governments and non-profits fulfill important roles in society, delivering widely varying services and products. Operations management, the analysis, design, operation, and improvement of the systems and processes that deliver goods or services, is critical for these organizations to achieve their mission, provide value to their many stakeholders, and effectively translate policy into action. This course equips students with capabilities and strategies to design, evaluate, and improve successful operations activities within government and non-profit organizations. The course is particularly relevant in the context of the DC metropolitan area where public sector represents a key industry sector in terms of contribution to the area's GDP and employment. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: OM 301[C], L301, 303[C], L303, OSCM 303[C], 303[XS], OM 303[XS], MBUS 306[C], 306[XS] or L306.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman or Sophomore may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take OSCM crses, terminated from BU major or terminated from ISOM major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

OSCM 452: *Business Forecasting.* 3 credits.
Introduces techniques for producing predictions of future business operations as aids to making planning decisions. Specific topics include judgmental forecasting, forecast accuracy, correlation analysis, smoothing methods, regression models, decomposition, and autoregressive and ARIMA models. Methods demonstrated and used through computer software. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts. Equivalent to OM 452.

Registration Restrictions:
Required Prerequisites: OM 301[C], L301, 303[C], L303, OSCM 303[C], 303[XS], OM 303[XS], MBUS 306[C], 306[XS] or L306.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman or Sophomore may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take BUSA crses, Ineligible to take OSCM crses, terminated from BU major or terminated from ISOM major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

OSCM 456: *Quality Management.* 3 credits.
Provides an understanding of the multifaceted nature of quality management by emphasizing topics such as quality philosophies, total quality management, design quality, process quality, and managing quality in information systems development. Discusses ISO 9000 and Capability Maturity Model. Uses software, case studies. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts. Equivalent to OM 456.

Specialized Designation: Writing Intensive in Major

Registration Restrictions:
Required Prerequisites: OM 301[C], L301, 303[C], L303, OSCM 303[C], 303[XS], OM 303[XS], MBUS 306[C], 306[XS] or L306.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman or Sophomore may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take OSCM crses, terminated from BU major or terminated from ISOM major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

OSCM 460: *Management of Product and Process Technologies.* 3 credits.
This course focuses on analysis of the challenges and opportunities associated with managing a firm's product and process technology resources for long-term competitive advantage in the face of technological evolution. Students will learn concepts of technology evolution, understand how enterprises can manage technology resources efficiently to create and deliver products and/or services that respond effectively to customer requirements and expectations, and examine models that help in the analysis, development and implementation of product and process technologies. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: OM 301[C], L301, 303[C], L303, OSCM 303[C], 303[XS], OM 303[XS], MBUS 306[C], 306[XS] or L306.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman or Sophomore may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the terminated from BU major or terminated from ISOM major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

OSCM 462: *Honors Seminar in Operations Management (Topic Varies).* 3 credits.
Topic and format vary. In-depth study of a topic in the area of operations management. Enrollment limited and competitive. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts. Equivalent to OM 462.

Specialized Designation: Topic Varies

Recommended Prerequisite: Enrollment in the Operations and Supply Chain Management concentration, senior standing, and permission of the course department.

Registration Restrictions:
Students with the Ineligible to take OSCM crses, terminated from BU major or terminated from ISOM major attributes may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

OSCM 465: *Government Contracting and Procurement.* 3 credits.
This course provides an in-depth knowledge and analysis of the Government Contracting industry, and Business to Government (B2G) relationships. It will discuss Procurement and Supply Chain processes in the government regulatory environment, and how they are executed in practice by government organizations, with a focus on US Federal Government contracting policies, processes and procedures. It is designed for students potentially pursuing careers in government organizations or businesses that serve government clients. Topics will include Federal Acquisition Regulation (FAR), Federal Budgeting, Market Analysis, Category Management, Small Business Utilization, National Security implications, Innovation and Research Funding. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: OM 301[C], L301, 303[C], L303, OSCM 303[C], 303[XS], OM 303[XS], MBUS 306[C], 306[XS] or L306.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman may **not** enroll.

Students with the Ineligible to take OSCM crses, terminated from BU major or terminated from ISOM major attributes may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

OSCM 491: *Seminar in Operations Management.* 3 credits.
Analyzes selected topics that highlight latest developments in the operations management field, including contemporary research findings and case studies of operations management in business and other organizations. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts. Equivalent to OM 491.

Registration Restrictions:
Required Prerequisites: OM 301[C], L301, 303[C], L303, OSCM 303[C], 303[XS], OM 303[XS], MBUS 306[C], 306[XS] or L306.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Senior.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take OSCM crses, terminated from BU major or terminated from ISOM major attributes may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

OSCM 492: *Internship in Operations and Supply Chain Management.* 3 credits.
Opportunity to gain practical, professional experience in conjunction with academic development. An internship is an important part of academic and career preparation. May be used as elective credit, but may not be repeated. Notes: No more than 6 credits of School of Business internship coursework (BUS 492 or OM 492) can be applied towards a student's 120 (BU) degree applicable credits. Students must receive departmental approval in order to register for this course; please contact the School of Business Office of Career Services for internal eligibility requirements. Offered by School of Business. May be repeated within the degree for a maximum 6 credits. Equivalent to ACCT 492, BUS 492, FNAN 492, MGMT 492, MIS 492, MKTG 492, OM 492.

Recommended Prerequisite: 75 credit hours

Registration Restrictions:
Required Prerequisites: (MIS 301[B-] or 303[B-]) and (OM 301[B-], 303[B-], OSCM 303[B-] or MBUS 306[B-]).
[B-] Requires minimum grade of B-.

Students with a class of Freshman or Sophomore may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take BUSA crses, Ineligible to take OSCM crses, terminated from BU major or terminated from ISOM major attributes may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

OSCM 493: *Management of Technology Projects.* 3 credits.
Focuses on managerial problems associated with meeting technical, cost, and time constraints of technology projects. Discusses project management areas including organization, teams, scheduling, cost control, earned value analysis, risk management, and quality. Includes software cost estimation models and the management of IT projects. Software and case studies. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts. Equivalent to OM 493.

Registration Restrictions:
Required Prerequisites: OM 301[C], L301, 303[C], L303, OSCM 303[C], 303[XS], OM 303[XS], MBUS 306[C], 306[DS] or L306.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.
[DS] Requires minimum grade of DS.

Students with a class of Freshman may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the Ineligible to take OSCM crses, terminated from BU major or terminated from ISOM major attributes may **not** enroll.

Schedule Type: Lecture

Grading:

This course is graded on the Undergraduate Regular scale.

OSCM 499: *Independent Study in Operations Management.* 1-3 credits.
By special arrangement with instructor, and approval from associate dean for undergraduate programs. Investigates business problem according to student interest, using state-of-the-art decision science methodology. Offered by School of Business. May be repeated within the term for a maximum 6 credits. Equivalent to OM 499.

Registration Restrictions:
Required Prerequisites: OM 301[C], L301, 303[C], L303, OSCM 303[C], 303[XS], OM 303[XS], MBUS 306[C], 306[XS] or L306.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman or Sophomore may **not** enroll.

Non-Degree or Washington Consortium level students may **not** enroll.

Students with the Ineligible to take OSCM crses, terminated from BU major or terminated from ISOM major attributes may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

700 Level Courses

OSCM 721: *Seminar in Operations and Supply Chain Management.* 1.5 credit.
This course is designed to expose doctoral students to academic research in operations and supply chain management. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Enrollment is limited to students with a major in Business.

Enrollment is limited to Graduate level students.

Enrollment limited to students in a Doctor of Philosophy degree.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

OSCM 731: *Seminar in Supply Chain Management.* 3 credits.
This course is designed to expose doctoral students to a broad foundation in supply chain management research including theory, quantitative and empirical tools. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Enrollment is limited to students with a major in Business.

Enrollment is limited to Graduate level students.

Enrollment limited to students in a Doctor of Philosophy degree.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

OSCM 732: *Seminar in Innovation and New Product Development.* 3 credits.
This course is designed to expose doctoral students to a broad foundation in innovation and new product development research including theory, quantitative and empirical tools. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Enrollment is limited to students with a major in Business.

Enrollment is limited to Graduate level students.

Enrollment limited to students in a Doctor of Philosophy degree.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

800 Level Courses

OSCM 893: *Special Topics in Operations Management.* 3 credits.
This course is designed to expose doctoral students to a specialized topic within the operations and supply chain management field through theoretical, quantitative and empirical work in the topic area. Offered by School of Business. May be repeated within the degree for a maximum 12 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Enrollment is limited to students with a major in Business.

Enrollment is limited to Graduate level students.

Enrollment limited to students in a Doctor of Philosophy degree.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

Operations Management (OM)

300 Level Courses

OM 303: *Operations Management.* 3 credits.
Examines an organization's operations, including design, management and improvement processes, projects and supply chains, in both product and service environments. Uses analytical models to support key planning and control activities. Notes: Students cannot receive credit for both OM 301 and OM 303.School of Business students will not be permitted to make more than three attempts to achieve a C or higher in OM 303. The third attempt requires School of Business academic advisor approval. Those who do not successfully complete this course within three attempts will be terminated from their major and will not be eligible to receive a degree from the School of Business. For more information about this, see the "Termination from the Major" section

under Academic Policies. Offered by School of Business. Limited to two attempts. Equivalent to OSCM 303.

Recommended Prerequisite: BUS 103 and BUS 200.

Registration Restrictions:
Required Prerequisites: BUS 210[C], U210 or 210[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the terminated from BU major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

OM 320: *Supply Chain Management in a Global Economy.* 3 credits.
Design, development, and management of supply chain systems, including production and inventory management, distribution channels, and information systems that support them. Emphasizes impact of e-business on companies and industries, including Internet's impact on the way goods and services flow through value chain from providers to customers. Offered by School of Business. Limited to three attempts. Equivalent to OSCM 320.

Registration Restrictions:
Required Prerequisites: (DESC 301[C], L301, OM 301[C], L301, 303[C] or 303[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the terminated from BU major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

OM 352: *Management Science.* 3 credits.
Introduces operation research and management sciences (OR/MS) techniques for supporting business management decisions. Specific mathematical programming and probabilistic topics include linear programming, integer programming, goal programming, network flow models, decision analysis, game theory, queuing models, and Monte Carlo simulation. Offered by School of Business. Limited to two attempts. Equivalent to OSCM 352.

Registration Restrictions:
Required Prerequisites: (DESC 301[C], L301, OM 301[C] or L301) or OM 303[C], L303 or 303[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the terminated from BU major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

OM 435: *Business Process Analysis and Simulation.* 3 credits.
Introduces concepts and tools used in designing, modeling, analyzing, and improving business processes. Various business process analysis and simulation methods, such as process mapping/flowcharting, process flow and capacity analysis, service process design, theory of constraints, process modeling and simulation, and business process reengineering are discussed. Introduces methods and analytical tools such as queue theory and computer simulation used to design, model, analyze, and improve business processes. Discusses methods such as process mapping/diagramming, service process design, process modeling, and business process reengineering. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts. Equivalent to OSCM 435.

Registration Restrictions:
Required Prerequisites: (DESC 301[C], L301, OM 301[C] or L301) or OM 303[C], L303 or 303[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman or Sophomore may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the terminated from BU major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

OM 452: *Business Forecasting.* 3 credits.
Introduces techniques for producing predictions of future business operations as aids to making planning decisions. Specific topics include judgmental forecasting, forecast accuracy, correlation analysis, smoothing methods, regression models, decomposition, and autoregressive and ARIMA models. Methods demonstrated and used through computer software. Offered by School of Business. Limited to two attempts. Equivalent to OSCM 452.

Registration Restrictions:
Required Prerequisites: (DESC 301[C], L301, OM 301[C] or L301) or OM 303[C], L303 or 303[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman or Sophomore may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the terminated from BU major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

OM 456: *Quality Management.* 3 credits.
Provides an understanding of the multifaceted nature of quality management by emphasizing topics such as quality philosophies, total quality management, design quality, process quality, and managing quality in information systems development. Discusses ISO 9000 and Capability Maturity Model. Uses software, case studies. A third attempt will require academic advisor approval. Offered by School of Business. Limited to two attempts. Equivalent to OSCM 456.

Specialized Designation: Writing Intensive in Major

Registration Restrictions:
Required Prerequisites: (DESC 301[C], L301, OM 301[C] or L301) or OM 303[C], L303 or 303[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman or Sophomore may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the terminated from BU major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

OM 462: *Honors Seminar in Operations Management (Topic Varies).* 3 credits.
Topic and format vary. In-depth study of a topic in the area of operations management. Enrollment limited and competitive. Offered by School of Business. Limited to two attempts. Equivalent to OSCM 462.

Specialized Designation: Topic Varies

Recommended Prerequisite: Degree status in ISOM major; senior standing; permission of department.

Registration Restrictions:
Students with the terminated from BU major attribute may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

OM 491: *Seminar in Operations Management.* 3 credits.
Analyzes selected topics that highlight latest developments in the operations management field, including contemporary research findings and case studies of operations management in business and other organizations. Offered by School of Business. Limited to two attempts. Equivalent to OSCM 491.

Registration Restrictions:
Required Prerequisites: (OM 301[C]) or OM 303[C], L301, L303 or 303[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Senior.

Non-Degree level students may **not** enroll.

Students with the terminated from BU major attribute may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

OM 492: *Internship in Operations Management.* 3 credits.
Opportunity to gain practical, professional experience in conjunction with academic development. An internship is an important part of academic and career preparation. May be used as elective credit, but may not be repeated. Notes: No more than 6 credits of School of Business internship coursework (BUS 492 or OM 492) can be applied towards a student's 120 (BU) degree applicable credits. Students must receive departmental approval in order to register for this course; please contact the School of Business Office of Career Services for internal eligibility requirements. Offered by School of Business. May be repeated within the degree for a maximum 6 credits. Equivalent to ACCT 492, BUS 492, FNAN 492, MGMT 492, MIS 492, MKTG 492, OSCM 492.

Recommended Prerequisite: 75 credit hours

Registration Restrictions:
Required Prerequisites: (OM 301[B-] or 303[B-]) and (MIS 301[B-] or 303[B-]).
[B-] Requires minimum grade of B-.

Students with a class of Freshman or Sophomore may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the terminated from BU major attribute may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

OM 493: *Management of Technology Projects.* 3 credits.
Focuses on managerial problems associated with meeting technical, cost, and time constraints of technology projects. Discusses project management areas including organization, teams, scheduling, cost control, earned value analysis, risk management, and quality. Includes software cost estimation models and the management of IT projects. Software and case studies. Offered by School of Business. Limited to two attempts. Equivalent to OSCM 493.

Registration Restrictions:
Required Prerequisites: (OM 301[C], L301, DESC 301[C] or L301) or OM 303[C], L303 or 303[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman or Sophomore may **not** enroll.

Non-Degree level students may **not** enroll.

Students with the terminated from BU major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

OM 499: *Independent Study in Operations Management.* 1-3 credits.
By special arrangement with instructor, and approval from associate dean for undergraduate programs. Investigates business problem according to student interest, using state-of-the-art decision science methodology. Offered by School of Business. May be repeated within the term for a maximum 6 credits. Equivalent to OSCM 499.

Registration Restrictions:
Required Prerequisites: (DESC 301[C], L301, OM 301[C] or L301) or OM 303[C], L303 or 303[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman or Sophomore may **not** enroll.

Non-Degree or Washington Consortium level students may **not** enroll.

Students with the terminated from BU major attribute may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

Operations Research (OR)

300 Level Courses

OR 335: *Discrete Systems Modeling and Simulation.* 3 credits.
Introduces basic concepts of modeling complex discrete systems by computer simulation. Topics include Monte-Carlo methods, discrete-event modeling, specialized simulation software, and statistics of input and output analysis. Offered by Systems Engr & Operations Rsch. Limited to two attempts. Equivalent to SYST 335.

Registration Restrictions:
Required Prerequisites: (SYST 130[C], 130[XS], CDS 130[C], 130[XS], CS 112[C], 112[XS] or ENGR 125T) and (STAT 334[C], 334[XS], 344[C], 344[XS], 346[C], 346[XS], MATH 351[C] or 351[XS]) and (SYST 230[*C], 230[XS], CS 211[*C] or 211[XS]).
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

OR 438: *Analytics for Financial Engineering and Econometrics.* 3 credits.
Introduces the basic analytics for financial engineering and econometrics. Topics include financial transactions and econometric data management, correlation, linear and multiple regressions for financial and economic predictions, financial time series analysis, portfolio theory, pricing models, and risk analysis. Provides a foundation of basic theory and methodology as well as applied examples with techniques to analyzing large financial and econometric data. Hands-on experiments with R will be emphasized throughout the course. Offered by Systems Engr & Operations Rsch. Limited to two attempts. Equivalent to SYST 438.

Recommended Corequisite: STAT 354

Registration Restrictions:
Required Prerequisites: (STAT 250[C] or 250[XS]) or (STAT 260[C] or 260[XS]) or (STAT 334[C] or 334[XS]) or (STAT 344[C] or 344[XS]) or (STAT 346[C] or 346[XS]) or (MATH 351[C] or 351[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

OR 441: *Deterministic Operations Research.* 3 credits.
Survey of deterministic methods for solving real-world decision problems. Covers linear programming model and simplex method of solution, duality, and sensitivity analysis; transportation and assignment problems; shortest path and maximal flow problems; and introduction to integer and nonlinear programming. Emphasizes modeling and problem solving. Notes: Accelerated MS students may not receive credit for both OR/MATH 441 and OR 531 Offered by Systems Engr & Operations Rsch. Limited to two attempts. Equivalent to MATH 441.

Registration Restrictions:
Required Prerequisites: MATH 203[C] or 203[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

OR 442: *Stochastic Operations Research.* 3 credits.
Survey of probabilistic methods for solving decision problems under uncertainty, probability review, decision theory, queuing theory, inventory models, forecasting, Markov chain models, and simulation are covered. Emphasis on modeling and problem solving. Offered by Systems Engr & Operations Rsch. Equivalent to MATH 442. Offered by Systems Engr & Operations Rsch. Limited to two attempts. Equivalent to MATH 442.

Registration Restrictions:
Required Prerequisites: STAT 334[C], 334[XS], 344[XS], 344[C], 346[C], 346[XS], MATH 351[C] or 351[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

OR 481: *Numerical Methods in Engineering.* 3 credits.
Modern numerical methods and software. Emphasis on problem solving through software and assessing the quality of solutions obtained. Topics include computer arithmetic, linear equations and least squares data fitting, interpolation, nonlinear optimization, and differential equations. Involves extensive computer use. Offered by Systems Engr & Operations Rsch. Limited to two attempts. Equivalent to MATH 446.

Registration Restrictions:
Required Prerequisites: (MATH 203[C] or 203[XS]) and (CS 112[C], 112[XS], SYST 130[C], 130[XS], CDS 130[C], 130[XS] or ENGR 125T).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

OR 498: *Independent Study in Operations Research.* 1-3 credits.
Directed self-study of special topics of current interest in operations research. Notes: May be repeated if topics substantially different. Offered by Systems Engr & Operations Rsch. Limited to two attempts.

Recommended Prerequisite: 60 hours; must be arranged with an instructor and approved by the dept. chair before registering.

Registration Restrictions:
Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

500 Level Courses

OR 531: *Analytics and Decision Analysis.* 3 credits.
Course focus is predominantly on prescriptive analytics with some parts focused on predictive analytics. Topics include operations research techniques and their application to decision making such as mathematical optimization, networks modeling, stochastic modeling, and multi-objective modeling. Other topics such as Monte Carlo simulation, decision analysis using decision trees and quantitative value functions, and heuristic methods for non-smooth models are covered, as well as use of contemporary computer software for problem solving. In particular, the course will use MS Excel extensively for building decision making support models. Case-study approach to problem solving is used. Notes: Cannot be used for credit for the PhD IT program. Offered by Systems Engr & Operations Research. May not be repeated for credit. Offered by Systems Engr & Operations Rsch. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

OR 538: *Analytics for Financial Engineering and Econometrics.* 3 credits.
Introduces the basic analytics for financial engineering and econometrics. Topics include financial transactions and econometric data management, correlation, linear and multiple regressions for financial and economic predictions, financial time series analysis, portfolio theory, pricing models, and risk analysis. Provides a foundation of basic theory and methodology as well as applied examples with techniques to analyzing large financial and econometric data. Hands-on experiments with R will be emphasized throughout the course. Offered by Systems Engr & Operations Rsch. May not be repeated for credit. Equivalent to SYST 538.

Recommended Prerequisite: STAT 515 or STAT 544.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

OR 541: *Operations Research: Deterministic Models.* 3 credits.
Survey of deterministic methods of solving real world decision problems. Covers linear programming model and simplex method of solution, duality, and sensitivity analysis, transportation and assignment problems; shortest path, minimal spanning tree, and maximal flow problems; and an introduction to integer and nonlinear programming. Emphasis on modeling and problem solving. Notes: Students who have taken OR 441/MATH 441 will not receive credit. Offered by Systems Engr & Operations Rsch. May not be repeated for credit.

Recommended Prerequisite: MATH 203 or equivalent.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

OR 542: *Operations Research: Stochastic Models.* 3 credits.
A survey of probabilistic methods for solving decision problems under uncertainty, probability theory review, forecasting, queuing theory, inventory systems, Markov chain models, and simulation. Emphasis on modeling and problem solving. Notes: Students who have taken OR 442/MATH 442 do not receive credit. Offered by Systems Engr & Operations Rsch. May not be repeated for credit. Offered by Systems Engr & Operations Rsch. May not be repeated for credit.

Recommended Prerequisite: STAT 344 or MATH 351 or equivalent.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

OR 568: *Applied Predictive Analytics.* 3 credits.
Introduces predictive analytics with applications in engineering, business, and econometrics. Topics include data preprocessing, predictive modeling with various regression and classification models (e.g., linear, logistic regression, tree-based methods, SVM, neural networks, etc.), time series analysis, and case studies. Provides a foundation of basic theory and methodology with applied examples to analyze large engineering, business, and econometric data for predictive decision making. Hands-on experiments with R will be emphasized. Offered by Systems Engr & Operations Rsch. May not be repeated for credit. Equivalent to SYST 568.

Recommended Prerequisite: STAT 515 or Graduate Standing at the MSOR or MSSE programs.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

OR 574: *Quality Control and Process Management.* 3 credits.
An overview of quality control techniques widely used in a number of manufacturing industries. The course teaches students about combining engineering process quality management and traditional statistical quality control procedures that are applicable in industry and are based on contemporary technologies such as lean Six Sigma, total quality management and predictive maintenance for achieving superior quality, reliability and maintainability. Offered by Systems Engr & Operations Rsch. May not be repeated for credit. Equivalent to SYST 574.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

OR 576: *Manufacturing Systems Analysis.* 3 credits.
An overview of modeling and analysis of general manufacturing systems techniques widely used in a number of manufacturing industries, such as semiconductor manufacturing. The course teaches students about best scheduling and inventory control practices, enterprise resource management principles, and details of engineering economy that are applicable in the industry. Offered by Systems Engr & Operations Rsch. May not be repeated for credit. Equivalent to SYST 576.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

OR 584: *Heterogeneous Data Fusion.* 3 credits.
Introduces the theory, design and implementation of multi-source information fusion systems in various domains. The course covers distinct technologies for combining data from multiple, heterogeneous sources and performing inferences in support to applications such as cyber security, Semantic Web, decision support systems, situational awareness, intrusion detection, crisis management, and others. The technical content is largely multi-disciplinary, encompassing disciplines such as knowledge engineering, ontologies, statistical learning, artificial intelligence, and data mining. Offered by Systems Engr & Operations Rsch. May not be repeated for credit. Equivalent to SYST 584.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

OR 588: *Financial Systems Engineering I: Introduction to Options, Futures, and Derivatives.* 3 credits.
This course is an introduction to financial engineering. Financial engineering is a cross-disciplinary field which relies on mathematical finance, numerical methods, and computer simulations to make trading, hedging, and investment decisions. This course will introduce basic

types of derivatives, such as forward, futures, swaps, and options; as well as financial models such as Brownian motion, Ito's formula, and Black-Scholes valuation model. Numerical methods for option pricing, such as Binomial tree and Monte Carlo simulation will also be covered. Offered by Systems Engr & Operations Rsch. May not be repeated for credit. Equivalent to SYST 588.

Recommended Prerequisite: Eng. or Math Graduate standing, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

600 Level Courses

OR 603: *Sports Analytics.* 3 credits.
Cover topics in the applied analysis of sports, with a focus on supporting team decision-makers. Students will learn to apply modern, practical analytic techniques to sports data in search of actionable insight and a competitive edge. The four major team sports of North America (football, baseball, basketball, and hockey) will be the primary subjects of study, but the course's learning objectives will universally apply to a variety of sports. Students will become familiar with the full analytic life-cycle: asking productive and relevant research questions, finding the right data, applying the appropriate tools, discovering insight, and clearly communicating results. Offered by Systems Engr & Operations Rsch. May not be repeated for credit.

Recommended Prerequisite: (OR 531 or OR 541), and (STAT 518 or OR 568).

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

OR 604: *Practical Optimization.* 3 credits.
Survey of optimization methods for students whose main focus is on application of optimization. Covers modeling, search methods, convexity, linear programming, sensitivity, networks, multiobjective optimization, heuristic methods, integer programming, nonlinear programming and dynamic programming; use of modeling languages and optimization tools, including NEOS. Offered by Systems Engr & Operations Rsch. May not be repeated for credit.

Recommended Prerequisite: OR 531 and CS 504 or higher programming course.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

OR 610: *Deep Learning for Predictive Analytics.* 3 credits.
Overview of the theoretical and algorithmic foundations of deep learning as well as practical aspects of developing deep learning predictive models. Topics include theoretical results from convex optimization and approximation theories, first and second order optimization algorithms (stochastic gradient descent, Nesterov acceleration, Newton's), overview of popular architectures (recurrent and convolutional networks), accelerated linear algebra, GPU computing, automated differentiation and Bayesian inference. Applications in engineering, finance and artificial intelligence. Practical aspects of building predictive models, such as architecture selection, and data normalization. Extensive use of computational tools, such as the Python language, both for illustration in class and in homework problems. In addition to traditional instruction, a number of case studies and students' model building projects provide further breadth and exposure. Offered by Systems Engr & Operations Rsch. May not be repeated for credit.

Recommended Prerequisite: (OR 541 or OR 604) and (OR 568 or OR 664), or permission of instructor

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

OR 635: *Discrete System Simulation.* 3 credits.
Computer simulation as a scientific methodology in operations analytics, with emphasis on model development, implementation, and analysis of results. Discrete-event models, specialized software and programming, input modeling, random variate generation, output statistical analysis, design of simulation experiments, and simulation-based optimization are covered. Extensive computational work is required. Offered by Systems Engr & Operations Rsch. May not be repeated for credit. Offered by Systems Engr & Operations Rsch. May not be repeated for credit.

Recommended Prerequisite: OR 542, or STAT 354 or 344, or equivalent; and knowledge of scientific programming language.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

OR 640: *Global Optimization and Computational Intelligence.* 3 credits.
Introduction to global optimization of nonconvex mathematical programs and numerical methods for the solution of such problems. Topics covered include high-level survey of traditional mathematical programming algorithms; critical comparison of metaheuristics and artificial intelligence (AI) algorithms to traditional mathematical programming algorithms; probabilistic search, multistart methods, statistical tests of performance and confidence, simulated annealing, genetic algorithms, neural networks, Tabu search, homotopies and tunneling; the traveling salesman problem, the Steiner problem, Stackelberg-Cournot-Nash mathematical games and other classical nonconvex optimization problems. Offered by Systems Engr & Operations Rsch. May not be repeated for credit.

Recommended Prerequisite: MATH 203 or equivalent, and knowledge of a scientific programming language.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

OR 641: *Linear Programming.* 3 credits.
In-depth look at the theory and methodology of linear programming: Computational enhancements of the revised simplex method; sparse-matrix techniques, bounded variables and the dual simplex method. Alternative interior point methods described and computational complexity of various algorithms analyzed. Offered by Systems Engr & Operations Rsch. May not be repeated for credit.

Recommended Prerequisite: OR 541 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

OR 642: *Integer Programming.* 3 credits.
Cutting plane and enumeration algorithms for solution of integer linear programs; bounding strategies and reformulation techniques; heuristic approaches to the solution of complex problems; knapsack problems, matching problems, set covering and partitioning problems; applications to problems in OR/MS, such as capital budgeting, facility location, political redistricting, engineering design, and scheduling. Offered by Systems Engr & Operations Rsch. May not be repeated for credit.

Recommended Prerequisite: OR 541 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

OR 643: *Network Modeling.* 3 credits.
Introduction to network problems in operations research, computer science, electrical engineering, and systems engineering. Solution techniques for various classes of such problems are developed. Topics include minimal-cost network flow, maximal flow, shortest path, and generalized networks; plus stochastic networks, network reliability, and combinatorially based network problems. Complexity of each problem class analyzed. Offered by Systems Engr & Operations Rsch. May not be repeated for credit.

Recommended Prerequisite: OR 541 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

OR 644: *Nonlinear Programming.* 3 credits.
Nonlinear optimization theory and techniques applicable to problems in engineering, economics, operations research, and management science. Covers convex sets and functions, optimality criteria and duality; algorithms for unconstrained minimization, including descent methods, conjugate directions, Newton-type and quasi-Newton methods; and algorithms for constrained optimization, including active set methods and penalty and barrier methods. Offered by Systems Engr & Operations Rsch. May not be repeated for credit.

Recommended Prerequisite: MATH 213 or equivalent and OR 541 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

OR 645: *Stochastic Processes.* 3 credits.
Selected applied probability models including Poisson processes, discrete- and continuous-time Markov chains, renewal and regenerative processes, semi-Markov processes, queuing and inventory systems, and reliability theory. Emphasis on applications in practice as well as analytical models. Offered by Systems Engr & Operations Rsch. May not be repeated for credit.

Recommended Prerequisite: OR 542 or STAT 544 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

OR 646: *Stochastic Optimization.* 3 credits.
Provides an introduction to stochastic optimization, more specifically, stochastic programming. The objectives are (i) to provide students with the ability to model and solve optimization problems under uncertainty, and (ii) to make students familar with the state-of-the-art of stochastic programming. Homework will be used to reinforce and supplement information in each section. Through the semester we will be reading research papers to supplement the material in the text book. Papers and other course material will be provided on Blackboard. Students should be proficient with one programming language (e.g. MATLAB, Python, Java, C++) and should be able to become familiar with a math programming solver (e.g. Cplex, Gurobi.) Offered by Systems Engr & Operations Rsch. May not be repeated for credit.

Recommended Prerequisite: OR 541 and OR 542.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

OR 647: *Queuing Theory.* 3 credits.
Unified approach to queuing, organized by type of model. Single- and multiple-channel exponential queues; Erlangian models, bulk and priority queues, networks of queues; general arrival and/or service times; and statistical inference and simulation of queues are covered. Extensive use of computational software. Offered by Systems Engr & Operations Rsch. May not be repeated for credit.

Recommended Prerequisite: OR 542, STAT 544, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

OR 649: *Topics in Operations Research.* 3-6 credits.
Advanced topic chosen according to interests of students and instructor from dynamic programming, inventory theory, queuing theory, Markov and semi-Markov decision processes, reliability theory, decision theory, network flows, large-scale linear programming, nonlinear programming,

and combinatorics. Notes: May be repeated if topics substantially different. Offered by Systems Engr & Operations Rsch. May be repeated within the term.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

OR 651: *Military Operations Research I: Cost Analysis.* 3 credits.
While drawing on other disciplines (managerial accounting, econometrics, systems analysis), cost analysis uses operations research to assist decision makers in choosing preferred future courses of action by evaluating selected alternatives on the basis of their costs, benefits, and risks. Cost analysis is distinctly different from cost estimating in that projecting future courses of action almost always requires mathematical modeling. Topics include analysis overview, economic analysis, estimating relationships (factors, simple and complex models), acquiring and verifying cost data, cost progress curves, life-cycle costing, scheduling estimating, effectiveness and risk estimation, relationship of effectiveness models and measures to cost analysis. Offered by Systems Engr & Operations Rsch. May not be repeated for credit.

Recommended Corequisite: OR 541 or OR 542.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

OR 652: *Military Operations Research Modeling II: Effectiveness Analysis.* 3 credits.
Examines issues and modeling underlying military decisions at the Military Service, Joint Staff, and Department of Defense level. Analytical methods with applications to theater campaign analysis, equipment and weapon system modernization, force structure development, strategic mobility and deployment, small-scale contingency operations, logistics, and requirements determination are considered. Optimization, simulation, and statistical techniques are stressed. Realistic problems presented and solved as case studies. Display of results and presentation techniques for military decision makers emphasized. Offered by Systems Engr & Operations Rsch. May not be repeated for credit.

Recommended Corequisite: OR 541 or OR 542.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

OR 660: *Air Transportation Systems Modeling.* 3 credits.
Introduces range of current issues in air transportation, including public policy toward the industry, industry economics, system capacity, current system modeling capability, human factors considerations, safety analysis and surveillance systems, and new technological developments. Students expected to develop broad understanding of contemporary and future issues. Knowledge evaluated through class discussions, a take-home midterm exam and a term project to be completed by the end of the semester. Offered by Systems Engr & Operations Rsch. May not be repeated for credit. Equivalent to SYST 660.

Recommended Prerequisite: SYST 460/560, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

OR 664: *Bayesian Inference and Decision Theory.* 3 credits.
Introduces decision theory and relationship to Bayesian statistical inference. Teaches commonalities, differences between Bayesian and frequentist approaches to statistical inference, how to approach statistics problem, and how to combine data with informed expert judgment to derive useful and policy relevant conclusions. Teaches theory to develop understanding of when and how to apply Bayesian and frequentist methods; and practical procedures for inference, hypothesis testing, and developing statistical models for phenomena. Teaches fundamentals of Bayesian theory of inference, including probability as a representation for degrees of belief, likelihood principle, use of Bayes Rule to revise beliefs based on evidence, conjugate prior distributions for common statistical models, and methods for approximating the posterior distribution. Introduces graphical models for constructing

complex probability and decision models from modular components. Offered by Systems Engr & Operations Rsch. May not be repeated for credit. Equivalent to CSI 674, SYST 664.

Recommended Prerequisite: STAT 544, STAT 554, or equivalent.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

OR 670: *Metaheuristics for Optimization.* 3 credits.
Course on the theory and practice of metaheuristics, i.e. solution search techniques for solving combinatorial optimization problems. It will introduce the theory, applications (scheduling in manufacturing, transportation, and in other engineering and service industries), and computational aspects of directly searching for solutions to solve computationally complex optimization problems without a well-defined analytical model. Offered by Systems Engr & Operations Rsch. May not be repeated for credit. Equivalent to SYST 670.

Recommended Prerequisite: OR 441/541 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

OR 671: *Judgment and Choice Processing and Decision Making.* 3 credits.
How do people make judgments and decisions? Course presents an initial review of scientific literature directed toward answering this question, and emphasizes its importance when performing decision analysis and designing systems to support judgment and decision processes. Offered by Systems Engr & Operations Rsch. May not be repeated for credit. Equivalent to SYST 671.

Recommended Prerequisite: STAT 344/354, OR 542 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

OR 674: *Dynamic Programming.* 3 credits.
Course on the theory and practice of dynamic programming, i.e., optimal sequential decision making over time in the presence of uncertainties. Stresses intuition, the mathematical foundations being for the most part elementary. Introduces the theory, applications in finance and engineering, and computational aspects of dynamic programming for deterministic and stochastic problems. Offered by Systems Engr & Operations Rsch. May not be repeated for credit. Equivalent to SYST 674.

Recommended Prerequisite: OR 442 or OR 542 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

OR 675: *Reliability Analysis.* 3 credits.
Introduction to component and system reliability, their relationship, and problems of inference. Topics include component lifetime distributions and hazard functions, parameter estimation and hypothesis testing, life testing, accelerated life testing, system structural functions, and system maintainability. Offered by Systems Engr & Operations Rsch. May not be repeated for credit. Equivalent to SYST 675.

Recommended Prerequisite: STAT 544/554, OR 542 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

OR 681: *Decision and Risk Analysis.* 3 credits.
Application of analytic reasoning and skills to practical problems in decision-making. Topics include problem structure, analysis and solution implementation, emphasizing contemporary approaches to decision analytic techniques. Offered by Systems Engr & Operations Rsch. May not be repeated for credit. Equivalent to SYST 573.

Recommended Prerequisite: OR 542 or MBA 638.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

OR 682: *Computational Methods in Engineering and Statistics.* 3 credits.
Numerical methods have been developed to solve mathematical problems that lack explicit closed-form solutions or have solutions that are not amenable to computer calculations. Examples include solving differential equations or computation probabilities. Discusses numerical methods for such problems as regression, analysis of variance, nonlinear equations, differential and difference equations and nonlinear optimization. Applications in statistics and engineering are emphasized. Involves extensive computer use. Offered by Systems Engr & Operations Rsch. May not be repeated for credit. Equivalent to CSI 690, MATH 685.

Recommended Prerequisite: MATH 203 and 213 or equivalent, and modern numerical methods and software.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

OR 683: *Principles of Command, Control, Communications, Computing, and Intelligence (C4I).* 3 credits.
Fundamental principles of C4I are developed from descriptive, theoretical, and quantitative perspectives. Principles and techniques applicable to wide range of civilian and military situations. Topics include C2 process; modeling and simulation for combat operations; detection, sensing, and tracking; data fusion and situation assessment; optimal decision making; methodologies and tools of C4I architectures; tools for modeling and evaluations of C4 systems such as queuing theory. Offered by Systems Engr & Operations Rsch. May not be repeated for credit.

Recommended Prerequisite: ECE 528 or OR 542 or SYST 611 or equivalent.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

OR 688: *Financial Systems Engineering II: Derivative Products and Risk Management.* 3 credits.
Financial engineering is a cross-disciplinary field which relies on mathematical finance, numerical methods, and computer simulations to make trading, hedging, and investment decisions, as well as facilitating the risk management of those decisions. This course will introduce basic concepts of options, futures, and financial derivatives markets. It will focus on risk management for market risk, credit risk, and operational risk. It will also cover a broad range of derivatives products and discuss how risks are managed in financial institutions. Offered by Systems Engr & Operations Rsch. May not be repeated for credit. Equivalent to SYST 688.

Recommended Prerequisite: OR 588 or SYST 588 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

OR 690: *Optimization of Supply Chains.* 3 credits.
Focuses on both supply chain optimization from an enterprise-wide perspective, and supply chain optimization from a business-to-business e-commerce concern. Concerned with optimizing the value of goods and services and assuring a reasonable return on such sales. Describes both heuristic and exact algorithms for scheduling, production, inventory management, logistics, and distribution. New software that enables such optimization is presented, as are manufacturing and service examples

from the public and private sectors. New techniques to handle risk, quality of data, and robustness of solutions are presented. Students perform case studies using state-of-the-art software. Offered by Systems Engr & Operations Rsch. May not be repeated for credit.

Recommended Prerequisite: Mathematics through linear algebra, and STAT 344.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

OR 699: *Masters Project.* 3 credits.
Capstone project course for MS/OR program. Key activity is completion of a major applied team project resulting in an acceptable technical report and oral briefing. Student should plan to take this course in the last semester of studies. Offered by Systems Engr & Operations Rsch. May not be repeated for credit.

Recommended Prerequisite: 21 graduate credits in OR or SYST.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

700 Level Courses

OR 719: *Graphical Models for Inference and Decision Making.* 3 credits.
Theory and methods for inference and decision making in environments characterized by uncertain information. Covers graphical probability and decision models. Studies approaches to representing knowledge about uncertain phenomena, and planning and acting under uncertainty. Topics include knowledge engineering, exact and approximate inference in graphical models, learning in graphical models, temporal reasoning, planning, and decision-making. Practical model-building experience provided. Students apply what they learn to a project of their own choosing. Offered by Systems Engr & Operations Rsch. May not be repeated for credit. Equivalent to CSI 775.

Recommended Prerequisite: STAT 652 or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

OR 735: *Advanced Stochastic Simulation.* 3 credits.
Advanced topics and recent developments in stochastic simulation methodology for discrete-event and agent-based stochastic systems, with applications in artificial intelligence, power systems, manufacturing, health care, transportation, etc. Topics include simulation data analysis, stochastic simulation methodologies in artificial intelligence/machine learning, risk analytics, simulation-based optimization of complex systems, distributed and parallel simulation. Offered by Systems Engr & Operations Rsch. May not be repeated for credit. Offered by Systems Engr & Operations Rsch. May not be repeated for credit. Equivalent to SYST 735.

Recommended Prerequisite: OR 635 or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

OR 741: *Advanced Linear Programming.* 3 credits.
Recent developments in linear programming. Highlights advances in interior point methods and also addresses developments in the simplex method. Projective methods, affine methods, and path-following methods are examined, including Karmarkar's original work. Discusses relationships between these methods, and relationships to methods in nonlinear programming. Also discussed are advances in data structures and other implementation issues. Students test software and solve large-scale linear programs. Offered by Systems Engr & Operations Rsch. May not be repeated for credit.

Recommended Prerequisite: OR 541 or 641.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

OR 750: *Advanced Topics in Operations Research.* 3 credits.
Special topics, applications, or recent developments in operations research. Contents vary and may include topics in optimization, stochastic methods, or decision support that are not covered in the

standard OR curriculum. Notes: May be repeated when topics are distinctly different. Offered by Systems Engr & Operations Rsch. May be repeated within the term for a maximum 12 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: OR 541 or 542, and 600-level course that varies with content of course.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

OR 751: *Advanced Topics in Operations Research for Planning and Scheduling.* 3 credits.
Introduces combinatorial optimization problems in scheduling and logistics. Solution techniques for various classes of such problems are developed. Topics include deterministic and stochastic scheduling algorithms with applications in manufacturing and service sectors. Offered by Systems Engr & Operations Rsch. May not be repeated for credit.

Specialized Designation: Topic Varies

Recommended Prerequisite: OR 541.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

OR 763: *Research Methods in Systems Engineering and Information Technology.* 3 credits.
Examines alternative paradigms of scientific research and their applicability to research in information technology. Topics include fundamental elements of scientific investigation, basic principles of experimental design and statistical induction, philosophy of science and its relation to the information technology sciences, and case studies of information technology research. Offered by Systems Engr & Operations Rsch. May not be repeated for credit. Equivalent to SYST 763.

Recommended Prerequisite: STAT 554, OR 542, or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

OR 774: *Advanced Dynamic Programming.* 3 credits.
Covers advanced topics on the theory and practice of dynamic programming, i.e., optimal sequential decision making over time in the presence of uncertainties. Stresses the mathematical foundations and introduces the theory, computational aspect, and applications of approximate dynamic programming for large-scale stochastic problems. Offered by Systems Engr & Operations Rsch. May not be repeated for credit.

Recommended Prerequisite: OR 674/SYST 674 or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

OR 782: *Advanced Topics in Combinatorial Optimizations.* 3 credits.
Studies problems using most recent developments. Topics include cutting plane procedures based on polyhedral combinatorics; column-generation procedures for large, complex problems; heuristic approaches such as genetic algorithms, simulated annealing, and tabu search; study of special structures; reformulation techniques; and bounding approaches. Topics stress most recent developments in field. Notes: May be repeated when topics are distinctly different. Offered by Systems Engr & Operations Rsch. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: OR 641 or OR 642.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

OR 783: *Advanced Topics in Network Optimization.* 3 credits.
Recent developments in solving optimization problems on networks. Prepares doctoral students to perform advanced research on network-related problems. Topics include linear, discrete, nonlinear, and stochastic problems. Several aspects of problems also studied, including computational complexity, exact algorithms, heuristics, solvable special

cases, and computer implementation issues. Offered by Systems Engr & Operations Rsch. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: OR 643.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

OR 784: *Advanced Topics in Nonlinear Programming.* 3 credits.
Studies theory and algorithms for solving nonlinear optimization problems. Contents vary; possible topics include large-scale and parallel-unconstrained optimization, theoretical issues in constrained optimization, duality theory, Lagrangian and sequential quadratic programming methods. Offered by Systems Engr & Operations Rsch. May not be repeated for credit.

Specialized Designation: Topic Varies

Recommended Prerequisite: OR 644.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

OR 799: *Master's Thesis.* 1-6 credits.
Research project chosen and completed under the guidance of a graduate faculty member, which results in a technical report acceptable to a three-member faculty committee, and an oral defense. Offered by Systems Engr & Operations Rsch. May be repeated within the degree.

Recommended Prerequisite: 21 graduate credits and permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Thesis

Grading:
This course is graded on the Satisfactory/No Credit scale.

800 Level Courses

OR 842: *Models of Probabilistic Reasoning.* 3 credits.
Survey of alternative views about how incomplete, inconclusive, and possibly unreliable evidence might be evaluated and combined. Discusses Bayesian, Baconian, Shafer-Dempster, and Fuzzy systems for probabilistic reasoning. Offered by Systems Engr & Operations Rsch. May not be repeated for credit.

Recommended Prerequisite: STAT 544, OR 542, OR 681 or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

900 Level Courses

OR 944: *The Process of Discovery and Its Enhancement in Engineering Applications.* 3 credits.
Studies ingredients of imaginative reasoning as it concerns efficient discovery of new ideas and valid evidential test of them. Topics include different interpretations of Peirce's theory of abductive reasoning and other forms of reasoning, Hintikka's analysis of process of inquiry, and current attempts to design systems that provide assistance in discovery-related or investigative activities. Offered by Systems Engr & Operations Rsch. May not be repeated for credit. Equivalent to SYST 944.

Recommended Prerequisite: OR 842 or SYST 842 or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

Organization Development and Knowledge Management (ODKM)

700 Level Courses

ODKM 700: *Foundations of Organization Development and Knowledge Management.* 3 credits.
This introduction to organization development and to knowledge management will provide a historical review and a contemporary understanding of interventions in these fields of study with an intent to stimulate students to be creative and original in developing their own flagship approaches. Conventional approaches that have their roots in the industrial age will be explored alongside contemporary ones. The course will expose participants to scholarly and practitioner models inspired by a multicultural orientation that combines knowledge and

wisdom. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to students with a major in Organiztn Dev Knowledge Mgt.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ODKM 705: *Group Dynamics and Team Learning.* 3 credits.
Engaging in unstructured and semi-structured learning environment, students will learn how to facilitate team learning for organizational effectiveness. By exploring various aspects of group dynamics such as power, perception, motivation, leadership, and decision making, students will develop various competencies to manage teams and enhance their emotional and appreciative intelligence. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to students with a major in Organiztn Dev Knowledge Mgt.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ODKM 710: *Social and Organizational Inquiry.* 4 credits.
Introduces participants to the ethics, conduct and evaluation of research into human, social and organizational realities. Explores relationships between what and how we measure and what we find. Students develop the capacity to reflect on themselves as research instruments, on their own impact on the systems under study, and on the impact of the research assumptions, framing and approach both on the results obtained and on the future development of those systems. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to students with a major in Organiztn Dev Knowledge Mgt.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ODKM 715: *Creating Learning Organizations.* 3 credits.
Focuses on the epistemological and ontological implications of organizational life in the twenty-first century. Reevaluates traditional management approaches in light of global economies, instantaneous communication, changing technologies, and diverse workgroups in knowledge economies. Special attention to developing skills for "double- and triple-loop learning," and reflection in professional lives through learning conversations, journals, narrative, autobiography, and imaginative literature. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to students with a major in Organiztn Dev Knowledge Mgt.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ODKM 721: *Foundations of Coaching.* 3 credits.
Introduces participants to theories that underpin the relatively new field of coaching in organizations. Explores the history and development of the field and its usefulness in the practice of organizational development. Within the classroom, students engage in experiential skills building exercises to develop foundational coaching skills as described by the International Coach Federation. Outside of the classroom, students apply their coaching skills in specific contexts, engage in reflection, and learn to discern what situations are most conducive to a coaching approach and why. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to students with a major in Organiztn Dev Knowledge Mgt.

Enrollment limited to students in a Master of Science degree.

Enrollment limited to students in the Schar School of Policy and Gov college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ODKM 722: *Coaching and Organization Development.* 3 credits.
Engages students at the cutting edge of transformational organizational change, in both theory and practice, that is beginning to emerge through synergies between the disciplines of coaching and organization development. Building on earlier foundational courses in OD and coaching, students will learn to harness the insights and capabilities of both these domains to support positive transformation in complex systems at multiple levels of scale, from interpersonal to groups and teams, to larger systems including the whole organization. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to students with a major in Organiztn Dev Knowledge Mgt.

Enrollment limited to students in a Master of Science degree.

Enrollment limited to students in the Schar School of Policy and Gov college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ODKM 725: *Knowledge Management and Collaborative Work.* 3 credits.
Provides an in-depth look at knowledge management, introducing key models and frameworks for understanding and analyzing all aspects of the Knowledge Management cycle, from knowledge creation and knowledge capture to knowledge sharing, knowledge dissemination and knowledge utilization, emphasizing the collaborative aspect of knowledge work. A range of specific KM processes, methods and tools are discussed (lessons learned, best practices, After-Action-Reviews, storytelling) and some are also practiced in class (knowledge cafes, peer assist). Finally, the class covers the steps necessary to develop a KM strategy and real-world barriers and pitfalls to be aware of in order to lead a successful KM effort within any organization. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to students with a major in Organiztn Dev Knowledge Mgt.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ODKM 730: *Special Topics.* 1-3 credits.
Selected special topics in organization development and knowledge management not covered by existing ODKM courses. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment is limited to students with a major in Organiztn Dev Knowledge Mgt.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ODKM 731: *Consulting Skills for Organizational Change.* 3 credits.
Explores various theories and practices of change management, collaborative consulting, action research, and organization development. Using class projects and case studies, students bring together their understanding of organization development, their values, and their personal style to perform more effectively in various consulting roles. Students also learn various aspects of process consulting and client relationship management. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to students with a major in Organiztn Dev Knowledge Mgt.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ODKM 732: *Leadership and Social Justice.* 4 credits.
This course challenges participants not just to theorize leadership and social justice but to inhabit them. Reflective understanding and practice span: inner journeys, interpersonal relationships, organizations, and large scale systems. With globalization, ethical leadership requires understanding diverse perspectives and complex systems. Outward leadership relies on inner leadership. Participants cultivate personal leadership philosophy and practice through engaging real-life challenges. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ODKM 735: *Organizational Development Practices.* 3 credits.
Students develop applied knowledge of various organizational development practices such as action research and appreciative inquiry. Includes simulations to understand the complexities of real-world change management. Group projects with selected organizations will help students develop their diagnostic and analytical skills to become better facilitators of organizational learning. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to students with a major in Organiztn Dev Knowledge Mgt.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

ODKM 740: *Learning Community.* 1-3 credits.
Using workshops, seminars, simulations, and structured experiences, students will learn how to build a learning Community of Practice (CoP) as practitioners of organization development. They will also reflect upon the community building experience using research findings and design practice sessions to apply the lessons learned to the work environment. Offered by Schar School of Policy & Govt. May be repeated within the degree for a maximum 3 credits.

Recommended Prerequisite: Candidates for the M.S. in ODKM degree only.

Registration Restrictions:
Enrollment is limited to students with a major in Organiztn Dev Knowledge Mgt.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

Parks, Recreation, and Leisure Studies (PRLS)

200 Level Courses

PRLS 200: *Wilderness First Responder.* 2 credits.
Examines the role of outdoor professionals in wilderness medicine and the response, care and rescue of outdoor participants in non-urban outdoor environments. Uses the Patient Assessment System (PAS) to assess backcountry patients in an intensive experiential course which addresses the issues of medico legal concerns, blood borne pathogens and infectious diseases. Offered by School of Sport/Rec/Tour Mgmt. May be repeated within the degree for a maximum 8 credits.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PRLS 210: *Introduction to Recreation and Leisure.* 3 credits.
Traces the development of current concepts of recreation and leisure and their implications and consequences. Covers influences of philosophy, religion, science, economics, sociology, and politics on discretionary time and its uses. Notes: Open to nonmajors. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PRLS 220: *Experiential Education Theory and Application.* 3 credits.
Provides a broad theoretical, as well as practical, background in teaching and learning experientially. Concepts presented, experienced, and discussed include the basic premises of experiential learning according to a wide variety of educators and philosophers. The content and experience applies to recreation, education, development, and therapeutic settings. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PRLS 221: *Challenge Course Facilitation.* 3 credits.
Provides the fundamental principles and techniques of challenge course facilitation. Classroom learning is combined with an experiential setting through leading youth groups in the field. Students are provided with an introduction to safety, skills, and facilitation techniques for low and high elements of outdoor challenge courses. Offered by School of Sport/Rec/Tour Mgmt. May be repeated within the degree for a maximum 9 credits.

Recommended Prerequisite: CPR Certification and PRLS 220.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PRLS 241: *Practicum.* 3 credits.
Paid or voluntary work experience in a park and recreation agency. Minimum period of 10 to 12 weeks of part-time employment or experience. Capstone course for minors, allowing for integration and application of course work, theories, and research to a work setting. Work sites chosen among four approved sites. Includes meetings and assignments prior to and during the practicum. Notes: Open to departmental majors and minors only. Serves as a capstone for minors who have completed PRLS 310, 316, and 327. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: PRLS 210[D], 210[XS], 210[XP], 220[D], 316[D], 316[XS] or 316[XP].
[D] Requires minimum grade of D.
[XS] Requires minimum grade of XS.
[XP] Requires minimum grade of XP.

Schedule Type: Internship

Grading:
This course is graded on the Satisfactory/No Credit scale.

PRLS 250: *Wilderness Travel and Sustainability.* 2 credits.
This experiential course is designed for students with prior backpacking experience. Involves discussions, demonstrations, and activities that teach students wilderness skills, safety and judgment, leadership and teamwork, and environmental ethics. Topics covered include basic wilderness first-aid, hazard evaluation, emergency procedures, expedition behavior, self awareness, judgment and decision making, campsite selection, shelter and stove use, fire building, sanitation and hygiene, cooking, nutrition and rationing, equipment care and selection, staying warm and dry, route finding and navigation, Leave No Trace backpacking, weather, natural history, and wilderness ethics. Application of these skills will occur during the 14-day offtrail backpacking trip in a remote wilderness area. Not only will students practice these wilderness skills, but they will also develop leadership abilities by working in a collaborative team environment. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Specialized Designation: Green Leaf Focused Course

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PRLS 290: *Aquatic Operation and Management.* 3 credits.
Covers industry standards for water quality and aquatic facility management. Includes recognizing, measuring, and preventing biological and physical hazards. Meets requirements for certification as a Certified Pool/Spa Operator through the National Swimming Pool Foundation as well as certification in CPR through the American Red Cross. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

300 Level Courses

PRLS 300: *People with Nature.* 3 credits.
Traces philosophical evolution of perceptions of and attitudes toward nature. Examines role of philosophers, scientists, nature-writers, and artists in the shaping of environmental thought. Includes extensive reading of Emerson, Thoreau, Muir, Leopold, Carson, Wilson, and others. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Specialized Designation: Green Leaf Focused Course

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PRLS 302: *Park Management and Operations.* 3 credits.
Focuses on management and operations of park resources, including the management of visitors and recreation development. Emphasizes understanding of contemporary threats to park integrity and preservation of resources. Also covers maintenance management systems. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Recommended Prerequisite: PRLS 300

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PRLS 310: *Program Planning and Evaluation.* 3 credits.
Introduces fundamental principles and techniques of the planning process for sport, recreation and tourism programs, including assessment of needs and goals, objectives, and mission statement; generating solutions; planning programs for implementation and evaluation. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: PRLS 210[D], 210[XS], 210[XP], SPMT 201[D], 201[XS], 201[XP], SRST 200[D], 200[XS], 200[XP], TOUR 200[D], 200[XS] or 200[XP].
[D] Requires minimum grade of D.
[XS] Requires minimum grade of XS.
[XP] Requires minimum grade of XP.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PRLS 316: *Leadership and Outdoor Education.* 3 credits.
Focuses on promotion of lifelong health and fitness via noncompetitive and informal outdoor activities. Introduces safety, skills, and leadership techniques. Covers sustainable use, conservation, and stewardship of natural resources. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PRLS 317: *Social Psychology of Play and Recreation.* 3 credits.
Applies social psychological theories and research to the study of leisure, play, and recreation behavior, including correlates, antecedents, and consequences of and constraints to these concepts. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: PRLS 210[D], 210[XS], 210[XP], SRST 200[D], 200[XS] or 200[XP].
[D] Requires minimum grade of D.
[XS] Requires minimum grade of XS.
[XP] Requires minimum grade of XP.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PRLS 323: *Program Leadership and Evaluation.* 3 credits.
Covers leadership and evaluation of health, fitness, and recreation programs. Uses computer technology to study evaluative aspects of program planning and administration. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: PRLS 310[D], 310[XS] or 310[XP].
[D] Requires minimum grade of D.
[XS] Requires minimum grade of XS.
[XP] Requires minimum grade of XP.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PRLS 327: *Foundations of Therapeutic Recreation.* 3 credits.
An introduction to the processes and techniques of therapeutic recreation to meet the unique needs of people with disabilities. This course examines the history, concepts, theories, and foundations of therapeutic recreation. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PRLS 362: *Cultural and Environmental Interpretation.* 3 credits.
Focuses on communication processes and practices used to explain and interpret special characteristics of cultural and environmental resource sites for visitors. Conceptual principles for planning interpretive programs and multi-media delivery techniques are discussed. Methods for programming interpretive services, addressing multi-audience accessibility, and administration and evaluation of interpretive services used at recreation and tourism sites are also examined.. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts. Equivalent to TOUR 362.

Recommended Prerequisite: PRLS 300.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

PRLS 402: *Human Behavior in Natural Environments.* 3 credits.
Applies social and behavioral theories to management for recreational users of land and water resources. Examines deterioration and pollution of land and water, noise, crowding, and conflicts among users. Discusses strategies for mitigation of deleterious impacts and depreciative behaviors, and attitudes toward resource conservation, preservation, and use. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Specialized Designation: Green Leaf Focused Course

Registration Restrictions:
Required Prerequisites: PRLS 300[C] or 300[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PRLS 405: *Planning and Operation of Recreation Facilities.* 3 credits.
Covers quantity, location, and design standards for facilities. Includes safety, functionality, durability, and maintenance demand criteria in planning and design; programmatic and operational objectives to be met, including user comfort and convenience, crowd management, and traffic flow, and space relationships. Includes field study of local facilities. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Recommended Prerequisite: 60 credits

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PRLS 410: *Administration of SRT Organizations I.* 3 credits.
Focuses on operation and management of sport, recreation and tourism organizations. Covers management and leadership theories and techniques, problem-solving and decision making, organizational communications, design of organizational structures and budgeting. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Recommended Prerequisite: 60 credits.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PRLS 411: *Administration of SRT Organizations II.* 3 credits.
Focuses on program and organizational marketing principles and strategies; service quality assessment and organizational evaluation techniques; and organizational financing for the experience industry. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: PRLS 410[C] or 410[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PRLS 416: *Trends and Programming Assessment in Therapeutic Recreation.* 3 credits.
Explores the role of leisure in human development with a specific focus on needs, demands, and services for people with disabilities and illness. Presents concepts associated with leisure, aging, physical challenge, targeting leisure services, research, and public policy. Notes: Field experience required. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: PRLS 327[D], 327[XS] or 327[XP].
[D] Requires minimum grade of D.
[XS] Requires minimum grade of XS.
[XP] Requires minimum grade of XP.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PRLS 417: *Processes, Techniques and Supervision in Therapeutic Recreation.* 3 credits.
Exploration of processes and techniques used in Therapeutic Recreation, with a focus on the nature and diversity of recreation and leisure activities, modalities and interventions, facilitation techniques and approaches, leadership roles and tasks, communication skills, clinical supervision, health and safety considerations, and the impact of the impairment and/or treatment on the individual. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: PRLS 327[C] or 327[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PRLS 418: *Assessment in Therapeutic Recreation.* 3 credits.
Presents methods of assessment, development of treatment program plans, and evaluation of all components. Extends program design by developing competencies in the planning approaches, individual and group assessment techniques, program evaluation, and documentation strategies for people with disabilities and illness. Notes: Field experience required. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: PRLS 327[D], 327[XS] or 327[XP].
[D] Requires minimum grade of D.
[XS] Requires minimum grade of XS.
[XP] Requires minimum grade of XP.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PRLS 460: *Sport and Recreation Law.* 3 credits.
Emphasizes safety, liability, and risk. Covers current law and liability issues for administrators of RHT facilities and programs. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Recommended Prerequisite: 60 credits

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PRLS 480: *Special Topics in Recreation Management.* 1-3 credits.
Selected topics reflecting interest in specialized areas of parks and outdoor recreation or therapeutic recreation. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Specialized Designation: Topic Varies

Recommended Prerequisite: 60 credits.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PRLS 490: *Recreation Management Internship.* 12 credits.
Consecutive weeks in an agency for a minimum 10-15 weeks of 30-40 hours weekly (400 total hours-parks and outdoor recreation) and (560 total hours-therapeutic recreation supervised by a Certified Therapeutic Recreation Specialist). Applies course work, theories, and research to an agency site chosen by the student after approval by Internship Coordinator. Includes meetings and assignments before and during internship. Note: Mandatory internship meeting attendance required before registration and CPR and AED certification required by start of class. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Mason Core: Capstone

Registration Restrictions:
Required Prerequisites: (PRLS 210[D], 210[XS] or 210[XP]) and (PRLS 310[C] or 310[XS]) and (PRLS 323[C] or 323[XS]) and (PRLS 316[C] or 316[XS]) and (PRLS 410[C] or 410[XS]) and (SRST 200[D], 200[XS] or 200[XP]) and (PRLS 323[C] or 323[XS]) and (PRLS 241[D], 241[XS] or 241[XP]) and (PRLS 317[C] or 317[XS]).
[D] Requires minimum grade of D.
[XS] Requires minimum grade of XS.
[XP] Requires minimum grade of XP.
[C] Requires minimum grade of C.

Enrollment limited to students with a class of Senior Plus or Senior.

Enrollment is limited to students with a concentration in Parks and Outdoor Recreation or Therapeutic Recreation.

Schedule Type: Internship

Grading:
This course is graded on the Satisfactory/No Credit scale.

PRLS 499: *Independent Study.* 1-3 credits.
Individual study of topic area in leisure research, theory, or practice under direction of faculty. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Recommended Prerequisite: 90 credits.

Registration Restrictions:
Enrollment is limited to students with a major in Health Education, Health, Fitness Rec Resrcs, Individualized Study, Nursing, Physical Education (Special), Physical Education or Parks, Rec, Leisure Studies.

Washington Consortium level students may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

500 Level Courses

PRLS 501: *Introduction to Natural Resources Law.* 3 credits.
Selected legal issues involving conflicting use and preservation demands on our nation's limited natural resource base, particularly those involving public lands, open space, and recreation resources. Uses case studies of recent court decisions. Offered by School of Sport/Rec/Tour Mgmt. May not be repeated for credit.

Specialized Designation: Green Leaf Related Course

Recommended Prerequisite: PRLS 460.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PRLS 503: *Administration and Disability Rights in Therapeutic Recreation.* 3 credits.
Overview of major law and policy issues related to therapeutic recreation services for people with disabilities. Primary focus is on the Americans with Disabilities Act and related federal legislation. Offered by School of Sport/Rec/Tour Mgmt. May not be repeated for credit.

Recommended Prerequisite: PRLS 460.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PRLS 526: *Environmental Education and Resource Interpretation.* 3 credits.
Provides methods for communicating and disseminating information pertaining to the use of natural recreation resources. Covers design and implementation of educational materials and programs to enhance understanding and appreciation of cultural, historical, and natural

resources. Offered by School of Sport/Rec/Tour Mgmt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PRLS 531: *Natural Resources Recreation Planning.* 3 credits.
Origins and evolution of recreation use philosophy, policies, and service of public estate management. Examines planning for a spectrum of opportunities, from wilderness to developed sites, with attention to financial consideration and sustainable use of cultural and visual resources. Offered by School of Sport/Rec/Tour Mgmt. May not be repeated for credit.

Specialized Designation: Green Leaf Focused Course

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PRLS 533: *Visitor Services.* 3 credits.
Examines motivation of resource-based recreation participants. Covers visitors' expectations and perceptions, with emphasis on implication for service quality, staff training, and other management responsibilities. Discusses use and user conflicts and placement, information and interpretive service, and human and other interpretive service resources. Offered by School of Sport/Rec/Tour Mgmt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PRLS 535: *Evaluating Recreation Outcomes.* 3 credits.
Covers application of quantitative and qualitative research methods to the evaluation of programs provided to visitors and users of public lands for outdoor recreation. Focuses on needs assessment and application of meaningful measures for formative and summative evaluations. Offered by School of Sport/Rec/Tour Mgmt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PRLS 598: *Special Topics.* 1-6 credits.
Projects related to parks, recreation, and leisure studies. Offered by School of Sport/Rec/Tour Mgmt. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

600 Level Courses

PRLS 601: *History of Leisure and Sport in American Society.* 3 credits.
Examines leisure and sport in American society from the early colonial period to the present day. Investigates the pattern of leisure and sport as America moved from a largely agrarian to a highly industrialized nation. Offered by School of Sport/Rec/Tour Mgmt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PRLS 610: *Recreation Administration and Planning.* 3 credits.
Examines recreational administration concepts regarding organizational structure and operations, personnel management, financing, policy development, and public relations procedures. Offered by School of Sport/Rec/Tour Mgmt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PRLS 611: *Social Psychology of Leisure.* 3 credits.
Addresses historical, theoretical, and empirical foundations of social psychological constructs relative to social behavior in park, recreation, sport, and tourism settings. Focuses on attitudinal, social, and motivational theories as applied to leisure-related contexts. Offered by School of Sport/Rec/Tour Mgmt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PRLS 612: *Philosophy of Leisure and Sport.* 3 credits.
Investigates the phenomenon of leisure and sport from a philosophical perspective. Utilizes the philosophical approach to better explain the role that leisure and sport play in American society. Offered by School of Sport/Rec/Tour Mgmt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PRLS 613: *Strategic Leadership in Recreation Administration.* 3 credits.
Focuses on strategic leadership in recreation administration necessitated by demographic, social, political, and legal challenges; addresses organizational culture, positive leadership, innovation, partnerships, data-driven decision making, and accountability. Offered by School of Sport/Rec/Tour Mgmt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

PRLS 614: *Legal Issues in Recreation Administration.* 3 credits.
Surveys current legal issues relevant to Recreation Administration, including, but not limited to, tort law, civil rights law, employment law, constitutional law, and copyright law. This course uses case studies of recent court decisions. Offered by School of Sport/Rec/Tour Mgmt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PRLS 670: *Environmental Law.* 3 credits.
Focuses on interpretation of environmental laws and regulatory issues. Emphasizes critical evaluation of alternatives to unresolved issues in environmental policies involving endangered species, hazardous waste, and toxic substances. Offered by School of Sport/Rec/Tour Mgmt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

Persian (PERS)

100 Level Courses

PERS 110: *Elementary Persian.* 6 credits.
Introduces elements of grammar, vocabulary, oral skills, listening comprehension, and reading. Offered by Modern & Classical Languages. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Persian

200 Level Courses

PERS 201: *Intermediate Persian I.* 3 credits.
Further development of skills in listening, speaking, and writing. Notes: PERS 201 and 202 must be taken in sequence. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: PERS 110, or permission of department.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Persian

PERS 202: *Intermediate Persian II.* 3 credits.
Further development of skills in listening, speaking, and writing. Notes: PERS 201 and 202 must be taken in sequence. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: PERS 201, or permission of department

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Fulfills Frgn Lng requirment, Taught in Persian

300 Level Courses

PERS 330: *Advanced Persian I.* 3 credits.
Development of cultural and linguistic competency in written and spoken Persian at the low advanced level, with attention to reading, writing, listening and speaking, grammar and vocabulary pertaining to Persian social, political and cultural issues. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: PERS 202 or equivalent.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Persian

PERS 331: *Advanced Persian II.* 3 credits.
Development of cultural and linguistic competency in written and spoken Persian at the advanced level, with attention to reading, writing, listening and speaking, grammar and vocabulary pertaining to Persian social, political, and cultural issues. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: PERS 330, equivalent, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Persian

Philosophy (PHIL)

100 Level Courses

PHIL 100: *Introduction to Philosophy.* 3 credits.
Introduction to the nature of philosophical reasoning and some of the main problems of philosophy. Offered by Philosophy. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHIL 112: *Ethics and the Cybersociety.* 1 credit.
Examines ethical issues associated with new developments in information technology, including privacy rights, intellectual property rights, and the effect of information technology on society. Offered by Philosophy. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHIL 151: *Introduction to Ethics.* 3 credits.
Considers some perennial issues in ethical theory. Offered by Philosophy. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHIL 156: *What Is Art?.* 3 credits.
Introduction to philosophical reflection on the arts by looking at the critical issues in the history of aesthetics. Applies considerations to specific works and explores these works in terms of their historical contexts and influences. Concentrates on one form of art or one period and always emphasizes questions of critical evaluation and art historical analysis. Offered by Philosophy. Limited to three attempts.

Mason Core: Arts

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHIL 173: *Logic and Critical Thinking.* 3 credits.
Basic concepts and techniques of deduction, emphasizing the modern treatment of such topics as quantification and rules of inference, with study of the classical treatment. Basic principles of induction, informal fallacies, and uses of logic in everyday life. Offered by Philosophy. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

200 Level Courses

PHIL 243: *Global Environmental Ethics.* 3 credits.
Examines the global dimensions of environmental problems. Although environmental problems are global in reach, because different societies make different philosophical and ethical assumptions, they are

understood in different ways. Examines several environmental problems, including climate change, population growth, and resource depletion, from a variety of scientific, policy, and cross-cultural perspectives. Offered by Philosophy. Limited to three attempts.

Mason Core: Global Understanding, Encore: Sustainability, Encore: Well-Being

Specialized Designation: Green Leaf Related Course, Mason Impact.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHIL 251: *Happiness and the Good Life.* 3 credits.
Addresses the question "How do I live a happy life?" by drawing on 2,500 years of philosophy as well as the much more recent science of happiness. Encourages students to develop and live their own answer in light of some of the best available science and philosophy. Offered by Philosophy. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHIL 253: *Philosophy and Literature.* 3 credits.
Examines differences and relations between literary and philosophical texts. Examines texts from a given period in the history of literature and philosophy. Topics include the presence of common issues in literary and philosophical writings, the influence of philosophical ideas on the production of literary texts and literary theory, and the development in literary texts of issues that are possible objects of philosophical inquiry. Offered by Philosophy. Limited to three attempts.

Mason Core: Literature

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHIL 271: *How Science Works.* 3 credits.
Introduction to the philosophy of science that examines a range of questions about what science is, how it works, and how it manages to be as successful as it is. Explores the goals, methods, principles and practices that characterize scientific enquiry. Surveys major milestones in the philosophy of science, and addresses such questions as: How are scientific claims justified? What constitutes a good explanation? How do we know if our scientific theories are true? How does scientific understanding change over time? What roles do social, political, and cultural factors play in the generation of scientific knowledge? Offered by Philosophy. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

300 Level Courses

PHIL 301: *History of Western Philosophy: Ancient.* 3 credits.
Classical Greek philosophy, including pre-Socratics, Socrates, Plato, and Aristotle. Offered by Philosophy. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHIL 303: *History of Western Philosophy: Modern.* 3 credits.
Figures and problems of modern philosophy. Study of philosophers such as Descartes, Locke, Berkeley, Hume, Kant, and Hegel. Offered by Philosophy. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHIL 305: *Business Ethics.* 3 credits.
Examines some moral problems that arise with regard to the responsibilities of various segments of the business community, including employers, management, stockholders; to one another; to the consumer; and to society at large. Offered by Philosophy. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHIL 306: *Philosophy Internship.* 3-6 credits.
Gives students the opportunity to apply philosophical skills in real-world settings. Internships arranged and supervised by faculty in the Department of Philosophy. Offered by Philosophy. May be repeated within the degree for a maximum 6 credits.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

PHIL 309: *Bioethics.* 3 credits.
Examines some major moral issues involved in practice and research in medicine and health care. Topics to be chosen from medical experimentation, definition of death, physician-assisted dying, genetics and human reproduction, distribution of scarce resources, fertility, and organ transplants. Offered by Philosophy. Limited to three attempts.

Mason Core: Synthesis

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHIL 311: *Philosophy of Law.* 3 credits.
Investigation of theories of natural law, legal positivism, and legal realism as they pertain to some of the central philosophical questions about law. Offered by Philosophy. Limited to three attempts.

Recommended Prerequisite: 3 hours of PHIL or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHIL 323: *Classical Western Political Theory.* 3 credits.
Exploration through lecture and discussion of developments in the Western tradition of political thought from the time of the Greek city-state

to late medieval Christendom, focusing on such topics as the nature and purpose of politics, the relationship between the individual and the state, the political significance of religion and tradition, and the concept of natural law. Offered by Philosophy. Limited to three attempts. Equivalent to GOVT 323.

Recommended Prerequisite: GOVT 101 or three credits of Philosophy.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHIL 324: *Modern Western Political Theory.* 3 credits.
Exploration through lecture and discussion of developments in the Western tradition of political thought from the Renaissance to the middle of the 19th century, focusing on such topics as the rise of individualism in political theory, early developments in social contact theory, theories of radical popular sovereignty, and early criticisms of liberal theory. Offered by Philosophy. Limited to three attempts. Equivalent to GOVT 324.

Recommended Prerequisite: GOVT 101 or three credits of philosophy.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHIL 325: *Karl Marx's Social and Political Thought.* 3 credits.
Study and evaluation of Marx's social and political ideas based on writings selected from several phases of his career. Examination of relation of Marx's thought to post-Marxian socialist theory and practice. Offered by Philosophy. Limited to three attempts.

Recommended Prerequisite: 3 credits of philosophy, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHIL 327: *Contemporary Western Political Theory.* 3 credits.
Exploration through lecture and discussion of recent developments in the Western tradition of political thought from the middle of the 19th century to today. Different sections focus on one or another of the various political theories that have been influential during this period such as liberal, libertarian, conservative, communitarian, Marxist, feminist, and postmodern thought. Notes: May be repeated for credit when topic is different. Offered by Philosophy. May be repeated within the term for a maximum 12 credits. Equivalent to GOVT 327.

Recommended Prerequisite: GOVT 101 or three credits of philosophy.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHIL 329: *Philosophy after Auschwitz.* 3 credits.
Examines the philosophical questions that arise in the wake of the Nazi concentration camps concerning genocide, political modernity, and conceptions of the human. Investigates how the logic of the camp made possible systematic genocidal violence against the Jews and other groups, and the ways in which that logic manifests in other forms and on other bodies before and after Auschwitz. Draws on writers and philosophers such as Primo Levi, Giorgio Agamben, Hannah Arendt, Maurice Blanchot, and/or Adriana Cavarero to analyze the ethical and political questions posed by the camps, and uses literature, film and art to engage with the complexities of bearing witness to horror and the unrepresentable. Offered by Philosophy. Limited to three attempts.

Specialized Designation: Mason Impact., Topic Varies

Recommended Prerequisite: 3 hours of PHIL or Permission of Instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHIL 332: *Issues in Analytic Philosophy.* 3 credits.
Explores figures, movements, and topics in analytic philosophy from its early days to the present. Examines attempts of philosophers working in the tradition of formal logic and empiricism to solve philosophical problems by an analysis of language. Possible figures and movements covered will include Frege, Russell, Moore, Carnap, Wittgenstein, Anscombe, Quine, Lewis, Kripke, logical positivism, and ordinary language philosophy. Possible topics include recent metaphysics and philosophy of language. Offered by Philosophy. Limited to three attempts.

Recommended Prerequisite: 3 credits of logic and PHIL 303, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHIL 333: *American Philosophy: Pragmatism.* 3 credits.
Examines the philosophical movement of American Pragmatism, with emphasis on its origin in the late nineteenth century. Figures covered include Peirce, James, Dewey, and Mead. Offered by Philosophy. Limited to three attempts.

Recommended Prerequisite: 3 credits of philosophy, or permission of the instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHIL 335: *Nineteenth-Century Philosophy.* 3 credits.
Development of German Romanticism and Idealism during a brilliant period in the history of the West rivaled only by ancient Greece. Kant, Fichte, Hegel, Kierkegaard, Schopenhauer, and Nietzsche mount a revolt against the rationalism and scientism of the modern world. Offered by Philosophy. Limited to three attempts.

Recommended Prerequisite: 3 hours of PHIL or Permission of Instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHIL 336: *Twentieth-Century Continental Thought: Existentialism.* 3 credits.
Examination of existential philosophy from its 19th-century origins to its 20th-century expressions. Philosophers studied include Kierkegaard, Nietzsche, Sartre, De Beauvoir, and Buber. Offered by Philosophy. Limited to three attempts.

Recommended Prerequisite: 3 hours of PHIL or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHIL 337: *Twentieth-Century Continental Thought: Phenomenology.* 3 credits.
Examines the phenomenological way of doing philosophy, its findings in regard to the "life-world," questions of "first philosophy," and the subject matter of the social sciences, as well as critical difficulties in its development. Texts by Husserl, Heidegger, Merleau-Ponty, Sartre, Schutz, and Derrida. Offered by Philosophy. Limited to three attempts.

Recommended Prerequisite: 3 credits of philosophy, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHIL 338: *Philosophy, Race, and Gender.* 3 credits.
Examines how concepts of gender, sexual difference, and race structure key philosophical ideas and put such ideas into question. Analyzes the ways in which patriarchal, colonial and racialized structures intersect to produce concepts of the human, the subject, and the 'Other'. Explores alternative approaches to subjectivity, sexuality, the body, and knowledge drawn from feminist philosophy, queer theory, and philosophies of race and decoloniality. Offered by Philosophy. Limited to three attempts.

Recommended Prerequisite: 3 hours of PHIL or Permission of Instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHIL 339: *Recent Continental Philosophy.* 3 credits.
Examines themes in continental philosophy from the late twentieth century to the present day. Particular themes will be explored through a variety of thinkers, such as Agamben, Cavarero, Deleuze, Derrida, Foucault, Irigaray, Kristeva, Lyotard, Nancy, Ranciere, or Stiegler, and approaches, such as postmodernist, poststructuralist, decolonial, or feminist. Possible themes will include temporality, alterity, language, history or technology. Offered by Philosophy. May be repeated within the degree for a maximum 9 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: 3 hours of PHIL or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHIL 340: *Hermeneutic Philosophy.* 3 credits.
Study of the development of hermeneutic philosophy in works by Heidegger, Gadamer, and Ricoeur, as an effort toward coming to terms with the historicity of human experience. Implications for interpretive understanding of artworks, institutions, events, texts, and the human condition. Offered by Philosophy. Limited to three attempts.

Recommended Prerequisite: 3 hours of PHIL or Permission of Instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHIL 343: *Topics in Environmental Philosophy.* 3 credits.
An in-depth examination of selected environmental issues from a philosophical perspective. Such issues might include the value of nature, the moral status of animals, duties to protect wilderness areas, economics and environmental protection, environmental justice, and environmental aesthetics. Offered by Philosophy. Limited to three attempts.

Mason Core: Encore: Sustainability, Synthesis

Specialized Designation: Green Leaf Related Course, Mason Impact., Topic Varies

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

PHIL 344: *Ethical Issues in Global Health.* 3 credits.
This course will consider ethical questions that arise in global health policy, practice and research. Offered by Philosophy. Limited to three attempts.

Recommended Prerequisite: Sophomore standing or higher.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHIL 353: *Theories of Justice.* 3 credits.
A critical analysis of classical and contemporary theories of justice, with discussion of present-day applications, that develops an understanding of how philosophers approach questions related to justice, how they reach conclusions about justice within and outside of formal institutions, and how they argue for them. Examines questions about justice as a basic virtue of legal, political, and social institutions and invites students to critically examine their own views on controversies related to such issues as the distribution of economic resources, oppression, criminal justice reform, freedom, conflict, equality, democracy, and rights. Offered by Philosophy. Limited to three attempts.

Recommended Prerequisite: Three credits of philosophy or permission of the instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHIL 355: *Theories of Ethics.* 3 credits.
A critical examination of a variety of different types of classical, modern, and contemporary ethical theories, including consequentialist theories, deontological theories, and virtue theories. Offered by Philosophy. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: 3 credits in PHIL or permission of instructor.

Schedule Type: Lecture

Grading:

This course is graded on the Undergraduate Regular scale.

PHIL 356: *Philosophy of Art.* 3 credits.
Basic problems that arise from an inquiry into meaning and value of art and our response to art. Offered by Philosophy. Limited to three attempts.

Recommended Prerequisite: 3 hours of PHIL or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHIL 357: *Philosophy of the Social Sciences.* 3 credits.
Philosophical issues relating to competing methodologies for the social sciences. Analysis and critique of mainstream positivism and behaviorism; paradigm theory and scientific revolutions; interpretive understanding and hermeneutical science; phenomenology and the social construction of reality; ethnomethodology and situational meaning; analytic philosophy and action theory; the "idea" of a social science; sociology of knowledge and theory of ideology; and Western Marxism and critical theory. Offered by Philosophy. Limited to three attempts.

Recommended Prerequisite: 3 credits of philosophy, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHIL 358: *Ethics and Economics.* 3 credits.
Examines issues at the intersection of ethics and economics. Looks at the different ways in which ethics and economics impact each other. Offered by Philosophy. Limited to three attempts.

Recommended Prerequisite: 3 credits in philosophy or permission of the instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHIL 371: *Philosophy of Natural Sciences.* 3 credits.
One semester of logic recommended. Study of aims and methodology of science. Among the questions of concern are: What constitutes a good scientific explanation? What grounds are used for comparing rival theories? Is there a special method of scientific discovery? Offered by Philosophy. Limited to three attempts.

Recommended Prerequisite: 3 hours of philosophy or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHIL 373: *Theory of Knowledge.* 3 credits.
Discussion of basic problems concerning the nature of knowledge, with study of the relation of knowledge to perception, belief, and language. Offered by Philosophy. Limited to three attempts.

Recommended Prerequisite: 3 hours of philosophy or Permission of Instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHIL 374: *Philosophy of Mind.* 3 credits.
Investigation of such theories as dualism, behaviorism, and materialism as they pertain to some of the central philosophical questions about mind. Offered by Philosophy. Limited to three attempts.

Recommended Prerequisite: 3 credits of philosophy, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHIL 376: *Symbolic Logic.* 3 credits.
Study of predicate calculi by means of a step-by-step construction of artificial languages. Topics include procedures for constructing a calculus, proof techniques, significant properties of predicate calculi, and procedures for recognizing phrases. Offered by Philosophy. Limited to three attempts.

Recommended Prerequisite: PHIL 173 or MATH 110 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHIL 377: *Darwin: Biology and Beyond.* 3 credits.
Introduction to and philosophical examination of the theory of evolution in its historical perspective. Examines Darwin's theory of evolution as a scientific theory, connects it to its context in the history of science, and surveys its wider cultural impact. In particular, examines implications of the theory of evolution for religion and morality. Offered by Philosophy. Limited to three attempts.

Mason Core: Synthesis

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHIL 379: *Perspectives on Time.* 3 credits.
Examines the variety of ways time is conceptualized in different disciplines. Influential conceptions of time from the history of philosophy are studied in order to provide a comparative framework within which to consider specialist conceptions of time drawn from the sciences and humanities, including relativistic time, geological deep time, life cycles, and time in historical narrative. Offered by Philosophy. Limited to three attempts.

Mason Core: Synthesis

Recommended Prerequisite: 3 credits of philosophy, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHIL 391: *Special Topics in Philosophy.* 1-3 credits.
Examines topics of current interest such as death and dying, rights of children, and philosophical controversies in modern physics. Notes: May be repeated for credit when topic is different. Offered by Philosophy. May be repeated within the term for a maximum 12 credits.

Specialized Designation: Topic Varies

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHIL 393: *Humanities College to Career.* 1 credit.
Focuses on career choices and effective self-presentation for soon-to-be graduating students with majors in the humanities. Explores how skills typically learned In humanities majors can be leveraged for a successful transition to post-graduation employment. Offered by Philosophy. Limited to three attempts. Equivalent to ENGH 303, FRLN 309, HIST 385, UNIV 420.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHIL 398: *Study Abroad.* 3 credits.
Study abroad under supervision of Mason faculty. Course topics, content and locations vary. Notes: A maximum of 6 credits may be applied to the BA in philosophy. Offered by Philosophy. May be repeated within the degree for a maximum 12 credits.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

PHIL 411: *Theories of Decision.* 3 credits.
Examines from a philosophical perspective descriptive and normative theories of individual decision, with particular focus on the strengths and weaknesses of theories of rational choice, and attempts to incorporate insights from psychology into theories of decision. Explores theoretical developments and a variety of applications. Offered by Philosophy. Limited to three attempts.

Recommended Prerequisite: Two previous courses in either Philosophy, Psychology, or Economics.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHIL 421: *Seminar.* 3 credits.
Explores topics in current philosophical research in a seminar format. Topics vary. Notes: May be repeated for credit when topic is different. Offered by Philosophy. May be repeated within the degree for a maximum 18 credits.

Mason Core: Capstone

Specialized Designation: Mason Impact., Writing Intensive in Major

Recommended Prerequisite: Nine credits in philosophy.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

PHIL 422: *Honors Seminar.* 3 credits.
Seminar for students enrolled in the honors program in philosophy. Notes: May be repeated for credit when topic is different. Offered by Philosophy. May be repeated within the term for a maximum 18 credits.

Mason Core: Capstone

Specialized Designation: Mason Impact., Writing Intensive in Major

Recommended Prerequisite: 9 credits in philosophy and acceptance to the honors program in philosophy.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

PHIL 425: *Independent Study.* 1-3 credits.
Independent study under supervision of faculty member. Students and faculty agree on program of study to include at least a reading list and final written project. Students must arrange for independent study in the semester before they wish to enroll. Requires approval of department. Offered by Philosophy. May be repeated within the term for a maximum 12 credits.

Recommended Prerequisite: Sixty credits, including 15 credits in Philosophy and permission of the department.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

PHIL 429: *Advanced Topics in Social and Political Philosophy.* 3 credits.
Examines key social and political issues drawing on a range of philosophical thinkers, texts and approaches. Possible topics include: migration and immigration, biopolitics, climate change, health inequity, decision theory, democracy and citizenship, slavery and reparations, mass incarceration, or human rights. Emphasizes the ability to put philosophical concepts and theories to work to address questions and problems of social, political or global significance. Offered by Philosophy. May be repeated within the degree for a maximum 9 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: PHIL/GOVT 323, or PHIL/GOVT 324, or PHIL/GOVT 327, or permission of the instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHIL 460: *Senior Seminar in Philosophy, Politics, and Economics.* 3 credits.
Covers issues in the philosophy, economics, and political science of institutions, information, and collective action. Through case studies of existing legal and political institutions, applies the insights to problems in politics, policy making, social-choice theory, and social, moral, and

political philosophy. (Specific content varies). Notes: Serves as the capstone course for the PPE program. Offered by Philosophy. Limited to three attempts. Equivalent to ECON 460, GOVT 469.

Recommended Prerequisite: PHIL 358 and ECON 412 or permission of instructor.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

600 Level Courses

PHIL 600: *Proseminar in Philosophy.* 1 credit.
Introduces MA students to the areas and methods of philosophical scholarship. Notes: Graduate students outside of the philosophy program may take this course with permission of the department. Offered by Philosophy. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment limited to students in the LA-MA-PHIL program.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Satisfactory/No Credit scale.

PHIL 603: *Aristotle: Selected Works.* 3 credits.
Close study of Aristotle's work and its place and future in history of philosophy. Topics vary by semester and include Aristotle's metaphysics, natural sciences, ethics, political thought, logic, epistemology, and psychology. Notes: May be repeated for credit when topic is different. Offered by Philosophy. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

PHIL 608: *Hegel's Phenomenology of the Spirit.* 3 credits.
A study of the philosophy of Hegel through a reading of the text that presents an introduction to his system. Special attention is paid to Hegel's background in the work of Kant and the German Idealists. Offered by Philosophy. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PHIL 615: *Postmodernist Thought.* 3 credits.
In recent decades, the term "postmodern," first used by art critics in the late 19th century, has been taken up by prominent contributors to the arts, social thinkers, and philosophers, to describe developments as well as the current period. Examines three thematic concerns found in work that is identified with postmodern issues: what modernity defines itself in contrast to or against, the status of "man," and status of "subjectivity." Offered by Philosophy. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PHIL 616: *Phenomenology.* 3 credits.
This major approach in philosophy is studied in regard to its basic features, the tasks to which it has been set by major contributors, certain findings of phenomenology in practice, as well as crucial problems that develop as phenomenology proceeds and how they are addressed by phenomenologists. Offered by Philosophy. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PHIL 617: *Movements and Issues in the History of Political Philosophy.* 3 credits.
Explores themes, movements, and periods in the history of political theory. Notes: May be repeated for credit when topic is different. Offered by Philosophy. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PHIL 640: *History of Ethical Theory.* 3 credits.
Examines history of Western ethical theory from ancient Greece to the present day, including virtue theory, consequentialism, deontological theory and contemporary feminism. Offered by Philosophy. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PHIL 642: *Biomedical Ethics.* 3 credits.
Explores the application of ethical theories and principles to issues in contemporary health care. Cases central to the development of the field will be examined. Offered by Philosophy. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PHIL 643: *Environmental Ethics.* 3 credits.
An examination of human interactions with the natural environment from an ethical perspective. Emphasis will be placed on the strengths and weaknesses of various ethical theories and the different conceptions of the proper relationship between humans and their environment. Offered by Philosophy. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PHIL 644: *Business and Organizational Ethics.* 3 credits.
Examines the application of ethics in business and organizational settings, and the necessity for ethical development wihin organizational culture. Offered by Philosophy. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

PHIL 645: *Research Ethics.* 3 credits.
Examines how ethical theories, concepts, and principles shape research guidelines. Students learn to identify ethical issues in research, to reflect on them critically, and to respond effectively. Designed for students in the humanities, social sciences, life sciences, and health sciences. Offered by Philosophy. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

PHIL 654: *Critical Philosophies of Race.* 3 credits.
Explores the nature of race by investigating the development of the concept of race and the implications of its use. Inquires into philosophical questions raised by race and racism; intersections of race with class, nationality, and gender; the role of philosophy in forming modern notions of race and the potential role of philosophy in addressing them with an eye to making our ways of thinking more just. Offered by Philosophy. May not be repeated for credit.

Recommended Prerequisite: Admission to graduate program in philosophy or related discipline, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PHIL 658: *Feminist Theory.* 3 credits.
Analysis of the critique of patriarchy offered by contemporary continental feminist philosophers. Examines contemporary moral, political, and epistemological issues in feminist theory. Offered by Philosophy. May not be repeated for credit.

Recommended Prerequisite: Admission to graduate program or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PHIL 681: *Figures and Topics in Ancient Philosophy.* 3 credits.
Examines major philosophical authors, texts, and topics of the ancient period and their influence on philosophical thought. May cover Plato, Aristotle, or the pre-Socratic philosophers. Notes: May be repeated for credit when topic is different. Offered by Philosophy. May be repeated within the degree for a maximum 12 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

PHIL 682: *Figures and Topics in Early Modern Philosophy.* 3 credits.
Examines major philosophical authors, texts, and topics of the early modern period and their influence on philosophical thought. Notes: May be repeated for credit when topic is different. Offered by Philosophy. May be repeated within the degree for a maximum 12 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

PHIL 683: *Contemporary Philosophical Figures.* 3 credits.
Examines major recent philosophical authors, texts, and topics, and their influence on philosophical thought. Notes: May be repeated for credit when topic is different. Offered by Philosophy. May be repeated within the term for a maximum 6 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

PHIL 693: *Directed Readings in Philosophy.* 3 credits.
Directed readings and research on a specific topic in philosophy chosen by student and instructor. Offered by Philosophy. May be repeated within the term for a maximum 12 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Regular scale.

PHIL 694: *Special Topics in Contemporary Philosophy.* 3 credits.
Topics vary. Notes: May be repeated for credit when topic is different. Offered by Philosophy. May be repeated within the term for a maximum 9 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

700 Level Courses

PHIL 720: *Nietzsche and his Readers.* 3 credits.
Reading of major texts of Nietzsche and some of his most influential interpreters and critics. Offered by Philosophy. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

PHIL 721: *Advanced Seminar in Philosophy.* 3 credits.
Close study of selected topics in current philosophical discourse. Notes: May be repeated for credit when topic is different. Offered by Philosophy. May be repeated within the term.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

PHIL 799: *Thesis.* 1-6 credits.
Develop research and write an original thesis under the direction of their thesis director. Offered by Philosophy. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Completion of 24 credits, approval of thesis proposal, and permission of instructor (thesis director).

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Thesis

Grading:
This course is graded on the Satisfactory/No Credit scale.

Physical Education (PHED)

200 Level Courses

PHED 202: *Teaching Skillful Movement.* 3 credits.
Provides students with the fundamentals of lesson planning, class management and analysis of teaching in physical education. Offered by School of Education. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHED 218: *Technology in Health and Physical Education.* 3 credits.
Introduces technological tools to support K-12 health and physical education instruction in school and online settings. Explores tools such as wearable technology, mobile apps, learning management systems used in the schools, and social media. Offered by School of Education. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHED 273: *Net and Target Games.* 3 credits.
Teaches skill, content knowledge and historical perspectives of net and target games. Includes skill progression, strategies, officiating, and authentic assessment in games such as volleyball, golf, tennis, and badminton. Offered by School of Education. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHED 274: *Dance and Educational Gymnastics.* 3 credits.
Teaches skills, content knowledge, and historical perspectives of dance and educational gymnastics taught in a K-12 physical education setting. Includes stages of motor development, skill progression, and authentic assessment for a variety of dances and educational gymnastics. Offered by School of Education. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHED 275: *Field and Invasion Games.* 3 credits.
Teaches skills, content knowledge, and historical perspectives of field and invasion games. Includes skill progression, strategies, officiating, and authentic assessment in activities such as softball, basketball, soccer, hockey, team handball, flag football, lacrosse and Ultimate Disc. Offered by School of Education. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHED 276: *Health-Related Fitness Education.* 3 credits.
Prepares future physical educators to develop, implement, and assess fitness concepts, and strategies to K12 students. Incorporates basic nutritional knowledge needed to live a healthy lifestyle. Requires fitness tests participation. Offered by School of Education. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

300 Level Courses

PHED 306: *Psychomotor Learning.* 3 credits.
Analyzes psychological aspects, learning theory, and practice conditions for learning motor skills. Offered by School of Education. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHED 308: *Adapted Physical Education.* 3 credits.
Introduces strategies and best practices when teaching health and physical education to students with disabilities in public schools. Covers national standards, federal legislation, Individual Educational Plans (IEPs), and developmental inclusion models. Offered by School of Education. Limited to three attempts.

Registration Restrictions:
Enrollment limited to students in a Bach of Science in Education degree.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHED 320: *Student Assessment in Health and Physical Education.* 3 credits.
Examines assessment purposes and introduces different assessment procedures that measure student achievement in the different domains of behaviors in health and physical education. Offered by School of Education. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHED 340: *Social and Cultural Issues in Physical Education.* 3 credits.
Studies contemporary and historical perspectives on socio-cultural and philosophical issues influencing American public schooling and physical education teacher preparation, including race, culture, ethnicity, nationality, globalization, socioeconomic status, gender, sexuality, ability, obesity, and urbanization. Offered by School of Education. Limited to three attempts.

Specialized Designation: Writing Intensive in Major

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHED 360: *Sport Based Youth Development.* 3 credits.
An interdisciplinary examination of current trends and issues in youth sport, with a focus on non-school based community programs. Emphasis is placed on the structural characteristics of sport and physical activity programs as they pertain to proper development of children and adolescents. Offered by School of Education. Limited to three attempts. Equivalent to SRST 360.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

PHED 403: *Elementary School Instruction in Physical Education.* 3 credits.
Covers content, knowledge, and teaching methods for elementary physical education. Requires field experience. Must be taking within one year of student teaching. Offered by School of Education. Limited to three attempts.

Recommended Prerequisite: PHED 273, 274, 275, and PHED 306 (Any of these courses may be taken concurrently).

Registration Restrictions:
Enrollment is limited to students with a major in Physical Education.

Enrollment limited to students in a Bach of Science in Education degree.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHED 404: *Middle and High School Instruction in Physical Education.* 3 credits.
Examines school curriculum content, and teaching practices appropriate for middle and high school physical education programs. Requires field experience. Offered by School of Education. Limited to three attempts.

Registration Restrictions:
Enrollment is limited to students with a major in Physical Education.

Enrollment limited to students in a Bach of Science in Education degree.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHED 415: *Student Teaching in Physical Education.* 12 credits.
Provides supervised clinical experience for a full semester in approved schools. Requires experiences in elementary and secondary school settings. Includes participation in pre-service workshop and related activities, and weekly seminars. Note: Completion of all Mason Core and program coursework, and acceptance into Student Teaching are required. PHED 415 must be completed within 5 years of PHED 202. Offered by School of Education. Limited to three attempts.

Mason Core: Capstone

Registration Restrictions:
Required Prerequisites: (ATEP 300[D], 300[XS] or 300[XP]) and (BIOL 124[D], 124[XS] or 124[XP]) and (BIOL 125[D], 125[XS] or 125[XP]) and (EDRD 300[D], 300[XS] or 300[XP]) and (EDUC 302[D], 302[XS] or 302[XP]) and (HEAL 110[D], 110[XS] or 110[XP]) and (HEAL 200[D], 200[XS] or 200[XP]) and (HEAL 405[C] or 405[XS]) and (KINE 310[D], 310[XS] or 310[XP]) and (PHED 202[C] or 202[XS]) and (PHED 218[D], 218[XS] or 218[XP]) and (PHED 273[D], 273[XS] or 273[XP]) and (PHED 274[D], 274[XS] or 274[XP]) and (PHED 275[C], 275[XS] or 275[XP]) and (PHED 276[D] or 276[XP]) or PHED 276[XS] and 306[D] or PHED 306[XS] or 306[XP]) and (PHED 308[C], 308[XS] or 308[XP]) and (PHED 320[D], 320[XS] or 320[XP]) and (PHED 340[D], 340[XS] or 340[XP]) and (PHED 403[C] or 403[XS] and (PHED 404[C] or 404[XS]) and (PRLS 316[D], 316[XS] or 316[XP]).
[D] Requires minimum grade of D.
[XS] Requires minimum grade of XS.
[XP] Requires minimum grade of XP.
[C] Requires minimum grade of C.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

PHED 499: *Independent Study in Physical Education and Fitness.* 1-3 credits.
Study of a problem area in physical education research, theory, or practice under direction of faculty member. Offered by School of Education. Limited to three attempts.

Recommended Prerequisite: Completion of 90 hours and Permission of Chair.

Registration Restrictions:
Enrollment is limited to students with a major in Health Education, Health, Fitness Rec Resrcs, Individualized Study, Nursing, Physical Education (Special), Physical Education or Parks, Rec, Leisure Studies.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

600 Level Courses

PHED 660: *Research Reading Seminar in Physical Education.* 3 credits.
Provides an overview of the current and past research in the field of physical education through an in-depth analysis, synthesis, and discussion of research. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to students with a concentration in ASTL-Physical Education.

Enrollment limited to students in a Master of Education degree.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

PHED 670: *Analysis of Teaching in Physical Education.* 3 credits.
Presents variety of research techniques for studying teacher and learner behaviors in physical education, engaging the teacher as researcher and grant writer. Goal is to prepare teachers to be leaders in their field. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PHED 672: *Curriculum and Assessment in Physical Education.* 3 credits.
Provides knowledge of curriculum models and assessment strategies in standards-based physical education program. Studies curriculum models such as sport education and adventure education. Examines traditional and alternative assessment. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PHED 673: *Motor Development for Special Populations.* 3 credits.
Provides knowledge that focuses on individuals with orthopedic, sensory, and learning disabilities in physical education setting. Areas of focus include development of motor patterns and skills assessment, and planning and instruction for students with disabilities. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PHED 680: *Mentoring and Supervising in Physical Education.* 3 credits.
Prepares mentors and supervisors of preservice and in-service teachers in physical education. Topics include professional dispositions, assessment and evaluation, adult learners, counseling and communication, providing feedback, and reflection and inquiry into the profession. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: PHED 670.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

Physics (PHYS)

100 Level Courses

PHYS 103: *Physics and Everyday Phenomena I.* 4 credits.
The course uses basic physics concepts from the areas of mechanics and thermodynamics to explain a wide range of everyday phenomena, such as how we walk and drive, how a ship floats, how clothing keeps us warm, and why it rains when we have a low pressure system. Notes: For nonscience majors. Offered by Physics & Astronomy. Limited to three attempts.

Mason Core: Natural Science with Lab

Schedule Type: Laboratory, Lecture

Grading:

This course is graded on the Undergraduate Regular scale.

PHYS 104: *Physics and Everyday Phenomena II.* 4 credits.
The course uses basic physics concepts from the areas of light, sound, electricity, magnetism, and modern physics to explain a wide range of everyday phenomena. Topics include how we speak, hear, and see, what to do if the circuit breaker keeps tripping, how your computer stores and displays data, how rainbows and northern lights form, and the basic nature of matter. Notes: For nonscience majors. Offered by Physics & Astronomy. Limited to three attempts.

Mason Core: Natural Science with Lab

Recommended Prerequisite: PHYS 103.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHYS 106: *The Quantum World: A Continuous Revolution in What We Know and How We Live.* 3 credits.
This course presents quantum physics that revolutionized the 20th Century and continues to evolve. In addition to presenting basic concepts, the course will discuss various applications involving quantum phenomena including quantum computers and quantum teleportation. The course will be a historical journey through the quantum science that many of its founders, such as Einstein, could not accept, and a peek into a possible future. Notes: For non-science majors. Offered by Physics & Astronomy. Limited to three attempts.

Mason Core: Natural Science Overview

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHYS 111: *Introduction to the Fundamentals of Atmospheric Science.* 3 credits.
An overview of the Earth's atmosphere, its history, and the physical and chemical processes that determine its characteristics. The focus is on key concepts from thermodynamics, radiation, chemistry, and dynamics that are essential for understanding the state, variability, and long term evolution of the atmosphere, especially in the context of comparisons with other planetary atmospheres. Offered by Physics & Astronomy. Limited to three attempts. Equivalent to CLIM 111.

Mason Core: Natural Science with Lab, Natural Science Overview, Encore: Sustainability

Specialized Designation: Green Leaf Related Course

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHYS 112: *Introduction to the Fundamentals of Atmospheric Science Lab.* 1 credit.
Laboratory course associated with PHYS 111/CLIM 111. Study of the Earth's atmosphere based on concepts taken from thermodynamics, radiation transport, chemistry, and dynamics. Offered by Physics & Astronomy. Limited to three attempts. Equivalent to CLIM 112.

Mason Core: Natural Science with Lab, Encore: Sustainability

Specialized Designation: Green Leaf Related Course

Registration Restrictions:
Required Prerequisites: (PHYS 111[*C], CLIM 111[*C], PHYS 111[XS] or CLIM 111[XS]).
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

PHYS 122: *Inside Relativity.* 1 credit.
Introductory course describing Einstein's theories of special and general relativity. Notes: Intended for majors and nonmajors. Offered by Physics & Astronomy. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHYS 123: *Inside the Quantum World.* 1 credit.
Introductory course describing quantum theory. Notes: Intended for majors and nonmajors. Offered by Physics & Astronomy. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHYS 124: *Experimental Explorations in Physics.* 2 credits.
Introductory nonmathematical course intended primarily for physics majors. Experimental studies of phenomena in mechanics, electricity and magnetism, and optics. Stresses development of familiarity with methods and techniques of measurement and with data evaluation. Offered by Physics & Astronomy. Limited to three attempts.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

PHYS 131: *Introduction to Renewable Energy.* 3 credits.
An overview of the renewable-energy field suitable for all students regardless of major. Topics include renewable-energy technologies, trends in the adoption of renewable energy, successful policy drivers, and environmental impacts. Offered by Physics & Astronomy. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHYS 160: *University Physics I.* 3 credits.
First semester of three-semester, calculus-based introductory physics sequence, designed primarily for science and engineering majors. Mechanics. Offered by Physics & Astronomy. Limited to three attempts.

Mason Core: Natural Science with Lab, Natural Science Overview

Registration Restrictions:
Required Prerequisites: MATH 114[*C], 114[XS], 116[*C] or 116[XS].
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture, Recitation

Grading:
This course is graded on the Undergraduate Regular scale.

PHYS 161: *University Physics I Laboratory.* 1 credit.
Experiments in mechanics, including techniques for recording, graphically and statistically analyzing, and reporting data. Offered by Physics & Astronomy. Limited to three attempts.

Mason Core: Natural Science with Lab

Registration Restrictions:
Required Prerequisites: PHYS 160[*C] or 160[XS].
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

PHYS 170: *Introductory and Modern Physics I.* 3 credits.
The first of a two-course, calculus-based introductory physics sequence. Topics include conservation laws, special relativity, quantum physics, thermal physics, Newton's laws, and electromagnetism. PHYS 170 does not satisfy the prerequisite for PHYS 260. Offered by Physics & Astronomy. Limited to three attempts. Equivalent to PHYS 160.

Mason Core: Natural Science with Lab, Natural Science Overview

Registration Restrictions:
Required Prerequisites: MATH 113[*C] or 113[XS].
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

200 Level Courses

PHYS 225: *Problems in Physics I.* 1-3 credits.
Individual study of physics problems of current interest. Offered by Physics & Astronomy. May be repeated within the degree for a maximum 3 credits.

Registration Restrictions:
Required Prerequisites: PHYS 260[C], 260[XS] or 270[C].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

PHYS 243: *College Physics I.* 3 credits.
The first of a two-semester algebra-based physics sequence with emphasis on topics of classical and modern physics of particular importance to science majors. Topics include principles of mechanics and heat. Facility in algebra and trigonometry is assumed. PHYS 243 is prerequisite to PHYS 245. Offered by Physics & Astronomy. Limited to three attempts.

Mason Core: Natural Science with Lab, Natural Science Overview

Schedule Type: Lecture, Recitation

Grading:
This course is graded on the Undergraduate Regular scale.

PHYS 244: *College Physics I Lab.* 1 credit.
Laboratory portion of two-semester basic physics course. Offered by Physics & Astronomy. Limited to three attempts.

Mason Core: Natural Science with Lab

Registration Restrictions:
Required Prerequisites: PHYS 243[*C] or 243[XS].
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

PHYS 245: *College Physics II.* 3 credits.
The second of a two-semester algebra-based physics sequence with emphasis on topics of classical and modern physics of particular importance to science majors. Topics include principles of electricity, magnetism, optics, and atomic and nuclear physics. Facility in algebra and trigonometry is assumed. Offered by Physics & Astronomy. Limited to three attempts.

Mason Core: Natural Science with Lab, Natural Science Overview

Registration Restrictions:
Required Prerequisites: PHYS 243[C] or 243[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture, Recitation

Grading:
This course is graded on the Undergraduate Regular scale.

PHYS 246: *College Physics II Lab.* 1 credit.
Laboratory portion of two-semester basic physics course. Offered by Physics & Astronomy. Limited to three attempts.

Mason Core: Natural Science with Lab

Registration Restrictions:
Required Prerequisites: PHYS 244[C] or 244[XS] and PHYS 245[*C] or 245[XS].
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Laboratory

Grading:

This course is graded on the Undergraduate Regular scale.

PHYS 251: *Introduction to Computer Techniques in Physics.* 3 credits.
Introduction to using computers in physics based on examples from mechanics and astronomy. Offered by Physics & Astronomy. Limited to three attempts.

Mason Core: Info Tech & Computing

Registration Restrictions:
Required Prerequisites: PHYS 160[C], 160[XS] or 170[C].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHYS 260: *University Physics II.* 3 credits.
Waves, electricity, and magnetism. Offered by Physics & Astronomy. Limited to three attempts. Equivalent to PHYS 270.

Mason Core: Natural Science with Lab, Natural Science Overview

Registration Restrictions:
Required Prerequisites: (PHYS 160[C] or 160[XS]) and (MATH 213[*C], 213[*XS], 215[*C] or 215[*XS]).
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture, Recitation

Grading:
This course is graded on the Undergraduate Regular scale.

PHYS 261: *University Physics II Laboratory.* 1 credit.
Experiments in mechanics, electricity, and magnetism, including techniques for recording, graphically and statistically analyzing, and reporting data. Offered by Physics & Astronomy. Limited to three attempts.

Mason Core: Natural Science with Lab

Registration Restrictions:
Required Prerequisites: (PHYS 161[C] or 161[XS]) and (PHYS 260[*C] or 260[XS]).
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

PHYS 262: *University Physics III.* 3 credits.
Thermodynamics, optics, and modern physics. Offered by Physics & Astronomy. Limited to three attempts.

Mason Core: Natural Science with Lab, Natural Science Overview

Recommended Prerequisite: C or higher in PHYS 261.

Registration Restrictions:
Required Prerequisites: PHYS 260[C] or 260[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture, Recitation

Grading:
This course is graded on the Undergraduate Regular scale.

PHYS 263: *University Physics III Laboratory.* 1 credit.
Experiments in optics and modern physics, including techniques for recording, graphically and statistically analyzing, and reporting data. Offered by Physics & Astronomy. Limited to three attempts.

Mason Core: Natural Science with Lab

Registration Restrictions:
Required Prerequisites: (PHYS 261[C] or 261[XS]) and (PHYS 262[*C] or 262[XS]).
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

PHYS 266: *Introduction to Thermodynamics.* 1 credit.
Students may not receive credit for both PHYS 262 and 266. Laws of thermodynamics, kinetic theory of gases, heat engines, and entropy. Offered by Physics & Astronomy. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: PHYS 260[C] or 260[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture, Recitation

Grading:
This course is graded on the Undergraduate Regular scale.

PHYS 270: *Introductory and Modern Physics II.* 3 credits.
The second of a two-course, calculus-based introductory physics sequence. Topics include conservation laws, special relativity, quantum physics, thermal physics, Newtons laws, and electromagnetism. Offered by Physics & Astronomy. Limited to three attempts. Equivalent to PHYS 260.

Mason Core: Natural Science with Lab, Natural Science Overview

Registration Restrictions:
Required Prerequisites: PHYS 170[C] and (MATH 114[*C] or 114[XS]).
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

300 Level Courses

PHYS 301: *Analytical Methods of Physics.* 3 credits.
Analytical methods in the Physical Sciences. Provides a comprehensive introduction to the areas of mathematical physics. Offered by Physics & Astronomy. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: MATH 214[C] or 214[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHYS 303: *Classical Mechanics.* 3 credits.
Motion of a particle in one, two, and three dimensions; systems of particles; noninertial coordinate systems; and equations of Lagrange and Hamilton. Offered by Physics & Astronomy. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (PHYS 260[C], 260[XS] or 270[C]) and (PHYS 301[*C] or 301[*XS]).
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHYS 305: *Electromagnetic Theory.* 3 credits.
Interaction of static charges, interaction of stationary currents, electromagnetic induction, and Maxwell's equations. Offered by Physics & Astronomy. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (PHYS 260[C], 260[XS] or 270[C]) and (PHYS 301[*C] or 301[*XS]).
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHYS 306: *Wave Motion and Electromagnetic Radiation.* 3 credits.
Vibrating string, plane waves, interference, diffraction, polarization, electromagnetic waves, dispersion, and relativity. Offered by Physics & Astronomy. Limited to three attempts.

Recommended Corequisite: MATH 214.

Registration Restrictions:
Required Prerequisites: PHYS 305[C] or 305[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHYS 307: *Thermal Physics.* 3 credits.
Classical concepts of energy and temperature, basic definitions, first and second laws of thermodynamics, properties of pure substances, and equations of state. Introduction to classical and quantum statistics and their application to physical systems. Offered by Physics & Astronomy. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: PHYS 260[C], 260[XS] or 270[C].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHYS 308: *Modern Physics.* 3 credits.
Introduces relativity, quantum mechanics, and selected topics in modern physics. Offered by Physics & Astronomy. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: PHYS 260[C], 260[XS] or 270[C].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHYS 310: *Physics of Semiconductor Materials and Processing.* 3 credits.
Survey of the electronic and structural properties of semiconductors and the physics of semiconductor processing. Topics to be discussed include crystal growth, crystal defects, thin films, thermal properties, lithography, and characterization. Offered by Physics & Astronomy. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: PHYS 262[C], 262[XS], 307[C] or 307[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHYS 311: *Instrumentation.* 3 credits.
Introduction to basic analog and digital circuits, circuit design and simulation, and data acquisition. Offered by Physics & Astronomy. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (PHYS 251[C] or 251[XS]) and (PHYS 261[C] or 261[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHYS 312: *Waves and Optics.* 3 credits.
Laboratory survey of wave and optical phenomena and associated instrumentation. Offered by Physics & Astronomy. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (PHYS 251[C] or 251[XS]) and (PHYS 261[C] or 261[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHYS 325: *Intermediate Methods of Experimental Physics.* 3 credits.
Experiments in mechanics, electromagnetism, and optics with emphasis on data acquisition and analysis using state-of-the-art-tools. Offered by Physics & Astronomy. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (PHYS 251[C] or 251[XS]) and (PHYS 261[C] or 261[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

PHYS 326: *Problems in Physics II.* 1-3 credits.
Individual study of physics problems of current interest. Offered by Physics & Astronomy. May be repeated within the degree for a maximum 3 credits.

Registration Restrictions:
Required Prerequisites: PHYS 301[*C], 301[*XS], 307[*C] or 307[*XS].
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

PHYS 331: *Physics of Renewable Energy.* 3 credits.
Introduces the physical principles for a range of renewable energies, including solar, wind, hydropower and geothermal. Demonstrates how the application of methods and principles of physics allow us to understand the basic operation, advantages, limitations and relative merits of various renewable energy sources. Designed for students majoring in the sciences or engineering but useful for students interested in science policy, business, global change and sustainable development. Offered by Physics & Astronomy. Limited to three attempts.

Specialized Designation: Green Leaf Related Course

Registration Restrictions:
Required Prerequisites: PHYS 260[C], 260[XS] or 270[C].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHYS 332: *Solar Cells.* 3 credits.
Covers the physics of solar cells, basics of semiconductors, pn junctions, basic structure of solar cells, the latest advances in solar cell materials, and concepts for improving the efficiency of solar cells. Solar cell design based on silicon, copper indium gallium selenide, gallium arsenide, organic solar cells, dye-sensitized solar cells, quantum dots, and nanowires will also be reviewed. Offered by Physics & Astronomy. Limited to three attempts.

Specialized Designation: Mason Impact.

Registration Restrictions:
Required Prerequisites: ((PHYS 260[C], 260[XS] or 270[C]) and (PHYS 261[C] or 261[XS])) or ((PHYS 245[C] or 245[XS]) and (PHYS 246[C] or 246[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHYS 334: *Introduction to Quantum Computation and Quantum Information.* 3 credits.
Introduction to the basic components of quantum computing (qubit, quantum gates, and quantum circuits, entanglement, the non-cloning theorem, dense coding, and quantum teleportation, including physical implementation), as well as quantum algorithms, such as Deutsch-Josza, Bernstein-Varirani, Simon's, Shor's, and Grover's algorithms, and quantum error correction code. Quantum coding of these algorithms will be run on an IBMq. Offered by Physics & Astronomy. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (PHYS 260[C], 260[XS] or 270[C]) and ((MATH 203[C] or 203[XS]) or (PHYS 301[C] or 301[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHYS 346: *Quarks to Strings.* 3 credits.
An non-technical introduction to the Standard Model of Elementary Particles and String Theory, in the context of the philosophy of science. Conceptual mastery will be demonstrated through writing assignments rather than calculations. Notes: This course does not satisfy elective-category requirements for the physics and astronomy majors. Offered by Physics & Astronomy. Limited to three attempts.

Mason Core: Synthesis

Registration Restrictions:
Required Prerequisites: PHYS 262[C], 262[XS], 270[C], 308[C] or 308[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHYS 370: *Molecular Biophysics.* 3 credits.
Offers a broad introduction into molecular biophysics. Demonstrates that the application of methods of physics provides a unique opportunity to tackle complex biological programs. Mainly designed for students majoring in physics or chemistry but also useful for biology majors interested in bioinformatics and computational biology. Offered by Physics & Astronomy. Limited to three attempts. Equivalent to BINF 470.

Registration Restrictions:
Required Prerequisites: (PHYS 307[C] or 307[XS]) or ((CHEM 331[C] or 331[XS]) and (CHEM 332[C] or 332[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHYS 385: *Materials Science with Applications to Renewable Energy.* 3 credits.
Introduction to basic concepts and methods of materials science. Review of metallic alloys and compounds, ceramic materials, ionic solids, semiconductors, polymers, and nano-structured materials. Mechanical, thermal, electric, magnetic and optical properties of materials. Theoretical background and experimental methods of materials characterization. Various materials applications with emphasis on renewable energy. Offered by Physics & Astronomy. Limited to three attempts.

Specialized Designation: Green Leaf Related Course

Registration Restrictions:
Required Prerequisites: PHYS 262[C], 262[XS], 266[C], 266[XS], 307[C], 307[XS], ME 211[C] or 211[XS] or ((PHYS 245[C] or 245[XS]) and (MATH 113[C] or 113[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHYS 390: *Topics in Physics.* 1-4 credits.
Selected topics in physics not covered in fixed-content courses. Offered by Physics & Astronomy. May be repeated within the term for a maximum 9 credits.

Specialized Designation: Topic Varies

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHYS 391: *Special Topics in Physics.* 1-4 credits.
Special topics in physics not covered in fixed-content courses. Notes: This course does not satisfy elective-category requirements for the physics or astronomy majors. Offered by Physics & Astronomy. May be repeated within the term for a maximum 9 credits.

Specialized Designation: Topic Varies

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

PHYS 402: *Introduction to Quantum Mechanics and Atomic Physics.* 3 credits.
Experimental basis of quantum mechanics; the wave function; systems in one, two, and three dimensions. Offered by Physics & Astronomy. Limited to three attempts. Equivalent to PHYS 502.

Registration Restrictions:
Required Prerequisites: (PHYS 303[C] or 303[XS]) and (PHYS 305[C] or 305[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHYS 403: *Quantum Mechanics II.* 3 credits.
Additional topics in Quantum Mechanics: angular momentum, perturbation theory, scattering, and the Dirac Equation. Offered by Physics & Astronomy. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: PHYS 402[C] or 402[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHYS 405: *Honors Thesis in Physics I.* 3 credits.
Project chosen and completed under the guidance of a faculty member, which results in a thesis. Students may receive no more than 6 credits of PHYS 405, 406, 408, and 409. Notes: PHYS 405 is a prerequisite for PHYS 406. An oral progress report is required for PHYS 405. Oral and written presentations are required for PHYS 406. Students may receive no more than 6 credits of PHYS 405, 406, 408, and 409. Offered by Physics & Astronomy. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (PHYS 251[C] or 251[XS]) and (PHYS 301[C] or 301[XS]) and (PHYS 303[C] or 303[XS]) and (PHYS 305[C] or 305[XS]) and (PHYS 307[C] or 307[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major in Physics.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

PHYS 406: *Honors Thesis in Physics II.* 3 credits.
Project chosen and completed under the guidance of a faculty member, which results in a thesis. Students may receive no more than 6 credits of PHYS 405, 406, 408, and 409. Notes: PHYS 405 is a prerequisite for PHYS 406. An oral progress report is required for PHYS 405. Oral and written presentations are required for PHYS 406. Students may receive no

more than 6 credits of PHYS 405, 406, 408, and 409. Offered by Physics & Astronomy. Limited to three attempts.

Registration Restrictions:
Required Prerequisite: PHYS 405[C].
[C] Requires minimum grade of C.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

PHYS 407: *Senior Laboratory in Modern Physics.* 4 credits.
Advanced experiments in modern physics: electronics, optics, condensed matter, and nuclear physics. Techniques for recording, graphically and statistically analyzing, and reporting data. Typical experiments include the Frank-Hertz experiment, Hall Effect, electron spin resonance, nuclear magnetic resonance and optical pumping. Offered by Physics & Astronomy. Limited to three attempts.

Mason Core: Capstone

Specialized Designation: Writing Intensive in Major

Registration Restrictions:
Required Prerequisites: (PHYS 251[C] or 251[XS]) and (PHYS 311[C] or 311[XS]) and (PHYS 312[C] or 312[XS]) and (PHYS 402[C] or 402[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

PHYS 408: *Senior Research.* 2-3 credits.
Work under guidance of faculty member on research project in experimental or theoretical physics. Students may receive no more than 6 credits of PHYS 405, 406, 408, and 409. Notes: May be repeated with permission of the Physics Department. Students may receive no more than 6 credits of PHYS 405, 406, 408, and 409. Offered by Physics & Astronomy. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Required Prerequisites: (PHYS 251[C] or 251[XS]) and (PHYS 301[C] or 301[XS]) and (PHYS 303[C] or 303[XS]) and (PHYS 305[C] or 305[XS]) and (PHYS 307[C] or 307[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Research

Grading:
This course is graded on the Undergraduate Regular scale.

PHYS 409: *Physics Internship.* 3 credits.
On-the-job experience for physics majors in industry or government laboratories including summer programs. Students may receive no more than 6 credits of PHYS 405, 406, 408, and 409. Notes: May be repeated with permission of the Department of Physics & Astronomy. Students may receive no more than 6 credits of PHYS 405, 406, 408, and 409. Offered by Physics & Astronomy. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Required Prerequisites: (PHYS 251[C] or 251[XS]) and (PHYS 301[C] or 301[XS]) and (PHYS 303[C] or 303[XS]) and (PHYS 305[C] or 305[XS]) and (PHYS 307[C] or 307[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

PHYS 410: *Computational Physics Capstone.* 4 credits.
Applications of computational techniques to simulate, visualize, and solve numerically problems from a variety of physical systems. Offered by Physics & Astronomy. Limited to three attempts.

Mason Core: Capstone

Specialized Designation: Writing Intensive in Major

Registration Restrictions:
Required Prerequisites: (PHYS 251[C] or 251[XS]) and (PHYS 325[C] or ASTR 401[C]) and (PHYS 303[C] or 303[XS]) and (PHYS 305[C] or 305[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHYS 411: *Renewable Energy Internship.* 3 credits.
On-the-job experience for Renewable Energy minors in industry, government, or non-profit organizations, including Summer programs. Offered by Physics & Astronomy. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (PHYS 131[C] or 131[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

PHYS 412: *Solid State Physics and Applications.* 3 credits.
Crystal structures, binding, lattice vibrations, the free electron model, metals, semiconductors and semiconductor devices, superconductivity, and magnetism. Offered by Physics & Astronomy. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: PHYS 402[C], 402[XS], 502[B-] or 502[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.
[B-] Requires minimum grade of B-.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHYS 416: *Undergraduate Physics Review.* 1 credit.
Emphasizing the breadth of physical understanding needed to approach physics problems, the course reviews undergraduate physics through

assigned, GRE test-like, problems. Offered by Physics & Astronomy. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (PHYS 301[C] or 301[XS]) and (PHYS 303[C] or 303[XS]) and (PHYS 305[C] or 305[XS]) and (PHYS 307[C] or 307[XS]) and (PHYS 402[C] or 402[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHYS 417: *Geophysics.* 3 credits.
Basic principles of geophysics including gravity, magnetism, and seismic reflection and refraction. Offered by Physics & Astronomy. Limited to three attempts. Equivalent to GEOL 417.

Recommended Prerequisite: GEOL 101, MATH 113, one year of PHYS or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHYS 428: *Relativity.* 3 credits.
Special relativity; four-dimensional space-time; general relativity; non-Euclidean geometries, geodesics, and field equations; tests of general theory of relativity; black holes; cosmology; models of the universe; remnant blackbody radiation; big bang cosmology; thermodynamics; and the universe. Offered by Physics & Astronomy. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (PHYS 303[C] or 303[XS]) and (PHYS 305[C] or 305[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHYS 440: *Nuclear and Particle Physics.* 3 credits.
Accelerators, detectors and related electronics; nuclear and elementary particle structure; symmetries and conservation laws; the electromagnetic, weak, and hadronic interactions; nuclear models; the quark model; and nuclear science and technology. Offered by Physics & Astronomy. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (PHYS 402[C], 402[XS], 502[B-] or 502[XS]) and (PHYS 428[*C] or 428[*XS]).
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.
[B-] Requires minimum grade of B-.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHYS 465: *Planetary Atmospheres and Ionospheres.* 3 credits.
An interdisciplinary introduction to the fundamental physics aod chemistry of the atmosphere-ionosphere system. The focus is on the governing equations of atmospheric and ionospheric dynamics with a systems (science) approach to the atmosphere-ionosphere coupling processes. Topics include observational and modeling techniques in the Earth's upper atmosphere as well as recent progress in planetary atmosphere-ionospheres and planetary missions. Offered by Physics & Astronomy. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (PHYS 260[C] or 260[XS]) and (PHYS 301[C] or 301[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PHYS 475: *Atmospheric Physics.* 3 credits.
Introduction to basic physical and chemical processes that operate in the Earth's atmosphere. Emphasis on those concepts that provide a global description of the current atmospheric state and those processes that relate to global change and atmospheric evolution. Topics include equilibrium structure, radiative transfer models, thermodynamics of various atmospheric layers, and the various processes defining these layers. Offered by Physics & Astronomy. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: PHYS 170[C], 262[C], 262[XS], 307[C] or 307[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

500 Level Courses

PHYS 502: *Introduction to Quantum Mechanics and Atomic Physics.* 3 credits.
Experimental basis of quantum mechanics, the wave function, and systems in one, two, and three dimensions. Offered by Physics & Astronomy. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: PHYS 308[C] or 308[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PHYS 510: *Computational Physics I.* 3 credits.
Study and development leading to computer simulations of various physical systems. Requires the study and development of computational techniques and numerical algorithms to obtain both numerical results and visualization of these results. Application to individual physical processes taking place in a variety of physical systems. Offered by Physics & Astronomy. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PHYS 512: *Solid State Physics and Applications.* 3 credits.
Crystal structures, binding, lattice vibrations, the free electron model, metals, semiconductors and semiconductor devices, superconductivity, and magnetism. Offered by Physics & Astronomy. May not be repeated for credit. Equivalent to CSI 687.

Registration Restrictions:
Required Prerequisites: PHYS 402[C], 402[XS], 502[B-] or 502[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.
[B-] Requires minimum grade of B-.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PHYS 513: *Applied Electromagnetic Theory.* 3 credits.
Classical electromagnetic theory with applications. Topics include electrostatics, magnetic fields and materials, electromagnetic wave propagation, waveguides, transmission lines, radiation, and antennas. Offered by Physics & Astronomy. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PHYS 533: *Modern Instrumentation.* 3 credits.
Topics include sensors for radiation, particles, electric and magnetic fields, pressure, and motion; electronic instruments, computer data collection, instrumentation noise and noise reduction methods; and specialized instrumentation systems for various areas of applied physics. Offered by Physics & Astronomy. May not be repeated for credit. Equivalent to CHEM 620.

Registration Restrictions:
Required Prerequisites: (PHYS 513[B-] or 513[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PHYS 534: *Introduction to Quantum Computation and Quantum Information.* 3 credits.
This course introduces science and engineering students to quantum computing code and quantum information using a linear algebra based approach. Prior experience with quantum mechanics is not required. Over the semester counterintuitive concepts, such as quantum entanglement and quantum teleportation, will be demystified. Basic quantum algorithms will be analyzed to understand quantum speedup over classical computing. Hands-on training in quantum circuit design and writing quantum code will be provided, culminating in running this code on simulators and quantum computers. Course content will include distinctions between classical and quantum computing, the qubit, quantum gates and circuits, and quantum algorithms for query, data base search, factorization, and error correction. State of the art and future prospects of quantum technology will also be discussed. Offered by Physics & Astronomy. May not be repeated for credit.

Recommended Prerequisite: Experience with programming. MATH 203 or PHYS 301. PHYS 160, 260; or 170, 270; or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PHYS 540: *Nuclear and Particle Physics.* 3 credits.
Accelerators, detectors and related electronics; nuclear and elementary particle structure; symmetries and conservation laws; the electromagnetic, weak, and hadronic interactions; nuclear models; the quark model; and nuclear science and technology. Offered by Physics & Astronomy. May not be repeated for credit.

Registration Restrictions:

Required Prerequisites: PHYS 402[C], 402[XS], 502[B-] or 502[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.
[B-] Requires minimum grade of B-.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PHYS 575: *Atmospheric Physics I.* 3 credits.
Introduction to basic physical and chemical processes that operate in the Earth's atmosphere. Emphasis on those concepts that provide a global description of the current atmospheric state and those processes that relate to global change and atmospheric evolution. Topics include equilibrium structure, radiative transfer models, thermodynamics of various atmospheric layers, and the various processes defining these layers. Offered by Physics & Astronomy. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (PHYS 305[C] or 305[XS]) and (PHYS 262[C] or 262[XS]) and (PHYS 260[C] or 260[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PHYS 580: *Selected Interdisciplinary Topics.* 3 credits.
Selected interdisciplinary topics with a strong physics content not covered in fixed-content courses. Notes: PHYS 580 cannot be used to satisfy degree requirements for PHYS (PhD), PHAE (MA) in the standard, applied physics, and engineering physics emphases. Offered by Physics & Astronomy. May not be repeated for credit.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PHYS 581: *Topics in Renewable Energy.* 3 credits.
The course covers the physical principles for a range of renewable energies, including solar, wind, hydropower and geothermal using mathematical and other types of analysis. The course demonstrates how the application of methods and principles of physics allow us to understand the basic operation, advantages, limitations and relative merits of various renewable energy sources. Offered by Physics & Astronomy. May not be repeated for credit.

Specialized Designation: Topic Varies

Registration Restrictions:
Required Prerequisites: (PHYS 262[C] or 262[XS]) and (PHYS 266[C] or 266[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PHYS 590: *Selected Topics in Physics.* 1-6 credits.
Selected topics from recent theoretical or experimental developments and applications. Satisfies needs of professional community to keep abreast of current developments. Offered by Physics & Astronomy. May be repeated within the term for a maximum 6 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PHYS 591: *Systems for Quantum Scientists.* 3 credits.
This course will introduce students to real world problem solving in quantum information science and engineering using the principles of system architecture. These principles are useful to students independent of career path, but particularly important for a successful transition into a career in industry. Students will work together on teams to identify a scientific or technical challenge in quantum science and engineering. Key activities will include weekly meetings to plan and discuss key aspects of their challenge, meetings with industry experts regarding the principles of systems architecture, and designing a solution to their challenge. The report on the project design will be submitted in stages and will include a motivation, approach, detailed technical schematics, cost estimation, risk assessment, and risk mitigation strategies. The report will be evaluated

by GMU faculty and industrial experts, and there will be a 'pitch' style presentation as part of the final project. Offered by Physics & Astronomy. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

600 Level Courses

PHYS 600: *Special Topics in Physics.* 1-6 credits.
In-service course to strengthen and update teachers' knowledge of physics and astronomy. Offered by Physics & Astronomy. May be repeated within the term.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PHYS 611: *Electro-optics.* 3 credits.
Optical modulators, display devices, types and operation of lasers, mode locking, Q-switching, photodetectors, optical fibers. Offered by Physics & Astronomy. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: ((PHYS 502[B-], 502[XS], 684[B-] or 684[XS]) and (PHYS 513[B-], 513[XS], 685[B-] or 685[XS])).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PHYS 612: *Physics of Modern Imaging.* 3 credits.
Study of imaging methods using acoustic and electromagnetic waves to probe extended objects, and mathematical transformations to produce images from scattered waves. Topics include classical imaging, physical optics, Fourier transform, holography, tomography, seismic mapping, underwater acoustic imaging and mapping, side-looking radar, antenna arrays, applicable computer methods. Offered by Physics & Astronomy. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (PHYS 513[B-], 513[XS], 685[B-] or 685[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PHYS 613: *Computational Physics II.* 3 credits.
Study of diverse physical systems with emphasis on modeling and simulation. Study and development of numerical algorithms and techniques to obtain both numerical results and visualization of these results. Projects undertaken will draw from such areas as many-body orbital dynamics, molecular interactions, quantum systems, radiative transfer in high-temperature plasmas, stellar interiors, hydrodynamics, and cosmology. Offered by Physics & Astronomy. May not be repeated for credit.

Recommended Prerequisite: PHYS 510

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PHYS 614: *Thermodynamics and Kinetics of Materials.* 3 credits.
Advanced thermodynamics and physical kinetics with applications to materials science. The course covers an axiomatic formulation of thermodynamics, theory of phase transformations, kinetic theory of reactions and diffusion processes in solids, and interface phenomena. Possible applications considered in the course include processing and fabrication of semiconductor materials, metal oxidation and corrosion, diffusion-controlled phase growth in solid solutions, shape memory alloys, and small-size effects in physical properties of materials. Offered by Physics & Astronomy. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (MATH 113[C] or 113[XS]) and (MATH 114[C] or 114[XS]) and (MATH 213[C] or 213[XS]) and MATH 307[C] and (PHYS 262[C], 262[XS], 266[C] or 266[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PHYS 615: *Fundamentals of Materials Science.* 3 credits.
Covers fundamentals of materials science with emphasis on physical topics including crystal structure and symmetry, dislocation theory, theory of interfaces, multicomponent phase diagrams, theory of phase transformations, nano-materials, metallic glasses. Includes a term project, assignments from current literature and application of computation in materials science. Offered by Physics & Astronomy. May not be repeated for credit. Equivalent to CSI 685.

Recommended Prerequisite: CDS 385 or PHYS 385 or undergraduate degree in physics, chemistry, materials, electrical or mechanical engineering or related disciplines; or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PHYS 620: *Continuum Mechanics.* 3 credits.
Study of continuum mechanics; topics include physical concepts, mathematical formulation and solution, elastic materials, ideal fluids, viscous fluids, waves in continuous media, turbulence, thermal convection, stability considerations, high-temperature gas flows, radiative processes for momentum and energy transport, shocks, and computational fluid dynamics. Offered by Physics & Astronomy. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PHYS 628: *Relativity.* 3 credits.
Special relativity; four-dimensional space-time; general relativity; non-Euclidean geometries, geodesics, and field equations; tests of general theory of relativity; black holes; cosmology; models of the universe; remnant blackbody radiation; big bang cosmology; thermodynamics; and the universe. Offered by Physics & Astronomy. May not be repeated for credit.

Recommended Prerequisite: PHYS 303, 305, or equivalent.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PHYS 630: *Introduction to Biophysics.* 3 credits.
Introduces biophysics, focusing on physical and chemical concepts and their relation to rapidly expanding interdisciplinary interfaces among biology, chemistry, and physics. Reveals multiscale nature of biophysics, and includes exploration of macroscopic and microscopic applications. Offered by Physics & Astronomy. May not be repeated for credit. Equivalent to BINF 740.

Recommended Prerequisite: Undergraduate degree in physics, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PHYS 640: *Finite Element Analysis of Solids and Fluids.* 3 credits.
Introduction to fundamentals of finite element analysis of solid, structural, fluid, and heat transfer problems. Topics include governing equations for heat transfer, solid and fluid mechanics; finite element formulation and solution procedures; appropriate use of finite element methods including setting up an appropriate model, interpreting results, and assessing solution error. Students are expected to develop their own finite element code. Offered by Physics & Astronomy. May not be repeated for credit.

Recommended Prerequisite: PHYS 620 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PHYS 660: *Space Weather.* 3 credits.
Overview of space weather including sun, heliosphere, magnetosphere, and ionosphere. Offered by Physics & Astronomy. May not be repeated for credit. Equivalent to ASTR 660.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PHYS 665: *Planetary Atmospheres and Ionospheres.* 3 credits.
An interdisciplinary introduction to the fundamental physics and chemistry of the atmosphere-ionosphere system. The focus is on the governing equations of atmospheric and ionospheric dynamics with a systems (science) approach to the atmosphere-ionosphere coupling processes. Topics include observational and modeling techniques in the Earth's upper atmosphere as well as recent progress in planetary atmosphere-ionospheres and planetary missions. Offered by Physics & Astronomy. May not be repeated for credit.

Recommended Prerequisite: PHYS 262, MATH 214.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PHYS 683: *Mathematical Methods in Physics.* 3 credits.
Covers common mathematical methods used in physics. Topics include vector and variational calculus; functions of complex variables; integral and discrete transforms; ordinary and partial differential equations; special functions; and linear operators and matrices. Offered by Physics & Astronomy. May not be repeated for credit.

Recommended Prerequisite: Undergraduate degree in physics or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PHYS 684: *Quantum Mechanics I.* 3 credits.
Fundamental concepts of quantum mechanics, including Dirac notation, quantum dynamics, theory of angular momentum, and symmetries. Offered by Physics & Astronomy. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Applied Engineering Physics or Physics.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PHYS 685: *Classical Electrodynamics I.* 3 credits.
Deals with static and dynamic properties of electromagnetic fields as described by Maxwell's equations. Covers electrostatics, magnetostatics, boundary value problems, multipoles, time dependent fields, propagating wave solutions, and resonant structures. Offered by Physics & Astronomy. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Applied Engineering Physics or Physics.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PHYS 690: *Engineering Thermodynamics.* 3 credits.
Introduction to the basic concepts used in engineering when dealing with thermodynamic problems. Topics include equations of state, phase changes, latent heat, internal energy, enthalpy, entropy, and analysis of basic thermodynamic cycles such as Carnot cycles, power generation, internal combustion engines and refrigeration processes. Offered by Physics & Astronomy. May not be repeated for credit.

Recommended Prerequisite: PHYS 620 or PHYS 705 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PHYS 694: *Applied Mechanics of Solids.* 3 credits.
Introduction to the physical laws, mathematical formulations, and computer algorithms that are used to predict material and structural response subjected to mechanical or thermal loading. Topics covered includes mathematical description of solids, equations of motion and equilibrium, constitutive equations, principle of virtual work, and fracture mechanics. Analytical technique and numerical method are also covered. Offered by Physics & Astronomy. May not be repeated for credit.

Recommended Prerequisite: PHYS 620

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PHYS 695: *Applied Fluid Mechanics.* 3 credits.
Introduction to concepts of fluid mechanics and solving its equations using numerical techniques. The concepts and methods of computational fluid dynamics (CFD) will be introduced. Topics include fluid mechanics equations, spatial and temporal discretization, finite difference and finite volume schemes, accuracy and convergence. This course requires writing of code to solve the governing equations of fluid mechanics. Offered by Physics & Astronomy. May not be repeated for credit.

Recommended Prerequisite: PHYS 620 or PHYS 705 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

700 Level Courses

PHYS 701: *Theoretical Physics.* 3 credits.
Study of the physical basis for selection of particular mathematical tools in physics; topics include curvilinear coordinates, tensors, matrices, differential equations, special functions, complex variables, and group theory. Offered by Physics & Astronomy. May not be repeated for credit.

Recommended Prerequisite: Undergraduate degree in physics or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PHYS 703: *Seminar in Physics.* 1 credit.
A general seminar course that combines invited seminars from faculty (both internal and external) with graduate student seminars. Offered by Physics & Astronomy. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Satisfactory/No Credit scale.

PHYS 705: *Classical Mechanics.* 3 credits.
Study of classical mechanics; topics include variational principles, constrained motion, Lagrangian and Hamiltonian mechanics, canonical transformations, and applications (central forces, rigid-body motion, oscillations). Offered by Physics & Astronomy. May not be repeated for credit.

Recommended Prerequisite: Undergraduate degree in physics or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PHYS 711: *Statistical Mechanics.* 3 credits.
Topics include thermodynamics, kinetic theory, ensemble theory, quantum statistics, and applications. Offered by Physics & Astronomy. May not be repeated for credit.

Recommended Prerequisite: Undergraduate degree in physics or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:

This course is graded on the Graduate Regular scale.

PHYS 736: *Computational Quantum Mechanics.* 3 credits.
Study of the fundamental concepts of quantum mechanics from a computational point of view, review of systems with spherically symmetric potentials, many-electron-atom solutions to Schrodinger's equation, electron spin in many-electron systems, atomic structure calculations, algebra of many-electron calculations, Hartree-Fock self-consistent field method, molecular structure calculations, scattering theory computations, and solid-state computations. Offered by Physics & Astronomy. May not be repeated for credit. Equivalent to CHEM 736, CSI 783.

Registration Restrictions:
Required Prerequisites: ((PHYS 502[B-] or 502[XS]) and (PHYS 510[B-] or 510[XS])).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PHYS 760: *Space Plasma Physics.* 3 credits.
Covers plasma processes involved in today's space physics research, including different regimes of plasma; basic concepts in kinetic, fluid, and MHD plasmas; and existent waves in these media. Also covers basics of shocks, discontinuities, transport and acceleration of particles such as cosmic rays, reconnection, and MHD instabilities. Offered by Physics & Astronomy. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (PHYS 513[B-], 513[XS], 685[B-] or 685[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PHYS 780: *Advanced Selected Topics in Physics.* 3 credits.
Selected topics in physics not covered in fixed-content physics courses. Offered by Physics & Astronomy. May be repeated within the term for a maximum 6 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PHYS 784: *Quantum Mechanics II.* 3 credits.
Advanced topics in quantum mechanics. Covers density and tensor operators, approximation methods, scattering theory, and identical particles. Offered by Physics & Astronomy. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (PHYS 684[B-] or 684[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PHYS 785: *Classical Electrodynamics II.* 3 credits.
Advanced topics in electrodynamics. Covers radiation, scattering and diffraction, special relativity, relativistic particle dynamics, Lorentz transformation, 4-vectors, transformation of fields, charges and currents, Thomas precession, retarded potentials, and radiation from moving charges. Offered by Physics & Astronomy. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: PHYS 685[B-] or 685[XS].
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PHYS 786: *Quantum Field Theory of Particles and Condensed Matter.* 3 credits.
Introduction to quantum field theory and its applications in particle and condensed matter physics. Topics: second quantization, scalar bosonic and fermionic fields, symmetries and conserved currents, Dirac equation, gauge theory, quantum electrodynamics, Feynman diagrams, renormalization, Fermi llquid, symmetry breaking, superconductivity, magnetism, path integral, uantum hase transitions to topological order, etc. Offered by Physics & Astronomy. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Required Prerequisites: (PHYS 684[B-] or 684[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PHYS 796: *Directed Reading and Research.* 1-12 credits.
Reading and research on a specific topic in physics or related field under the direction of a faculty member. Offered by Physics & Astronomy. May be repeated within the term.

Recommended Prerequisite: Admission to MS program and permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Research

Grading:
This course is graded on the Graduate Special scale.

PHYS 798: *Research Project.* 3 credits.
Research project chosen and completed under the guidance of a graduate faculty member resulting in an acceptable technical report. Offered by Physics & Astronomy. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Nine graduate credits or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Thesis

Grading:
This course is graded on the Satisfactory/No Credit scale.

PHYS 799: *Master's Thesis.* 1-6 credits.
Project chosen and completed under the guidance of a graduate faculty member, which results in an acceptable technical report and oral defense. Offered by Physics & Astronomy. May be repeated within the degree.

Recommended Prerequisite: 9 graduate credits, and permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Thesis

Grading:
This course is graded on the Satisfactory/No Credit scale.

900 Level Courses

PHYS 998: *Doctoral Dissertation Proposal.* 1-12 credits.
Covers development of a research proposal under the guidance of a dissertation director and the doctoral committee. The proposal forms the basis for the doctoral dissertation. Notes: No more than 24 credits in ASTR/PHYS 998 and ASTR/PHYS 999 may be applied toward satisfying doctoral degree requirements in the physics PhD program. Out of the 24, no more than 12 credits of ASTR/PHYS 998 may be applied. Offered by Physics & Astronomy. May be repeated within the degree for a maximum 21 credits.

Recommended Prerequisite: Admission to physics doctoral program and permission of advisor.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

PHYS 999: *Doctoral Dissertation.* 1-12 credits.
Doctoral research performed under direction of dissertation director. Notes: No more than 24 credits in ASTR/PHYS 998 and ASTR/PHYS 999 may be applied toward satisfying doctoral degree requirements in the physics PhD program. Offered by Physics & Astronomy. May be repeated within the degree for a maximum 24 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy.

Enrollment is limited to Graduate level students.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

Policy and Government (POGO)

500 Level Courses

POGO 511: *Introductory Data Analysis for Policy and Government.* 3 credits.
Introduces fundamental statistical analysis for analyzing policy, government and other social science data. Focuses on problem definition, problem solving, and how to communicate results to general audience under conditions of uncertainty in public sector. Provides the core foundation for advanced graduate work in data analytics using contemporary statistical software packages. Offered by Schar School of Policy & Govt. May not be repeated for credit. Equivalent to PUBP 511.

Registration Restrictions:
Required Prerequisite: minimum score of 1 in 'Statistical Screening Exam'.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

POGO 550: *Topics in Policy and Government.* 1-3 credits.
Focuses on selected topics in policy and government not covered in fixed-content Schar school courses. Offered by Schar School of Policy & Govt. May be repeated within the term.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

POGO 580: *Topics: Advanced Skills for Policy Professionals.* 1-3 credits.
Practical seminar focusing on development of advanced qualitative and quantitative skills for the professional policy world. Offered by Schar School of Policy & Govt. May be repeated within the term for a maximum 18 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

600 Level Courses

POGO 611: *Advanced Data Analysis for Policy and Government.* 3 credits.
Introduces advanced statistical techniques to analyze policy, government and other social science data. Covers classical regression methods and their application to public policy analysis. Covers linear and non-linear regressions using cross sectional, time-series and panel data, and problems associated with applications including specification error, multicollinearity, qualitative variables, heteroskedasticity, serial correlation, and structural identification. Offered by Schar School of Policy & Govt. May not be repeated for credit. Equivalent to GOVT 712, PUAD 612, PUBP 705.

Registration Restrictions:
Required Prerequisites: (POGO 511[B-], 511[XS], PUAD 511[B-], 511[XS], PUBP 511[B-], 511[XS], GOVT 511[B-] or 511[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

POGO 646: *Policy and Program Evaluation.* 3 credits.
Practical exploration of assessment techniques used in studying results of public programs and policies, including evaluation of implementation strategies and impacts. Offered by Schar School of Policy & Govt. May not be repeated for credit. Equivalent to PUAD 646, PUBP 713.

Registration Restrictions:
Required Prerequisites: (POGO 511[C], 511[XS], PUAD 511[C], 511[XS], PUBP 511[C], 511[XS], GOVT 511[C], 511[XS], HAP 602[C], 602[XS], 719[C] or 719[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

700 Level Courses

POGO 730: *Global Economic and Human Development.* 3 credits.
Interdisciplinary examination of economic and human development in world economy. Introduces alternative concepts and theories of economic and human development, and analytical frameworks for assessing important issues that arise in development process. Topics include colonialism, economic growth, population, health, education, industrialization, and rural development. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (ITRN 503[B-], 503[XS], 504[B-], 504[XS], PUBP 720[B-] or 720[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

POGO 731: *Business and Politics in Emerging Markets.* 3 credits.
Examines developing countries that are major destination points for international financial flows and foreign direct investment. Emerging markets have become a major influence in the world economy both because of the potential for growth and the downside risks from economic crises. The course uses the new institutional economics to analyze the interplay of political, economic, and business conditions. Institutional economics is a combination of economics, economic history, and political science. Topics covered include the politics of economic reform, drivers of globalization and investment, the informal sector, and relationships of risk and reward. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

POGO 732: *Strategic Trade Controls.* 3 credits.
Equips students with a holistic, contextual, and global understanding of strategic trade, focusing on the use of trade controls to manage modern security threats. Explores supply chain security, trade control systems, and compliance through readings, case studies, and practical exercises. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:

Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

POGO 733: *Global Business and Policy.* 3 credits.
Focuses on the multinational firm (MNE) and examines the international activities of large companies as well as small and medium sized enterprises. Assesses how firms strategize across national borders and address the challenges posed by different governance structures, political economies, institutions and cultures. Theoretical concepts are applied to 'real' business situations and case studies. Offered by Schar School of Policy & Govt. May not be repeated for credit. Equivalent to ITRN 752.

Registration Restrictions:
Required Prerequisites: (ITRN 504[B-], 504[XS], PUBP 720[B-] or 720[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

POGO 734: *Country Risk Analysis.* 3 credits.
Presents a wide variety of country risk analysis methods used by corporations, financial institutions, governments, international organizations, specialized consulting groups, and publications. These methods are used to design policies, programs, and projects in the international arena. The course explores natural, commercial, economics, political and financial risk. It also provides a conceptual foundation for understanding the sources of risk, the impacts of risk on public and private sector activities, and the ways that risk can be successfully mitigated or managed. Offered by Schar School of Policy & Govt. May not be repeated for credit. Equivalent to ITRN 759.

Registration Restrictions:
Required Prerequisites: (ITRN 504[B-], 504[XS], PUBP 720[B-] or 720[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

POGO 750: *Topics in Policy and Government.* 1-3 credits.
Focuses on selected topics in policy and government not covered in fixed-content Schar school courses. Offered by Schar School of Policy & Govt. May be repeated within the term.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

POGO 793: *Big Data Analytics for Policy and Government.* 3 credits.
Big data provides an exciting resource for policy and government. However, while their use in this context brings opportunities, it also creates unique analytical and computational needs and challenges. This course provides a fundamental understanding of these issues, and the tools and techniques used for big data analysis. Methods covered in the course include network analysis, geo-spatial computation, unstructured content mining, and supervised and unsupervised machine learning. Offered by Schar School of Policy & Govt. May not be repeated for credit. Equivalent to PUBP 793.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

POGO 794: *Internship.* 1-3 credits.
Provides practical work experience in state, federal, or international agencies, or the private or non-profit sector. Requires written project integrating work experience and academic program. Requires permission of program director. Offered by Schar School of Policy & Govt. May not be repeated for credit. Equivalent to ITRN 780, PUBP 794.

Recommended Prerequisite: 12 graduate credits in the program or permission of program director.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Satisfactory/No Credit scale.

POGO 796: *Directed Readings and Research.* 1-3 credits.
Independent reading and research at master's or doctoral level on specific topic related to policy or government as agreed to by student and faculty member. Offered by Schar School of Policy & Govt. May be repeated within the term for a maximum 12 credits. Equivalent to BIOD 996, ITRN 790, PUAD 796, PUBP 796.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Regular scale.

800 Level Courses

POGO 801: *Research Design for the Social Sciences and Public Policy.* 3 credits.
Grounds students in the principles of the scientific method as the framework for investigating questions in the social sciences and public policy. Provides broad overviews of quantitative or/and qualitative methodologies, with a major emphasis on research design, including conceptualization, the role of theory, hypothesis generation, inference and bias. Offered by Schar School of Policy & Govt. May not be repeated for credit. Equivalent to PUBP 801.

Registration Restrictions:
Enrollment limited to students in a Doctor of Philosophy degree.

Enrollment limited to students in the Schar School of Policy and Gov college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

POGO 840: *Policy, Politics, and American Government Institutions.* 3 credits.
This course examines major institutions that create and implement policy in the United States of America. The course explores executive, legislative, and judicial institutions at the federal, state, and local levels. In addition, the course considers agenda-building institutions such as media, interest groups, political parties, and elections. Offered by Schar School of Policy & Govt. May not be repeated for credit. Equivalent to PUAD 840, PUBP 840.

Registration Restrictions:
Enrollment limited to students in a Doctor of Philosophy degree.

Enrollment limited to students in the Schar School of Policy and Gov college.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

POGO 841: *U.S. Political Behavior and the Process of Policymaking.* 3 credits.
This course examines the interaction of mass political behavior and the policymaking process in the American political system. Topics include the antecedents to political behavior, including political attitudes and opinions, and the policy consequences of political behavior. Emphasizes how opinions and behaviors aggregate through the interest group system and the policy process. Content is meant to complement that from POGO 840. Offered by Schar School of Policy & Govt. May not be repeated for credit. Equivalent to PUBP 841.

Registration Restrictions:
Enrollment limited to students in a Doctor of Philosophy degree.

Enrollment limited to students in the Schar School of Policy and Gov college.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

POGO 850: *PhD Professional Development Seminar.* 1 credit.
Weekly colloquium series for Schar school doctoral students. Features a cross-section of speakers from academia, government, industry and non-profit sectors. Topics include all areas of current Schar faculty research and practice.Offered by Policy, Govt, and Intl Affairs. May be repeated within the term for a maximum 4 credits. Equivalent to PUBP 850.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Enrollment limited to students in a Doctor of Philosophy degree.

Enrollment limited to students in the Schar School of Policy and Gov college.

Schedule Type: Seminar

Grading:
This course is graded on the Satisfactory/No Credit scale.

Portuguese (PORT)

100 Level Courses

PORT 110: *Elementary Portuguese.* 6 credits.
Introduces elements of grammar, vocabulary, oral skills, listening comprehension, and reading. Offered by Modern & Classical Languages. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Portuguese

200 Level Courses

PORT 201: *Intermediate Portuguese I.* 3 credits.
Further development of skills in listening, speaking, and writing. Notes: PORT 201 and 202 must be taken in sequence. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: PORT 110, or permission of department.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Portuguese

PORT 202: *Intermediate Portuguese II.* 3 credits.
Further development of skills in listening, speaking, and writing. Notes: PORT 201 and 202 must be taken in sequence. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: PORT 201, or permission of department

Schedule Type: Lecture

Grading:

This course is graded on the Undergraduate Regular scale.

Additional Course Details: Fulfills Frgn Lng requirment, Taught in Portuguese

Professional Development in Education (EDPD)

400 Level Courses

EDPD 402: *Professional Development in Elementary Literacy, and Secondary Education.* 1-6 credits.
Provides opportunity for focused study on selected topics or emerging issues in elementary, literacy and secondary education. Course may not be applied to a degree program. Offered by School of Education. May be repeated within the term for a maximum 15 credits.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Special scale.

EDPD 406: *Professional Development in Special Education and Disability Research.* 1-6 credits.
Provides opportunity for focused study on selected topics or emerging issues in special education and disability research. Course may not be applied to a degree program. Offered by School of Education. May be repeated within the term for a maximum 15 credits.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Special scale.

500 Level Courses

EDPD 501: *Professional Development in Advanced Teacher Research and Practice.* 1-6 credits.
Provides opportunity for focused study on selected topics or emerging issues in advanced teacher research and practices. Notes: Course may not be applied to a degree program. Offered by School of Education. May be repeated within the term for a maximum 15 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

EDPD 502: *Professional Development in Elementary, Literacy, and Secondary Education.* 1-6 credits.
Provides opportunity for focused study on selected topics or emerging issues in elementary, literacy and secondary education. Notes: Course may not be applied to a degree program. Offered by School of Education. May be repeated within the term for a maximum 15 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

EDPD 503: *Professional Development in Individual and Organizational Transformation.* 1-6 credits.
Provides opportunity for focused study on selected topics or emerging issues in individual and organizational transformation. Notes: Course may not be applied to a degree program. Offered by School of Education. May be repeated within the term for a maximum 15 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

EDPD 504: *Professional Development in Learning Technologies.* 1-6 credits.
Provides opportunity for focused study on selected topics or emerging issues in learning technologies. Notes: Course may not be applied to a degree program. Offered by School of Education. May be repeated within the term for a maximum 15 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

EDPD 505: *Professional Development in Educational Psychology, Research Methods and Education Policy.* 1-6 credits.
Provides opportunity for focused study on selected topics or emerging issues in educational psychology, research methods and education policy. Notes: Course may not be applied to a degree program. Offered by School of Education. May be repeated within the term for a maximum 15 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

EDPD 506: *Professional Development in Special Education and Disability Research.* 1-6 credits.
Provides opportunity for focused study on selected topics or emerging issues in special education and disability research. Notes: Course may not be applied to a degree program. Offered by School of Education. May be repeated within the term for a maximum 15 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

EDPD 507: *Professional Development in Health and Human Performance.* 1-6 credits.
Provides opportunity for focused study on selected topics or emerging issues in health and human performance. Notes: Course may not be applied to a degree program. Offered by School of Education. May be repeated within the term for a maximum 15 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

EDPD 508: *Professional Development in Sport, Recreation and Tourism.* 1-6 credits.
Provides opportunity for focused study on selected topics or emerging issues in sport, recreation and tourism. Notes: Course may not be applied to a degree program. Offered by School of Education. May be repeated within the term for a maximum 15 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

Provost (PROV)

100 Level Courses

PROV 110: *Special Topics.* 1-3 credits.
Exploration of leadership in a specific career field(s); changing nature of that industry; understanding of organizational structures in the field(s); and introduction to career and internship opportunities for students who aspire to a career in that field. Offered by Provost's Office. May be repeated within the term.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment is limited to Non-Degree or Undergraduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Special scale.

PROV 150: *International Experience: Global Understanding.* 0 credits.
This course is designed for students studying abroad for a full semester (e.g. 12-15 credits and not a three week course) to fulfill their Mason Core Global Understanding requirement. Offered by Provost's Office. Limited to three attempts.

Mason Core: Global Understanding

Schedule Type: Independent Study

Grading:
This course is graded on the Satisfactory/No Credit scale.

200 Level Courses

PROV 210: *Comprehensive Topics in Leadership.* 1-3 credits.
Comprehensive exploration of leadership in a specific career field(s); changing nature of that industry; understanding of organizational structures in the field(s); and introduction to career and internship opportunities for students who aspire to a career in that field. Offered by Provost's Office. May be repeated within the degree for a maximum 3 credits.

Specialized Designation: Topic Varies

Schedule Type: Lecture

Grading:
This course is graded on the Satisfactory/No Credit scale.

300 Level Courses

PROV 342: *The George Mason Debates in Current Affairs.* 3 credits.
In-depth investigation of one or more contemporary public policy issues. Examines the selected topics as discussed by scholars, public interest groups and think tanks, government officials, and the news media. Texts and guest lecturers presenting a wide range of perspectives are an important feature. Offered by Provost's Office. May be repeated within the degree for a maximum 6 credits.

Mason Core: Synthesis

Recommended Prerequisite: Completion or concurrent enrollment in all other required general education courses.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

600 Level Courses

PROV 601: *Thriving in Your Graduate Program.* 1 credit.
Gaining greater insight into student learning theories, the nature of research and scholarship, higher education trends, and the various career paths available to individuals with graduate degrees is important for students in the early stages of their academic programs. This seminar is designed for early career MFA and doctoral students to facilitate their success as graduate students at Mason. Offered by Provost's Office. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Satisfactory/No Credit scale.

PROV 699: *Special Topics in Graduate Education.* 0-3 credits.
This course explores selected topics in Graduate Education across all disciplines. When offered, each course will have a course description based on special topics selected for a particular semester. Offered by the Office of the Provost, every offered section will provide graduate students an educational experience with the ultimate goal of maximizing their academic success and well-being. Notes: May be repeated if topics substantially differ. Offered by Provost's Office. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Satisfactory/No Credit scale.

700 Level Courses

PROV 701: *Preparing for Academic Careers.* 1 credit.
This seminar will be devoted to helping doctoral students explore and prepare for future academic careers and to strengthening their instructional effectiveness. The seminar will provide a clearer understanding of the roles and responsibilities of being a faculty member. Participants will learn how to construct a meaningful statement of teaching philosophy and plan for a course through syllabus design. Notes: This course does not apply to required credits for doctoral degrees. Offered by Provost's Office. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Satisfactory/No Credit scale.

800 Level Courses

PROV 801: *Community-engaged Interdisciplinary Methods I.* 3 credits.
This course sequence is designed to provide graduate students with a firm foundation in applying interdisciplinary design thinking to develop creative solutions to real world challenges with the objective of creating actionable knowledge in a community. In close collaboration with community partners, students will receive hands-on training to define problems, understand the challenges associated with data in the real world, collaborate on multidisciplinary teams, communicate with diverse audiences, integrate multiple perspectives including disciplinary knowledge, lived experiences, and community insights, and apply multidisciplinary methods to create actionable knowledge. In the first course, multidisciplinary teams will immerse themselves in community settings to identify and articulate a problem with participation of community stakeholders, and design a proposed solution. Offered by Provost's Office. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Fieldwork

Grading:
This course is graded on the Graduate Regular scale.

PROV 802: *Community-engaged Interdisciplinary Methods II.* 3 credits.
This course sequence is designed to provide graduate students with a firm foundation in applying interdisciplinary design thinking to develop creative solutions to real world challenges with the objective of creating actionable knowledge in a community. In close collaboration with community partners, students will receive hands-on training to define problems, understand the challenges associated with data in the real world, collaborate on multidisciplinary teams, communicate with diverse audiences, integrate multiple perspectives including disciplinary knowledge, lived experiences, and community insights, and apply multidisciplinary methods to create actionable knowledge. In the second course of the series, multidisciplinary graduate student teams will further develop and refine their project deliverable and generate preliminary results, data and/or prototype solutions. Offered by Provost's Office. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Fieldwork

Grading:
This course is graded on the Graduate Regular scale.

Psychology (PSYC)

100 Level Courses

PSYC 100: *Basic Concepts in Psychology.* 3 credits.
Introduces psychology as scientific discipline. Examines concepts and methods in learning, motivation, development, personality, and measurement. Offered by Psychology. Limited to three attempts.

Mason Core: Social/Behavioral Sciences

Schedule Type: Lecture, Recitation

Grading:
This course is graded on the Undergraduate Regular scale.

200 Level Courses

PSYC 211: *Developmental Psychology.* 3 credits.
Review of major developmental theories including perspectives of childhood, adolescence, adulthood, and old age. Offered by Psychology. Limited to three attempts.

Mason Core: Social/Behavioral Sciences

Recommended Prerequisite: PSYC 100 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PSYC 231: *Social Psychology.* 3 credits.
Study of human behavior development in a social matrix, including such topics as socialization, cultural behavior, group norms, and attitude formation. Offered by Psychology. Limited to three attempts.

Mason Core: Social/Behavioral Sciences

Recommended Prerequisite: PSYC 100 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PSYC 260: *Basic Research Methods in Psychology.* 1-3 credits.
Introduction to research methods in psychology in the context of assisting faculty with research; individualized sections by arrangement with faculty. Methods taught vary but generally include basic data collection and recordkeeping methods in research. Notes: Course culminates in a paper describing techniques learned. No more than 6 credits in PSYC 260, 350, and 460 can be used toward a psychology major. Offered by Psychology. May be repeated within the term.

Recommended Prerequisite: A 3.0 overall G.P.A., and a written proposal approved before registration by the instructor and the department chair.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

300 Level Courses

PSYC 300: *Statistics in Psychology.* 4 credits.
Descriptive and inferential statistics in design, analysis, and interpretation of psychological research with practical application using computers in laboratory. Notes: Students are strongly encouraged to take PSYC 301 concurrently. Offered by Psychology. Limited to three attempts.

Recommended Prerequisite: 6 credits of PSYC and 3 credits of MATH course work or permission of instructor.

Recommended Corequisite: Students are strongly encouraged to take PSYC 301.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PSYC 301: *Research Methods in Psychology.* 4 credits.
General research design in psychology, with an emphasis on experimental design and control. Topics include use of human participants in research, reliability and validity, observational methods, and survey and longitudinal designs. Notes: Students are strongly encouraged to take PSYC 300 concurrently. Laboratory work will include designing and running research studies and writing manuscripts using appropriate style and format. Offered by Psychology. Limited to three attempts.

Specialized Designation: Writing Intensive in Major

Recommended Prerequisite: PSYC 100 and either PSYC 300, STAT 250, or STAT 350 or equivalent.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PSYC 304: *Principles of Learning.* 4 credits.
Principles of animal learning, including such topics as classical and operant conditioning, discrimination learning, and animal cognition. Notes: Laboratory projects require working with computer simulations. Offered by Psychology. Limited to three attempts.

Specialized Designation: Writing Intensive in Major

Recommended Prerequisite: PSYC 300 or permission of instructor.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PSYC 309: *Sensation, Perception, and Information Processing.* 4 credits.
Principles of perception, including topics such as psychophysics, perceptual organization, perceptual learning, and perceptual constancies. Notes: Laboratory projects demonstrate and investigate perceptual phenomena. Offered by Psychology. Limited to three attempts.

Specialized Designation: Writing Intensive in Major

Recommended Prerequisite: PSYC 300 and PSYC 301.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PSYC 312: *Educational Psychology.* 3 credits.
Enables students to apply psychological principles to the learning process in the classroom context. Examines the theoretical and applied aspects of learning, motivation, human development, personality, assessment, and evaluation in educational settings. Corresponding implications for effective teaching will be discussed. Offered by Psychology. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PSYC 313: *Child Development.* 3 credits.
Study of human psychological development from conception to adolescence including such topics as genetic factors, emotional and intellectual growth, and environmental influences. Offered by Psychology. Limited to three attempts.

Recommended Prerequisite: PSYC 100 or equivalent.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PSYC 314: *Adolescent Development.* 3 credits.
Study of the biological and cultural changes accompanying adolescence, including the effect of these changes on emotional, intellectual, and social development. Offered by Psychology. Limited to three attempts.

Recommended Prerequisite: PSYC 100 or equivalent.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PSYC 317: *Cognitive Psychology.* 3 credits.
An in-depth overview of important topics in cognitive psychology, including memory, attention, pattern recognition, problem solving, reasoning, and psycholinguistics. Offered by Psychology. Limited to three attempts.

Recommended Prerequisite: Six credits of psychology or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PSYC 320: *Psychological Tests and Measurements.* 4 credits.
Examination and application of principles underlying the theory, interpretation, and administration of psychological tests, including a study of tests of intelligence, achievement, and ability. This course may count for both the Applied Psychology and Experimental Psychology lab requirements or for both the Applied Psychology and Technical Writing requirements. Offered by Psychology. Limited to three attempts.

Recommended Prerequisite: PSYC 300 or permission of instructor.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PSYC 321: *Clinical Psychology.* 3 credits.
Examines evidence-based psychological assessment and psychotherapy techniques to understand, prevent, and treat psychological distress and dysfunction and promote well-being. Offered by Psychology. Limited to three attempts.

Recommended Prerequisite: PSYC 325 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PSYC 322: *Behavior Modification.* 3-5 credits.
Examination of experimental principles of human and animal learning within theoretical framework of applied behavior analysis, including design, implementation, and evaluation of operant intervention programs across a wide variety of human situations. Offered by Psychology. Limited to three attempts.

Recommended Prerequisite: PSYC 324 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PSYC 324: *Personality Theory.* 3 credits.
Introduction to classical and contemporary theories of personality, and comparative evaluation of major theories in terms of relevant studies. Offered by Psychology. Limited to three attempts.

Recommended Prerequisite: PSYC 100 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PSYC 325: *Abnormal Psychology.* 3 credits.
Study of development of abnormal behavior patterns, including such topics as methods of diagnosis and prevention of serious mental disorders such as psychosomatic disorders, psychoses, character disorders, and intellectual disability. Offered by Psychology. Limited to three attempts.

Recommended Prerequisite: PSYC 100 and either PSYC 211, 231, or 324 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PSYC 326: *Therapeutic Communication Skills.* 3 credits.
Introduction to understanding and use of basic therapeutic communication skills used in clinical and counseling psychology. Offered by Psychology. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: PSYC 325[C-], 325[XS] or L325.
[C-] Requires minimum grade of C-.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:

This course is graded on the Undergraduate Regular scale.

PSYC 327: *Psychology in the Community.* 3 credits.
Individual placements in applied psychology settings. Notes: A maximum of 6 credits of PSYC 327, 328, 421, and 422 can be applied to the psychology major. Offered by Psychology. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: PSYC major with 6 hours of PSYC and permission of associate chair for undergraduate studies.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

PSYC 328: *Psychology in the Community Laboratory.* 1 credit.
Consists of a one-hour service learning component linked to selected psychology courses. Notes: A maximum of 6 credits of PSYC 327, 328, 421, and 422 can be applied to the psychology major. Offered by Psychology. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: PSYC major with 6 hours of PSYC and permission of instructor and associate chair for undergraduate studies.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

PSYC 333: *Industrial and Organizational Psychology.* 3 credits.
Examination of application of psychological principles and methods to problems commonly encountered in business and industry. Offered by Psychology. Limited to three attempts.

Recommended Prerequisite: PSYC 100 and PSYC 300; or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PSYC 335: *Psychology of Creativity and Innovation.* 3 credits.
Creativity and innovation take place in many domains such business, science and the arts. Learn the distinction between creativity and innovation. Apply findings from the scientific literature about the antecedents of creativity and innovation including emotions, cognition, individual differences, and social contexts. Experiment with ways to enhance your creativity and skills for innovation. Offered by Psychology. Limited to three attempts.

Recommended Prerequisite: PSYC 100 or permission of instructor.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

PSYC 340: *Human Factors Psychology.* 3 credits.
Reviews history and current practice of optimal product and system design as a function of psychology. Includes a brief history of human factors psychology, a review of human memory and attentional systems as they relate to product and system design, and an introduction to current methods used to analyze and redesign products and systems for optimal human interaction. Offered by Psychology. Limited to three attempts.

Recommended Prerequisite: PSYC 100 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PSYC 350: *Directed Reading and Research in Psychology.* 1-3 credits.
Library research in psychology, culminating in a substantial formal paper; individualized sections by arrangement with faculty. Notes: No more than 6 credits in PSYC 260, 350, and 460 can be used toward psychology major. Offered by Psychology. May be repeated within the term.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

PSYC 362: *Psychology of Gender.* 3 credits.
Behavior and attitudes of women; influence of chromosomes and hormones on behavior, influence of culture on sex role differentiation, and theories of sex role development. Offered by Psychology. Limited to three attempts.

Recommended Prerequisite: PSYC 100, BIOL 103, and BIOL 104 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PSYC 372: *Biopsychology.* 3 credits.
Survey of neuroscience, including basic neuroanatomy, neural and synaptic transmission, neural mechanisms underlying normal and abnormal behavior, and biological mechanisms of drug action. Students may earn credit for PSYC 372 and either PSYC 375 or PSYC 376, but they may not earn credit for all three. Offered by Psychology. Limited to three attempts.

Recommended Prerequisite: PSYC 100, BIOL 103 with BIOL 106 & BIOL 107; or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PSYC 373: *Biopsychology Laboratory.* 2 credits.
Functional anatomy and physiology of the brain, including dissection of brain and eye, and a demonstration and practice in research methods for studying physiological mechanisms underlying behavior. Offered by Psychology. Limited to three attempts.

Recommended Prerequisite: PSYC 372 or 375, or permission of instructor. Concurrent enrollment is also permitted.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

PSYC 375: *Brain and Sensory Processes.* 3 credits.
First half of comprehensive survey of neuroscience, including basic neuroanatomy, neural and synaptic transmission, neural mechanisms underlying normal and abnormal behavior, and biological mechanisms of drug action. Notes: Students may earn credit for 372 and either 375 or 376, but they may not earn credit for all three. Offered by Psychology. Limited to three attempts.

Recommended Prerequisite: PSYC 100 with a grade of C- or better, and BIOL 103, BIOL 106 & 107, or BIOL 213; or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PSYC 376: *Brain and Behavior.* 3 credits.
Second half of a comprehensive survey of neuroscience, including neural mechanisms underlying normal and abnormal behavior. Notes: Students may earn credit for 372 and either 375 or 376, but they may not earn credit for all three. Offered by Psychology. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: PSYC 372[C], 372[XS], 375[C], 375[XS], L372 or L375.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PSYC 379: *Applied Cross-Cultural Psychology.* 3 credits.
A review of important landmarks in cross-cultural research, showing how this research impacts psychology as a discipline. Emphasizes an empirical approach to cross-cultural study and includes topics such as theoretical and empirical developments in cross-cultural psychology, development of coherent schemas to guide cross-cultural research and interventions, comparison of psychology's goals and assumptions in Western and other cultures, and integration of course materials into educational and career goals of students. Offered by Psychology. Limited to three attempts.

Mason Core: Global Understanding

Recommended Prerequisite: PSYC 100 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PSYC 380: *Introduction to Forensic Psychology.* 3 credits.
Explores the differing, yet varied facets of the field of forensic psychology including landmark legal cases relevant to psychology, potential careers in forensic psychology, police psychology, expert testimony, forensic psychological assessment, psychopathy, homeland security, ethics, correctional psychology, and issues in working in the juvenile justice system. Offered by Psychology. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PSYC 381: *Mental Illness and Criminal Justice.* 3 credits.
Examines the frequent intersection of individuals diagnosed with severe mental illness and the criminal justice system. Includes case studies that demonstrate possible judicial, therapeutic, correctional, and post-adjudication outcomes. Offered by Psychology. Limited to three attempts.

Recommended Prerequisite: PSYC 325.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PSYC 382: *Psychology of Crime Victims.* 3 credits.
Explores short-term and long-term psychological effects of crime on victims through interviews with survivors of childhood abduction, elder abuse, intimate partner violence, and child abuse, among others. Evaluates roles and responsibilities of mental professionals and law enforcement when interacting with crime victims. Offered by Psychology. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PSYC 399: *Psychology: College to Career.* 3 credits.
Emphasizes development and readiness for a profession in the social sciences through self-assessment and professional skill acquisition. Offered by Psychology. Limited to three attempts.

Recommended Prerequisite: At least 30 hours of completed college coursework and a declared major in the social sciences or permission of the instructor.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

PSYC 405: *Mystery, Madness, and Murder.* 3 credits.
Multidisciplinary approach to taboo topics that fascinate and frighten us. Instructors from disciplines across the arts and sciences bring expertise and diverse perspectives to provocative issues such as cannibalism and serial murder. Students learn to think critically and objectively while examining use in myth, literature, and popular culture. Offered by Psychology. Limited to three attempts.

Mason Core: Synthesis

Recommended Prerequisite: PSYC 100 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PSYC 406: *Psychology of Communication.* 3 credits.
An examination of the behavior of communicating across species and sensory modalities, with an emphasis on the evolutionary basis for the various communication strategies used by animals and humans. Offered by Psychology. Limited to three attempts.

Mason Core: Synthesis

Recommended Prerequisite: PSYC 100 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PSYC 408: *Psychological Fitness.* 3 credits.
Evaluates and applies scientific research on psychological exercises to increase one's cognitive, behavioral, emotional, and physical health. Offered by Psychology. Limited to three attempts.

Recommended Prerequisite: PSYC 100.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PSYC 410: *The Psychology of Environmental Stewardship.* 3 credits.
Reviews theory and research from social psychology on encouraging behavioral and lifestyle changes that contribute to the conservation of natural resources and lead to reductions in harm to the environment. Theories reviewed include the theory of reasoned/action planned, social norms theories, and theories of self-regulation as applied to the conservation of energy, water, green spaces, and other issues. Offered by Psychology. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PSYC 414: *Behavior Disorders of Childhood.* 3 credits.
Review of the theories, methods, and research dealing with emotional and behavioral disorders of children. Offered by Psychology. Limited to three attempts.

Recommended Prerequisite: PSYC 313 and 325 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PSYC 415: *Psychological Factors in Aging.* 3 credits.
Examination of the sensory, perceptual, intellectual, personality, health, and familial changes that occur as people age and adjust into their later years. Common and more serious adjustment difficulties and developments are discussed with attention to impacts on the individual and the family. Offered by Psychology. Limited to three attempts.

Recommended Prerequisite: PSYC 100 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PSYC 417: *Science of Well Being.* 3 credits.
This course will examine and interpret the latest research in social, personality, and clinical psychology on well-being, character strengths, and personal growth. Emphasis will be placed on the ways in which scientists generate hypotheses regarding the nature of positive psychological traits and processes and the methods by which these ideas are tested. Offered by Psychology. Limited to three attempts.

Recommended Prerequisite: PSYC 100 or permission of instructor

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PSYC 418: *Death, Dying, and Grieving.* 3 credits.
Advanced survey of processes of grieving and their relationship to death and dying. Topics include ways of dying, effects of death on loved ones, and care for the terminally ill. Offered by Psychology. Limited to three attempts. Equivalent to PSYC 518.

Recommended Prerequisite: PSYC 100 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PSYC 423: *Group Psychotherapy Techniques.* 3 credits.
Review of theory and methods of group therapy with emphasis on humanistic and interpersonal approaches, including applications to family therapy, alcoholism, and drug abuse. Offered by Psychology. Limited to three attempts.

Recommended Prerequisite: PSYC 324 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PSYC 427: *Community Engagement for Social Change.* 3 credits.
Explores social problems and interpersonal, intrapersonal, and social aspects of addressing them. Addresses both theoretical aspects of social problems through readings and class discussion and application through community service. This course may count for both Applied Psychology and Professional Development requirements. Offered by Psychology. Limited to three attempts.

Mason Core: Synthesis

Recommended Prerequisite: PSYC 100 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PSYC 430: *Clinical Practicum in Psychology.* 3 credits.
Gain professional experience in a clinical setting. This course takes place at the GMU Center for Psychological Services, a mental health training center that serves the community. Enrolled students provide reception room service to clients at the center, learning aspects of the center administration and acquiring relevant skills in the field. This course may count for both Applied Psychology and Professional Development requirements. Offered by Psychology. May be repeated within the degree for a maximum 6 credits.

Schedule Type: Fieldwork

Grading:

This course is graded on the Undergraduate Regular scale.

PSYC 435: *Personnel Training and Development: A Psychological Perspective.* 3 credits.
Overview and critique of training methods used in industry from viewpoint of psychological theory, including simulations, on-the-job training, supervisory/leadership skills training, computer-assisted instruction, and programmed texts. Principles of needs analysis, program development, and program evaluation are discussed within framework of industrial psychology. Offered by Psychology. Limited to three attempts.

Recommended Prerequisite: PSYC 333, PSYC 320 (may be taken concurrently) or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PSYC 440: *Forensic Psychology: Science and Pseudoscience.* 3 credits.
Provides a critical, evidenced-based, examination of common psychological practices and constructs in the field of forensic psychology including psychological assessments, expert testimony, risk assessment, hypnosis, criminal profiling, polygraph examination, and methods of interrogation. Offered by Psychology. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PSYC 441: *Criminal Behavior: Psychological and Neurological Aspects.* 3 credits.
Considers the psychological factors and structural and functional neurological differences that influence criminal behaviors including murder, sexual assault, fraud, intimate partner violence, and arson. The predictive and explanatory abilities of neuroimaging with respect to the criminal acts in question, as well as the role of neuroimaging in the judicial system, will also be explored. Offered by Psychology. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PSYC 460: *Independent Study in Psychology.* 1-4 credits.
Advanced research methods in psychology in context of individual student projects or assisting with research on faculty projects; individual sections by arrangement with faculty. Notes: No more than 6 credits in PSYC 260, 350, and 460 can be used toward psychology major. Offered by Psychology. May be repeated within the term.

Recommended Prerequisite: 18 credits of PSYC, including PSYC 301 (grade of C or better), a 2.500 GPA in PSYC, and a written proposal approved before registration by the instructor and the department.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

PSYC 461: *Special Topics.* 1-3 credits.
Selected topics reflecting interest in specialized areas. Notes: Topic announced in advance. May be repeated when topic is different. Offered by Psychology. May be repeated within the term.

Specialized Designation: Topic Varies

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PSYC 462: *Selected Topics in Forensic Psychology.* 3 credits.
Selected topics reflecting interest in forensic psychology. Notes: May be repeated for credit when topic is different. Offered by Psychology. May be repeated within the term.

Specialized Designation: Topic Varies

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PSYC 465: *Pioneering Ideas in Psychology.* 3 credits.
Historical background and major theoretical systems in modern psychology. Approaches include behaviorism, cognitive/information processing approaches, and psychodynamic theories. Offered by Psychology. Limited to three attempts.

Recommended Prerequisite: PSYC 100 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PSYC 466: *Psychology of Intimate Relationships.* 3 credits.
Advanced survey of theories and research related to intimate relationships, including romantic relations and those among family members and friends in diverse cultural and relationship contexts. Offered by Psychology. Limited to three attempts.

Recommended Prerequisite: PSYC 100 and PSYC 231; PSYC 324 recommended.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PSYC 467: *The Psychology of Working in Groups and Teams.* 3 credits.
Teaches knowledge and the skills to meet communication, interpersonal, and task-related challenges that arise when functioning in work teams. Through readings, classroom activities, and applied problem-solving exercises, students acquire or refine team-related competencies. Students study theory of group and team processes while gaining insight from feedback on their behavior in exercises to become more effective team members. Offered by Psychology. Limited to three attempts.

Recommended Prerequisite: 60 credit hours, including PSYC 100, or permission of instructor.

Schedule Type: Lecture

Grading:

This course is graded on the Undergraduate Regular scale.

PSYC 472: *Current Topics in Brain and Behavior.* 3 credits.
Rotating topics. Physiological mechanisms underlying behavior. Selected topics include neuronal bases of learning and memory, Alzheimer's disease, and biological bases of addiction. Notes: May be repeated with approval of instructor. Offered by Psychology. May be repeated within the term for a maximum 6 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: PSYC 372 or PSYC 375, and PSYC 376; or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PSYC 480: *Biological Bases of Alzheimer's Disease.* 3 credits.
A survey of the causes, symptoms, drug treatments, risk factors and preventative measures associated with Alzheimer's disease. Offered by Psychology. Limited to three attempts.

Recommended Prerequisite: PSYC 375, PSYC 376, equivalent course, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

PSYC 490: *Psychology Honors I.* 3 credits.
Review of topics and issues in psychology, including historical overview, theory and supporting data, and influences on behavior. Notes: Topics vary. Offered by Psychology. Limited to three attempts.

Specialized Designation: Mason Impact.

Recommended Prerequisite: Admission to psychology department Honors program.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

PSYC 491: *Psychology Honors II.* 3 credits.
Introduces advanced statistics, research methodologies, statistics packages, computing and information technology, and library technology appropriate for psychological research and pedagogy. Notes: Students required to complete proposal in preparation for admission to Psychology Honors III. Offered by Psychology. Limited to three attempts.

Specialized Designation: Mason Impact.

Recommended Prerequisite: PSYC 300, 305 and 490.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

PSYC 492: *RS: Psychology Honors III.* 3 credits.
Completion of final honors project or thesis. Students must complete project or thesis, and present oral defense to committee and poster to class. Students also expected to prepare proposal to present project or thesis at regional or national conference, or prepare manuscript for publication in appropriate journal. Offered by Psychology. Limited to three attempts.

Specialized Designation: Research/Scholarship Intensive

Recommended Prerequisite: PSYC 491 and approval of final honors project for thesis.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

PSYC 499: *Senior Thesis.* 3 credits.
Directed research on topic agreed on by student and advisor. Notes: Students should take PSYC 460 with same advisor to develop thesis proposal before registering for PSYC 499. Students must complete thesis and defend it orally before advisor and two faculty members. Offered by Psychology. Limited to three attempts.

Recommended Prerequisite: Psychology major with 84 hours, an experimental psychology laboratory course, PSYC 460, Permission of Instructor, and prior approval of thesis proposal.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

500 Level Courses

PSYC 518: *Death, Dying, and Grieving.* 3 credits.
Advanced survey of processes of grieving and their relationship to death and dying. Topics include ways of dying, effects of death on loved ones, and care for the terminally ill. Offered by Psychology. May not be repeated for credit. Equivalent to PSYC 418.

Recommended Prerequisite: PSYC 100

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Enrollment is limited to Graduate or Undergraduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PSYC 530: *Cognitive Engineering: Cognitive Science Applied to Human Factors.* 3 credits.
Application of cognitive theory to understand and predict interactions among human cognition, artifact, and task. Discusses recent research and case studies that emphasize empirical research, analytical modeling techniques, systems design, and development of tools and methods. Offered by Psychology. May not be repeated for credit.

Recommended Prerequisite: An experimental lab course or permission of instructor.

Registration Restrictions:

Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Enrollment is limited to Graduate or Undergraduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PSYC 531: *Mammalian Neurobiology.* 3 credits.
Functional anatomy of brains of mammals, with emphasis on regional and systems neuroanatomy of humans. Anatomy correlated with material from clinical neurology where possible. Laboratory component includes brain dissections and clinical correlations. Offered by Psychology. May not be repeated for credit. Equivalent to BIOL 516.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Enrollment is limited to Graduate or Undergraduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Graduate Regular scale.

PSYC 552: *Histology/Histochemistry of the Brain.* 4 credits.
Explores conceptual basics and provides hands-on experience in techniques for studying brain tissue, including stereotaxic surgery, perfusion, sectioning, Nissl and myelin stains, enzyme histochemistry, immunohistochemistry, in situ hybridization, and quantitative receptor autoradiography. Offered by Psychology. May not be repeated for credit.

Recommended Prerequisite: PSYC 372 or equivalent.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Enrollment is limited to Graduate or Undergraduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Graduate Regular scale.

PSYC 555: *Neuroimaging.* 3 credits.
Covers functional magnetic resonance imaging (fMRI) methods, experimental design and analysis issues in fMRI, structural MRI techniques and how they can contribute to cognitive neuroscience, and event-related potential methods. Offered by Psychology. May not be repeated for credit.

Recommended Prerequisite: Graduate enrollment in either Cognitive & Behavioral Neuroscience or Human Factors & Applied Cognition programs, or instructor approval.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Enrollment is limited to Graduate or Undergraduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PSYC 557: *Psychometric Methods.* 3 credits.
Examines concepts of psychological measurement with emphasis on predictor test and criterion development. Discusses reliability, validity, and specialized techniques to develop tests of ability, interest, and personality. Offered by Psychology. May not be repeated for credit.

Recommended Prerequisite: PSYC 611 or permission of instructor

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PSYC 558: *Neuronal Bases of Learning and Memory.* 3 credits.
Examines neuronal mechanisms involved in learning and memory, in animals ranging from invertebrates to humans. Offered by Psychology. May not be repeated for credit.

Recommended Prerequisite: PSYC 372, or 375 and 376; or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Enrollment is limited to Graduate or Undergraduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PSYC 559: *Behavioral Chemistry.* 3 credits.
Neurochemistry and neuroendocrinology, including neurotransmitter synthesis, genetic aspects of neural functioning, mechanisms of action of neurotransmitters and second messenger systems, regulation of neuroendocrine systems, neuroendocrine effects on behavior, and neuroimmunology. Offered by Psychology. May not be repeated for credit.

Recommended Prerequisite: PSYC 372, or 375 and 376; or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Enrollment is limited to Graduate or Undergraduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PSYC 562: *Research Methods in Human Experimental Psychology.* 3 credits.
Hands-on approach to selected current and/or classical human experimental psychology research methods. Course topics include experimental design, including psychophysical and physiological experimentation. In addition, mathematical, cognitive modeling and simulation, as well as advanced statistical techniques will be covered. Offered by Psychology. May not be repeated for credit.

Recommended Prerequisite: Graduate enrollment in either Cognitive and Behavioral Neuroscience or Human Factors and Applied Cognition programs.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Enrollment is limited to Graduate or Undergraduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PSYC 563: *Laboratory Methods in Cognitive and Behavioral Neuroscience.* 3 credits.
Specialized instruction on a variety of laboratory methods that could include EEG (event related potentials and oscillations), brain stimulation (eg., tDCS, TMS), histological, genetic, electrophysiological, and/or behavioral techniques, depending on the instructor/semester. Specific topic will vary from section to section. May be repeated for credit as long as it is a different section/topic. Upper level undergraduate students may register with permission of instructor. Offered by Psychology. May be repeated within the degree for a maximum 9 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Enrollment is limited to Graduate or Undergraduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Graduate Regular scale.

PSYC 566: *Cognitive and Perceptual Development.* 3 credits.
Survey of theory and the research on development of perception, memory, concepts, problem solving, intelligence, and academic skills in children. Offered by Psychology. May not be repeated for credit.

Recommended Prerequisite: 6 credits of child psychology and course in experimental psychology or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Enrollment is limited to Graduate or Undergraduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PSYC 592: *Special Topics.* 1-6 credits.
Special topics reflecting interests in specialized areas. Notes: Topic announced in advance. May be repeated when topic is different. Offered by Psychology. May be repeated within the term for a maximum 9 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PSYC 597: *Directed Reading and Research.* 1-6 credits.
Independent reading or research on topic agreed on by student and faculty member. Notes: Directed reading or research for MA students in psychology. Offered by Psychology. May be repeated within the term for a maximum 6 credits.

Recommended Prerequisite: Permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Regular scale.

PSYC 598: *Introduction to the Science and Practice of Industrial and Organizational Psychology.* 3 credits.
Introduces students to the building blocks of I-O Psychology and developing key competencies for their success in the Master of Professional Studies in Applied and Industrial and Organizational Psychology program. Course topics include an overview of I-O theory, applied research methods, data analytics, ethics, and demographic diversity. Offered by Psychology. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

600 Level Courses

PSYC 601: *Applied Data Analysis in Psychology I.* 3 credits.
Introduces fundamental statistical concepts for applied psychological research. Concepts include descriptive statistics, inferential statistics and hypothesis testing, Analysis of Variance, and Linear Regression. The course presents these topics from an applied perspective and also covers data visualization and presentation of results to clients. Offered by Psychology. Limited to three attempts.

Registration Restrictions:
Enrollment limited to students with a class of Graduate.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PSYC 602: *Applied Data Analysis in Psychology II.* 3 credits.
Covers advanced statistical concepts and approaches for applied psychological research, such as multivariate techniques, longitudinal analyses, and other more complex approaches. A key emphasis will be on using these techniques to assess applied issues, such as return on investment of interventions and utility analyses. Offered by Psychology. Limited to three attempts.

Registration Restrictions:
Enrollment limited to students with a class of Graduate.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PSYC 603: *Psychological Research Methods.* 3 credits.
Covers basic principles of research methods for applied psychology contexts. The focus on this course is on learning how to interpret and design research studies and survey measures. Topics include basic concepts important to survey design and research methods, and overview of types of research design, and basic issues related to communication of research to lay audiences. Offered by Psychology. Limited to three attempts.

Registration Restrictions:
Enrollment limited to students with a class of Graduate.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PSYC 611: *Advanced Statistics.* 4 credits.
Integrates basic psychological statistics and measurement issues from advanced perspective. Lab work includes using computer packages for data handling and analyses. Offered by Psychology. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Enrollment is limited to students with a major in Psychology.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Graduate Special scale.

PSYC 612: *Advanced Statistics.* 4 credits.
Open only to degree students. Integrates basic psychological statistics with overview of research methodology including experimental, quasi-experimental, field approaches, and measurement issues from advanced perspective. Lab work includes use of computer packages for data handling and analyses. Notes: Students must enroll in 611 and 612 in sequential semesters. Offered by Psychology. May not be repeated for credit.

Recommended Corequisite: Open only to degree students.

Registration Restrictions:
Required Prerequisite: PSYC 611[B].
[B] Requires minimum grade of B.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Graduate Regular scale.

PSYC 614: *The Psychology of Aging.* 3 credits.
Review of the experimental literature in psychology of aging, including intellectual functioning, personality and adjustment, minor and major adjustment problems, and role changes in later life. Offered by Psychology. May not be repeated for credit.

Recommended Prerequisite: PSYC 100 and undergraduate or graduate course in aging.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Enrollment is limited to Graduate or Undergraduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PSYC 615: *Language Development.* 3 credits.
Seminar covering theory and research on acquisition of language, including biological and environmental influences and constraints; research methods; role of parents; individual and cultural differences; links between language and other domains of development including cognitive, behavioral, social, and emotional; language and the brain; animal language; bilingualism; and atypical language development. Offered by Psychology. May not be repeated for credit.

Recommended Prerequisite: 3 credits graduate Developmental Psychology or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Enrollment is limited to Graduate or Undergraduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

PSYC 616: *Employee Selection.* 3 credits.
Study of administration, scoring, and interpretation of standard tests used by industry for selection and assessment of personnel. The focus is on understanding and applying evidence-based best practices. Offered by Psychology. Limited to three attempts.

Registration Restrictions:
Enrollment limited to students with a class of Graduate.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PSYC 618: *Applied Leadership in the Workplace.* 3 credits.
Covers major theories of leadership in organizations. Includes a focus on strategies for leadership assessment, selection, and development, and also examines strategies for staffing and building high performance teams. Offered by Psychology. Limited to three attempts.

Registration Restrictions:
Enrollment limited to students with a class of Graduate.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PSYC 619: *Applied Behavior Analysis: Principles, Procedures, and Philosophy.* 3 credits.
Focuses on basic principles and procedures of applied behavior analysis; identification of factors that contribute to behavioral problems and improved performance; and procedures that can be used to minimize behavioral problems, improve performance, teach new behaviors, and increase probability of behaviors occurring under appropriate circumstances. Offered by Psychology. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Enrollment is limited to Graduate or Undergraduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PSYC 620: *Motivation and Well-Being.* 3 credits.
Covers major theories of work motivation and well-being, with an emphasis on understanding valid tools for measuring motivation and well-being and evidence-based approaches for enhancing motivation and well-being in organizational contexts. Offered by Psychology. Limited to three attempts.

Registration Restrictions:
Enrollment limited to students with a class of Graduate.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PSYC 622: *Applied Teamwork in the Workplace.* 3 credits.
The purpose of this class is to cover major theories concepts of teamwork in organizations. The course also includes a focus on strategies for assessing, training, staffing and building teams. Offered by Psychology. Limited to three attempts.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Non-Degree level students may **not** enroll.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PSYC 626: *Organizational Change and Development.* 3 credits.
Covers principles and strategies for facilitating effective organizational change and growth. Topics include principles of organizational growth, organizational diagnosis, the design of effective organizational interventions, leading and managing organizational change, and strategies for evaluating and calibrating organizational change. Offered by Psychology. Limited to three attempts.

Registration Restrictions:
Enrollment limited to students with a class of Graduate.

Schedule Type: Lecture

Grading:

This course is graded on the Graduate Regular scale.

PSYC 627: *Performance Management.* 3 credits.
Focuses on developing competencies in designing, implementing, and evaluating systems that measure and evaluate employees' individual performance within the organizational context, as well as the performance of organizational units. Includes developing skills and knowledge to develop tools for providing feedback at the individual and the group/organizational level. Emphasis will be on evidence-based management practices and the dynamic nature of workplaces. Offered by Psychology. Limited to three attempts.

Registration Restrictions:
Enrollment limited to students with a class of Graduate.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PSYC 628: *Benefits and Compensation.* 3 credits.
Provides an understanding of a variety of approaches for rewards, recognition, and compensation systems. Covers the underlying theoretical frameworks for the design and implementation of such systems on attraction, retention, motivation, and performance of employees, as well as the existing empirical evidence to support these propositions. Offered by Psychology. Limited to three attempts.

Registration Restrictions:
Enrollment limited to students with a class of Graduate.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PSYC 629: *Workplace Training.* 3 credits.
Covers principles and strategies of effective training. Topics include assessment of training needs, development of effective instructional designs, strategies for facilitating training transfer, and techniques of program evaluation. Offered by Psychology. Limited to three attempts.

Registration Restrictions:
Enrollment limited to students with a class of Graduate.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PSYC 631: *Industrial and Personnel Testing and Evaluation.* 3 credits.
Study of administration, scoring, and interpretation of standard tests used by industry for selection and assessment of personnel. Offered by Psychology. May not be repeated for credit.

Recommended Prerequisite: PSYC 300 and 320.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Enrollment limited to students in the LA-MA-PSYC or LA-PHD-PSYC programs.

Enrollment is limited to Graduate or Undergraduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PSYC 633: *Evaluative Research in Psychology.* 3 credits.
Examines research techniques specifically designed to evaluate human effectiveness of organizations and mental health programs. Offered by Psychology. May not be repeated for credit.

Recommended Prerequisite: PSYC 300 or Permission of Instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Enrollment limited to students in the LA-MA-PSYC or LA-PHD-PSYC programs.

Enrollment is limited to Graduate or Undergraduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PSYC 636: *Survey of Industrial-Organizational Psychology.* 3 credits.
Intensive survey of historical and current issues in major areas of industrial and organizational psychology. Offered by Psychology. May not be repeated for credit.

Recommended Prerequisite: PSYC 300 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Enrollment limited to students in the LA-MA-PSYC or LA-PHD-PSYC programs.

Enrollment is limited to Graduate or Undergraduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PSYC 637: *Foundations of Industrial Psychology.* 3 credits.
Intensive survey of historical and current issues in major areas of applied (nonclinical) psychology. Offered by Psychology. May not be repeated for credit.

Recommended Prerequisite: PSYC 300 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PSYC 638: *Training: Psychological Contributions to Theory, Design, and Evaluation.* 3 credits.
Focuses on applying learning principles derived from psychological research in development of training models and techniques of skill acquisition. Discusses research designs and empirical results appropriate to training evaluation. Offered by Psychology. May not be repeated for credit.

Recommended Prerequisite: PSYC 636 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Enrollment limited to students in the LA-MA-PSYC or LA-PHD-PSYC programs.

Enrollment is limited to Graduate or Undergraduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PSYC 639: *Survey of Organizational Processes.* 3 credits.
Trains at conceptual/theoretical and empirical levels in organizational processes. Includes individual, interpersonal, intra-group, and intergroup phenomena as they exist in context of organizational settings. Offered by Psychology. May not be repeated for credit.

Recommended Prerequisite: PSYC 333 or 632.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Enrollment limited to students in the LA-MA-PSYC or LA-PHD-PSYC programs.

Enrollment is limited to Graduate or Undergraduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PSYC 640: *Techniques in Industrial/Organizational Psychology.* 3 credits.
Skills-oriented course enabling students to construct instruments and perform functions critical to both researchers and practitioners in industrial/organizational psychology. Focuses on conducting job analysis interviews, developing and scoring task inventories, using critical incident and KSAO methods, and constructing performance appraisal and selection instruments. Offered by Psychology. May not be repeated for credit.

Recommended Prerequisite: PSYC 300 or Permission of Instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Enrollment is limited to Graduate or Undergraduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PSYC 641: *Foundations of Organizational Psychology.* 3 credits.
Trains at conceptual/theoretical and empirical levels in organizational processes. Includes individual, interpersonal, intra-group, and intergroup phenomena as they exist in context of organizational settings. Offered by Psychology. May not be repeated for credit.

Recommended Prerequisite: PSYC 333 or 632.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PSYC 644: *Methods for Social Research.* 3 credits.
Examines issues in basic and applied social science methodology including internal validity, causal generalization, and construct validity. Offered by Psychology. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Enrollment is limited to Graduate or Undergraduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

PSYC 645: *Research Methods in Human Factors and Applied Cognition.* 3 credits.
Hands-on approach to selected current or classical human factors/applied cognition research methods; exact methods announced in advance. Potential methods include cognitive task analysis, usability evaluation methods, critical incident analysis, reliability analysis, workload measures, verbal protocol analysis, and engineering models

of human performance. Offered by Psychology. May not be repeated for credit.

Recommended Prerequisite: PSYC 530 and 611.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Enrollment is limited to Graduate or Undergraduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PSYC 646: *Longitudinal Data Analysis.* 3 credits.
Examines techniques for measuring developmental change across lifespan. Offered by Psychology. May not be repeated for credit.

Recommended Prerequisite: PSYC 611

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PSYC 648: *Developmental Psychopathology.* 3 credits.
In-depth look at emerging discipline of developmental psychopathology. Discusses specific disorders and contexts to illustrate how knowledge of normal development, deviant development, and maladaptive behavior illuminates principles underlying adaptive functioning. Offered by Psychology. May not be repeated for credit.

Recommended Prerequisite: 6 credits graduate developmental psychology.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Enrollment is limited to Graduate or Undergraduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

PSYC 651: *Doing Social Network Research in Psychological Science.* 3 credits.
This course is an overview and application of social network analysis (SNA) concepts and tools to understand how social networks promote and constrain individual and group outcomes from a psychological perspective. SNA software (R-packages) are used to characterize people's social network structure and dynamics. Students have the opportunity to apply SNA in their own areas of interest within psychology. Offered by Psychology. Limited to three attempts.

Recommended Prerequisite: PSYC 611 and either PSYC 754: Multiple Regression or ANOVA

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

PSYC 652: *Quantitative Methods II: Analysis of Variance.* 3 credits.
Basic concepts in experimental design, fundamental assumptions in analysis of variance, and analysis of variance and covariance designs. Reviews multiple comparison tests. Offered by Psychology. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (PSYC 611[B-] or 611[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Enrollment is limited to Graduate or Undergraduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PSYC 654: *Naturalistic Methods in Psychology.* 3 credits.
Theory and techniques involved in studying people in their natural environment. Primary emphasis on quasiexperimental designs and methods of systematic observation. Offered by Psychology. May not be repeated for credit.

Recommended Prerequisite: PSYC 300 and either 304, 305, or 309.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Enrollment is limited to Graduate or Undergraduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PSYC 667: *Behavior in Small Groups and Teams.* 3 credits.
Theories, methods, and topics relevant to individual behavior in small group setting. Includes effects of individual on group, effects of group

on individual, and interaction effects among individuals. Offered by Psychology. May not be repeated for credit.

Recommended Prerequisite: PSYC 231.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Enrollment is limited to students with a major, minor, or concentration in Psychology.

Enrollment is limited to Graduate or Undergraduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PSYC 668: *Personality: Theoretical and Empirical Approaches.* 3 credits.
Presents comprehensive overview of current theoretical and empirical approaches to personality. Emphasizes areas of special relevance to clinical, developmental, and industrial/ organizational psychology. Offered by Psychology. May not be repeated for credit.

Recommended Prerequisite: PSYC 324 (or equivalent) or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Enrollment limited to students in the LA-MA-PSYC or LA-PHD-PSYC programs.

Enrollment is limited to Graduate or Undergraduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PSYC 669: *Social and Emotional Development.* 3 credits.
Surveys theory and research relevant to development of social relationships, emotional expressiveness and regulation, aggressive and altruistic behaviors, sex roles, and morality. Emphasizes influences on such development, including parents, other adults, peers, siblings, and broader culture. Offered by Psychology. May not be repeated for credit.

Recommended Prerequisite: Six hours of developmental psychology or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Enrollment is limited to Graduate or Undergraduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PSYC 685: *Cognitive Neuroscience.* 3 credits.
Provides an overview of the neural basis of human mental functions. Uses neuroimaging (PET, fMRI, ERPs, TMS, etc.), computational, and information-processing methods to examine functions such as attention, memory, language, emotion, and decision making. Offered by Psychology. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Enrollment is limited to students with a major in Psychology.

Enrollment is limited to Graduate or Undergraduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

700 Level Courses

PSYC 701: *Cognitive Bases of Behavior.* 3 credits.
Surveys concepts in learning, cognitive, and affective processes, including theories and supporting data and their influences on behavior. Notes: Open only to degree students. Offered by Psychology. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to students with a major in Adv Grad Studies in Sch Psych or Psychology.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PSYC 702: *Biological Bases of Human Behavior.* 3 credits.
Surveys biological bases of behavior, including such topics as neural conduction, role of specific neurotransmitters, cortical functioning, and brain disorders. Notes: Open only to degree students. Offered by Psychology. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to students with a major in Psychology.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:

This course is graded on the Graduate Regular scale.

PSYC 703: *Social Bases of Behavior.* 3 credits.
Surveys social influences on behavior, including group processes, person perception, and attitude formation. Notes: Open only to degree students. Offered by Psychology. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to students with a major in Psychology.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PSYC 704: *Life-Span Development.* 3 credits.
Surveys theories and research regarding lifespan development and personality formation. Notes: Open only to degree students. Offered by Psychology. May not be repeated for credit.

Recommended Prerequisite: Admission to graduate program in psychology.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PSYC 707: *Emotional Bases of Behavior.* 3 credits.
Surveys major theories and research in emotion, including its development, cognitive and neurological bases, clinical implications, and social functions. Offered by Psychology. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

PSYC 730: *Practicum in Applied Psychology.* 1-6 credits.
Practical experience in organizational setting as assigned. Notes: PhD students may repeat course for a maximum of 15 credits; MA students for a maximum 6 credits. Offered by Psychology. May be repeated within the degree for a maximum 15 credits.

Registration Restrictions:
Enrollment is limited to students with a major in Adv Grad Studies in Sch Psych or Psychology.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Graduate Special scale.

PSYC 733: *Issues in Personnel Psychology.* 3 credits.
Examines psychological literature on job analysis, job evaluation and compensation, performance appraisal, training, and EEOL selection issues. Methodological and psychometric issues in interpretation and evaluation of personnel psychology research receive particular attention. Offered by Psychology. May not be repeated for credit.

Recommended Prerequisite: PSYC 636 or permission of instructor.

Registration Restrictions:
Enrollment limited to students in the LA-MA-PSYC or LA-PHD-PSYC programs.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PSYC 734: *Seminar in Human Factors and Applied Cognition.* 3 credits.
Emphasizes current research and application of human factors, ergonomics, applied cognition, and applied perception. Notes: May be repeated when topic is different. Offered by Psychology. May be repeated within the term for a maximum 9 credits.

Recommended Prerequisite: Six graduate credits in Human Factors and Applied Cognition or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

PSYC 737: *Psychology of Human-Technology Interaction.* 3 credits.
Emphasizes current research and development in human-computer interaction, cognitive systems engineering, cognitive ergonomics, and cognitive engineering. Notes: May be repeated when topic is different. Offered by Psychology. May be repeated within the term for a maximum 9 credits.

Recommended Prerequisite: 6 graduate credits in human factors and applied cognition or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PSYC 739: *Seminar in Industrial/Organizational Psychology.* 3 credits.
Rotating topics such as leadership theories and management development, and performance appraisal. Notes: Topics announced in advance. May be repeated when topic is different. Offered by Psychology. May be repeated within the degree for a maximum 12 credits.

Recommended Prerequisite: PSYC 333 and 636, or permission of instructor.

Registration Restrictions:
Enrollment limited to students in the LA-MA-PSYC or LA-PHD-PSYC programs.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

PSYC 741: *Psychology of Work Motivation.* 3 credits.
Examines psychological literature of need, cognitive, and reinforcement theories of motivation; organizational attachment (commitment, absenteeism, and turnover); job design and quality of work issues. Emphasizes methodological and psychometric issues in interpreting and evaluating work-motivation research. Offered by Psychology. May not be repeated for credit.

Recommended Prerequisite: PSYC 333 or permission of instructor.

Registration Restrictions:
Enrollment limited to students in the LA-MA-PSYC or LA-PHD-PSYC programs.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PSYC 742: *Careers.* 3 credits.
This graduate seminar surveys career studies from an interdisciplinary perspective, with an emphasis on psychological theories and research. Offered by Psychology. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

PSYC 743: *Behavior and Performance at Work.* 3 credits.
Advanced, research-based analysis of employee behavior and performance in organizational settings. Topics covered include performance appraisal and management, organizational citizenship behavior, counterproductive (deviant) work behavior, and employee withdrawal (primarily lateness, absenteeism, and turnover), along with coverage of timely issues such as within-person performance variability, adaptive performance, and star performers. Offered by Psychology. May not be repeated for credit.

Recommended Prerequisite: PSYC 611 and PSYC 754 or equivalent and PSYC 636 and PSYC 639 or equivalent

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

PSYC 754: *Multiple Regression.* 3 credits.
Reviews psychological applications of regression techniques in variety of contexts including experimental, field, and survey settings. Offered by Psychology. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (PSYC 611[B-] or 611[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Graduate.

Non-Degree level students may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Graduate Regular scale.

PSYC 756: *Quantitative Methods IV: Multivariate Techniques in Psychology.* 3 credits.
Surveys multivariate statistical techniques as applied to psychological research. Emphasizes analysis of complex designs and interpretation of multivariate data analyses resulting from computer processing. Offered by Psychology. May not be repeated for credit.

Recommended Prerequisite: PSYC 611

Registration Restrictions:
Enrollment limited to students with a class of Graduate.

Non-Degree level students may **not** enroll.

Schedule Type: Lecture

Grading:

This course is graded on the Graduate Regular scale.

PSYC 757: *Advanced Topics in Statistical Analysis.* 3 credits.
Focuses on noncognitive individual differences that predict performance. Published work discussed in seminar format with emphasis on conceptual development, methodological adequacy, and new directions. Notes: May be repeated for credit when topic is different. Offered by Psychology. May be repeated within the degree.

Specialized Designation: Topic Varies

Recommended Prerequisite: PSYC 754.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PSYC 768: *Advanced Topics in Cognitive Science.* 3 credits.
Emphasizes current research in cognitive science. Topics may include computational cognitive models, nature of expertise, diagrammatic reasoning, display-based problem solving, visual attention, decision making, goal-based versus event-based cognition, and situated action. Notes: May be repeated when topic is different. Offered by Psychology. May be repeated within the term for a maximum 12 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: PSYC 530 or 701.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PSYC 780: *Applied Developmental Psychology.* 3 credits.
Examines how developmental theory, knowledge base, and methodology can be used to promote health and welfare of individuals across lifespan. Topics include contemporary social issues and child development, research in applied settings, developmental assessment and intervention, and program evaluation. Offered by Psychology. May not be repeated for credit.

Recommended Prerequisite: PSYC 704 or 3 credits of other graduate developmental psychology courses and permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PSYC 792: *Psychology Practicum.* 1-6 credits.
Supervised experience working in applied, school, or agency settings. Offered by Psychology. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Admission to psychology graduate program.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Satisfactory/No Credit scale.

PSYC 794: *Developmental Assessment.* 1-6 credits.
Introduces considerations and methods needed for evaluating young children (ages two - six). Focus on the skills necessary for formulating, conducting, and reporting comprehensive developmental evaluations. Emphasizes evaluation of preschool children and includes information relating to infants, as well as older children functioning at lower developmental levels. Offered by Psychology. May be repeated within the term for a maximum 9 credits.

Recommended Prerequisite: Admission to applied developmental psychology program.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PSYC 798: *Thesis Proposal.* 1-6 credits.
Work on a proposal for master's thesis. Offered by Psychology. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Permission of program coordinator.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Thesis

Grading:
This course is graded on the Satisfactory/No Credit scale.

PSYC 799: *Master's Thesis.* 1-6 credits.
Research on approved master's thesis topic under direction of thesis committee with approval of chair. Offered by Psychology. May be repeated within the degree.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Thesis

Grading:
This course is graded on the Satisfactory/No Credit scale.

800 Level Courses

PSYC 810: *Psychological Assessment I.* 4 credits.
First of required two-course sequence that provides comprehensive coverage of principles, strategies, and techniques of psychological assessment. Emphasizes empirically supported methods. Notes: Open to clinical psychology PhD students, or other students with permission of instructor. Offered by Psychology. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to students with a major in Psychology.

Enrollment is limited to Graduate level students.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Graduate Regular scale.

PSYC 811: *Psychological Assessment II.* 4 credits.
Second of required two-course sequence that provides comprehensive coverage of principles, strategies, and techniques of psychological assessment. Emphasizes empirically supported methods. Notes: Open to clinical psychology PhD students, or other students with permission of instructor. Offered by Psychology. May not be repeated for credit.

Recommended Prerequisite: PSYC 810.

Registration Restrictions:
Enrollment is limited to students with a major in Psychology.

Enrollment is limited to Graduate level students.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Graduate Regular scale.

PSYC 813: *Supervision, Consultation, and Interprofessional Skills.* 3 credits.
Offers advanced graduate students in health service psychology a foundation in supervision, consultation, and interprofessional/ interdisciplinary knowledge and skills. Offered by Psychology. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PSYC 822: *Scientific Foundations of Clinical Psychology I.* 3 credits.
First of required two-course sequence that provides comprehensive coverage of major psychological problems, including review of empirically supported interventions. Notes: Open to clinical psychology PhD students, or other students with permission of instructor. Offered by Psychology. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to students with a major in Psychology.

Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PSYC 830: *History, Systems, and Theories of Personality and Psychotherapy.* 3 credits.
Review of history, systems, and theories of clinical psychology emphasizing traditional theories of personality and psychotherapy. Notes: Open to clinical psychology PhD students, or other students with permission of instructor. Offered by Psychology. May not be repeated for credit.

Recommended Prerequisite: Admission to doctoral concentration in clinical psychology.

Registration Restrictions:
Enrollment is limited to students with a major in Psychology.

Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PSYC 833: *Social And Cognitive Foundations Of Clinical Psychology.* 3 credits.
Review of theory and research in social psychology (particularly social cognition) relevant to understanding psychological adjustment, adjustment problems, and clinical interventions. Notes: Open to clinical psychology PhD students, or other students with permission of instructor. Offered by Psychology. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to students with a major in Psychology.

Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PSYC 850: *Teaching Practicum in Psychology.* 1-3 credits.
Workshop in effective teaching of selected undergraduate psychology courses. Required of and designed to guide graduate teaching assistants assigned to teach undergraduate course (not a lab) for first time. Topics include course planning, syllabus development, lecture resources, effective lecturing skills, use of audio visuals, leading of classroom discussion, construction and grading of exams, student writing, instructional technology, and handling of student questions and problems. Individual critiques of teaching. Offered by Psychology. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to students with a major in Psychology.

Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Special scale.

PSYC 855: *Social, Cognitive, and Affective Foundations of Behavior.* 3 credits.
This course is designed to provide foundational knowledge, as required by the APA Commission on Accreditation, for graduate training in professional psychology, with a specific focus on the areas of social, cognitive, and affective bases of behavior. Offered by Psychology. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PSYC 856: *Diversity, History and Clinical Psychology.* 3 credits.
In all of their roles, clinical psychologists have the potential to engage with diverse populations thoughtfully, ethically, intentionally, and in a way that promotes justice. This class equips students with the foundational knowledge, awareness and skills to reach this goal. The class builds awareness of the ways in which social identity influences our perceptions, interactions, and professional endeavors, and introduces students to the ways in which psychology has both perpetuated oppression and interrupted injustice in its distant and recent history. Students end the semester with training goals for growing their capacity to engage with our diverse society thoughtfully and intentionally. Offered by Psychology. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PSYC 860: *Introductory Helping Skills and Motivational Interviewing.* 3 credits.
Teaches fundamental interviewing skills and the theory, research, and practice of motivational interviewing. Offered by Psychology. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

PSYC 861: *Cognitive Behavioral Therapy for Youth.* 3 credits.
Teaches the selection, evaluation, and application of empirically supported interventions for children and adolescents with a focus on cognitive-behavioral interventions. Instruction in evidence based assessments, cognitive-behavioral case conceptualization, outcome evaluation, and consultation. Supervision of cognitive-behavioral therapy with youth. Offered by Psychology. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Satisfactory/No Credit scale.

PSYC 862: *Cognitive Behavioral Therapy for Adults.* 3 credits.
Teaches the principles of cognitive-behavioral theory, conceptualization and psychotherapy techniques for psychological problems with adults. Supervision of cognitive-behavioral therapy with adults. Offered by Psychology. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Satisfactory/No Credit scale.

PSYC 881: *Practicum in Clinical Psychology.* 1-3 credits.
Supervised clinical work in a professional psychological services setting. Usually includes practice in psychological assessment and clinical interventions, but can also include supervision, consultation, and program evaluation. Offered by Psychology. May be repeated within the term for a maximum 21 credits.

Recommended Prerequisite: Admission to doctoral concentration in clinical psychology and permission of director.

Registration Restrictions:
Enrollment is limited to students with a major in Psychology.

Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

PSYC 883: *Ethical and Professional Issues in Clinical Practice.* 3 credits.
Examines ethical principles and professional guidelines to help develop ethical decision-making and behavior to meet the appropriate standards of care in providing clinical services. Notes: Open to clinical psychology PhD students, or other students with permission of instructor. Offered by Psychology. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

PSYC 885: *Clinical Externship.* 0 credits.
Individual placements in psychological assessment or psychotherapy service settings. Notes: Open only to clinical psychology PhD students in the third year or more of training. Offered by Psychology. May be repeated within the degree.

Registration Restrictions:
Enrollment is limited to students with a major in Psychology.

Enrollment is limited to Graduate level students.

Schedule Type: Internship

Grading:
This course is graded on the Graduate Special scale.

PSYC 889: *Structural Equation Modeling and Meta-Analysis.* 3 credits.
Offers advanced instruction on meta-analysis and structural equation modeling (SEM). The meta-analysis portion teaches students scoping and formulating a research question, searching for effect sizes, coding for study information, conducting and interpreting the analyses, and reporting results. The SEM portion of the course covers topics such as confirmatory analysis, mediation and moderation with latent variables, multiple-group SEM, invariance testing, and longitudinal analysis within SEM. Offered by Psychology. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: ((PSYC 611[B-] or 611[XS]) and (PSYC 754[B-] or 754[XS])).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PSYC 890: *Seminar in Professional Psychology.* 1-3 credits.
Each section limited to students in one concentration of MA or PhD program. See area coordinator for requirements for section in each track. Offered by Psychology. May be repeated within the term for a maximum 3 credits.

Recommended Prerequisite: Student in psychology.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Satisfactory/No Credit scale.

PSYC 892: *Special Topics in Psychology.* 1-6 credits.
Selected topics reflecting specialized areas in psychology. Notes: Open only to PhD students. Content varies. May be repeated when topic is different. Offered by Psychology. May be repeated within the term for a maximum 17 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PSYC 897: *Directed Reading and Research.* 1-3 credits.
Independent reading on topic agreed on by student and faculty member. Notes: PhD students in the clinical psychology concentration may not take this course for elective credit. May not be repeated for credit towards a degree by students who also register for PSYC 799. Offered by Psychology. May be repeated within the term.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Regular scale.

900 Level Courses

PSYC 998: *Doctoral Dissertation Proposal.* 1-6 credits.
Work on research proposal that forms basis for doctoral dissertation. Notes: No more than 24 credits of PSYC 998 and 999 may be applied to doctoral degree requirements. Offered by Psychology. May be repeated within the degree.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

PSYC 999: *Doctoral Dissertation.* 1-9 credits.
Research on approved dissertation topic under direction of dissertation committee. Notes: Students must complete a minimum of 3 credits of 999. No more than 12 credits of PSYC 998 and 999 may be applied to doctoral degree requirements. Offered by Psychology. May be repeated within the degree.

Recommended Prerequisite: PSYC 998.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy.

Enrollment is limited to Graduate level students.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

Public Administration (PUAD)

500 Level Courses

PUAD 502: *Administration in Public and Nonprofit Organizations.* 3 credits.
Graduate introduction to field of public administration. Focuses on structure, functions, and processes of executive branch agencies of national, state, and local governments. Emphasizes nonprofit organizations as co-actors with government in policy-making/policy

implementation nexus. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUAD 504: *Managing in the International Arena: Theory and Practice.* 3 credits.
Theoretical and empirical examination of international system that both affects and is affected by decisions, behaviors, and subsystems of state and nonstate (organizational) actors. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUAD 505: *Introduction to Management of Nonprofits.* 3 credits.
Examines nonprofit organizations and their role in contemporary society. Explores unique aspects of nonprofits including voluntary governance, tax-exempt status, nonprofit corporation law, accounting practices, fund raising, finance, and management of volunteers. Emphasizes board/executive relationship, and value of establishing and maintaining nonprofit organization's reputation. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUAD 509: *Justice Organizations and Processes.* 3 credits.
Examines structures, practices, and performance of organizations involved in administration of justice (law enforcement, courts and legal agencies, corrections, regulatory and related agencies, private organizations) Explores applicability of various theoretical perspectives on organizational processes, and considers extent to which processes operate as a system. Focuses on comparing formal goals and system expectations to actual practice. Offered by Schar School of Policy & Govt. May not be repeated for credit. Equivalent to CRIM 509.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUAD 520: *Organization Theory and Management Behavior.* 3 credits.
Considers behavior in context of public organization, and consequent changes required in management. Focuses on such issues as perception, attitude formation, motivation, leadership, systems theory, communication and information flow, conflict theory, and decision theory. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

PUAD 540: *Public Policy Process.* 3 credits.
Processes of making public policy, including detection of public issues, consideration of alternatives, and adoption and implementation of solutions. Highlights major actors in policy process, and environment within which they work. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Recommended Prerequisite: PUAD 502.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

600 Level Courses

PUAD 613: *Economic Analysis in Public Administration.* 3 credits.
Covers major economic issues about role of markets and government in global world. Applies fundamental economic concepts such as cost

benefit analysis to public sector. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: PUAD 511[B-], GOVT 511[B-] or PUBP 511[B-].
[B-] Requires minimum grade of B-.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUAD 615: *Administrative Law.* 3 credits.
Covers law as guiding and controlling force in public-sector operations. Includes application of legal processes to administrative practices and situations, and administrative determination of private rights and obligations. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUAD 621: *Principles and Practices in Government Organization and Management.* 3 credits.
Major management theories applicable to American federal system. Emphasizes organization, structure, and operations. Explores relationship of theories to management practices in contemporary American administration. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Recommended Prerequisite: PUAD 520.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUAD 622: *Program Planning and Implementation.* 3 credits.
Practical exploration of implementing public law in American federal system. Studies construction of organizational apparatus, development of operational plans, and systems of control and evaluation necessary to implement government programs. Emphasizes coordinating tasks and resources required for effective program implementation. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Recommended Prerequisite: PUAD 520.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUAD 623: *Managing Government Contracting.* 3 credits.
Explores unique management and administrative challenges of providing public goods and services through contracts. Examines debates over privatization, and explores tools managers need to address unique accountability challenges associated with this governance tool. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUAD 624: *Public and Private Partnerships.* 3 credits.
Emphasizes entrepreneurial efforts where governments, nonprofit organizations and private companies establish goals and combine resources and talents. Issues of efficiency, accountability, and democratic responsiveness will be examined. Various tools for promoting and implementing such partnerships will be explored. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

PUAD 625: *Higher Education Law.* 3 credits.
Analyzes legal issues confronting higher education: governance, faculty matters, and student issues. Examples include due process, freedom of speech, and privacy. Reviews key constituents in higher education-students, faculty, administrators, board of trustees, and parents -and how their roles are changing. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUAD 626: *Consulting Management.* 3 credits.
Explores the consulting industry, changes in the industry and future expectations of consulting as a career. Examines different sectors of consulting such as HR, IT, Operations, Marketing, Succession Planning, Organizational Consulting, Knowledge management, Non-profit and health care and government consulting. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

PUAD 630: *Emergency Planning and Preparedness.* 3 credits.
Provides an understanding of the issues associated in developing plans and policies to prepare for disasters, both natural and man made. Overview of nature of challenges posed by different kinds of disasters; discussion of regulatory requirements, sample plans, equipment requirements, collateral and mutual aid support agreements, and methods for testing and updating plans. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

PUAD 631: *Disaster Response Operations and Recovery.* 3 credits.
Explores the principles and practices that promote effective disaster response operations and management. Examines nature of disasters, models for response operations in the United States and roles and responsibilities of various emergency management-related organizations. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

PUAD 632: *Terrorism: Theory and Practice.* 3 credits.
Introduces students to the subject of terrorism including the history and evolution of terrorism, case studies of key terrorist groups, the current nature of the terrorist threat, and counterterrorism strategies. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

PUAD 633: *Hazard Mitigation Policy.* 3 credits.
Examines the complex interplay and policy approaches to hazard prevention and protection of known hazards in terms of land use, zoning, infrastructure, and building code management. Focuses on understanding the relative roles of proactive policy design and implementation at the federal, state, and local levels of government. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

PUAD 634: *Management of International Security.* 3 credits.
Examines theory and practice of managing international security. Emphasizes interplay of organizational structure and bureaucratic dynamics in international context. Presents theory and practice of crisis

management, and coordination and comparison of security methods and techniques. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUAD 635: *Emergency Preparedness: Interagency Communication and Coordination.* 3 credits.
Considers complex relationships within governments and across sectors and levels of government for effective emergency management in planning, response, recovery, and mitigation phases. Explores intergovernmental management and network management theories and research to understand the nature of interorganizational problems and potential models for collaboration. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUAD 636: *The NGO: Policy and Management.* 3 credits.
Explores unique aspects of nonprofit organizations operating in international environments, particularly in relief and development work. Examines relationship between NGO and U.S. and foreign governments. Covers international philanthropy; cross-cultural understanding; and key managerial concerns such as communications, planning, human resource management, control, group process, and project evaluation. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

PUAD 637: *Managing Homeland Security.* 3 credits.
Focuses on the Department of Homeland Security and will cover the statutory law that provides the foundation for the department, the resources appropriated to the department, the determination of strategy and priorities, the development of operational capacity, and other challenges associated with top-level (secretarial) management of the department and its principal bureaus. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

PUAD 642: *Environmental Policy.* 3 credits.
In-depth examination of environmental policy making. Examines U.S. efforts from 1970 to present to mitigate pollution of nation's air, land, and water; and addresses issues of global concern including biodiversity loss, ozone depletion, and climate change. Offered by Schar School of Policy & Govt. May not be repeated for credit. Equivalent to EVPP 642.

Specialized Designation: Green Leaf Focused Course

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUAD 644: *Public Policy Models.* 3 credits.
Approaches to modeling policy problems. Includes analysis and comparison of dominant paradigms in policy sciences. Reviews assumptions and implications of different models and their utility for analysis, implementation, and evaluation. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Recommended Prerequisite: PUAD 540.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:

This course is graded on the Graduate Regular scale.

PUAD 645: *Policy Analysis.* 3 credits.
Introduces concepts and techniques for formal policy analysis, development of skills in applying policy analysis techniques through case studies, and exploring legitimacy and utility of policy analysis. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: or GOVT 511[B-] or PUBP 511[B-].
[B-] Requires minimum grade of B-.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

PUAD 649: *Advocacy and Lobbying.* 3 credits.
Explores how nonprofit organizations advocate and lobby for social change. Considers the different steps in the advocacy process and the broad range of strategies used by non profits seeking to influence public policy. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

PUAD 651: *Virginia Politics, Policy, and Administration.* 3 credits.
Cultural, demographic, constitutional, and socioeconomic environment of public administration in Virginia. Covers governmental agencies, legislative functions, executive leadership, staff agencies, state-local relationships, intrastate regionalism, administrative customs peculiar to Virginia. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Recommended Prerequisite: PUAD 502.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUAD 652: *Leading in the Nonprofit Sector.* 3 credits.
Introduces students to a broad range of nonprofit leadership issues. Examines the challenges leaders face within nonprofit organizations and considers how nonprofit staff lead in communities. Also explores critical nonprofit issues which those aspiring to leadership in the nonprofit sector should be informed and have opinions about, such as the argument that there are too many nonprofit organizations or that more philanthropy should be directed to helping the poor. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

PUAD 654: *The Community, Marketing, and Public Relations.* 3 credits.
Focuses on marketing concepts and communications issues of nonprofit organization as they apply to identifying market, ability to formulate public image and reputation, and capability to raise money and retain membership or volunteers. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Recommended Prerequisite: PUAD 502 or 505.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUAD 655: *Nonprofit Fund Raising and Resource Development.* 3 credits.
Explores how nonprofit organizations raise funds from a variety of sources, including: fees for service and other enterprise activity; federal, state, and local governments; and private donations from individuals, foundations, and corporations. Also considers how nonprofits manage the fundraising process within their organizations. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Recommended Prerequisite: PUAD 502 or 505.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUAD 657: *Association Management.* 3 credits.
Practical application of management theory in context of professional and trade associations. Covers legal structures, tax-exempt status, and general organizational structure. Topics include volunteer management, budgeting and accounting practices in associations, fund raising, media relations, media and event planning, and human resource management. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Recommended Prerequisite: PUAD 502 or 505.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUAD 658: *Social Entrepreneurship and Social Enterprise.* 3 credits.
Explores innovative approaches for addressing social problems. Organized around the steps in the entrepreneurial process: identifying social needs, formulating program strategies, mobilizing resources, managing growth tracking results, and maximizing impact. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

PUAD 659: *Nonprofit Law, Governance, and Ethics.* 3 credits.
Overview of nonprofit governance as well as basic contract, labor, and tax law issues within nonprofit corporation law. Covers relationship between board and executive, and ethics topics typical to nonprofit organizations such as self-dealing, fiduciary responsibility, and human resource issues. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUAD 660: *Public and Nonprofit Accounting and Finance.* 3 credits.
Studies fundamental normative debates in public and nonprofit financial management arena with focus on resulting implementation principles and techniques in governmental accounting, financial reporting, budget and revenue decisions, debt management, cash and investment management, pensions and employee benefits, and risk management. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Recommended Prerequisite: Course open only to admitted MPA or Association/ Nonprofit Management Certificate students.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Enrollment is limited to students with a major in Association Management, Nonprofit Management or Public Administration.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUAD 661: *Public Budgeting Systems.* 3 credits.
Survey focusing on policy and theoretical framework of revenue and expenditure choices at all levels of government. Topics include development, theories, structure of budgeting; political, economic, and managerial aspects of public budgeting; public policy implications; and budgetary reform movements and successes and failures. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUAD 662: *National Budgeting.* 3 credits.
Examines formulation of overall national fiscal policy and budgetary priorities through presidential and congressional budget processes, including decisions over spending and revenues. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUAD 663: *State and Local Budgeting.* 3 credits.
Introduces state and local government budgeting including principal actors and institutions inside and outside state and local governments that play role in budget development, appropriation, implementation, and auditing. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUAD 664: *Nonprofit Financial Management.* 3 credits.
Covers nonprofit financial management with attention to conflicts between social mission and financial entrepreneurship. Topics include mission, budgeting, fund raising, commercial programs, investments, accounting and information systems, financial reporting, auditing, and internal control. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Recommended Prerequisite: Admission to MPA, certificate in association management, or certificate in nonprofit management.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

PUAD 670: *Human Resources Management in the Public Sector.* 3 credits.
Overview of range and complexity of functions, responsibilities, and expectations of human resource staff and line managers in public sector. Focuses on human resources management in context of political, legal, and managerial systems. Human resource functions, such as hiring, performance, and development, are also presented. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Recommended Prerequisite: PUAD 502.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUAD 671: *Public Employee Labor Relations.* 3 credits.
Public employee labor relations, including unionization, representational elections, bilateral policy negotiations, administration of agreements, management rights, union and membership security, strike issue and grievance procedures, impact on public administration, and assessment of future developments. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUAD 672: *Human Resources Reforms for Public Administration.* 3 credits.
Explores recent reforms in human resources management in federal, state, and local governments. Covers pay for performance systems, flexible assignment patterns, incentives for productivity, work-life balance, job design, and changes resulting from higher levels of contracting for government programs. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

PUAD 679: *Leadership Skills for the 21st Century.* 3 credits.
The class is premised on the belief that an individual's leadership capabilities can be enhanced by better understanding and practicing day-today leadership skills which can be used in the workplace. The academic literature on leadership will also be discussed. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

PUAD 680: *Public Technology Management.* 3 credits.
Explores the implications and principles of information management technologies for public and nonprofit managers, including the role of eGovernment, citizen engagement, Web 2.0 and social media, digital service delivery, open and big data, cyber security awareness, augmented decision making through AI, the exploration of how policy and technology intersect, and how technology can be best managed through various governance models. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUAD 691: *Justice Program Planning and Implementation.* 3 credits.
Covers development and construction of organizational systems to implement government policies and programs. Emphasizes dealing with real-world challenges, constraints, and opportunities to create feasible plans, performance-monitoring systems, and secure multiple agency coordination. Applications of planning and implementation principles to actual projects in justice agencies. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Recommended Prerequisite: PUAD 502 and 509.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

700 Level Courses

PUAD 700: *Ethics and Public Administration.* 3 credits.
Topics of ethical dimensions including constitutionalism, democratic values and traditions, standards of conduct and ethics, and conflicting values of public officials and social equity of public programs. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (PUAD 502[B]) and (PUAD 511[B] or 611[B]) and (PUAD 520[B] or 620[B]) and (PUAD 540[B] or 640[B]).
[B] Requires minimum grade of B.

Enrollment is limited to students with a major in Nonprofit Management or Public Administration.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUAD 701: *Cross-Cultural and Ethical Dimensions of International Management.* 3 credits.
To be taken in final two semesters of MPA program. Examines normative issues in management of programs in international context. Emphasizes interplay of cultural, sociopolitical, legal, and ethical factors, and management and policy problems arising from conflicting goals, values, and inequities among nations and regions. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Recommended Prerequisite: To be taken during final semester of student's MPA program.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUAD 703: *Collaborative Public Management.* 3 credits.
Examines design and management of public service programs relying on various levels of government, the nonprofit and private sectors for delivery, with focus on organizational networks, their management, and tools (e.g., contracts, grants, loans, regulation, and tax credits). Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (PUAD 502[B]) and (PUAD 511[B] or 611[B]) and (PUAD 520[B] or 620[B]) and (PUAD 540[B] or 640[B]).
[B] Requires minimum grade of B.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

PUAD 720: *Performance Measurement.* 3 credits.
Methods used by managers to systematically assess performance. Includes practical tools such as focus groups, survey research, cost/benefit analysis, benchmarking, and comparison methods for revealing

outcomes and impacts. Prepares managers to use information more effectively in developing programs and services and formulating policy, and covers reporting techniques to communicate performance results. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUAD 727: *Seminar in Risk Assessment and Decision Making.* 3 credits.
Examines decision making under risk and uncertainty. Readings introduce major intellectual perspectives on topic and are drawn from variety of disciplines, including biology, economics, law, and psychology. Emphasizes making actual decisions under uncertainty. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Recommended Prerequisite: 12 graduate credits.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

PUAD 729: *Issues in Public Management.* 3 credits.
Current issues in management of public organizations in contemporary American government. Includes practical applications of theories and analysis to managerial problems. Emphasizes competence in improving management in selected government settings. Notes: May be repeated for credit when topic is different. Offered by Schar School of Policy & Govt. May be repeated within the term.

Recommended Prerequisite: PUAD 502 and 9 graduate credits.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUAD 730: *Professional Development Workshop.* 1-3 credits.
Explores external and internal factors reshaping public and nonprofit organizations. Investigates processes and techniques that managers and staff can use to respond to rapid environmental change. Emphasizes case studies and application of techniques and processes. Offered by Schar School of Policy & Govt. May be repeated within the term for a maximum 12 credits.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUAD 731: *Homeland/Transportation Security Administration.* 3 credits.
Examines the terrorist attacks of 9/11, the vulnerabilities of the aviation security system at that time, reasons why elected leaders and officials did not act more decisively to improve security before 9/11, and the policy and administration responses to the 9/11 attacks, including the creation of the Transportation Security Administration and the Department of Homeland Security. Includes the development of radical Islam and the rise of Osama bin Laden and Al Qaeda. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

PUAD 738: *Issues in International Security.* 3 credits.
Examines issues of topical interest in general area of international security. Possible topics include nuclear strategy, disarmament, American defense policy, and international terrorism. Notes: May be repeated for credit when topic is different. Offered by Schar School of Policy & Govt. May be repeated within the term.

Recommended Prerequisite: PUAD 504 and 9 graduate credits.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUAD 739: *Issues in International Management.* 3 credits.
Examines significant current issues in public international management. Emphasizes practical applications of theories and analysis of problems in public international management arena, and competence in improving management practices in international management settings. Notes: May be repeated for credit when topic is different. Offered by Schar School of Policy & Govt. May be repeated within the term.

Recommended Prerequisite: PUAD 502 and 9 graduate credits.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUAD 749: *Issues in Public Policy.* 3 credits.
Examines significant issues in public policy in contemporary American government. Emphasizes practical applications of theories and analysis

to policy problems, and competence in improving policy analysis in selected government settings. Offered by Schar School of Policy & Govt. May be repeated within the term.

Recommended Prerequisite: PUAD 502 and 9 graduate credits.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUAD 750: *Federalism and Intergovernmental Relations.* 3 credits.
Examines broad trends in governance, including theory and practice of federalism, with particular focus on intergovernmental relations and changing roles of federal, state, and local governments. May include privatization, devolution, mandating, regulatory reform, and comprehensive federalism reform. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Recommended Prerequisite: PUAD 502 and 9 graduate credits.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

PUAD 758: *Environmental Politics.* 3 credits.
Evolution and current state of environmental policy making. Includes history, strengths, and weaknesses of key U.S. environmental laws and central international environmental agreements. Introduces analytical approaches, including cost-benefit and risk analysis. Discusses economic incentives and normative considerations. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUAD 759: *Issues in Local Government Administration.* 3 credits.
Management and policy formulation in American local governments. Addresses environments, institutions, and actors involved. Examines contemporary problems such as education, criminal justice, transportation, land use, economic development, and environmental impact. Notes: May be repeated with different topic. Offered by Schar School of Policy & Govt. May be repeated within the term.

Recommended Prerequisite: PUAD 502 and 9 graduate credits.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUAD 769: *Issues in Public Financial Management.* 3 credits.
Current issues in budgeting and financial management in contemporary American government. Emphasizes practical applications of administration and management issues and policy choices at all levels of government. Notes: May be repeated for credit when topic is different. Offered by Schar School of Policy & Govt. May be repeated within the term for a maximum 15 credits.

Recommended Prerequisite: PUAD 502 and 9 graduate credits.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUAD 781: *Information Management: Technology and Policy.* 3 credits.
Examines challenges that organizations encounter as they move to a more technologically sophisticated information and communication environment. Studies organizational policy issues evolving from new technologies, including privacy, security, authentication, content control, intellectual property, and taxation, focusing on effectiveness of previous policy solutions and analyzing proposed solutions. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Recommended Prerequisite: PUAD 680 or Permission of Instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUAD 790: *Justice Organization and Administration.* 3 credits.
Examines organization and administration of justice and security organizations. Covers organization theory and behavior as applied to justice and security organizations. Offered by Schar School of Policy & Govt. May not be repeated for credit. Equivalent to CRIM 740.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

PUAD 791: *Justice Program Evaluation.* 3 credits.
Practical exploration of assessment techniques used to study need for and consequences of justice programs and policies. Covers needs assessments, process, and impact evaluations. Includes design and measurement issues for assessing performance of justice programs, and interpreting and presenting results. Emphasizes designing program evaluation for justice agency. Offered by Schar School of Policy & Govt. May not be repeated for credit. Equivalent to CRIM 781.

Recommended Prerequisite: PUAD 511 and 612.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

PUAD 792: *Advanced Seminar in Applied Public Administration Research.* 3 credits.
An applied research experience. Students will apply skills in problem definition, issue framing, collection of data and information, interviewing, selection and analysis of alternatives, presentation of findings and recommendations, design of implementation tools and administrative procedures and organizations, report writing and oral presentation to policymakers. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Recommended Prerequisite: 30 PUAD credits and permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

PUAD 793: *Conduct of Justice Organizations at the Street Level.* 3 credits.
Explores how justice organizations behave at lowest levels, where service is delivered and discretion is greatest. Includes suspects, victims, witnesses, police officers, prison guards, parole officers, attorneys, and others who interact with the justice system. Offered by Schar School of Policy & Govt. May not be repeated for credit. Equivalent to CRIM 741.

Recommended Prerequisite: CRIM 740/PUAD 790 or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

PUAD 794: *Internship.* 3 credits.
Open only to MPA students. Contact internship coordinator one semester before enrollment. Credit determined by the department. Offered by Schar School of Policy & Govt. May be repeated within the term for a maximum 6 credits.

Recommended Prerequisite: 12 PUAD credits or permission of instructor. Open only to MPA students. Enrollment is controlled. See http://pia.gmu.edu/internships for registration application.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Satisfactory/No Credit scale.

PUAD 795: *Leadership in Justice and Security Organizations.* 3 credits.
Examines leadership theories, and explores fundamental questions about leadership in justice and security organizations today. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Recommended Prerequisite: CRIM 740, PUAD 790, or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

PUAD 797: *Changing Justice and Security Organizations.* 3 credits.
Examines challenges of changing justice organizations, how changes have been successfully and unsuccessfully implemented in the past, and what change strategies appear to be most effective. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Recommended Prerequisite: CRIM 740, PUAD 790, or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

800 Level Courses

PUAD 821: *Doctoral Seminar in Theories of Organization and Bureaucracy.* 3 credits.
Examines key issues in organization theory and behavior. Issues include organization design; interorganizational coordination, intelligence and decision-making systems; leadership and motivation theories; and theories or organizations as agents of political and social change. Uses case studies. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Recommended Prerequisite: PUAD 520 or equivalent, or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

PUAD 840: *Research Seminar in Policy Governance I.* 2-4 credits.
Surveys major institutions that formulate and implement public policy in United States. Examines translation of public preferences into public policy, and decisions about which societal and economic functions are most appropriately carried out by governments, and which are best accomplished by private institutions and individuals. Offered by Schar School of Policy & Govt. May not be repeated for credit. Equivalent to POGO 840, PUBP 840.

Recommended Prerequisite: Admission to the doctoral program or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

PUAD 841: *Research Seminar in Policy Governance II.* 2-4 credits.
Second of two-semester sequence (PUAD 840, 841) in governance and public management policy concentration. Focuses on division of responsibilities among several levels of government, and between public and private sectors. Explores impact of these divisions on development of public policy in several policy areas, such as urban governance, environmental policy, and health care. Offered by Schar School of Policy & Govt. May not be repeated for credit. Equivalent to PUBP 841.

Recommended Prerequisite: Admission to doctoral program.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

Public Policy (PUBP)

500 Level Courses

PUBP 500: *Theory and Practice in Public Policy.* 3 credits.
Introduces tools and concepts to navigate the world of public policy. Explores theories and assesses their strengths, weaknesses and applicability to public policy in order to understand different varieties of theory, their uses and application. Introduces several perspectives on and tools for the practice of policy analysis, and provides an opportunity to engage in an analytical policy project. Strong ethical and international components are built into the course. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 501: *Policy and Organizational Analysis.* 4 credits.
Prepares students to engage in systematic analysis, both qualitative and quantitative, and constitutes the basis for advanced analytical techniques. Emphasis on research design, information acquisition, application of data analysis techniques, and presentation, including writing for professional and lay audiences. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 502: *Governance and Policy Processes.* 1-4 credits.
Assesses governance processes in public and private organizational settings on the basis of economic and political standards such as efficiency, accountability, and responsiveness to societal needs in a rapidly changing global environment. Using cases, simulations, and fieldwork, students learn to evaluate the quality of institutional governance in specific venues and appraise implications for public policy. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 503: *Culture, Organization, and Technology.* 1-4 credits.
Focuses on the dynamic interplay of technology, organization and culture in societal, political, and economic processes, nationally and internationally. Using theory and case studies, students learn pertinent approaches to the study of culture, including digital culture, from the analysis of organization and social networks to that of belief systems and identities. Key issues of technological politics, the role of values and identity, cultural bases of intergroup conflict, and the political implications of globalization and technological change are addressed. Students develop practical skills in observation and become familiar with appropriate tools, methods, and frameworks for analyzing public policy

and its context. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 504: *Grand Strategy.* 3 credits.
Uses the traditional tools of history and theory to analyze grand strategy. The goal is to gain an in-depth understanding of effective and ineffective grand strategies so as to inform U.S. policy, or that of other countries. Analyzing the strategic implications of policy-making, it takes a long view of effective statecraft, using current means to achieve large ends. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 505: *Politics and Practice of International Security Policy.* 3 credits.
Drawing on current and historical cases, this course develops knowledge, strategies, and skills required to transform policy ideas and proposals into implemented policy on issues of international security. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 506: *Ethics and the Use of Force.* 3 credits.
Explores the relationship between weapons and warfare and the ethical issues raised by the use of force, both in past conflicts and in a current and future context. Examines the relationship between emerging technology enabled weapons and the just war tradition. Studies relevant theories of war and selected international laws and conventions governing war and weapons. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 533: *Topics in Public Policy Processes.* 1-3 credits.
Focuses on selected topics in public policy processes and procedures on an introductory level. Offered by Schar School of Policy & Govt. May be repeated within the term for a maximum 6 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 550: *Topics in Public Policy.* 1-3 credits.
Focuses on selected topics in public policy not covered in fixed-content public policy courses. Offered by Schar School of Policy & Govt. May be repeated within the term.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 555: *Economics Math Workshop.* 0 credits.
Short course covering math and calculus skills required for master's level managerial economics course PUBP720. Offered by Schar School of Policy & Govt. May be repeated within the degree.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Schar School of Policy and Gov college.

Schedule Type: Lecture

Grading:
This course is graded on the Not Gradeable (NG) scale.

PUBP 556: *Writing Workshop.* 0 credits.
A limited enrollment, noncredit, one-day workshop designed for master-level public policy students who want to improve their writing skills. Aimed at good writers who want to move to the next level of effectiveness. Taught by professional writers. Offered by Schar School of Policy & Govt. May be repeated within the term.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Schar School of Policy and Gov college.

Schedule Type: Lecture

Grading:
This course is graded on the Not Gradeable (NG) scale.

PUBP 570: *Policy Writing Fundamentals.* 3 credits.
Designed for entering students whose writing skills and style must satisfy the demands of a rigorous graduate program; aims to give students the ability and confidence to write clearly and concisely for a variety of policy audiences; reviews basic rules and develops essential techniques for effective writing in graduate school and beyond. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

600 Level Courses

PUBP 601: *Theory and Practice of Regional Economic Development.* 3 credits.
Helps students develop real-world skills to be a successful economic developer, consultant, policymaker, or change agent in this rapidly changing environment. Designed to provide a framework for understanding regional and national economic growth and prosperity, and provide tools to conduct concrete analyses to help decision makers, clients, and constituents make better-informed decisions. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 602: *Regional Economic Development: Strategies and Applications.* 3 credits.
Introduces range of methods for tracking the performance of metropolitan economies, identifying opportunities for economic development, and assessing effectiveness of public and private investments designed to achieve region's economic growth. Also examines strategies and case results of economic development plans and projects. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 605: *State and Local Government Policy and Economic Development.* 3 credits.
Examines state and local government policies and processes to promote local economic development, including institutional arrangements, financing and tax incentives, nonfinancial strategies and approaches, land use, environmental and other relevant regulations, and relationships across government and nongovernmental organizations. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 610: *Organizations, Management, and Work: Theory and Practice.* 2 credits.
This introduction to organizations, management, and work examines ideas and practices from two perspectives: conventional ones that go back to the industrial age and scientific management; and contemporary ones that have to do with organizing knowledge-work. Covers contributions of a range of writers and deals with foundations

of OD from the standpoint of both theory and practice. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 611: *Critical Infrastructure Protection in Theory, Policy and Practice.* 2 credits.
Introduces critical infrastructure protection as a policy field, examines its institutional framework, and considers its foundations in political and economic theory. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 650: *International Conflict and Crisis Response.* 3 credits.
First course of two-semester sequence on international peace operations. Focuses on emerging theory of peace operations, including peacemaking activities of United Nations and other diplomatic initiatives; peace-building activities of international organizations and nongovernmental organizations; and peace support provided by international militaries. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 651: *Peace and Stabilization Operations.* 3 credits.
Second course of two-semester sequence on international peace operations. Focuses on application of emerging theory of peace operations, including peace-making activities of United Nations and other diplomatic initiatives; peace-building activities of international organizations and nongovernmental organizations; and peace support provided by international militaries. Several guest lectures from past and present peace operations provide practical information for future staff of peace operations. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 652: *Strategies for Peace and Stabilization Operations.* 4 credits.
This course concentrates on the institutional mindsets, characteristics, and behaviors of the actors involved in peace operations. Readings, role-plays, and research underpin the class. Special attention is also paid to developing students' graduate-level research and writing skills. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 653: *Interagency Operations in Conflict and Post-Conflict Settings.* 3 credits.
Examines the U.S. Interagency process as it relates to peace operations. Various departments and agencies maintaining equities in overseas missions will be identified and explored. Case studies highlight instances of success or failure in application of a "whole-of-government" approach to intervention. Examines significant problems hampering Interagency cooperation today and recent policy directives, frameworks, and initiatives developed to address this situation. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 654: *Analysis for Peace Operations.* 3 credits.
Examines theories of human behavior and social systems as they relate to conflict at the interpersonal, community, and international

level. The class provides a foundation of academic thinking about the role of conflict in violent and peaceful social change. At the end of the course, students should be able to think systematically and critically about conflict, and engage in practical application of conflict analysis techniques to peace operations. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 655: *State- and Institution-Building.* 4 credits.
Ending prolonged civil conflicts often necessitates building stronger state institutions as well as addressing broader social, economic, and political issues affecting particular places and peoples. This course examines the literatures on state formation and state building from a historic, regional, and functional perspective paying special attention to polities exiting civil conflicts. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

700 Level Courses

PUBP 700: *Theory and Practice in Public Policy.* 1-4 credits.
Theories of public policy emphasizing historical intellectual development, and role theory and ethics may play in public policy making. Assumptions made by policy professionals examined against broad range of philosophical, social, political, and economic imperatives affecting public policy environment. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 702: *Comparing Political Institutions.* 3 credits.
Examines political institutions and processes from comparative and international perspectives, and role of political environment in economic trade and investment policy decisions. Examines how generalizability, objective knowledge and understanding, and nature of evidence impact public policy. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 704: *Statistical Methods in Policy Analysis.* 3 credits.
Graduate-level introduction to statistical methods and techniques used in policy sciences. Topics include descriptive statistics, sampling and probability theory, graphical data display, estimation and significance testing, contingency tables, bivariate regression and correlation, and multiple regression, with introduction to computer based statistical analysis. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 707: *Budget Decision Making: Concepts and Practices in Economic and Financial Analyses.* 3 credits.
Studies analytical concepts and techniques used in public-sector overall budgetary and specific project decision making. Includes conceptual concerns and quantitative techniques used in benefit-cost analysis, capital budgeting, financial analysis, and various specialty applications, such as economic and fiscal impact analysis. These are all interrelated by the desire to measure the benefits versus the costs of various alternative public decisions. Attention is given to measuring results over time and the use of present value techniques. Assesses strengths and weaknesses of analytical techniques. Emphasizes the process of defining the appropriate stakeholders affected by decisions, the sources and quality of data, and the rigor of conducting studies. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 709: *Professional Writing for Policy.* 3 credits.
Professional Writing teaches effective writing for the professions. The course includes the fundamentals of writing -- grammar, word usage and paragraphing and instruction in selected genres, including news stories, editorials, and research writing. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Enrollment limited to students in the Schar School of Policy and Gov college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 710: *Topics in Public Policy.* 1-3 credits.
Focuses on selected topics in public policy not covered by fixed-content public policy courses. Offered by Schar School of Policy & Govt. May be repeated within the term for a maximum 15 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 712: *Policy Systems Analysis and Management Science.* 3 credits.
Introduces analytical models and analysis to support decisions. Primary emphasis on understanding techniques of operation research and management science, cost benefits, and cost effectiveness for public decision making. Using mathematical details of algorithms to solve models not emphasized except as it contributes to understanding reliability and validity of methodologies. Through case studies and computer solutions, offers appreciation of when, where, and how to use models. Students demonstrate their understanding of techniques by applying them to term research project on government program. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 714: *Topics in Transportation Policy, Operations, and Logistics.* 1-3 credits.
Issues in transportation policy, operations and logistics in United States and abroad. Includes practical applications of theories and analysis to policy problems, and emphasizes competence in improving policy in selected domains. May be taken up to three times and simultaneously for sections addressing different subject matter. Offered by Schar School of Policy & Govt. May be repeated within the term for a maximum 9 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 715: *Introduction to Transportation Systems.* 3 credits.
Transportation is a service that contributes substantially to well-being of advanced economies. Resource requirements and byproducts of transportation also pose sobering environmental challenges for society. Course examines history and development of transportation systems; contribution to and impact on society; institutions and practices that govern planning, design, construction, operation, maintenance, and retirement from service; and policy and managerial challenges, and tools and techniques for addressing them. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 716: *Transportation Operations and Logistics.* 3 credits.
Provides survey of issues, methods, problems, and strategies. Topics include origins of logistics, industry structure, pricing, underwriting, rate making, compliance, inventory effects, just-in-time inventory management (JIT), materials requirements planning (MRP), customer service and order processing operations, sales functions and operations, dispatch and fleet manager functions and operations, rate-setting among three parties, typical electronic and paper document flow, routing and scheduling, route selection, satellite load tracking through dispatch-customer web inquiry, role of ITS in route selection, toll system use, congestion, training activities, and logistics markets. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 717: *Analysis for Transportation Managers.* 4 credits.
Introduces basic methods of transportation analysis and evaluation relating them to policy framework. Covers descriptive statistics, hypothesis testing, contingency tables (Chi-Square analysis), regression, optimization, demand elasticities, and gravity model. Also covers sources of transportation data and research design. Teaches mathematical base and logic of each technique, but primary emphasis is applying methods to relevant policy and management problems. Students required to complete series of assignments along with research proposal focused on applying one or more methods to problem of their own interest. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 718: *Transportation Planning and Policy.* 3 credits.
Introduces highway, rail, air, and water transport planning in United States. Teaches legislative, organizational, fiscal, legal and political environment within which planning for transportation facilities and services takes place. Introduce technical and analytical methods for transportation planning. Focus is largely on public sector, but also considers commercial transport planning and role of private sector in helping to design, manage, and finance transport systems. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 719: *Transportation Law.* 3 credits.
Examines legal environment of transportation. Topics include basic legal concepts and institutions, history and evolution of price and service regulation, environmental law and regulation, labor relations, and property. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 720: *Managerial Economics and Policy Analysis.* 3 credits.
Introduces microeconomics theory and its application in analyzing public policy issues. Provides capability to understand economic literature and theories. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 721: *Transportation Economics.* 3 credits.
Provides basis for understanding economics of transport system, and how transportation relates to urban and regional development. Treats transport generically, but includes case studies of specific modes. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 722: *Practicum in Transportation Policy, Operations, and Logistics.* 3 credits.
In-depth field study of ongoing transportation policy, operations, or logistics situations; and design and delivery of actions to manage or resolve problems and opportunities. Range of application areas depends on interests of student body and opportunities faculty identify for "clients" or real-world projects. Illustrative domain areas include surface transportation (highways and transit), airports, and aviation. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 723: *Metropolitan Transportation Policy.* 3 credits.
Recent changes in federal legislation have led to renewed importance for transportation policy and planning. Considerations of clean air, economic development, congestion management, and changing urban form have greatly increased importance of well-planned transportation facilities and policies. Course introduces basic methods of transportation policy analysis and evaluation. Topics include data collection, simplified demand estimation techniques, transportation choice modeling, transportation supply analysis, and ex-ante and ex-post evaluation methods. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 726: *Telecommunications Policy.* 3 credits.
Examines salient issues associated with telecommunications and electronic commerce in context of public policy questions facing decision makers in government, education, and business. Examples include privacy, electronic signatures, digital divide, bandwidth auctions, IP telephony, CRM, Bluetooth, and Internet taxation. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:

This course is graded on the Graduate Regular scale.

PUBP 730: *US Institutions and the Policy Process.* 3 credits.
Explores the United States constitutional system of government, including the principal governmental and non-governmental institutions shaping American public policy. Investigates the national policy making process and the interplay between politics and policy. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 731: *Macroeconomic Policy Assessment.* 3 credits.
Covers monetary theory, theories of consumption and saving, budget deficits, economic growth, international finance, and monetary and fiscal policy. Investigates national income and product accounts, savings, employment, and investment, and alternatives to Keynesian principles. Evaluates theories of inflation, investment, capital accumulation, and nonproportional growth. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 732: *Labor Markets and Policies.* 3 credits.
Analysis of labor market issues and policies, including those affecting employment, wages, working conditions, and unemployment -- issues central to current policy debates on job creation, inequality, discrimination, immigration, education, and social programs. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 733: *Urban Politics and Policy.* 3 credits.
This course explores the factors that guide and affect urban politics and policy including, but not limited to, housing, public education, criminal justice, employment, and economic development. It is designed to provide students with an introduction to the major theories and some of the significant research in urban politics and policy. The primary focus will be on large American cities. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 734: *Administrative Law and Public Policy.* 3 credits.
Covers administrative discretion, rule-making and agency proceedings, public participation, political accountability, regulatory processes, oversight, formal adjudication and informal action, lobbying agency administrators, and political and legal nature of the administrative process. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 735: *Lobbying and Interest Representation.* 3 credits.
To work effectively within a democratic political environment, policy analyst must understand contemporary methods used to influence policy. Course focuses on roles and techniques of organized influence, and its impact on policy. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 736: *International Migration and Public Policy.* 3 credits.
Examines demographic, economic, political, and social forces driving international migration on a global basis in the twenty-first century. Considers policy responses within sending and receiving countries and at the global level, including the role of international cooperation and institution-building. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 737: *Cases and Concepts in E-Government.* 3 credits.
Electronic government has become a significant public policy issue worldwide. It offers the prospect of dramatic improvements in delivering government services, but also portends major debate about government intrusion. Course covers emerging public policy issues associated with electronic government: job displacement in public sector, privacy, procurement and supply chain management, voter profiling, scope of

government services, challenges to "digital democracy," Internet-based voting, land management, the "digital divide," and others. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 739: *Media and Public Policy.* 3 credits.
Explores complex relationship between media and public policy. Examines how these forces collide in our modern media, how coverage decisions regarding public policy are made in newsrooms, how advocates use and rely on the media to advance message, and how different media reflect different strengths and vulnerabilities. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 740: *U.S. Foreign Policy: Formulation and Practice.* 3 credits.
Focuses on policy formulation and policy implementation. The principal arenas of foreign policy are explored, including the White House, the State Department, the defense and intelligence communities, and the Congressional committees. These arenas are both affected by and influential upon the exogenous systems, such as the media, public opinion, interest groups, foreign governments, and international organizations. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 741: *U.S. Financial Policy Processes and Procedures.* 3 credits.
Examines the design and operation of expenditure and revenue systems and programs at federal, state, and local levels of U.S. government. Covers a variety of public finance topics including mobilization of resources through planning, adoption, and execution of budget; theory, policy objectives, and microeconomic impact of tax policy and spending programs; and financial controls, cash and debt management, and accounting and financial reporting systems. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Recommended Prerequisite: PUBP 720.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 742: *Transportation Safety and Security.* 3 credits.
Examines transportation safety and security from multimodal perspective for both passenger and freight. Topics include historical context and policy framework, regulation, institutional issues, new security arrangements for preventing organized terrorist attacks, infrastructure design, vehicle design, operating protocols, and information systems. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 743: *National Security Management and Policy.* 3 credits.
Examines hierarchies in national security from the president to military establishment, including National Security Council, secretary of defense, joint chiefs of staff, commanders-in-chief of unified and specified commands, and intelligence agencies. Covers policies involving national defense, peace-keeping operations, embargoes and other sanctions, defense conversion, and military acquisition policy. Also covers significant legislation affecting national security, such as National Security Act of 1947 and Goldwater-Nichols Act of 1986. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 744: *Federal Institutions and Management.* 3 credits.
Covers management and policy in federal government, examining policy problems within context of national system of governance, including political environment, evolution and constitutional framework of American government, U.S. Congress, executive branch from White House to agencies, and role of interest groups and political parties. Special attention to implementing legislation, regulatory process, and intergovernmental relations. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 745: *Transportation and the Environment.* 3 credits.
Multidisciplinary examination of implications of transportation and ways public policy has attempted to handle them, and how policy may move in the future. Explores all modes of transportation and most environmental ramifications. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 747: *Air Transportation Policy, Operations and Logistics.* 3 credits.
Reviews evolution of various forms of air transport such as airlines, general aviation, and military aviation; and includes basics of airline economics, especially as they intersect with airline operations and the management of hub and spoke networks; air traffic control technologies and operations and their intersection with airline economics; safety and security technologies and regulations; future of various elements of air transportation; and effects of deregulation on air travel. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 748: *Public Transportation Policy, Operations and Logistics.* 3 credits.
Provides general system description for components comprising typical publicly funded transit property. Topics include organizational structure, historical context, budget development including operating and capital budgets, personnel and labor relations, regulatory framework, operations management (bus and commuter rail), reporting structure, customer service, and contracted operations. Also discusses current topics of interest, such as security of transit systems and transit's role in air quality. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 750: *History of Military Operations Other than War.* 3 credits.
Focuses on history of military activity in support of noncombat missions. Uses historical examples of early days of United States and colonial histories of Western and Eastern powers. Also touches on use of military force in support of multinational peace operations. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 751: *International Police Operations.* 3 credits.
Analyzes role of international police monitors and domestic police forces in international peace operations. Focuses on how using international police monitors and developing indigenous law-enforcement capabilities can improve prospects for success of international peace operations. Examines origins, mandates, planning, and deployment of international civilian police forces; problems of coordinating international police operations with international military forces and local security forces; international role in developing democratically oriented police forces; relationship of police to the entire judicial system; and the need to continue assistance to all parts of the judicial system beyond initial intervention. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 752: *Infrastructure Finance.* 3 credits.
Covers planning, budgeting, and financing of infrastructure, including air, water and surface transportation, public utilities, and other major public works. Focuses on private capital markets for projects funding as well as domestic and international loan and grant programs. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 753: *Ethics in Public Policy.* 3 credits.
Inquiry into ethical and moral issues in public policy. Explores issues that are controversial and often confusing to public policy makers such as health care, secrecy in government, surrogate motherhood, and disability. Perspectives are national as well as global, and deal with impact of culture and politics on ethical dilemmas confronting society. Also looks at processes by which specific ethical systems are incorporated into governing bodies. Larger issues, such as war and peace, just and unjust wars, capital punishment, medical and legal ethics, and communitarian vs. individual liberties are also included, with emphasis on how they affect public policy. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 754: *Geographic Information Systems and Spatial Analysis for Public Policy.* 3 credits.
Introduces Geographic Information Systems (GIS), including spatial data tools, to answer applied policy questions. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (POGO 511[B-] or 511[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

PUBP 755: *National Security Decision-Making Policy.* 3 credits.
Applies behavioral, economic, strategic, and other decision theories to U.S. government and other actors in historical national security crisis cases and current policy issues. Explores tension in decisions between rational goal seeking by actors vs. organizational process, and aims to develop usable decision tools. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 756: *Global Medical Systems Policy Analysis.* 3 credits.
Equips students with knowledge and skills to critically analyze structures, functions, governing policies, and performance of healthcare systems; to identify problems and solutions; and to devise alternative courses of action and reform policies that would contribute to achieving goals. Prepares students in policy analysis rooted in systems analysis, while linking issues, objectives, and solutions with the larger context in which a system is embedded. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 757: *Public Policy in Global Health and Medical Practice.* 3 credits.
Introduces international medical policy. Covers globalization of health and medical policies directed at removing disparities, financing, ethical considerations of biomedical research, and use of emerging technologies. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 758: *Global Threats and Medical Policies.* 3 credits.
Explores medical and health governance, biosecurity and biosafety, health and natural and human-made disasters, humanitarian and emergency assistance, vaccine development, behavior and health, critical infrastructures, bioethics and resource allocations in global context. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

PUBP 759: *National Security Law and Public Policy.* 3 credits.
Introduces legal and policy issues concerning current U.S. national security. Its emphasis is on developments since 9/11. It focuses on the legal rules governing the formulation and execution of U.S. national security policy. It examines U.S. and international law as well as general domestic and foreign policy considerations. In particular, the course considers the principal cases, legislation and treaties impacting U.S. national security. Special emphasis is on the interplay of national security concerns and civil liberties in this age of global and transnational terrorism. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 760: *Science and Technology Policy in the 21st Century.* 3 credits.
Investigates roles dynamic scientific research and technological innovation play in contemporary society. Focuses on design and analysis of alternative public policies intended to influence rate and direction of technological change in societies, and use of scientific and technical knowledge in public policy making. Uses historical and international comparative approaches to assess politics and pragmatics of science and technology policy. Includes material from policy evaluation and analysis, organization theory, economics of innovation, and sociology of science and technology. Applications focus on areas of concern to "new

economy" such as biotechnology, networked telecommunications and computing, and globalization of technology-based production. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 761: *Social Entrepreneurship and Public Policy.* 3 credits.
This course is about people who start new ventures with the explicit objective of creating social as well as private value. As societies and the challenges they face become ever more complex, existing institutions and incentive structures may or may not be adequate to address new generations of problems. Social entrepreneurs innovate new organizational forms with the objective of finding solutions in the public interest. Students in this course will be challenged to integrate elements of business strategy and policy analysis towing the objective of crafting a practical plan for the launch of a novel and needed social venture. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 762: *Social Institutions and Public Policy.* 3 credits.
Limited government involvement in social policies changed drastically during the 1960s, with an explosion of social programs designed to ameliorate poverty, reduce crime, and eliminate racial segregation. These new social policies affect many institutions, including family, schools and colleges, criminal justice system, and government agencies. Many of these policies have been controversial, with debates over efficacy and whether they have cured or exacerbated social problems. Course examines evolution and status of selected American social policies, including civil rights policies, education reform, family policy, crime prevention, and other topics chosen by students. Readings and discussions on policy issues linked to readings and discussions on social theories and value systems that underpin social policies. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 763: *Illicit Trade.* 3 credits.
Examines the role that illicit trade assumes in international trade and commerce. The class examines diverse international illicit markets and their convergence. It analyzes the role of illicit trade in perpetuating insecurity and instability globally, conflicts,environmental degradation and how the most pervasive forms of illicit trade undermine economic development, peace and justice, and prosperity. Examines the actors involved in illicit commerce including corrupt officials, organized criminal organizations, terrorist groups, and complicit superfixers (market facilitators). Examines needed policies to stem growth, develop cross-border responses, capacities, and technologies to curb the proliferation of illicit trade. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 764: *Transnational Crime and Corruption.* 3 credits.
Provides an overview of transnational crime, kleptocracy, and diverse forms of corruption and examines their political, economic, social, and environmental effects. Focuses on the growing problem of transnational crime in conflict regions, and efforts to develop effective economic development strategies including the UN's Sustainable Development Goals (SDGs). Addresses the inter-connections among transnational criminal organizations and gangs, corruption and terrorism. It analyzes diverse range of activities of transnational crime groups in both the legitimate and illegitimate economy and how their illicit trade fuels greater insecurity and instability across the world. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 765: *Human Smuggling and Trafficking.* 3 credits.
Examines the rapidly growing phenomenon of human smuggling and trafficking. Addresses the underlying causes and reasons for the growth of these phenomena and their far-reaching and diverse social, political and economic consequences globally. Transnational crime dimensions of the problem are a central component of the class including the human rights costs of this crime. The role of technology including online platforms and social media in its proliferation are discussed. The phenomenon is examined in conflict regions, developing, diverse developed as well as transitional societies. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 766: *Modern Counterinsurgency: Theory and Practice.* 3 credits.
This course is intended to give students a broad understanding of the nature of counterinsurgency, the policy implications of the U.S. becoming involved in an insurgency, and the multifaceted, interagency approach that is required to successfully combat an insurgency. The course includes case studies, a review of contemporary U.S. counterinsurgency practices, and insights on what the future might hold in this important type of conflict. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 767: *Ethics in Health Policy.* 3 credits.
Examines major ethical issues raised in health policy and medical practice around the world. Studies issues comparatively and applies various ethical frameworks to study them. Considers various legal and policy solutions derived to deal with them. Principles of biomedical ethics as well as consideration of several major schools of thought in political philosophy, including utilitarianism, libertarianism and communitarianism will be considered. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 768: *Education and Public Policy (Topic Varies).* 3 credits.
Explores current issues and policy initiatives in education policy at federal, state, and local levels, with emphasis on education reform. Issues and topics vary. Typical policy issues include raising academic standards, high-stakes testing, alternative governance including school choice and voucher policies, teacher quality and certification, role of school resources in academic outputs, and equity topics. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 769: *Political Violence and Terrorism.* 3 credits.
Examines the persistent threat of terrorism and political violence to international stability generally, and U.S. national security interests in particular. Provides students with a long-term analytical and substantive foundation to deepen their knowledge and effectiveness as policy-makers in national security, diplomacy, homeland security, law enforcement, humanitarian law, peace operations, postconflict reconstruction, development assistance, public diplomacy and other related areas. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 770: *Health Policy Analysis.* 3 credits.
Prepares students in global health policy analysis with a focus on processes, roles, expenditures, alternatives and tradeoffs in different country settings. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 775: *Economics of Electronic Commerce.* 3 credits.
Focuses on gaining competitive advantage through electronic commerce implementation; identification and growing of new market opportunities and electronic enabling of existing business relationships; and business-to-consumer relationships and economics of strategic procurement, ERP hosting, customer relationship management, catalog hosting, portal operations, and supplier management. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 777: *Critical Infrastructure Protection: Policy and Practice.* 3 credits.
Introduces critical infrastructure protection and resilience as a policy field, examines its governance framework, and considers its foundations in institutional theory and risk analysis. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 780: *Evolution of the Washington Metropolitan Economy.* 3 credits.
Includes historical context, role of federal spending, tourism, technology sector, international business, regional organizations, local government policies, and forecasts. Evaluates development patterns in Washington, D.C., Northern Virginia, and suburban Maryland. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 781: *Entrepreneurship and Economic Development.* 3 credits.
A knowledge spillover theory of entrepreneurship is employed to link between theories of entrepreneurship and theories of innovation and regional development. Other interconnections are explored at the regional level as firms forge networks, clusters, and specialized markets. The public policy issues of these constructs, including competition policy, industrial policy, and cluster policy, are examined within a regional and global context. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

PUBP 782: *International Financial Policy.* 3 credits.
Addresses theory of international finance, application to financial policy such as exchange rate regimes, and institutions of international finance. Covers operations of International Monetary Fund and World Bank, development of European Monetary Union, and debate over "international financial architecture." Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 783: *Global Governance.* 3 credits.
Surveys important issues in global governance given changes in contemporary world. Explores dynamics and complexity of formal and informal actors, institutional arrangements, organizations, and roles in process of governance in international sphere. Considers states, governmental and nongovernmental organizations, international regimes, social movements, regional associations, and multinational corporations as actors bearing on transnational authority. Examines various vehicles for international coordination and conflict in terms of relevance and opportunities for global governance. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 784: *Entrepreneurship, Economics, and Public Policy.* 3 credits.
To demonstrate that global capitalism is a process driven by entrepreneurship, students study the Austrian school of economics, which views capitalism as a process of creative destruction, as well as other economists who emphasize entrepreneurship and change. The course reviews the history of capitalism, focusing on the so-called industrial revolutions in Britain, Germany, Japan, and the United States, and on particular historical and current entrepreneurs. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 791: *Advanced Field Research for Policy: Theory and Method.* 4 credits.
Teaches how to analyze the framing of policy questions and examine culture and organization at group, organizational, interorganizational, and societal levels. Covers case study research, open-ended interviewing, participant-observation, social network analysis, and historical and archival research. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

PUBP 792: *Advanced Economic Analysis for Policy Research.* 4 credits.
Builds analytical skills in economic analysis for policy research for students with competence in elementary calculus. Reviews mathematical techniques and covers consumer theory, demand estimation and forecasting, production theory, cost-benefit analysis, technological change and productivity analysis, growth theory, market structure and competition, game theory, capital budgeting, and public sector's role in the economy. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Recommended Prerequisite: PUBP 720 or equivalent.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

PUBP 795: *Final Project.* 1-3 credits.
Project developed drawing on key themes of the program, in consultation with the program director. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Special scale.

PUBP 799: *Master's Thesis.* 1-6 credits.
Individualized section form required. Original research endeavor related to student's program concentration. Research must result in document meeting public policy and university standards. Offered by Schar School of Policy & Govt. May be repeated within the degree.

Recommended Prerequisite: Degree candidacy in a Public Policy Master's program, completion of required credits of graduate course work, and approval of a thesis proposal by the faculty advisor, two committee members, and the program director.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Thesis

Grading:
This course is graded on the Satisfactory/No Credit scale.

800 Level Courses

PUBP 800: *Culture and Public Policy.* 1-4 credits.
Comparative analysis of the role of culture in shaping policy environments and outcomes. Introduces analytical methods for studying culture, including measurement of social and cultural change, surveys, and field studies. Presents major findings and research issues regarding the role of culture in democracy, ethnic and gender relations, economic growth and other policy issues. Focuses on differences among national and regional cultures, and their policy implications. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Enrollment limited to students in a Doctor of Philosophy degree.

Enrollment limited to students in the Schar School of Policy and Gov college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 801: *Research Design for Public Policy.* 1-4 credits.
Provides an introduction to the theory and practice of research in public policy. Gives students an understanding of issues in the philosophy of science and different approaches to social science research. Provides broad overviews of quantitative and qualitative methodologies, with a major emphasis on research design, including conceptualization, the role of theory, hypothesis generation, inference and bias. Offered by Schar School of Policy & Govt. May not be repeated for credit. Equivalent to POGO 801.

Recommended Prerequisite: PUPB 720 and PUBP 730, or their equivalents strongly recommended.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Enrollment limited to students in a Doctor of Philosophy degree.

Enrollment limited to students in the Schar School of Policy and Gov college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 802: *The Logic of Policy Inquiry.* 1-4 credits.
Defines policy research problems, questions, and hypotheses. Explores modes of policy research, analysis, and rhetoric, including interdisciplinary research strategies. Uses information sources to emphasize written communication of policy research results. Also discusses professional practice issues. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Enrollment limited to students in a Doctor of Philosophy degree.

Enrollment limited to students in the Schar School of Policy and Gov college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 804: *Multivariate Statistical Analysis in Public Policy.* 4 credits.
Explores multivariate techniques of contingency table analysis, reliability and validity assessment, factor analysis and scaling, multivariate regression and path analysis, analysis of variance and covariance, and other selected multivariate techniques. Emphasizes applying these techniques to real policy data using sophisticated statistical packages. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (POGO 511[B-] or 511[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to Graduate level students.

Enrollment limited to students in a Doctor of Philosophy degree.

Enrollment limited to students in the Schar School of Policy and Gov college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 805: *Foundations of Social Science for Public Policy.* 4 credits.
Grounds doctoral students in core concepts of political science and economics through critical analysis of classic sources, old and new. Topics may include theory of the state, state-market relations, democratic governance, markets and economic institutions, and other relevant frameworks for public policy research. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Recommended Prerequisite: PUBP 730 or equivalent.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Enrollment limited to students in a Doctor of Philosophy degree.

Enrollment limited to students in the Schar School of Policy and Gov college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 806: *Advanced Management Science for Public Organizations.* 3 credits.
Primary emphasis is to understand techniques of operations research and management science, cost benefits, and cost effectiveness for public policy decision making. Some familiarity with elementary calculus and linear algebra helps with understanding mathematical basis of algorithms used to solve models, and reliability and validity of these techniques. Case studies and computer solutions help students understand when and how to use OR models. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Recommended Prerequisite: PUBP 712 or equivalent.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Enrollment limited to students in a Doctor of Philosophy degree.

Enrollment limited to students in the Schar School of Policy and Gov college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 810: *Regional Development and Transportation Policy.* 4 credits.
Introduces and critiques theory and methods used in regional and transportation policy analysis. Explores central place, growth pole, and economic base theories as well as other theoretical constructs used in regional policy analysis. Introduces and examines methodological tools such as regional econometric modeling, multiobjective programming, shift-share analysis, economic base analysis, location quotient analysis, and input-output analysis. Examines selected regional and transportation public issues using theoretical and methodological constructs. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Enrollment limited to students in a Doctor of Philosophy degree.

Enrollment limited to students in the Schar School of Policy and Gov college.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

PUBP 811: *Applied Methods in Regional Development and Transportation Policy.* 4 credits.
Students develop research papers that investigate aspect of regional and transportation policy, with goal of producing publishable papers. Students are expected to prepare two-page proposal followed by detailed proposal and finally, completed paper. Each is critiqued in the seminar, which is organized to conform to process of review and critique. Instructor works with students individually as well as in seminar sessions. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Enrollment limited to students in a Doctor of Philosophy degree.

Enrollment limited to students in the Schar School of Policy and Gov college.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

PUBP 817: *Policy Research Topics: Transportation Policy.* 3 credits.
Research workshop examining development of policy research and relevant methodologies linked directly to faculty and student interests. Students identify cutting-edge policy concerns and execute research program. The 4-credit version of course requires discussion section and research laboratory. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment is limited to Graduate level students.

Enrollment limited to students in a Doctor of Philosophy degree.

Enrollment limited to students in the Schar School of Policy and Gov college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 820: *Technology, Science, and Innovation: Institutions and Governance.* 4 credits.
Explores how political and economic institutions and cultural values shape pace, direction, costs, and benefits of technological innovation and scientific research. Special emphasis on interaction between national institutions, and values and processes of globalization. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Enrollment limited to students in a Doctor of Philosophy degree.

Enrollment limited to students in the Schar School of Policy and Gov college.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

PUBP 821: *Analytic Methods for Technology, Science, and Innovation Policy.* 4 credits.
Covers major methodological approaches to study of technology, science, innovation, and public policy. Focuses on analytical inputs to policy making, and assesses practical consequences in such areas as security, energy, environment, and health. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Enrollment limited to students in a Doctor of Philosophy degree.

Enrollment limited to students in the Schar School of Policy and Gov college.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

PUBP 830: *Comparative Socioeconomic Policy.* 1-4 credits.
Throughout the past century, numerous socioeconomic theories have competed for primacy. This course compares, contrasts, and analyzes some of the leading socioeconomic theories and policies and places them in a global context. The role of these theories in shaping current public policy is explored. Offered by Schar School of Policy & Govt. May not be repeated for credit. Equivalent to ECON 676.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Enrollment limited to students in a Doctor of Philosophy degree.

Enrollment limited to students in the Schar School of Policy and Gov college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 833: *Topics in Public Policy.* 1-4 credits.
Focuses on selected topics in public policy not covered in fixed-content public policy courses. Offered by Schar School of Policy & Govt. May be repeated within the term for a maximum 9 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment is limited to Graduate level students.

Enrollment limited to students in a Doctor of Philosophy degree.

Enrollment limited to students in the Schar School of Policy and Gov college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 834: *Entrepreneurship, Growth, and Public Policy.* 1-4 credits.
Focuses on a closer consonance among entrepreneurship, geography, and economic growth. Studies the creation and incubation of new knowledge and features three theoretical fields: the new growth theory; the new economic geography; and the new economics of innovation. Develops a knowledge spillover theory of entrepreneurship. Examines public policy issues arising from these constructs, including competition, within a regional and global context. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Enrollment limited to students in a Doctor of Philosophy degree.

Enrollment limited to students in the Schar School of Policy and Gov college.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

PUBP 835: *Entrepreneurship, Creativity, and Innovation.* 1-4 credits.
Provides multidisciplinary foundation for the study of entrepreneurship, creativity, and innovation, and their effects on regional and national economic growth. Draws from seminal thinkers and emphasizes creativity and innovation. Examines how organizational change, institutional structure, and geographic clustering drive the development of regional and national economies. Explores these issues through the lens of the three Ts of economic growth: technology, talent, and tolerance. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Enrollment limited to students in a Doctor of Philosophy degree.

Enrollment limited to students in the Schar School of Policy and Gov college.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

PUBP 840: *U.S. Policy-Making Institutions.* 4 credits.
Examines major institutions that formulate and implement policy at national level. Emphasizes presidency, Congress, and executive branch bureaucracies. Also considers agenda-building institutions such as media, interest groups, political parties, and elections. Offered by Schar School of Policy & Govt. May not be repeated for credit. Equivalent to POGO 840, PUAD 840.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Enrollment limited to students in a Doctor of Philosophy degree.

Enrollment limited to students in the Schar School of Policy and Gov college.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

PUBP 841: *U.S. Policy-Making Processes.* 4 credits.
Analyzes major U.S. public policy processes. Attention to major instruments for implementing policy, including regulation, grants, tax policy, and market-based mechanisms; and how different methodologies are appropriate for understanding aspects of policy inquiry. Covers ethical and accountability aspects of policy, including federalism, intergovernmental relations, and state and local governance. Offered by Schar School of Policy & Govt. May not be repeated for credit. Equivalent to POGO 841, PUAD 841.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Enrollment limited to students in a Doctor of Philosophy degree.

Enrollment limited to students in the Schar School of Policy and Gov college.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

PUBP 860: *Social Theory, Culture, and Public Policy.* 4 credits.
Covers major social and cultural theories that underlie public policies. Selections from classical and contemporary social theorists relevant to studying social change, social capital, and social organization. Focuses on interplay among culture, social institutions, social processes, and policy. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Enrollment limited to students in a Doctor of Philosophy degree.

Enrollment limited to students in the Schar School of Policy and Gov college.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

PUBP 861: *Culture and Social Policy Analysis.* 4 credits.
Applies social and cultural theories to policy topics, including methodological approaches and empirical studies. Emphasizes linkage between theory and empirical research, and methods appropriate for social policy study. Policy topics may include poverty and inequality, family, education, crime and corruption, immigration, and health. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Enrollment limited to students in a Doctor of Philosophy degree.

Enrollment limited to students in the Schar School of Policy and Gov college.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

PUBP 862: *Institutional Analysis and Policy.* 4 credits.
Policy analysts are increasingly cognizant of the influence of societal institutions in shaping public policy, not only in terms of policy design, but also as a determinant of implementation. This course reviews the growing literature regarding institutional analysis; furthermore, it considers the ways in which institutions help shape the policies that emerge within a given society and the context by which they are evaluated. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Enrollment limited to students in a Doctor of Philosophy degree.

Enrollment limited to students in the Schar School of Policy and Gov college.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

PUBP 870: *Organizational and Policy Aspects of Informatics.* 1-4 credits.
Examines effects of informatics on national and international policy; setting international policy on informatics; ethical and social change in governments and organizations; shaping national policy in informatics; industry growth; and research methods from various scientific disciplines. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Enrollment limited to students in a Doctor of Philosophy degree.

Enrollment limited to students in the Schar School of Policy and Gov college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 871: *Organizational and Information Technology Challenges of the Knowledge Society.* 4 credits.
Explores links of policy, managing organizations, and information technologies in postmodern era. Includes issues related to contradictions among conventional models of organizational and process design, policy and regulatory structures, ideologies, and information technologies. Provides framework for becoming a sophisticated analyst of policy, organizations, and information technology. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Recommended Prerequisite: PUBP 870.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Enrollment limited to students in a Doctor of Philosophy degree.

Enrollment limited to students in the Schar School of Policy and Gov college.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

PUBP 872: *Managing Knowledge-Based, Information-Intensive Organizations.* 4 credits.
Deals with challenges of planning, creating, integrating, and managing contemporary information-technology enabled public and private sector organizations, and managing relationships between public and private enterprises enabled by information technology initiatives. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Enrollment limited to students in a Doctor of Philosophy degree.

Enrollment limited to students in the Schar School of Policy and Gov college.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

PUBP 880: *Global and International Public Policy I.* 4 credits.
Explores multiple dimensions of globalization and internationalization relative to public policy processes and consequences. Offers substantive insight into contemporary public policy dynamics from global and comparative perspectives. Accordingly, it examines a broad range of international cultural, political, technological, and economic policy issues, and their interactions and implications at all levels of analysis. Engages relevant theoretical and methodological approaches and debates to provide tools for analyzing various world problems and policies. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Enrollment limited to students in a Doctor of Philosophy degree.

Enrollment limited to students in the Schar School of Policy and Gov college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

PUBP 881: *International Trade Policy.* 4 credits.
Addresses international trade theory, trade policy analysis, regional economic integration, and institutional arrangements governing world trade. Covers World Trade Organization (including constituent agreements in goods, services, intellectual property and trade-related investment measures), regional trade agreements such as NAFTA, dispute settlement regimes, and relations between trade and the environment. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Enrollment limited to students in a Doctor of Philosophy degree.

Enrollment limited to students in the Schar School of Policy and Gov college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

900 Level Courses

PUBP 997: *Field Statement.* 1 credit.
Requires work on field statement in preparation for field exam. Notes: Must register in semester during which field exam will be taken. Does not apply to credit degree requirements. Note: Restricted to public policy PhD students. Students must contact program coordinator for permission and CRN number to register via Patriot Web. Offered by Schar School of Policy & Govt. May not be repeated for credit.

Recommended Prerequisite: Permission of field committee chair.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Enrollment limited to students in a Doctor of Philosophy degree.

Enrollment limited to students in the Schar School of Policy and Gov college.

Schedule Type: Independent Study

Grading:
This course is graded on the Satisfactory/No Credit scale.

PUBP 998: *Research/Proposal for Dissertation.* 1-9 credits.
Requires work on research proposal that forms basis for doctoral dissertation. Notes: No more than 24 credits of PUBP 998 and 999 may be applied to doctoral degree requirements. Offered by Schar School of Policy & Govt. May be repeated within the degree.

Registration Restrictions:
Enrollment limited to students in a Doctor of Philosophy degree.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

PUBP 999: *Dissertation.* 1-9 credits.
Requires research on approved dissertation topic under director on dissertation committee. Notes: No more than 24 credits of PUBP 998 and 999 may be applied to doctoral degree requirements. Offered by Schar School of Policy & Govt. May be repeated within the degree.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy.

Enrollment limited to students in a Doctor of Philosophy degree.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

Reading (EDRD)

300 Level Courses

EDRD 300: *Literacy and Curriculum Integration.* 3 credits.
Provides an overview of literacy development in PK-12 students. Builds understanding of disciplinary instructional strategies to support students' development of reading, writing, listening, speaking, viewing, and visually representing in the fine arts or health and physical education. Emphasizes integration of reading and other language arts across the curriculum. Note: School-based field experience required. Offered by School of Education. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EDRD 301: *Facilitating Literacy in School or Community Settings.* 3 credits.
Provides knowledge, teaching strategies, and support for students working with developing readers and writers. Emphasizes implementation strategies that foster literacy development; incorporation of trade books and technology resources into individual and small group work; and reflection. Note: Requires 45 hours of school-based field experience during course. Offered by School of Education. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

EDRD 419: *Literacy in the Content Areas.* 3 credits.
Examines language and literacy processes of adolescent learners. Builds understanding of reading, writing, listening, speaking, viewing, and visually representing in content areas. Evaluates disciplinary instructional strategies to support students' development of academic language and comprehension, including adaptations for diverse learners' needs. Fosters an awareness of the role of multiple texts and independent reading in adolescent learners' literacy practices. Offered by School of Education. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: ((SEED 372[C], 466[C], 469[C] or 473[C]) and (SEED 472[*C], 476[*C], 479[*C] or 483[*C])).
[*] May be taken concurrently.
[C] Requires minimum grade of C.

Enrollment is limited to students with a major, minor, or concentration in Secondary Ed - Biology 6-12, Secondary Ed - Chemistry 6-12, Secondary Ed - Mathematic 6-12, Secondary Ed - English 6-12, Secondary Ed - Comp Sci 6-12, Secondary Ed - Physics 6-12 or Secnd Ed - Earth Science 6-12.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

500 Level Courses

EDRD 501: *Literacy and Curriculum Integration.* 3 credits.
Provides an overview of literacy development in PK-12 students. Builds understanding of disciplinary instructional strategies to support students' development of reading, writing, listening, speaking, viewing, and visually representing in the fine arts. Emphasizes integration of reading and other language arts across the curriculum. Note: School-based field experience required. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDRD 515: *Language and Literacy in Global Contexts.* 3 credits.
Focuses on the relationship of language to reading and the connection between language structure and how we learn to read. Examines theories of language acquisition and the complexity of language development and the reading process. Explores key factors that influence and enhance language learning and development. Introduces literacy instruction and assessment for all learners, and explores sociocultural perspectives on literacy. Offered by School of Education. May not be repeated for credit. Equivalent to EDRD 525.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Special scale.

600 Level Courses

EDRD 610: *Content Literacy for English Language Learners, PK-12.* 3 credits.
Focuses on research-based instructional strategies for integrating development of English learners' academic language and literacy skills with learning of content concepts across grade levels and disciplinary areas. Emphasizes sociocultural practices that leverage ELs' social, cultural, linguistic, and knowledge capitals to strengthen academic achievement in content classrooms. Fieldwork hours are required. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (EDCI 519[B-] or 519[XS]) and (EDCI 520[*B-] or 520[*XS]).
[*] May be taken concurrently.
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDRD 619: *Literacy in the Content Areas.* 3 credits.
Examines language and literacy processes of adolescent learners. Builds understanding of reading, writing, listening, speaking, viewing, and visually representing in content areas. Evaluates disciplinary instructional strategies to support students' development of academic language and comprehension, including adaptations for diverse learners' needs. Fosters an awareness of the role of multiple texts and independent reading in adolescent learners' literacy practices. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: For students in the Secondary Education program, SEED 566, SEED 567, SEED 569, SEED 572, or SEED 573 is a required prerequisite.

Recommended Corequisite: For students in the Secondary Education program, SEED 667, SEED 669, SEED 672, or SEED 673 should be taken concurrently.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDRD 620: *Reading/Writing in Foreign/World Languages.* 3 credits.
Introduces reading and writing processes in foreign and second languages, research on reading comprehension, and effective teaching and assessment approaches for students in PK-12 schools. Topics include reading goals and standards for foreign language learning, sociocultural perspectives, multimedia computer-assistance, research on related strategies and skills, and performance-based assessments. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (EDCI 520[*B-] or 520[*XS]) and (EDCI 560[B-] or 560[XS]) and (EDCI 684[*B-] or 684[*XS]).
[*] May be taken concurrently.
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDRD 625: *Integrating Literacy and Technology for K-12 Learners.* 3 credits.
Provides insight into the use of digital technology to support the literacy development of children and adolescents, including, but not limited to, designing instruction in which students use digital technology for reading and writing, providing student choice with digital technology, encouraging self-expression, and teaching students to be safe and positive digital citizens. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDRD 626: *Writing Development and Instruction for K-12 Learners.* 3 credits.
Provides an overview of the research and theory related to writing development and writing processes of K-12 learners. Builds teachers' knowledge of evidence-based instructional approaches for teaching writing. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDRD 627: *Comprehension and Vocabulary Development for K-12 Learners.* 3 credits.
Examines the complex nature of language and its connection to literacy development. Explores theories of comprehension and vocabulary development. Evaluates materials and evidence-based strategies to engage K-12 learners in complex comprehension, including across the disciplines. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDRD 628: *Word Analysis: Phonics, Vocabulary, and Spelling for K-12 Learners.* 3 credits.
Emphasizes the application of word analysis skills and strategies to support K-12 learners' reading and writing. Builds teachers' knowledge of evidence-based instructional strategies for teaching phonics, spelling, and vocabulary. Examines the complex nature of language acquisition and its connection to literacy development. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDRD 629: *Literacy Foundations and Instruction for School Psychologists.* 3 credits.
Examines literacy theory, research, and practice as it relates to children in order for school psychologists to effectively work with teachers and families to improve students' literacy learning. Includes reading, writing, and oral communication. Addresses sociocultural, cognitive, linguistic, psychological, and developmental influences on literacy. Explores evidence-based strategies for reading instruction. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: Admission to school psychology program or permission of the literacy program coordinator

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDRD 630: *Literacy Foundations and Instruction for Diverse Populations: Birth through Middle Childhood.* 3 credits.
Explores literacy theory, research, and practice as it relates to younger learners. Includes teaching of reading to English Learners and language acquisition for diverse populations (including Special Education students who access the general curriculum). Addresses sociocultural, cognitive, linguistic, psychological, and developmental influences on children's literacy. Includes reading, writing, and oral communication. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: Admission to a graduate program in literacy, or permission of the academic program coordinator.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDRD 631: *Literacy Foundations and Instruction for Diverse Populations: Adolescence Through Adulthood.* 3 credits.
Examines literacy theory, research, and practice as it relates to adolescents and adults. Addresses sociocultural, cognitive, linguistic, psychological, and developmental influences on literacy development. Includes reading, writing, and oral communication. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: Admission to a graduate program in literacy, or permission of the academic program coordinator.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDRD 632: *Literacy Assessments and Interventions for Groups.* 3 credits.
Provides literacy assessments and interventions for groups of learners. Includes exploration of assessment tools for classrooms and large populations. Note: This course requires students to conduct related practice in their own schools or specified field settings. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (EDRD 630[B-] or 630[XS]) and (EDRD 631[B-] or 631[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDRD 633: *Literacy Assessments and Interventions for Individuals.* 3 credits.
Builds candidates' abilities to select and administer appropriate literacy assessments, analyze assessment data, and design individualized instructional interventions for students who experience difficulty with reading and writing. Note: This course requires students to conduct related practice in their own schools or specified field settings. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (EDRD 630[B-] or 630[XS]) and (EDRD 631[B-] or 631[XS]) and (EDRD 637[*B-] or 637[*XS]).
[*] May be taken concurrently.
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

EDRD 634: *School-Based Leadership in Literacy.* 3 credits.
Prepares reading specialists as school leaders. Expands on literacy knowledge gained in prerequisite courses, and applies it to professional development work with teachers in school settings. Note: This course requires students to conduct related practice in their own schools or specified field settings. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (EDRD 630[B-] or 630[XS]) and (EDRD 631[B-] or 631[XS]) and (EDRD 632[B-] or 632[XS]) and (EDRD 633[B-] or 633[XS]) and (EDRD 637[B-] or 637[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDRD 635: *School-Based Inquiry in Literacy.* 3 credits.
Examines professional literature in order to develop a literature review and advocate on behalf of teachers, students, families, and communities for effective literacy practices and policies. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (EDRD 630[B-] or 630[XS]) and (EDRD 631[B-] or 631[XS]) and (EDRD 632[B-] or 632[XS]) and (EDRD 633[B-] or 633[XS]) and (EDRD 637[B-] or 637[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDRD 637: *Supervised Literacy Practicum.* 3 credits.
Provides supervised experiences assessing students identified as needing additional support in literacy, followed by designing and implementing appropriate data-based instruction. Note: This course requires students to conduct related practice in their own schools or specified field settings. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (EDRD 630[B-] or 630[XS]) and (EDRD 631[B-] or 631[XS]) and (EDRD 633[*B-] or 633[*XS]).
[*] May be taken concurrently.
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Satisfactory/No Credit scale.

EDRD 680: *Foundations of Coaching and Fostering Professional Learning.* 3 credits.
Reviews theoretical, conceptual, and evidence-based foundations of comprehensive literacy programs designed to meet the needs of all learners. Develops specific understandings of the evidence-based foundations of effective professional learning and adult learning theory, including learning strategies appropriate for individual, small-group, and schoolwide professional development settings. Provides experiences with leading effective professional development. Note: This course requires students to conduct related practice in their own schools or specified field settings. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: Admission to the Literacy Coaching Graduate Certificate program

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDRD 681: *Collaboration and Communication in Literacy Coaching.* 3 credits.
Examines research-based coaching models used in school settings. Explores approaches to coaching interactions with a variety of stakeholders in school-based contexts. Provides experiences with facilitating an observation-feedback cycle with individual teachers. Note: This course requires students to conduct related practice in their own schools or specified field settings. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: Admission to the Literacy Coaching Graduate Certificate program

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDRD 682: *Creating Change through Data-Oriented Coaching.* 3 credits.
Explores supports and barriers to school change and improvement. Examines the importance and appropriate use of assessment within a comprehensive literacy program, including strategies for communicating assessment information to relevant stakeholders. Provides experiences with designing and leading professional learning experiences focused on analysis and appropriate uses of assessment data. Note: This course requires students to conduct related practice in their own schools or specified field settings. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: Admission to the Literacy Coaching Graduate Certificate program

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDRD 683: *Trends and Issues in Literacy Instruction and Literacy Coaching.* 3 credits.
Provides insight into current trends and issues in literacy instruction and literacy coaching, including, but not limited to, leading and learning with digital technology, diversity and equity in literacy instruction, and challenges in today's changing schools. Note: This course requires students to conduct related practice in their own schools or specified field settings. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: Admission to the Literacy Coaching Graduate Certificate program

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

800 Level Courses

EDRD 829: *Advanced Foundations of Literacy Education.* 3 credits.
Explores advanced foundational theory, research, and methodology across the broad field of literacy both nationally and internationally. Includes analysis of historical and current trends, research, practice, and policy in literacy. Individual projects will connect literacy to students' areas of interest. Appropriate for PhD in Education students in any specialization. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: EDUC 800, EDRS 810, or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDRD 830: *Theory, Research, and Practice in Literacy: Birth through Middle Childhood.* 3 credits.
Explores emergent through intermediate literacy. Topics include literacy acquisition and development in academically and linguistically diverse young children; historical and current trends in theories of literacy development; cognitive, linguistic, sociocultural, and instructional influences on literacy development; and assessment. Implications for teacher education and policy are explored. Individual research projects will connect literacy to students' areas of interest. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: EDUC 800 and EDRS 810.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDRD 831: *Theory, Research, and Practice in Literacy: Early Adolescence through Young Adulthood.* 3 credits.
Explores youth culture and socio-historical constructions of adolescence; literacy in the lives of culturally and linguistically diverse learners; multimodal literacy; international literacy contexts; adolescent literacy policy and leadership; content area and disciplinary literacy; literacy needs of special learners; and adult literacy. Individual projects will connect adolescent literacy to students' areas of interests. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: EDUC 800 and EDRS 810.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDRD 832: *Research Methodologies and Trends in Literacy.* 3 credits.
Develops knowledge and skills in the application of research methodologies in literacy to current national and international trends. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: EDUC 800, EDRS 810, permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:

This course is graded on the Graduate Regular scale.

EDRD 833: *Literacy and Learning in the Digital Age.* 3 credits.
Engages students in an in-depth study of theories and arguments related to digital literacies for academic success. Encourages critical thinking about digital media and how analyzing media involves understanding the text, context, and culture in which messages are produced and consumed. Explores the role of creative production as an active process for academic learning. Engages students in reconsidering the role of digital technology in instruction and the sociocultural practices associated with digital environments. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

EDRD 834: *Research in Reading Motivation.* 3 credits.
Develops knowledge and skills related to research on reading motivation informed by the fields of literacy and educational psychology. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (EDUC 800[*B-] or 800[*XS]) and (EDRS 810[*B-] or 810[*XS]).
[*] May be taken concurrently.
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

Real Estate Development (REAL)

600 Level Courses

REAL 605: *Policy and Planning of the Built Environment.* 3 credits.
This class takes a holistic approach to examining the complex environment in which all development occurs. Students will be introduced to the public policy, social considerations, and infrastructure involved in creating and supporting the built environment. Emphasis will be placed on evaluating what constitutes "good development" and how enacted public policies impact decision making at the individual project level and on the overall development of communities. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

REAL 615: *Brokerage and Market Analysis.* 3 credits.
Students will learn how to analyze market data, evaluate sites in the context of the market, and work with brokerage professionals to maximize sales and/or leasing opportunities. The data component of the class will focus on using industry market analytics resources to identify and interpret trends in the real estate market life cycle. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Enrollment is limited to Graduate or Undergraduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

REAL 625: *Financial Analysis and Valuation.* 3 credits.
Teaches key financial concepts necessary to evaluate real estate investment and development opportunities, such as: cash flow analysis, project financing options, and basic asset valuation. Various quantitative techniques for evaluating project returns, including proforma modelling, will be presented with emphasis placed on understanding the time value of money and the relationships between money, time, and risk. Explores the risks and rewards of using financial leverage and the consequences of default. Considers the economic consequences of public-sector policy and regulation of the real estate and finance industries. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

REAL 635: *The Development Process.* 3 credits.
Outlines the development process and the interrelated activities of the key disciplines involved. Introduces students to vocabulary and concepts from multiple industry sectors and teaches them how each respective sector can influence project outcomes. The role of the developer as a leader and coordinator of both the project and development team is stressed. Various product types are considered, including: office, multifamily, retail, and industrial properties. In their final project, students will make portfolio recommendations by analyzing different development scenarios and examining critical decisions at each project stage and the resulting impact on project costs and outcomes. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: REAL 625[*B-] or 625[*XS].
[*] May be taken concurrently.
[B-] Requires minimum grade of B-.

XS Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

REAL 645: *Law and Entitlements.* 3 credits.
Provides students with a basic understanding of the relevant law and legal concepts involved in real estate development. Addresses legal issues through the life cycle of a real estate development, including: acquisition, entitlement, construction, leasing, and disposition. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (REAL 605C, 605XS or 605XS) and (REAL 635C, 635XS or 635XP).
C Requires minimum grade of C.
XS Requires minimum grade of XS.
XP Requires minimum grade of XP.

Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

REAL 655: *Design and Construction.* 3 credits.
Introduces the principles of site and building design and the basic technical aspects of construction. The design portion of the class includes both site and building layouts and challenges students to consider the relationship between design, function, and cost. The construction component features both horizontal and vertical construction challenges. Throughout the course, students will analyze how related decisions impact project costs/viability. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (REAL 605C, 605XS or 605XP) and (REAL 635C or 635XS and REAL 635XP).
C Requires minimum grade of C.
XS Requires minimum grade of XS.
XP Requires minimum grade of XP.

Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

700 Level Courses

REAL 710: *Real Estate Entrepreneurship.* 3 credits.
Explores real estate development from an applied, entrepreneurial perspective. Emphasis is placed on understanding the unique challenges, risks, and opportunities faced by entrepreneurial developers as opposed to those operating in a larger, institutional context. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (REAL 615C, 615XS or 615XP) and (REAL 625C, 625XS or 625XP).
C Requires minimum grade of C.
XS Requires minimum grade of XS.
XP Requires minimum grade of XP.

Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

REAL 720: *Real Estate Leadership and Project Management.* 3 credits.
Focuses on the differences, similarities, and applications of both Leadership and Management in the context of the real estate industry. Students will study characteristics of industry leaders, both historical and contemporary, to asses different leadership styles and how to effectively manage organizations. Emphasis, will be placed on different organization structures and organizational management theories including their applications, risks, effectiveness, and best practices. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

REAL 730: *Financing Real Estate Projects.* 3 credits.
Students will study the key drivers of successful real estate capital deals from the perspectives of both suppliers and users of funds. Emphasis will be placed on exploring the intricacies of financing alternatives, primary and secondary markets, and evaluating the impact of different financing scenarios on project returns. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: REAL 625C, 625XS or 625XP.
C Requires minimum grade of C.
XS Requires minimum grade of XS.

XP Requires minimum grade of XP.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

REAL 740: *Real Estate Investments.* 3 credits.
Focuses on the analysis of complex real estate investment opportunities with an emphasis on evaluating investment feasibility. Students will be provided with case study materials for actual commercial real estate offerings in the greater Washington, DC metropolitan area over the past decade. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (REAL 615C, 615XS or 615XP) and (REAL 625C, 625XS or 625XP) and (REAL 635C, 635XS or 635XP) and (REAL 645C, 645XS or 645XP).
C Requires minimum grade of C.
XS Requires minimum grade of XS.
XP Requires minimum grade of XP.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

REAL 750: *MSRED Capstone.* 3 credits.
The Capstone Project will be the culmination of the master's program, offered at the end of the program. The course will combine the theoretical teachings from the program with real world, practical situations. Students will apply concepts learned to current development and construction projects in the Washington, D.C. metropolitan area. One of the sample cases involves the potential future uses of a plot of land in the metro area, a mixed-use high-density area that is slated to undergo significant transformation. The case will request project teams to explore the various options, employing a decision-tree approach to fully analyze the options, and examining the SWOT, local urban management policies, future valuation streams, and environmental impacts of each. A site visit will be required, as well as visits to various developers engaged in similar projects. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (REAL 605C, 605XS or 605XP) and (REAL 615C, 615XS or 615XP) and (REAL 625C, 625XS or 625XP) and (REAL 635C, 635XS or 635XP) and (REAL 645C, 645XS or 645XP) and (REAL 655C, 655XS or 655XP).
C Requires minimum grade of C.
XS Requires minimum grade of XS.
XP Requires minimum grade of XP.

Enrollment limited to students with a class of Graduate.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

REAL 790: *Special Topics in Real Estate.* 3 credits.
Explores contemporary issues and challenges in the management and development of real estate. Topics not covered in the regular real estate development offerings. Course may be repeated with change in topic. Offered by School of Business. May be repeated within the term for a maximum 15 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

REAL 796: *Directed Reading.* 1-6 credits.
Admission to the MSRED program or permission of the program director. Offered by School of Business. May be repeated within the degree for a maximum 12 credits.

Recommended Prerequisite: Admission to the MSRED program or permission of the program director.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

Recreation (RECR)

100 Level Courses

RECR 100: *Brazilian Jiu-Jitsu: Intro.* 1 credit.
Instructs students in self defense Brazilian Jiu-Jitsu techniques. Appropriate for students who have no prior experience in martial arts or Brazilian Jiu-Jitsu. Offered by School of Education. Limited to three attempts.

Schedule Type: Activity-Based

Grading:
This course is graded on the Undergraduate Regular scale.

RECR 101: *Brazilian Jiu-Jitsu: Intermediate.* 1 credit.
Teaches students beginner-to-intermediate-level techniques in Brazilian Jiu-Jitsu. Focuses on specific defensive techniques to be used against an attacker along with escapes and submissions from a variety of different attacks. Requires participation in basic sparring with particular attention

to safety and intensive training and conditioning routine. Offered by School of Education. Limited to three attempts.

Recommended Prerequisite: RECR 100.

Schedule Type: Activity-Based

Grading:
This course is graded on the Undergraduate Regular scale.

RECR 102: *Judo: Introduction.* 1 credit.
Introduces basic body mechanics of throwing, sweeping, grappling, and submission skills used in Judo and for self-defense. Presents the history of Judo, rules of the sport and proper safety and falling techniques. Offered by School of Education. Limited to three attempts.

Schedule Type: Activity-Based

Grading:
This course is graded on the Undergraduate Regular scale.

RECR 103: *Judo: Intermediate.* 1 credit.
Emphasizes the execution of proper skills and movements rather than the contact itself. Incorporates both offensive and defensive movements. Offered by School of Education. Limited to three attempts.

Recommended Prerequisite: RECR 102 or permission of instructor.

Schedule Type: Activity-Based

Grading:
This course is graded on the Undergraduate Regular scale.

RECR 106: *Krav Maga: Introduction.* 1 credit.
Introduces students to the principles and practice of Krav Maga, an Israeli system of self-protection. Involves knowledge of threat response, skill training in self-protection, and mental preparation for defensive tactics. Prepares students in appropriate protective action in situations of threat or attack. Offered by School of Education. Limited to three attempts.

Schedule Type: Activity-Based

Grading:
This course is graded on the Undergraduate Regular scale.

RECR 107: *Krav Maga: Intermediate.* 1 credit.
Continues training in Krav Maga skills for experienced students. Explores multiple opponents, defending third parties, decision making skills, using & defending against weapons, and fight strategy. Notes: Students with injuries or pre-existing conditions that affect performance must inform the instructor. Offered by School of Education. Limited to three attempts.

Recommended Prerequisite: RECR 106.

Schedule Type: Activity-Based

Grading:
This course is graded on the Undergraduate Regular scale.

RECR 108: *Self Defense: Introduction.* 1 credit.
Teaches beginner level of self-defense such as defensive techniques to be used against an attacker along with escapes and submissions from a variety of different attacks. Requires participation in basic sparring with particular attention to safety. Offered by School of Education. Limited to three attempts.

Schedule Type: Activity-Based

Grading:
This course is graded on the Undergraduate Regular scale.

RECR 109: *Self Defense: Intermediate.* 1 credit.
Teaches more advanced defensive and offensive techniques, building on the student's previous training. Emphasizes continuous improvement in physical and mental fitness. Offered by School of Education. Limited to three attempts.

Recommended Prerequisite: RECR 108.

Schedule Type: Activity-Based

Grading:
This course is graded on the Undergraduate Regular scale.

RECR 110: *Tae Kwon Do: Introduction.* 1 credit.
Develop basic skills of Tae Kwon Do, a Korean martial art that predominantly emphasizes kicking. Offered by School of Education. Limited to three attempts.

Schedule Type: Activity-Based

Grading:
This course is graded on the Undergraduate Regular scale.

RECR 111: *Tae Kwon Do: Intermediate.* 1 credit.
Develops intermediate -level skills of Tae Kwon Do, building on basic skills learned in the introduction course. Continues to focus on the student's mental development, as well as physical training. Offered by School of Education. Limited to three attempts.

Recommended Prerequisite: RECR 110.

Schedule Type: Activity-Based

Grading:
This course is graded on the Undergraduate Regular scale.

RECR 113: *Fencing.* 1 credit.
Gives the beginning student basic knowledge of the sport of fencing and teaches the fundamental movements so students can fence at a novice level. Teaches basic officiating and etiquette of the sport. Offered by School of Education. Limited to three attempts.

Schedule Type: Activity-Based

Grading:
This course is graded on the Undergraduate Regular scale.

RECR 118: *Cardio Conditioning.* 1 credit.
Introduces cardiovascular fitness. Provides students with lectures and multiple cardiovascular workouts. Covers cardiovascular endurance, cardiovascular diseases, body composition, nutrition, and weight management. Teaches the use of cardiovascular equipment and designing a cardiovascular fitness program. Offered by School of Education. Limited to three attempts.

Schedule Type: Activity-Based

Grading:
This course is graded on the Undergraduate Regular scale.

RECR 119: *Fitness Walking.* 1 credit.
Introduces students to cardiovascular exercise as it relates to a healthy lifestyle and improved quality of life. Covers design, implementation, and evaluation of a personal walking plan based on current fitness levels. Offered by School of Education. Limited to three attempts.

Schedule Type: Activity-Based

Grading:
This course is graded on the Undergraduate Regular scale.

RECR 120: *Weight Training/ Body Conditioning.* 1 credit.
Introduce students to fitness and healthy lifestyles. Provides students with an overview of the various types of weight training, with an emphasis on circuit weight training method. Offered by School of Education. Limited to three attempts.

Schedule Type: Activity-Based

Grading:
This course is graded on the Undergraduate Regular scale.

RECR 121: *Backpacking: Introduction.* 2 credits.
Introduces practical and experiential activities for students with starting knowledge of backpacking. Involves discussions, demonstrations, and activities that teach the basics of backpacking. Covers equipment selection, map and compass skills, backcountry cooking, staying healthy in the outdoors, safety and emergency procedures, backcountry ethics (Leave No Trace), and natural history. Offered by School of Education. Limited to three attempts.

Schedule Type: Activity-Based

Grading:
This course is graded on the Undergraduate Regular scale.

RECR 122: *Exploring Outdoor Adventure.* 2 credits.
Provides students an introduction to leadership theory and practice in planning outdoor adventure activities. Focuses on building skills necessary to engage in a wide range of individual outdoor adventure activities such as orienteering, geocaching, canoeing, rock climbing, and challenge course team building. Offered by School of Education. Limited to three attempts.

Schedule Type: Activity-Based

Grading:
This course is graded on the Undergraduate Regular scale.

RECR 124: *Horsemanship: Introduction.* 1 credit.
Introduces the basics of horseback riding and horsemanship. Emphasizes how to care for a horse, tack a horse, and basic riding skills such as walking, trotting, and jumping small obstacles. Offered by School of Education. Limited to three attempts.

Schedule Type: Activity-Based

Grading:
This course is graded on the Undergraduate Regular scale.

RECR 125: *Horsemanship: Intermediate.* 1 credit.
Builds the intermediate skills of horseback riding and horsemanship. Emphasizes technical riding and advancing basic horseback riding skills (e.g. figure S's, serpentines, and change of direction). Focuses on how equitation affects the horse and horse behavior affects riding and safety. Offered by School of Education. Limited to three attempts.

Recommended Prerequisite: RECR 124.

Schedule Type: Activity-Based

Grading:
This course is graded on the Undergraduate Regular scale.

RECR 129: *Mountain Biking.* 2 credits.
Provides students with the fundamentals of mountain biking through skills aimed to master techniques in descending and ascending hills, negotiating obstacles, and stopping. Skills in maintaining a bike and appreciation of terrain, navigation, and safety will also be covered. Offered by School of Education. Limited to three attempts.

Schedule Type: Activity-Based

Grading:
This course is graded on the Undergraduate Regular scale.

RECR 130: *Introduction to Marksmanship.* 1 credit.
Orients users of air powered rifles and pistols in firearm safety during international level target shooting and other competitive marksmanship. Offered by School of Education. Limited to three attempts.

Schedule Type: Activity-Based

Grading:
This course is graded on the Undergraduate Regular scale.

RECR 133: *Indoor Rock Climbing: Intro.* 1 credit.
Introduces equipment, techniques, safety, and planning related to basic rock climbing. Offered by School of Education. Limited to three attempts.

Schedule Type: Activity-Based

Grading:
This course is graded on the Undergraduate Regular scale.

RECR 134: *Rock Climbing: Introduction.* 2 credits.
Teaches basic climbing terms, techniques, equipment, and safety practices for top rope belay climbing and rappelling. Builds on communication skills and trust. Offered by School of Education. Limited to three attempts.

Schedule Type: Activity-Based

Grading:
This course is graded on the Undergraduate Regular scale.

RECR 136: *Pistol Marksmanship.* 1 credit.
Introduces students to marksmanship skills in Olympic sport and target shooting. Increases students' knowledge of shooting safety, position shooting, equipment care and maintenance, and shooting sports competition methods and techniques. Offered by School of Education. Limited to three attempts.

Schedule Type: Activity-Based

Grading:
This course is graded on the Undergraduate Regular scale.

RECR 137: *Trap and Skeet Shooting: Intro.* 2 credits.
Designed to educate the student on gun and range safety. Includes hands-on learning of the games trap and skeet, where competitors fire

at clay targets (approximately 4 1/4 inches in diameter and 1 1/2 inches in height) launched from a trap at varying angles. Offered by School of Education. Limited to three attempts.

Schedule Type: Activity-Based

Grading:
This course is graded on the Undergraduate Regular scale.

RECR 139: *Archery: Introduction.* 1 credit.
Introduces students to competitive archery. Provides instruction for shooting safety, proper form and technique, equipment maintenance, and rules for competing in Olympic style FITA tournaments. Offered by School of Education. Limited to three attempts.

Schedule Type: Activity-Based

Grading:
This course is graded on the Undergraduate Regular scale.

RECR 140: *Rifle Marksmanship.* 1 credit.
Introduces students to marksmanship skills in Olympic style small bore competition target shooting. Increases students' knowledge of firearm safety, international target shooting styles, equipment care and maintenance, and shooting sports competition methods and techniques for rifle target shooting. Offered by School of Education. Limited to three attempts.

Schedule Type: Activity-Based

Grading:
This course is graded on the Undergraduate Regular scale.

RECR 141: *Basketball: Introduction.* 1 credit.
Introduces the basic elements of basketball, including dribbling, passing, shooting, tactics, and strategy. Offered by School of Education. Limited to three attempts.

Schedule Type: Activity-Based

Grading:
This course is graded on the Undergraduate Regular scale.

RECR 143: *Soccer: Introduction.* 1 credit.
Introduces the basic elements of soccer including dribbling, kicking, passing, trapping, tactics, and strategy. Offered by School of Education. Limited to three attempts.

Schedule Type: Activity-Based

Grading:
This course is graded on the Undergraduate Regular scale.

RECR 144: *Soccer: Intermediate.* 1 credit.
Prepares the experienced soccer player in the aspects of the competitive game. Applies skills-training to competitive and recreational play. Covers strategies of offense and defense and variation of different systems of play. Offered by School of Education. Limited to three attempts.

Recommended Prerequisite: RECR 143.

Schedule Type: Activity-Based

Grading:
This course is graded on the Undergraduate Regular scale.

RECR 145: *Volleyball: Introduction.* 1 credit.
Introduces students to fundamental knowledge and basic skills of volleyball. Offered by School of Education. Limited to three attempts.

Schedule Type: Activity-Based

Grading:
This course is graded on the Undergraduate Regular scale.

RECR 151: *Badminton: Introduction.* 1 credit.
Introduces the fundamental skills, rules, and strategies of badminton. Covers basic techniques and etiquette of both singles and double play. Offered by School of Education. Limited to three attempts.

Schedule Type: Activity-Based

Grading:
This course is graded on the Undergraduate Regular scale.

RECR 152: *Pickleball.* 1 credit.
Introduces basic knowledge and skills to play Pickleball such as forehand, backhand, ground strokes, volleys and serves, as well as the rules and strategies for singles and doubles play. Offered by School of Education. Limited to three attempts.

Schedule Type: Activity-Based

Grading:
This course is graded on the Undergraduate Regular scale.

RECR 155: *Tennis: Introduction.* 1 credit.
Teaches tennis terms, rules, scoring, techniques for the forehand and backhand ground strokes, volley, overhead, and serve, as well as basic strategy for singles and doubles. Offered by School of Education. Limited to three attempts.

Schedule Type: Activity-Based

Grading:
This course is graded on the Undergraduate Regular scale.

RECR 156: *Tennis: Intermediate.* 1 credit.
Prepares experienced tennis player in advanced skills: point play, control of pace, direction, and depth of forehand and back hand, ground strokes, and topspin and underspin. Instructs tactical use of volley, styles of play, and strategies for singles and doubles. Introduces principles to refereeing. Applies skills-training to competitive and recreational play. Offered by School of Education. Limited to three attempts.

Recommended Prerequisite: RECR 155.

Schedule Type: Activity-Based

Grading:
This course is graded on the Undergraduate Regular scale.

RECR 157: *Squash: Introduction.* 1 credit.
Introduces basic squash terms, rules, scoring, safety, and techniques for drives, volleys, wall boasts, and serves, as well as singles and doubles strategies. Offered by School of Education. Limited to three attempts.

Schedule Type: Activity-Based

Grading:
This course is graded on the Undergraduate Regular scale.

RECR 161: *Scuba Diving: Basic.* 2 credits.
Provides training toward certification as an open water SCUBA diver. Emphasizes snorkeling (free diving introduction) and SCUBA skills. Covers safe diving skills, the physics of diving, equipment care and maintenance, diving fitness, underwater navigation, record keeping, and other basic SCUBA knowledge. Qualifies students for open water certification by Scuba Schools International (SSI). Requires strong swimming skills, high comfort level under water and physical and mental conditioning compatible with SCUBA industry diving safety standards. Offered by School of Education. Limited to three attempts.

Schedule Type: Activity-Based

Grading:
This course is graded on the Undergraduate Regular scale.

RECR 162: *Swimming: Beginning.* 1 credit.
Develops a knowledge base and basic swimming skills for the weak swimmer and non-swimmer, and makes them water safe. Includes, but are not limited to, locomotion and propulsive movements in a prone and supine position, breath control, rhythmic breathing, beginning diving techniques, personal safety, and rescue skills to maintain a water-safe environment. Offered by School of Education. Limited to three attempts.

Schedule Type: Activity-Based

Grading:
This course is graded on the Undergraduate Regular scale.

RECR 163: *Swimming: Intermediate.* 1 credit.
Builds on basic-level swimming skills by providing practice for confidence, refinement of coordination, and improvement of other aquatic skills. Presents more advanced swimming strokes and focuses on physical conditioning and aquatic safety. Offered by School of Education. Limited to three attempts.

Recommended Prerequisite: RECR 162.

Schedule Type: Activity-Based

Grading:
This course is graded on the Undergraduate Regular scale.

RECR 169: *Golf: Introduction.* 1 credit.
Teaches basic golf terms, rules, and techniques for the full swing, putting, chipping, and pitching, as well as playing on a golf course. Offered by School of Education. Limited to three attempts.

Schedule Type: Activity-Based

Grading:
This course is graded on the Undergraduate Regular scale.

RECR 171: *Latin Dance.* 1 credit.
Provides knowledge base of dance fundamentals and skill development in various Latin dances and will include basic rhythms, dance positions, floor alignments, techniques of leading and following, and maintenance of dance frame in partner dancing. Introduces dances which may include but not restricted to Merengue, Mambo, Samba, Salsa, and Bachata. Offered by School of Education. Limited to three attempts.

Schedule Type: Activity-Based

Grading:
This course is graded on the Undergraduate Regular scale.

RECR 172: *Social Dance.* 1 credit.
Provides a knowledge base of dance fundamentals and skill development in various ballroom dances and includes basic rhythms, dance positions, floor alignments, techniques of leading and following, and maintenance of dance frame in partner dancing. Offered by School of Education. Limited to three attempts.

Schedule Type: Activity-Based

Grading:
This course is graded on the Undergraduate Regular scale.

RECR 181: *Meditation: Introduction.* 1 credit.
Introduces students to philosophical foundations of meditation. Guides in the practice of meditation and its application to daily mental focus and concentration. Offered by School of Education. Limited to three attempts.

Schedule Type: Activity-Based

Grading:
This course is graded on the Undergraduate Regular scale.

RECR 182: *Pilates: Introduction.* 1 credit.
Provides the history and basic foundations of Pilates including an introduction to beginning Pilates exercises and their proper execution; exploration of modifications for certain exercises and the various props which may be used in the group class setting. Offered by School of Education. Limited to three attempts.

Schedule Type: Activity-Based

Grading:
This course is graded on the Undergraduate Regular scale.

RECR 183: *Pilates: Intermediate.* 1 credit.
Provides students with advanced knowledge and skills in Pilates techniques and exercises. Offered by School of Education. Limited to three attempts.

Recommended Prerequisite: RECR 182.

Schedule Type: Activity-Based

Grading:
This course is graded on the Undergraduate Regular scale.

RECR 184: *Tai Chi: Introduction.* 1 credit.
Increase awareness of the mind and body. Introduces basic principles of Chi (energy) and Yin Yang (polarity) and how they apply to the body through practicing the Tai Chi movements. Offered by School of Education. Limited to three attempts.

Schedule Type: Activity-Based

Grading:
This course is graded on the Undergraduate Regular scale.

RECR 186: *Yoga: Introduction.* 1 credit.
Introduces students to the practice of Hatha yoga. Emphasizes yoga asanas (postures) and pranayama (breathing exercises) to enhance physical fitness and mental concentration. Offered by School of Education. Limited to three attempts.

Schedule Type: Activity-Based

Grading:

This course is graded on the Undergraduate Regular scale.

RECR 187: *Yoga: Intermediate.* 1 credit.
Emphasizes mastery of yoga asanas (postures) and pranayama (breathing techniques) to enhance physical fitness and mental concentration. Focuses on 10 new yoga poses and practice of the complete Sun Salutation. Offered by School of Education. Limited to three attempts.

Recommended Prerequisite: RECR 186.

Schedule Type: Activity-Based

Grading:
This course is graded on the Undergraduate Regular scale.

Rehabilitation Science (RHBS)

200 Level Courses

RHBS 201: *Introduction to Rehabilitation Science.* 3 credits.
Introduces the field of rehabilitation science. Surveys various topics within rehabilitation science including development of the field, models of disablement-enablement, facilitators and barriers to enablement across the lifespan. Offered by Rehabilitation Science. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

RHBS 270: *Applied Human Anatomy and Physiology I.* 4 credits.
Develops a comprehensive understanding of the interrelationships of anatomy and physiology as observed in the human organism, and introduces application of knowledge to health, disease and dysfunction. Emphasis on musculoskeletal, nervous, cardiovascular, respiratory and integumentary systems. Offered by Rehabilitation Science. Limited to three attempts.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

RHBS 271: *Applied Human Anatomy and Physiology II.* 4 credits.
Develops a comprehensive understanding of the interrelationships of anatomy and physiology as observed in the human organism, and introduces application of knowledge to health, disease and dysfunction. Emphasis on digestive, endocrine, lymphatic, genitourinary, and reproductive systems. Offered by Rehabilitation Science. Limited to three attempts.

Recommended Prerequisite: RHBS 270.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

300 Level Courses

RHBS 340: *Health, Disease and Dysfunction.* 3 credits.
Focuses on basic epidemiology, health promotion and disease prevention, as well as impairments in normal function of the individual resulting in disease and dysfunction. Exploration of the individual and societal impact of health and disease. Introduces current rehabilitation and intervention strategies as well as classification of disease and disability. Offered by Rehabilitation Science. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

RHBS 345: *Applied Biomechanics in Rehabilitation.* 3 credits.
Introduces basic concepts and principles of biomechanics in the study and analysis of functional human movement. Discusses the biomechanical principles as applied in both healthy and clinical populations. Develops an understanding of the scientific and clinical applications of biomechanics to rehabilitation interventions. Offered by Rehabilitation Science. Limited to three attempts.

Recommended Prerequisite: College level physics or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

RHBS 350: *Clinical Physiology and Human Performance.* 3 credits.
Investigates the study of human physiology and how it relates to physical activity, health, and functional ability. Specifically, examines the metabolic, locomotive, endocrine, cardiovascular, and pulmonary responses to physical activity and their contributions and limitations to human performance. Offered by Rehabilitation Science. Limited to three attempts.

Recommended Prerequisite: College-level chemistry or permission of instructor or department chair.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

RHBS 375: *Gait and Functional Movement Analysis.* 3 credits.
Analyzes human gait and common structural impairments associated with functional performance. Provides the fundamental terminology, techniques, and data interpretation methods used in gait analysis and assessing human physical function. Offered by Rehabilitation Science. Limited to three attempts.

Recommended Prerequisite: RHBS 270 and RHBS 271 or similar courses in human anatomy and physiology.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

RHBS 380: *Neural Basis of Movement.* 3 credits.
Introduces major topics in sensory and motor neurophysiology as they relate to motor control and motor learning. Includes organization of sensory and motor systems, neural mechanisms of learning and memory, and current neurophysiological testing techniques. Special emphasis is placed on the implications for motor impairment and recovery following nervous system disease or injury. Offered by Rehabilitation Science. Limited to three attempts.

Recommended Prerequisite: RHBS 270 and RHBS 271 or equivalent anatomy and physiology course.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

RHBS 390: *Clinical Assessment of Functional Capacity.* 3 credits.
Examines the scientific basis and theory for exercise assessments in healthy persons and those with chronic disease and disability. Covers cardiorespiratory fitness measurements, cardiac function, body composition, muscular strength and endurance. Offered by Rehabilitation Science. Limited to three attempts.

Recommended Prerequisite: Undergraduate course in anatomy and physiology or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

RHBS 410: *Physical Activity and Public Health.* 3 credits.
Investigates the basic principles and concepts of epidemiology and the influence of exercise and physical activity on the most common risk factors for prevalent chronic diseases in the United States of America. Offered by Rehabilitation Science. Limited to three attempts. Equivalent to GCH 410.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

RHBS 415: *Clinical Movement Science I.* 3 credits.
Describes how the human nervous and musculoskeletal systems work together to move the human body, with special emphasis on movement disorders and disabilities. Topics include movement and motion principles, muscle force production, physiology, and adaptation, along with the measurement of muscle activity, body movements, and body forces. Offered by Rehabilitation Science. Limited to three attempts.

Recommended Prerequisite: College-level physics or permission of instructor or department chair.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

RHBS 416: *Clinical Movement Science II.* 3 credits.
Describes how the human nervous and musculoskeletal systems work together to move the human body, with a special emphasis on movement disorders and disabilities. Topics include movement control, adaptation, and learning; experimental and clinical assessment of body movements and forces, treatment of abnormal movement, and rehabilitation technologies. Offered by Rehabilitation Science. Limited to three attempts.

Recommended Prerequisite: RHBS 415 or permission of instructor or department chair.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

RHBS 418: *Exercise Endocrinology.* 3 credits.
Explores the role of the endocrine system in the coordination and regulation of the body's internal environment under acute and chronic exercise conditions. Offered by Rehabilitation Science. Limited to three attempts.

Recommended Prerequisite: RHBS 270 and RHBS 271 or similar course in human anatomy and physiology.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

RHBS 420: *Adult Health and Function.* 3 credits.
Approaches the study of function and normal development, how it is attained and how it is optimized with a multi-systems viewpoint. Focuses on the components of functional movement. Addresses strategies for assessing, promoting and maintaining functional independence. Highlights current treatment approaches of disease and dysfunction. Offered by Rehabilitation Science. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

RHBS 430: *Advanced Functional Clinical Assessments.* 3 credits.
Examines the theory behind functional assessments used in those with chronic diseases and/or disability. Current measures used to assess function in clinical populations will be performed and discussed. Established clinical and research measures will also be examined and conducted. Offered by Rehabilitation Science. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: RHBS 390[C] or 390[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

RHBS 450: *Psychosocial Adaptation in Rehabilitation.* 3 credits.
Examines the psychosocial impacts of rehabilitation and disability. Provides a disability perspective from the individual and society and explores the interaction between them. Offered by Rehabilitation Science. Limited to three attempts.

Recommended Prerequisite: Completed RHBS 201 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

RHBS 455: *Research in Rehabilitation Science.* 3 credits.
Describes central principles of scientific method and ethical and regulatory responsibilities of rehabilitation science researchers. Explores application of scientific method in basic, interventional, clinical and translational research. Develops ability to read literature critically and

make appropriate scientific inferences. Introduces basics of grant writing. Offered by Rehabilitation Science. Limited to three attempts.

Mason Core: Capstone

Specialized Designation: Writing Intensive in Major

Recommended Prerequisite: STAT 250 or equivalent.

Registration Restrictions:
Enrollment limited to students with a class of Senior.

Enrollment is limited to students with a major, minor, or concentration in Rehabilitation Science.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

RHBS 489: *Introduction to Clinical Research.* 1 credit.
Provides students with a basic understanding of what clinical research is and the scientific principles on which it is based. Starts with a historical perspective on clinical research and then goes on to explore the following topics: purpose of clinical research, ethical and regulatory implications of clinical research, and the roles and responsibilities of all parties involved in clinical research. Offered by Rehabilitation Science. Limited to three attempts.

Recommended Prerequisite: Course is open to honors college students only or by permission of instructor.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

RHBS 490: *RS: Clinical Research Internship.* 3 credits.
Practical experience in a clinical research setting under the direction of a mentor. Each student is required to work with an experienced clinical investigator who agrees to provide the trainee mentorship. Clinical research embraces a spectrum of scientific disciplines that use a variety of study methods. Therefore, the multidisciplinary approach to clinical research is emphasized during didactic interactions. Note: In addition, an application must be submitted in the semester prior to enrollment in the course. During the semester prior to entry, students may be asked to acquire certain competencies/certifications in order to fully participate at their research site (for example, human subjects research protections training, lab safety certification, HIPAA training). Offered by Rehabilitation Science. Limited to three attempts.

Specialized Designation: Research/Scholarship Intensive

Recommended Prerequisite: Course is open to honors college students only.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

RHBS 491: *Directed Research.* 1-3 credits.
Engages students in a directed research project under the guidance of a faculty member. Offered by Rehabilitation Science. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Permission of the instructor.

Schedule Type: Independent Study

Grading:
This course is graded on the Satisfactory/No Credit scale.

600 Level Courses

RHBS 606: *Clinical Exercise Physiology.* 3 credits.
Examines acute and chronic alterations and adaptations associated with exercise and training. Covers role of exercise therapy in preventing and rehabilitating from disease across lifespan. Particular emphasis on role of exercise therapy in cardiorespiratory, musculoskeletal, and metabolic diseases. Offered by Rehabilitation Science. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major, minor, or concentration in Rehabilitation Science.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

RHBS 620: *Psychosocial Aspects of Rehabilitation.* 3 credits.
Explores social and psychological impacts of disability. Processes by which people with disabilities adapt to limitations will be examined, as will the influence society has in promoting independence/dependence among people with disabilities. Offered by Rehabilitation Science. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major, minor, or concentration in Rehabilitation Science.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

RHBS 650: *Foundations of Rehabilitation Science.* 3 credits.
Examines the field of rehabilitation science with emphasis on the core theories and models of this emerging discipline. Surveys various topics within rehabilitation science including the history and development of the field, assistive technologies, pathology and impairment research, functional limitations research, disability research, translational research, and ethical considerations in clinical and research settings. Offered by Rehabilitation Science. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major, minor, or concentration in Rehabilitation Science.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

RHBS 651: *Research Design and Methods I.* 3 credits.
Explores quantitative and qualitative research methods, principles and techniques necessary for implementation of health science research. Offered by Rehabilitation Science. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major, minor, or concentration in Rehabilitation Science.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

RHBS 652: *Research Design and Methods II.* 3 credits.
Explores advanced experimental and quasi-experimental research methods frequently utilized in rehabilitation research. Develop theoretical and practical knowledge necessary to conduct independent research. Offered by Rehabilitation Science. May not be repeated for credit.

Recommended Prerequisite: RHBS 651 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major, minor, or concentration in Rehabilitation Science.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

700 Level Courses

RHBS 706: *Clinical Assessment of Fatigability.* 3 credits.
Reviews the scientific literature describing the theories of fatigue and fatigability. Assessments and methodologies used to evaluate fatigue and fatigability will be performed. Students will apply the theories of fatigue to further their understanding of specific clinical problems. Offered by Rehabilitation Science. May not be repeated for credit.

Recommended Prerequisite: Enrolled in RHBS program, or with permission of the course instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

RHBS 710: *Applied Physiology I.* 3 credits.
Examines the primary bio-regulatory and communication systems. A detailed study of physiology for graduate students interested in health and human movement, chronic illness, and disability. Covers energy metabolism, endocrine, immune, neurological, and muscular systems. Offered by Rehabilitation Science. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to students with a major, minor, or concentration in Rehabilitation Science.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

RHBS 711: *Applied Physiology II.* 3 credits.
Explores general systemic function. A detailed study of physiology for graduate students interested in health and human movement, chronic illness, and disability. Covers cardiovascular, pulmonary, gastrointestinal, renal, and reproductive systems. Offered by Rehabilitation Science. May not be repeated for credit.

Recommended Prerequisite: RHBS 710.

Registration Restrictions:
Enrollment is limited to students with a major, minor, or concentration in Rehabilitation Science.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

RHBS 720: *Principles of Clinical Trials.* 3 credits.
Provides a practical overview of the fundamental principles of clinical trial design and management, ethical and regulatory factors in the conduct of clinical trials, and their role in clinical practice, public health and decision making. Topics include clinical trial design, biostatistics, ethics and regulatory affairs, study management and oversight, and

current concepts. Offered by Rehabilitation Science. May not be repeated for credit.

Recommended Prerequisite: Graduate level statistics/methods

Registration Restrictions:
Enrollment is limited to students with a major, minor, or concentration in Rehabilitation Science.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

RHBS 740: *Applied Physiology: Cardiorespiratory.* 3 credits.
Rigorous, evidence-based study of biological factors and medial conditions that limit oxidative metabolic function. Emphasis on examining current hypotheses of physical activity limitations in chronic illness and disability. Offered by Rehabilitation Science. May not be repeated for credit.

Recommended Prerequisite: RHBS 606, EFHP 610, RHBS 710 or other graduate physiology course, plus one of the following: two-semester course sequence in anatomy and physiology (100 level or above) or one course in animal or comparative physiology (300 level or above) or one course in human physiology (300 level or above).

Registration Restrictions:
Enrollment is limited to students with a major, minor, or concentration in Rehabilitation Science.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

RHBS 745: *Metabolic Basis of Disability.* 3 credits.
Examines anatomy and physiology of organs and systems involved in regulating metabolism; assesses relationships among hormonal and central nervous system regulation in the production and regulation of energy. Offered by Rehabilitation Science. May not be repeated for credit.

Recommended Prerequisite: RHBS 710

Registration Restrictions:
Enrollment is limited to students with a major, minor, or concentration in Rehabilitation Science.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

RHBS 746: *Movement Control and Learning.* 3 credits.
Describes how the human nervous and musculoskeletal systems work together to move the human body, with a special emphasis on movement disorders and disabilities. Topics include movement and motion principles, muscle force production, physiology, and adaptation, along with the measurement of muscle activity, body movements, and body forces. Offered by Rehabilitation Science. May not be repeated for credit.

Recommended Prerequisite: RHBS 710

Registration Restrictions:
Enrollment is limited to students with a major, minor, or concentration in Rehabilitation Science.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

RHBS 750: *Physiology of Clinical Exercise Interventions.* 3 credits.
Critiques current knowledge of exercise prescription in both healthy and clinical populations. Examines physiological effects of exercise interventions, with emphasis on chronic disease and disability. Offered by Rehabilitation Science. May not be repeated for credit.

Recommended Prerequisite: RHBS 606.

Registration Restrictions:
Enrollment is limited to students with a major, minor, or concentration in Rehabilitation Science.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

RHBS 754: *Movement Disorders: Etiology, Assessment, and Analyses.* 3 credits.
Applies concepts of neuromechanics to the assessment and analysis of normal and pathological movement using both existing clinical assessments and laboratory-based measures of body kinematics, kinetics, muscle activity, and perception/cognition interactions with movement. Discusses benefits and limitations of assessment and analysis techniques as well as current research with regard to advancing these techniques. Offered by Rehabilitation Science. May not be repeated for credit.

Recommended Prerequisite: RHBS 746.

Registration Restrictions:
Enrollment is limited to students with a major, minor, or concentration in Rehabilitation Science.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

RHBS 772: *Applied Biomechanics in Rehabilitation.* 3 credits.
Describes concepts and principles of biomechanics for the study and analysis of functional human movement within the scope of rehabilitation science. Describes the biomechanical principles as applied in both healthy and clinical populations. Develops an understanding of the scientific and clinical applications of biomechanics to rehabilitation interventions. Offered by Rehabilitation Science. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

RHBS 776: *Movement Analysis of Function.* 3 credits.
Applies biomechanical principles to record and analyze functional activities, including walking, sit-stand, and reaching. Focuses on data acquisition, processing, and compiling of kinematic and kinetic data including motion capture, center of pressure, and electromyography. Evaluates movement from a joint, total body, and muscular perspective related to performance. Addresses how age and injuries affect functional performance. Offered by Rehabilitation Science. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

800 Level Courses

RHBS 816: *Rehabilitation Efficacy and Effectiveness Research.* 3 credits.
Examines the theory and methods of comparative effectiveness studies and their relationship to developing Rehabilitation Science and other disciplines to effect better clinical practice by identifying benefits/harms of prevention and treatment and explores the implications of evidence for comparative effectiveness in developing health care policy. Offered by Rehabilitation Science. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to students with a major, minor, or concentration in Rehabilitation Science.

Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

RHBS 850: *Teaching Practicum.* 3 credits.
Prepares students for teaching role as an academic through direct teaching experiences in undergraduate courses in Rehabilitation Science under the supervision of a graduate faculty member, including syllabus development, lecture preparation, presentation skills, grading, and course evaluation. Offered by Rehabilitation Science. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Enrollment is limited to students with a major, minor, or concentration in Rehabilitation Science.

Enrollment limited to students in the HH-PHD-RHBS program.

Enrollment is limited to Graduate level students.

Schedule Type: Internship

Grading:
This course is graded on the Satisfactory/No Credit scale.

RHBS 894: *Special Topics in Rehabilitation Science.* 3 credits.
In-depth study of contemporary topics in Rehabilitation Science. Course topics vary each semester. Notes: Students may take up to 9 credits of RHBS 894 with permission of program director. Offered by Rehabilitation Science. May be repeated within the term for a maximum 9 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment is limited to students with a major, minor, or concentration in Rehabilitation Science.

Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

900 Level Courses

RHBS 940: *Independent Study.* 1-6 credits.
In-depth study of selected area of rehabilitation science under the direction of faculty. Offered by Rehabilitation Science. May be repeated within the degree for a maximum 24 credits.

Registration Restrictions:
Enrollment is limited to students with a major, minor, or concentration in Rehabilitation Science.

Enrollment is limited to Graduate level students.

Schedule Type: Independent Study

Grading:
This course is graded on the Satisfactory/No Credit scale.

RHBS 960: *Directed Research.* 1-6 credits.
Research on a pertinent topic in rehabilitation science. Must be arranged with instructor before registering. Offered by Rehabilitation Science. May be repeated within the term for a maximum 24 credits.

Registration Restrictions:
Enrollment is limited to students with a major, minor, or concentration in Rehabilitation Science.

Enrollment is limited to Graduate level students.

Schedule Type: Independent Study

Grading:
This course is graded on the Satisfactory/No Credit scale.

RHBS 998: *Doctoral Dissertation Proposal.* 1-9 credits.
Work on research proposal that forms basis for doctoral dissertation. Offered by Rehabilitation Science. May be repeated within the degree for a maximum 9 credits.

Recommended Prerequisite: Advancement to PhD candidacy.

Registration Restrictions:
Enrollment is limited to students with a major, minor, or concentration in Rehabilitation Science.

Enrollment is limited to Graduate level students.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

RHBS 999: *Dissertation Research.* 1-9 credits.
Dissertation research on a specific topic under the direction of a faculty member. Offered by Rehabilitation Science. May be repeated within the degree for a maximum 24 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy.

Enrollment is limited to students with a major, minor, or concentration in Rehabilitation Science.

Enrollment is limited to Graduate level students.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

Religious Studies (RELI)

100 Level Courses

RELI 100: *The Human Religious Experience.* 3 credits.
Examines main forms of religious expression as embodied in several important religious traditions in contemporary world. Investigates religious experience; myth and ritual; teachings and scripture; ethical, social, and artistic aspects of religion; and nature and function of religion in human society. Offered by Religious Studies. Limited to three attempts.

Mason Core: Global Understanding

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

200 Level Courses

RELI 211: *Religions of the West.* 3 credits.
Focuses on Judaism, Christianity, and Islam from historical, comparative, and cross-cultural perspectives. May also include modern developments of those faiths such as Mormonism and Baha'ism, as well as Zoroastrianism and religions of ancient Near Eastern cultures. Offered by Religious Studies. Limited to three attempts.

Mason Core: Global Understanding

Specialized Designation: Non-Western Culture

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

RELI 212: *Religions of Asia.* 3 credits.
Focuses on the traditional religions from Asia, particularly Hinduism, Buddhism, Daoism, and Confusianism from historical, comparative, and cross-cultural perspectives. May also include Jainism, Sihk, Shinto, native shamanism, and others as well as modern developments after European colonialism and growth as global religions. Offered by Religious Studies. Limited to three attempts.

Mason Core: Global Understanding

Specialized Designation: Non-Western Culture

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

RELI 235: *Religion and Literature.* 3 credits.
Explores the relationship between religion and literature in different times and cultures, the influence of religion on literary works, and how literature expresses major religious themes such as death and immortality, divine will and justice, suffering and human destiny, and religion and state. Offered by Religious Studies. Limited to three attempts.

Mason Core: Literature

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

RELI 240: *Death and the Afterlife in World Religions.* 3 credits.
Explores how selected world religions address the universal experience of death and express their beliefs in an afterlife. Focuses on the scriptures, beliefs, rituals and customs of selected world religions as they reflect each tradition's response to the most basic question about human destiny - how human beings face death and attempt to transcend it. Offered by Religious Studies. Limited to three attempts.

Specialized Designation: Non-Western Culture

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

RELI 271: *The Bible as Literature.* 3 credits.
Analyzes the Bible as a collection of literary texts. Course readings will include selections from the Jewish Tanakh and from the Christian New Testament. Students will become familiar with contemporary scholarship on the Bible and sample the Bible's impact on the art and literature of the last millennia. Students will become conversant with concepts such as scripture, canon, source criticism, historical criticism, genre, and reception history. Offered by Religious Studies. Limited to three attempts.

Mason Core: Literature

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

RELI 272: *Islam.* 3 credits.
Introduces basic religious beliefs and practices of Islam, with view to diverse manifestations of Islamic culture in different ethnic and social contexts. Provides overview of essential rituals of Islamic life, mystical practices of Sufis, certain popular forms of religious practice, sources and application of Islamic law, and distinctive Islamic artistic and literary forms. Offered by Religious Studies. Limited to three attempts.

Specialized Designation: Non-Western Culture

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

300 Level Courses

RELI 300: *Theories and Methods in Religious Studies.* 3 credits.
Basic introduction to interdisciplinary methods, theories, definitions, and thinkers in the academic study of religion. Provides foundation for further comparative studies of religions, concentrated studies of a particular religion, and the understanding of engagement between religion and wider culture. Prerequisite for upper-level courses on religious studies theory and method, such as the writing intensive and synthesis courses in Religious Studies. Offered by Religious Studies. Limited to three attempts.

Recommended Corequisite: RELI 100, 211, and/or 212

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

RELI 313: *Hinduism.* 3 credits.
Introduces Hindu religion and thought, beliefs, rituals, ethics and religious practices. Emphasis on classical Hinduism, but also covers Hinduism and modernity, modern Hindu movements, and Hinduism as a global religion. Offered by Religious Studies. Limited to three attempts.

Mason Core: Global Understanding

Specialized Designation: Non-Western Culture

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

RELI 314: *Chinese Philosophies and Religious Traditions.* 3 credits.
Surveys major religious traditions and philosophical themes of China including Confucianism, Taoism, and Chinese Buddhism and Neo-Confucianism. Examines foundation of Chinese world view and spirituality by investigating diverse religious traditions that have created tensions and harmony among them. Offered by Religious Studies. Limited to three attempts.

Specialized Designation: Non-Western Culture

Recommended Prerequisite: RELI 212 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

RELI 315: *Buddhism.* 3 credits.
Surveys Buddhist religious traditions. Includes historical development of Buddhism in India, China, and Japan, examining both Theravada and Mahayana traditions; philosophical and religious significance of Buddhism; and social and political implications of Buddhist traditions in South Asian and East Asian countries. Offered by Religious Studies. Limited to three attempts.

Mason Core: Global Understanding

Specialized Designation: Non-Western Culture

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

RELI 316: *Modern Christian Thought.* 3 credits.
Examines influential Christian thinkers and Christian intellectual trends of the modern period, from the Enlightenment through the present. Offered by Religious Studies. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

RELI 317: *Daoism.* 3 credits.
Daoism is one of the most influential philosophical and spiritual traditions in East Asia and especially in China. This course explores philosophical ideas, spiritual orientation, religious practice, and social and political values in Daoist tradition reading classic Daoist texts including Dao De Jing, Chuang-tzu, and other sources. Students will analyze Daoism in light of comparative and cross-cultural studies for global understanding of issues on concepts of nature, human nature, and good and evil. Offered by Religious Studies. Limited to three attempts.

Specialized Designation: Non-Western Culture

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

RELI 318: *Korean Philosophy and Religions.* 3 credits.
Survey of the religious traditions and philosophical systems of Korea including Shamanism, Buddhism, Confucianism, and Christianity. The course will explore the Korean development of the religious traditions and philosophical ideas introduced to Korea in relationship to native Korean spirituality and thought pattern. Offered by Religious Studies. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

RELI 320: *Religion and Revolution in Latin America.* 3 credits.
Explores the intersection between Christian and revolutionary thought, such as Marxism and existentialism, in Latin America after the 1960s that formed liberation theology. Emphasis on historical, philosophical and

interdisciplinary issues. Offered by Religious Studies. Limited to three attempts.

Mason Core: Global Understanding

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

RELI 322: *Religions of Africa.* 3 credits.
Explores traditional religious practices and world views in Africa south of the Sahara, the spread of African religions to the Caribbean and the Americas, the forms that religions imported or imposed from the north have taken in Africa south of the Sahara, and the interaction among the religious cultures of Africa, European Christianity and Islam. Offered by Religious Studies. Limited to three attempts.

Mason Core: Global Understanding

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

RELI 330: *Religion, Fantasy and Imagination.* 3 credits.
Explores the worlds of religion, fantasy and imagination, presented in selected writings of 20th century fantasy authors, including Lewis, Tolkien, Pullman, Rowling. Covers ideas of quest for enlightenment, redemption or salvation, conflict between good and evil, worlds of the supernatural, parallel dimensions and their inhabitants. Offered by Religious Studies. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

RELI 331: *Religion in America.* 3 credits.
Religious heritage in American culture, growth of denominations and sects, and interrelationship of religion and sociopolitical life. Offered by Religious Studies. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

RELI 332: *Mormonism.* 3 credits.
Examines the origins and development of Mormonism, as embodied in the Church of Jesus Christ of Latter-day Saints and other related churches. Introduces students to a critical analysis of Latter-day Saint scriptures, rituals, and history. Offered by Religious Studies. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

RELI 333: *Spiritual Autobiography.* 3 credits.
Investigates the genre of autobiography as employed by religious authors, both classical and modern. Introduces students to personal, historical, and religious doctrinal contexts that shape the autobiographical literature. Offered by Religious Studies. Limited to three attempts.

Mason Core: Literature

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

RELI 334: *American Scriptures.* 3 credits.
In this course, students will analyze texts that Americans have treated as "scripture." Students will read texts that present themselves as scripture, such as selections from the Book of Mormon and a Holy Sacred and Divine Roll and Book (a Shaker text). They will also read texts that have attained a sort of canonicity within American culture, such as the Declaration of Independence and Martin Luther King Jr.'s "Letter from Birmingham Jail." Students will thus gain more than a valuable familiarity with a variety of American religious traditions. They will also reflect on the way that, even in a digital age, texts continue to shape American identity. Offered by Religious Studies. Limited to three attempts. Equivalent to HIST 334.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

RELI 335: *Paul and His Letters.* 3 credits.
This course will focus on the oldest known Christian literature, the letters by Saint Paul. The course will explore these letters in their first-century historical and literary contexts, while also surveying some of the most relevant contemporary theoretical approaches to the letters (e.g., feminist, queer, affective, African American, and economic approaches). Offered by Religious Studies. Limited to three attempts.

Recommended Prerequisite: RELI 271, RELI 356, RELI 381

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

RELI 337: *Mysticism: East and West.* 3 credits.
Comparative treatment of major expressions of mysticism in East and West through exploration of various ways of understanding mystical experience. Readings and discussion emphasize one or more of the Eastern (Hinduism, Buddhism, Taoism, Zen) and Western (Judaism, Christianity, Islam) traditions. Offered by Religious Studies. Limited to three attempts.

Specialized Designation: Non-Western Culture

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

RELI 341: *Global Perspectives on Spirituality and Healing.* 3 credits.
Cross-cultural investigation of human understandings of relationship between spirituality and health. Beliefs about spiritual causes of sickness and health and spiritual techniques of healing in variety of world cultures placed in context of religious beliefs of those cultures. Offered by Religious Studies. Limited to three attempts.

Mason Core: Global Understanding, Encore: Well-Being

Recommended Prerequisite: 30 credits or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

RELI 350: *Religion and History of Ancient Israel.* 3 credits.
Examines religion and history of ancient Israel from origins around 1250 BCE to Babylonian Exile in 587 BCE. Topics include debate on historical value of biblical narratives, extra-biblical texts mentioning Israel, move from polytheism to monotheism, archaeology and artifacts, and development of Israel's unique religious and historical self-understanding. Offered by Religious Studies. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

RELI 352: *Judaism from Exile to Talmud.* 3 credits.
Examines Jewish religion, history, and literature from the Babylonian Exile to third century C.E. Special attention to development of Hebrew Bible, Apocalyptic and Apocryphal literature, belief in resurrection and final judgment, Dead Sea Scrolls, Jewish sects, and emergence of Christianity and Rabbinic Judaism. Offered by Religious Studies. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

RELI 353: *Jewish Political Tradition.* 3 credits.
Explores Jewish thinkers' attitudes towards politics and state. Topics include traditional sources, theological and political crisis of modern times, liberal Jewish thought, Zionist ideology, Israel as a separate state, relationship between religion and politics in modern Israel. Offered by Religious Studies. Limited to three attempts.

Recommended Prerequisite: RELI 211, 251 or 252, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

RELI 355: *Sufism.* 3 credits.
Examines the tradition of Islamic mysticism, Sufism, through an exploration of the literature produced by Sufis themselves. Provide general introduction to Sufism and its spiritual perspective and investigates various genres of Sufi literature, including hagiography, symbolic scriptural exegesis, spiritual autobiography, didactic allegory and love poetry. Offered by Religious Studies. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

RELI 356: *Jesus and the Gospels.* 3 credits.
Examines Gospel accounts of Jesus in context of first-century Christianity. Applies variety of historical and literary methods to gain understanding of Jesus and history and theology of early church. Offered by Religious Studies. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

RELI 357: *Gender and the Body in Judaism.* 3 credits.
Explores distinctively Jewish approaches to questions of gender, sexuality, and the body as described in the legal, religious, ethical, and literary material in the Jewish tradition. Topics include the "body of God," circumcision, laws of purity, rites of passage, the synagogue, feminist theology, and masculine and feminine stereotypes. Offered by Religious Studies. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

RELI 360: *Religion and Politics.* 3 credits.
Explores the roles of religion in contemporary political life in the United States and abroad. Emphasizes religion in current political debates. Includes history, political theory, sociology, and theology to present a comprehensive understanding of the topic. Offered by Religious Studies. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

RELI 361: *Evangelical America.* 3 credits.
Introduces the intellectual and social sources of evangelical Protestant traditions in the United States. Examines varieties of evangelical beliefs and practices. Surveying a range of themes, including science, sexuality, politics, and environmentalism, students examine how evangelicals have defined themselves in opposition to secular society but also have engaged the secular in an effort to convert souls, manage personal behavior, and transform American society in their image of Christian community. Offered by Religious Studies. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

RELI 362: *Religion and Film.* 3 credits.
Surveys representations of religious beliefs, practices, persons, and institutions in popular film. Focuses on the media consumption of box office movies in the United States. Examines how religion is imaged in film and how that religious imagination relates to social constructions of national, ethnic, racial, gender, and sexual identities. Offered by Religious Studies. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

RELI 363: *Catholicism.* 3 credits.
Focuses on the beliefs of the over one billion Roman Catholics in today's world. Probes the history, doctrine, symbols, rituals, practices, and material culture of the world's largest church. Considers Catholicism's dialog with secularism and discusses controversies and challenges facing the church today. Offered by Religious Studies. Limited to three attempts.

Recommended Prerequisite: 3 credits in religious studies or philosophy or permission of instructor

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

RELI 364: *Religion and Law in the United States.* 3 credits.
Explores issues relating to law and religion. Focuses on the legal doctrines that have arisen in cases under the Establishment and Free Exercise Clauses of the First Amendment. Topics include religion and public schools, government aid to religious institutions, including school vouchers, government endorsement of religious symbols, freedom of religious expression, and freedom of religious practice. Offered by Religious Studies. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

RELI 365: *Muhammad: Life and Legacy.* 3 credits.
Examines life and character of the founder of Islam, as remembered and understood by Muslims, as well as explores influence of his paradigmatic life and teachings on Islamic religious discourse and culture. Addresses Western critical studies of the accounts of Muhammad's life and contemporary controversies regarding Muhammad. Offered by Religious Studies. Limited to three attempts.

Specialized Designation: Non-Western Culture

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

RELI 370: *Judaism.* 3 credits.
Studies Judaism from origins to present. Includes origins of Judaism B.C.E.; Rabbinic Judaism; Jews in the Middle Ages; Hasidic and Mystical Judaism; Enlightenment; persecution and Holocaust; contemporary American Judaism; and Jewish, Christian, and Muslim relations. Offered by Religious Studies. Limited to three attempts.

Mason Core: Global Understanding

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

RELI 372: *American Judaism.* 3 credits.
Surveys Jewish religious life focusing on various types of American Judaism such as orthodox, conservative, reform, reconstructionist, as they have developed historically and continue to evolve. Emphasizes issues and challenges facing contemporary Judaism. Offered by Religious Studies. Limited to three attempts.

Recommended Prerequisite: 3 credits in RELI or PHIL or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

RELI 374: *Islamic Thought.* 3 credits.
Examines Islamic views on fundamental issues in religious thought, such as nature of God, nature of man, and relationship between God and man as reflected in both divine revelation and human religious vocation. Investigates intellectual approaches to these problems within Islamic tradition, including those of theological, philosophical, and mystical thinkers. Offered by Religious Studies. Limited to three attempts.

Mason Core: Global Understanding

Specialized Designation: Non-Western Culture

Recommended Prerequisite: RELI 211, 3 credits in religious studies, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

RELI 375: *Qur'an and Hadith.* 3 credits.
Explores two primary sources of Islamic belief and practice: Qur'an and Hadith. Discusses thematic structure and literary quality, and examines theological and moral issues. Also introduces various methods of interpretation and critical analysis applied to texts in both Islamic and Western scholarship. Lecture and discussion. Offered by Religious Studies. Limited to three attempts.

Specialized Designation: Non-Western Culture

Recommended Prerequisite: 3 credits in philosophy and religious studies, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

RELI 376: *Special Topics in Religious Thought.* 3 credits.
Selected topics from a philosophical perspective. Offered by Religious Studies. May be repeated within the term for a maximum 12 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: 3 hours of Religious Studies or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

RELI 379: *Islamic Law, Society, and Ethics.* 3 credits.
Introduces foundational sources and principles of Islamic Law or shariah. Examines the historical development and application of Islamic law, its role in Muslim societies, and its relationship to Islamic social ideals and ethical discourse. Offered by Religious Studies. Limited to three attempts.

Specialized Designation: Non-Western Culture

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

RELI 381: *Beginnings of Christianity.* 3 credits.
Examines early Christian church from time of Jesus to 700 C.E. Covers internal development of Christianity as it formed official doctrines and institutions, and external relations of Christians with followers of other religions in Roman Empire. Special attention to reasons for success of Christianity in Roman world. Offered by Religious Studies. Limited to three attempts.

Recommended Prerequisite: 3 credits of religious studies, RELI 252, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

RELI 384: *Global History of Christianity.* 3 credits.
Explores the history of Christianity around the world in the context of political and social structures as well as religious beliefs and practices. Offered by Religious Studies. Limited to three attempts.

Mason Core: Global Understanding

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

RELI 386: *Islam in the Modern Age.* 3 credits.
Covers the study of the Islamic tradition and its peoples during the last two centuries-the period of Islamic reform in the wake of Western hegemony-and the efforts of the community to readjust itself in light of Westernization and modernization, as well as the broader challenges of the secular, liberal, and technical age. Offered by Religious Studies. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

RELI 387: *Islam, Democracy, and Human Rights.* 3 credits.
Evaluates the political and religious goals of Muslim societies and governments, and whether these goals are conducive to the development of democratic institutions to promote democratic cultures and explicit support for human rights, as well as to these societies' full integration in an international order founded upon secularism and modernism. Offered by Religious Studies. Limited to three attempts.

Specialized Designation: Non-Western Culture

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

RELI 403: *Scripture and Authority in World Religions.* 3 credits.
Examines origins, development, and role of Scripture (religious texts) in world religions, concentrating on issues of divine inspiration, authority, authenticity, and canon. Offered by Religious Studies. Limited to three attempts.

Recommended Prerequisite: 60 credits including 6 credits of Religious Studies or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

RELI 405: *Religion, Values, and Globalization.* 3 credits.
Explores diverse value systems, ethical norms, and teaching found in different religious traditions and cultures. Examines assumption that globalization is attempt to universalize Western culture. Offered by Religious Studies. Limited to three attempts.

Recommended Prerequisite: 60 credits, including 6 credits in Religious Studies or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

RELI 407: *Women in the World's Religions.* 3 credits.
Seminar course offering theoretical and comparative study of role of women in six of the major religious traditions of the world?Judaism, Christianity, Islam, Hinduism, Buddhism, and Chinese religions. Offered by Religious Studies. Limited to three attempts.

Recommended Prerequisite: 60 credits; 6 credit hours in Philosophy or Religious Studies.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

RELI 420: *Seminar.* 3 credits.
Senior seminar on a specific topic of relevance to religious studies. Content varies. Notes: May be repeated when topic varies. Students with other majors may be take the course if the topic is sufficiently close to their field of study. Offered by Religious Studies. May be repeated within the term for a maximum 12 credits.

Specialized Designation: Writing Intensive in Major

Recommended Prerequisite: Major in religious studies with 60 credits including 9 credits or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

RELI 425: *Directed Readings in Religious Studies.* 1-3 credits.
Individual readings and research in religious studies on a topic selected in consultation with instructor. Offered by Religious Studies. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Major in religious studies with 60 credits including 9 credits in religious studies.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

RELI 426: *Religious Studies Internship.* 3 credits.
Course rubric to be used for acquiring academic credit in Religious Studies for religious studies related internships. Offered by Religious Studies. Limited to three attempts.

Recommended Prerequisite: The completion of 60 undergraduate credits and 12 credits toward the Religious Studies major or minor.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

RELI 490: *Comparative Study of Religions.* 3 credits.
Cross-cultural examination of comparative aspects of religious phenomena. Examines significance of religious phenomena from diverse religious and cultural perspectives, and investigates patterns of religious phenomena that have appeared in world cultures and civilizations. Offered by Religious Studies. Limited to three attempts.

Mason Core: Synthesis

Specialized Designation: Non-Western Culture

Recommended Prerequisite: 9 credits in religious studies including RELI 211 and RELI 212, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

500 Level Courses

RELI 591: *Special Topics in Religious Studies.* 3 credits.
Topics in religious studies selected by importance in the field and pertinent to the role of religion in society and culture. Emphasis on historical, interdisciplinary, and cross-cultural issues. Notes: May be repeated when topic is different with permission of department. Offered by Religious Studies. May be repeated within the term for a maximum 12 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

600 Level Courses

RELI 600: *Interdisciplinary Pathways in the Study of Religion.* 3 credits.
A co-taught course by Religious Studies faculty that introduces students to the graduate study of religion through a survey of different lines of inquiry in the field and different methodological approaches in the discipline. Offered by Religious Studies. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

RELI 630: *Theories and Methods in the Study of Religion.* 3 credits.
Examines study of religion as academic discipline. Evaluates various intellectual approaches and methods used in study of religious phenomena. Offered by Religious Studies. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

RELI 632: *Interreligious Dialogue.* 3 credits.
Examines the philosophical and theoretical foundation for religious pluralism and dialogue and different approaches to interreligious dialogue and understanding among leading interreligious thinkers. Offered by Religious Studies. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

RELI 633: *Issues in Religious Ethics.* 3 credits.
Examines how perceptions of ultimate reality shape ethical values and behaviors of various religious traditions. Addresses problems in interpretation of authoritative foundational teachings in contemporary contexts. Special attention to non-Western religions. Offered by Religious Studies. May be repeated within the degree for a maximum 9 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

RELI 634: *Topics in American Religion.* 3 credits.
Examines key issues related to religion in North America and the United States. Topics may include evangelicalism/revivalism; religion and the American founding; religious conversion; the intersection of religion and race; new religious movements; religion and immigration. Offered by Religious Studies. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

RELI 635: *World Religions in Transition and Transformation.* 3 credits.
Explores transitions and transformations in selected world religions as they respond to and influence forces of cultural change, social values, and the crises of history. Fresh or modified constructions of the sacred and their relationship to world and humans will be examined. Offered by Religious Studies. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

RELI 636: *Religion and the Natural Environment.* 3 credits.
Explores contemporary religious thought on the morality and ethics of environmental responsibility. Begins with an exploration of this issue in Western Christian thought and examines religious approaches to the environment in the traditional and contemporary thought of other major world religions, including Judaism, Islam, Hinduism, Buddhism, and the Chinese traditions. Offered by Religious Studies. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

RELI 637: *Religion and Secularity in State and Society.* 3 credits.
Examines the relationship between religion, state, society, and law in modern contexts, and across the global and religious spectrum, through the lens of different theoretical approaches to this issue. Offered by Religious Studies. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

RELI 640: *Religion and Law.* 3 credits.
Focuses on United States Supreme Court decisions on religion clauses over the last 50 years. Provides a close reading of court's opinions and considers material from religious legal traditions. Covers contemporary political debates on issues like prayer in public schools, displays of religious symbols, ceremonial references to God, and public aid to religious schools. Offered by Religious Studies. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

RELI 644: *Islamic Texts and Contexts.* 3 credits.
Introduces foundational Islamic texts; scholarly traditions of commentary, criticism and analysis on these texts; and application and significance of these texts in contemporary Islamic discourses. Offered by Religious Studies. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

RELI 645: *Muslim Comparative Theologies: Sunni-Shi`i Religious Thought.* 3 credits.
Compares and analyzes Sunni and Shi`ite theologies, with particular attention to the historical development of Muslim creed in the context of social and political conditions, and the essential differences between the

Sunni and Shi'ite schools of thought. Offered by Religious Studies. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

RELI 646: *Islam and Human Rights.* 3 credits.
Compares the conception of human rights in international human rights documents and accords with conceptions of human rights in classical Islamic theological, legal, and ethical texts. Examines various relevant issues, including but not limited to religious and gender discrimination, slavery, freedom of religion and belief and apostasy, and questions of punishment. Offered by Religious Studies. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

RELI 660: *Islamic Biomedical Ethics.* 3 credits.
Examination of the foundations of religious ethics and ethical principles developed by Muslims to solve bioethical problems. Relates ethical principles to the moral experience of contemporary Muslims, and explores the role of human experience and intuitive reasoning in deriving ethical decisions. Offered by Religious Studies. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

Russian (RUSS)

100 Level Courses

RUSS 101: *Elementary Russian I.* 3 credits.
For students with no knowledge of Russian. Introduces elements of grammar, vocabulary, oral skills, listening comprehension, and reading. Lab work required. Notes: Students may not receive credit for RUSS 101 and RUSS 110. Offered by Modern & Classical Languages. Limited to three attempts. Equivalent to RUSS 110.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Russian

RUSS 102: *Elementary Russian II.* 3 credits.
Continuation of RUSS 101. Notes: Students may not receive credit for RUSS 102 and RUSS 110. Offered by Modern & Classical Languages. Limited to three attempts. Equivalent to RUSS 110.

Recommended Prerequisite: RUSS 101 or permission of department.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Russian

RUSS 110: *Elementary Russian.* 6 credits.
Introduces elements of grammar, vocabulary, oral skills, listening comprehension, and reading. Notes: Students may not receive credit for RUSS 110 and RUSS 101, 102. Offered by Modern & Classical Languages. Limited to three attempts. Equivalent to RUSS 101, RUSS 102.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Russian

200 Level Courses

RUSS 201: *Intermediate Russian I.* 3 credits.
Further development of skills in listening, speaking, reading, and writing. Notes: RUSS 201 and 202 must be taken in sequence. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: RUSS 102, RUSS 110, appropriate placement score, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Russian

RUSS 202: *Intermediate Russian II.* 3 credits.
Application of language skills to reading, composition, and discussion. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: RUSS 201, appropriate placement score, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Fulfills Frgn Lng requirment, Taught in Russian

300 Level Courses

RUSS 302: *Russian Conversation and Composition.* 3 credits.
Develops in students ability to express themselves orally on topics of current interest and everyday situations. Provides practice in more difficult forms of written expression. Offered by Modern & Classical Languages. Limited to three attempts.

Specialized Designation: Writing Intensive in Major

Recommended Prerequisite: RUSS 202, appropriate placement score, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Russian

RUSS 303: *Russian Advanced Conversation.* 3 credits.
Development of oral proficiency. Includes current colloquial expressions. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: RUSS 202, appropriate placement score, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Russian

RUSS 310: *Readings in Russian Literature.* 3 credits.
Readings of Russian literary works in original language with lectures, discussions, and exam in Russian. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: RUSS 202, appropriate placement score, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Russian

RUSS 311: *Contemporary Russian Short Fiction.* 3 credits.
Reading and discussion of recent short stories by best-known Russian writers of today. Notes: Readings in original language. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: RUSS 202, appropriate placement score, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Russian

RUSS 325: *Major Russian Writers.* 3 credits.
Study of works of major Russian writers in translation. Writers to be studied vary. Notes: May be repeated once for credit when course content is different. Offered by Modern & Classical Languages. May be repeated within the term for a maximum 9 credits.

Mason Core: Literature

Specialized Designation: Writing Intensive in Major

Recommended Prerequisite: ENGL 101/ENGH 101 or equivalent or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

RUSS 326: *A Survey of Russian Literature.* 3 credits.
Surveys Russian literature from its beginning to 1880. Offered by Modern & Classical Languages. Limited to three attempts.

Mason Core: Literature

Recommended Prerequisite: Completion of 60 hours or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

RUSS 327: *A Survey of Russian Literature.* 3 credits.
Surveys Russian literature of late 19th and 20th centuries. Offered by Modern & Classical Languages. Limited to three attempts.

Mason Core: Literature

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

RUSS 353: *Russian Civilization.* 3 credits.
Civilization and culture of Russia and former Soviet Union. Includes films, slides, and music in addition to readings and lectures. Offered by Modern & Classical Languages. Limited to three attempts.

Mason Core: Synthesis

Specialized Designation: Non-Western Culture

Recommended Prerequisite: 60 credits and completion or concurrent enrollment in all other required Mason Core courses.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

RUSS 354: *Contemporary Post-Soviet Life.* 3 credits.
Social life, art, economics, education, view of life, and personal aspirations of Russian citizen today. Offered by Modern & Classical Languages. Limited to three attempts.

Mason Core: Global Understanding

Specialized Designation: Non-Western Culture

Recommended Prerequisite: 54 hours or Permission of Instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

RUSS 380: *Advanced Russian I.* 3 credits.
Comprehensive study of the more difficult characteristics of contemporary standard Russian in areas of grammar, style, and vocabulary usage. Emphasizes developing fluency in oral and written expression. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: RUSS 202 or equivalent, appropriate placement score, or permission of instructor

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Russian

RUSS 381: *Advanced Russian II.* 3 credits.
Comprehensive study of the more difficult characteristics of contemporary standard Russian in areas of grammar, style, and vocabulary usage. Emphasizes developing fluency in oral and written expression. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: RUSS 202 or equivalent, appropriate placement score, or permission of instructor

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Russian

400 Level Courses

RUSS 401: *Readings in the Social Sciences.* 3 credits.
Reading, translation, and discussion of Russian materials in fields of history, politics, geography, and sociology. Offered by Modern & Classical Languages. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Russian

RUSS 407: *Russian Drama and Theater.* 3 credits.
Development of Russian theater including directing techniques in Moscow Art Theater. Reading and discussion of major Russian plays of 19th and 20th centuries. Notes: Course work in English; knowledge of Russian not required. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: 60 hours or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

RUSS 410: *Russian Poetry.* 3 credits.
Historical development of Russian poetry and representative works of major poets. Notes: Reading in Russian; course work in English and Russian. Offered by Modern & Classical Languages. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Russian

RUSS 470: *Topics in (Post) Soviet Film.* 3 credits.
Russian, Soviet, and post-Soviet films selected by type, period, or director with emphasis varying from year to year. Required viewings, student discussion, and written critiques. Notes: May be repeated once with permission of department or film studies adviser. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 9 credits.

Specialized Designation: Topic Varies

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

RUSS 480: *Fourth-Year Russian.* 3 credits.
Advanced work in major grammatical and lexical topics of Russian. Application of theoretical principles in guided written and oral exercises. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: RUSS 380 and 381 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Russian

RUSS 481: *Fourth-Year Russian.* 3 credits.
Advanced work in major grammatical and lexical topics of Russian. Application of theoretical principles in guided written and oral exercises. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: RUSS 380, 381, or equivalent.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Russian

RUSS 490: *Independent Study.* 1-3 credits.
Research and analysis of selected problem in language, literature, or culture in consultation with member of Russian studies faculty. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: Russian studies major with 84 hours and Permission of Instructor.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Russian

RUSS 491: *Independent Study.* 1-3 credits.
Research and analysis of selected problem in language, literature, or culture in consultation with member of Russian studies faculty. Offered by Modern & Classical Languages. Limited to three attempts.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Russian

School Psychology (SPSY)

500 Level Courses

SPSY 597: *Special Topics in School Psychology.* 3 credits.
Focuses on emerging or foundational concepts in school psychology research, theory, or practice under direction of faculty member. Offered by School of Education. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Admission to school psychology program or permission of instructor

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

600 Level Courses

SPSY 617: *Child Psychopathology.* 3 credits.
Surveys major types of psychopathological disturbances of infancy and childhood. Provides an overview of atypical development in children and adolescents focusing on cognitive, emotional, social, and adaptive domains. Examines etiologies, symptoms, effects, and treatments of major psychological disorders. Introduces students to major classification systems that are commonly applied to diagnose psychological disorders in children. Offered by School of Education. May not be repeated for credit. Equivalent to PSYC 617.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SPSY 619: *Consultation and Applied Behavioral Analysis.* 3 credits.
Examines the theoretical framework and elements of applied behavioral analysis, foundational principles of behavioral approaches to learning, as well as the framework of behavioral consultation. Provides acquisition and practical application of behavioral consultation skills through the process of the consultant-consultee relationship. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SPSY 671: *Role and Function of the School Psychologist.* 3 credits.
Considers roles and functions of school psychologist in the educational environment, including all National Association of School Psychologists (NASP) practice standards. Includes certification process, relevant school law, ethical standards and practice, current and historical issues, and trends. Notes: Open only to school psychology MA students, or by permission of instructor. Offered by School of Education. May not be repeated for credit.

Recommended Corequisite: SPSY 672

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SPSY 672: *Schools as Systems Practicum in School Psychology.* 3 credits.
Provides contextual understanding of how districts, schools and classrooms operate; job responsibilities of the school psychologist; role of colleagues in the schools; special education process; various team structures and functioning; MTSS implementation; systems-level initiatives; organizational change; program evaluation; and use of data for school/student improvement. Requires semester-long practicum in the schools shadowing a school psychologist, and weekly class meetings. Offered by School of Education. May not be repeated for credit.

Recommended Corequisite: SPSY 671

Registration Restrictions:
Enrollment limited to students with a class of Graduate.

Enrollment is limited to students with a major in Psychology.

Enrollment limited to students in the Education Human Development college.

Schedule Type: Internship

Grading:
This course is graded on the Graduate Regular scale.

SPSY 692: *Counseling in the Schools.* 3 credits.
Examines theories, techniques, and counseling issues relevant to children and adolescents. Develops basic and advanced counseling skills, and provides experience receiving verbal and written feedback on simulated counseling sessions. Explores range of community agencies providing mental health services. Counseling practice provides an emphasis on process and culturally competent counseling strategies. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (EDCD 603[B-] or 603[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major in Psychology.

Enrollment is limited to Graduate level students.

Enrollment limited to students in the Education Human Development college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

700 Level Courses

SPSY 709: *Cognitive Assessment.* 4 credits.
Introduces school psychology graduate students to issues and methods of cognitive/intellectual assessment. Provides experience in administration, scoring, and interpretation of major infant, child, and adult tests of cognitive ability, with emphasis on individual tests. Examines the development of IQ tests, theories of intelligence, and current trends and developments in intellectual assessment. Notes: Open only to school psychology MA students. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to students with a major in Psychology.

Enrollment is limited to Graduate level students.

Enrollment limited to students in the Education Human Development college.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Graduate Regular scale.

SPSY 710: *Social, Emotional, and Behavioral Assessment.* 4 credits.
Examines major instruments used in clinical assessment of social, emotional and behavioral functioning of children and adolescents. Provides practice in administration and scoring of major techniques for evaluation of social emotional behavioral adjustment. Explores nature, problems, and predictive value, and principles of interpretation of these procedures. Notes: Open only to school psychology MA students. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (SPSY 709[B-], 709[XS], PSYC 810[B-] or 810[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major in Psychology.

Enrollment is limited to Graduate level students.

Enrollment limited to students in the Education Human Development college.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Graduate Regular scale.

SPSY 722: *Advanced Child Assessment.* 4 credits.
Provides comprehensive coverage of principles, strategies, and techniques in diagnostic assessment of children and adolescents with various conditions such as learning disabilities, intellectual disability, autism, attention difficulties, and emotional disturbances. Familiarizes students with diagnostic classification systems and special education eligibility process in schools. Notes: Open only to school psychology MA or PhD students. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (((SPSY 709[B-] or 709[XS]) and (SPSY 710[B-] or 710[XS]) and (SPSY 750[B-] or 750[XS])) or ((PSYC 810[B-] or 810[XS]) and (PSYC 811[B-] or 811[XS]))).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Graduate Regular scale.

SPSY 750: *Cognitive Assessment Practicum.* 3 credits.
Semester-long practicum experience in cognitive assessment, to develop and refine psychological assessment skills. Requires weekly seminar. Provides experience in individual cognitive assessments of children referred to the GMU Cognitive Assessment Program under direct supervision of a licensed psychologist. Includes interviewing, testing, scoring, report writing, and communicating results. Requires group and individual supervision Notes: Open only to school psychology MA students. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (SPSY 709[B-] or 709[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major in Psychology.

Enrollment is limited to Graduate level students.

Enrollment limited to students in the Education Human Development college.

Schedule Type: Internship

Grading:
This course is graded on the Graduate Special scale.

SPSY 751: *Advanced Assessment Practicum in School Psychology I.* 3 credits.
Provides practical, applied, supervised experience conducting comprehensive psychoeducational evaluations with children and adolescents to develop assessment and diagnostic skills. Requires interviewing, test selection and administration, scoring, report writing, and feedback sessions with clients. Focuses on integration of data and recommendation development. Requires practicum in training clinic, and individual and group supervision. Notes: Open only to School Psychology MA students. Offered by School of Education. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Required Prerequisites: ((SPSY 709[B-] or 709[XS]) and (SPSY 710[B-] or 710[XS]) and (SPSY 722[B-] or 722[XS]) and (SPSY 750[B-] or 750[XS])).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major in Psychology.

Enrollment is limited to Graduate level students.

Enrollment limited to students in the Education Human Development college.

Schedule Type: Internship

Grading:
This course is graded on the Graduate Special scale.

SPSY 752: *Advanced Assessment Practicum in School Psychology II.* 3 credits.
Provides practical, applied, supervised experience conducting comprehensive psychoeducational evaluations with children and adolescents to refine assessment and diagnostic skills. Requires interviewing, test selection and administration, scoring, report writing, and feedback sessions with clients. Focuses on integration of data and recommendation development. Requires practicum in training clinic, and individual and group supervision. Notes: Open only to School Psychology MA students. Offered by School of Education. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Required Prerequisites: ((SPSY 709[B-] or 709[XS]) and (SPSY 710[B-] or 710[XS]) and (SPSY 722[B-] or 722[XS]) and (SPSY 750[B-] or 750[XS]) and (SPSY 751[B-] or 751[XS])).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major in Psychology.

Enrollment is limited to Graduate level students.

Enrollment limited to students in the Education Human Development college.

Schedule Type: Internship

Grading:
This course is graded on the Graduate Special scale.

SPSY 753: *Multiculturalism in Schools.* 3 credits.
Introduces school/educational/developmental psychology graduate students to issues and recent research on multicultural competence and multiculturalism in schools. Develops self-awareness around issues of cultural diversity and expands knowledge base in the area of diversity. Provides an opportunity to read research in the field on RTI, Consultation, Intervention, and Assessment that has a multicultural perspective or component. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SPSY 773: *Prevention, Intervention, and Consultation in Schools.* 3 credits.
Examines psychological theory and practice of prevention, intervention, and consultation in the school environment. Provides an overview of consultation approaches, prevention models that promote academic and social success, strategies and methods for targeted intervention, and crisis response. Focuses on current models of direct/indirect service-delivery in a MTSS/RtI model to support academic achievement and social emotional adjustment of all children. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SPSY 775: *Prevention Intervention Consultation Practicum.* 3 credits.
Requires school-based practicum under the supervision of school psychologist, and weekly seminar. Focuses on teacher consultation and implementation of prevention/intervention services. Application of a variety of concrete methods/strategies designed to support successful academic achievement and positive social-emotional adjustment for children in schools. Focuses on delivery of evidence-based direct and consultative psychological services to individuals and groups within the school community. Offered by School of Education. May not be repeated for credit. Equivalent to SPSY 792.

Registration Restrictions:
Required Prerequisites: SPSY 773[B-] or 773[XS].
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major in Psychology.

Enrollment is limited to Graduate level students.

Enrollment limited to students in the Education Human Development college.

Schedule Type: Internship

Grading:
This course is graded on the Graduate Regular scale.

SPSY 790: *School Psychology Internship.* 3-5 credits.
Provides supervised field experience and semi-monthly seminar over course of one school year as students work as full-time staff members in schools. Focuses on demonstration of the integration of skills/knowledge across all professional practice domains. Emphasizes evidence-based interventions, direct and indirect services, and measurement of student outcomes. NOTE: Students must register for at least 3 credits in each of 2 consecutive semesters. Offered by School of Education. May be repeated within the degree for a maximum 10 credits.

Recommended Prerequisite: Completion of required courses in school psychology and permission of program coordinator.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Internship

Grading:
This course is graded on the Graduate Special scale.

SPSY 792: *Prevention Intervention Consultation Practicum.* 3 credits.
Requires school-based practicum under the supervision of school psychologist, and weekly seminar. Focuses on teacher consultation and implementation of prevention/intervention services. Application of a variety of concrete methods/strategies designed to support successful academic achievement and positive social-emotional adjustment for children in schools. Focuses on delivery of evidence-based direct and consultative psychological services to individuals and groups within the school community. Offered by School of Education. May be repeated within the degree for a maximum 6 credits. Equivalent to SPSY 775.

Registration Restrictions:
Required Prerequisites: SPSY 773[B-] or 773[XS].
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major in Psychology.

Enrollment is limited to Graduate level students.

Enrollment limited to students in the Education Human Development college.

Schedule Type: Internship

Grading:
This course is graded on the Satisfactory/No Credit scale.

Secondary Education (SEED)

300 Level Courses

SEED 370: *Young Adult Literature in Multicultural Settings.* 3 credits.
Examines literary works written for and about young adults, introduces critical issues surrounding teaching of young adult literature in multiculturally diverse schools, and requires reading and review of young adult literature. Offered by School of Education. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SEED 372: *Teaching Mathematics in the Secondary School.* 3 credits.
Covers curricula, current issues, and research literature in secondary school mathematics. Emphasis is on developing different styles of teaching. Field experience is required for those seeking initial teacher licensure. Offered by School of Education. Limited to three attempts. Equivalent to EDCI 372.

Recommended Corequisite: SEED 440

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

SEED 406: *LGBTQ Issues in Education.* 3 credits.
Provides an overview of contemporary issues and concepts related to lesbian, gay, bisexual, trans, and queer persons and communities as they relate to systems, structures, and experiences within educational contexts, such as schools, museums, and community organizations. Focuses on theories, methods, and practices to support learners and educators in settings inclusive of all sexual identities and orientations. Offered by School of Education. Limited to three attempts.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

SEED 422: *Foundations of Secondary Education.* 3 credits.
Analyzes philosophical assumptions, curriculum issues, learning theories, and history associated with current teaching styles. Emphasizes applications to all disciplines taught in secondary schools. Examines educational trends and issues. Note: 15 hours of school-based field experience required. Offered by School of Education. Limited to three attempts. Equivalent to EDUC 422.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SEED 440: *Human Development, Learning, and Teaching.* 3 credits.
Explores processes that influence intellectual, social, emotional, moral, ethical, and physical development of middle and high school students. Examines research and theories for understanding the learning process. Notes: School-based field experience required. Offered by School of Education. Limited to three attempts. Equivalent to EDUC 372.

Recommended Corequisite: SEED 372 or SEED 466 or SEED 469 or SEED 473

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SEED 466: *Teaching Computer Science in Secondary School.* 3 credits.
Emphasizes developing different styles of teaching and covers curricula, current issues, and research literature in secondary school computer science. Note: School-based field experience required. Offered by School of Education. Limited to three attempts.

Recommended Corequisite: SEED 440

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SEED 469: *Teaching English in Secondary School.* 3 credits.
Provides study of methods, materials, content, and organization of English programs in secondary school. Offered by School of Education. Limited to three attempts. Equivalent to EDCI 469.

Recommended Corequisite: SEED 440

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SEED 472: *Advanced Methods for Teaching Mathematics in the Secondary School.* 3 credits.
Focuses on learning processes for mathematics. Introduces national and state standards regarding content and methodologies for teaching mathematics. Examines instructional methods and materials in relation to secondary mathematical content, curriculum, and assessment. School-based field experience required. Offered by School of Education. Limited to three attempts. Equivalent to EDCI 472.

Recommended Prerequisite: SEED 440, SEED 422

Recommended Corequisite: EDRD 419

Registration Restrictions:
Required Prerequisite: SEED 372[C].
[C] Requires minimum grade of C.

Enrollment is limited to students with a major, minor, or concentration in Secondary Ed - Mathematic 6-12.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SEED 473: *Teaching Science in the Secondary School.* 3 credits.
Builds fundamental knowledge of science teaching and learning including standards-based curriculum design and research-based teaching strategies. Notes: School-based field experience required for those seeking initial teacher licensure. Offered by School of Education. Limited to three attempts. Equivalent to EDCI 473.

Recommended Corequisite: SEED 440

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SEED 476: *Advanced Methods of Teaching Computer Science in the Secondary School.* 3 credits.
Emphasizes learning processes for computer science (CS). Introduces national and state standards regarding content and methodologies for teaching CS. Examines instructional methods and materials in relation to secondary CS content, curriculum, and assessment. Note: School-based field experience required. Offered by School of Education. Limited to three attempts.

Recommended Prerequisite: SEED 422, SEED 440

Recommended Corequisite: EDRD 419

Registration Restrictions:
Required Prerequisite: SEED 466[C].
[C] Requires minimum grade of C.

Enrollment is limited to students with a major, minor, or concentration in Secondary Ed - Comp Sci 6-12.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SEED 479: *Advanced Methods of Teaching English in the Secondary School.* 3 credits.
Guides students in working effectively with national and local standards for teaching secondary English. Offered by School of Education. Limited to three attempts. Equivalent to EDCI 479.

Recommended Prerequisite: SEED 422, SEED 440

Recommended Corequisite: EDRD 419

Registration Restrictions:
Required Prerequisite: SEED 469[C].
[C] Requires minimum grade of C.

Enrollment is limited to students with a major, minor, or concentration in Secondary Ed - English 6-12.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SEED 483: *Advanced Methods of Teaching Science in Secondary School.* 3 credits.
Provides advanced study of teaching and curriculum development based on research and current issues. Emphasizes integrating science and technology, adapting instruction to needs of diverse learners, and promoting safety. Offered by School of Education. Limited to three attempts. Equivalent to EDCI 483.

Recommended Prerequisite: SEED 422, SEED 440

Recommended Corequisite: EDRD 419

Registration Restrictions:
Required Prerequisite: SEED 473[C].
[C] Requires minimum grade of C.

Enrollment is limited to students with a major, minor, or concentration in Secondary Ed - Biology 6-12, Secondary Ed - Chemistry 6-12, Secondary Ed - Physics 6-12 or Secnd Ed - Earth Science 6-12.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SEED 491: *Internship Seminar in Secondary Teaching.* 2 credits.
Focuses on critical reflection regarding effects of teacher actions on others; develops skills as a reflective practitioner; presents research-based rationales for instructional decision-making. Offered by School of Education. Limited to three attempts. Equivalent to EDCI 491.

Recommended Prerequisite: All students must have completed all licensure and all endorsement course work.

Registration Restrictions:
Required Prerequisites: (((SEED 422[C] or 422[XS]) and SEED 440[C] and EDRD 419[C]) and ((SEED 469[C] and 479[C]) or (SEED 372[C] and 472[C]) or (SEED 473[C] and 483[C]) or (SEED 466[C] and 476[C])) and (SEED 492[*C], 493[*C], 494[*C] or 496[*C])).
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major in Secondary Ed - Biology 6-12, Secondary Ed - Chemistry 6-12, Secondary Ed - Mathematic 6-12, Secondary Ed - English 6-12, Secondary Ed - Comp Sci 6-12, Secondary Ed - Physics 6-12 or Secnd Ed - Earth Science 6-12.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

SEED 492: *Internship: Secondary Education English.* 6 credits.
Provides intensive, supervised clinical experience in English grade 6-12 classroom in approved school for fall or spring semester. Offered by School of Education. Limited to three attempts. Equivalent to EDCI 490, SEED 493, SEED 494, SEED 496.

Mason Core: Capstone

Recommended Prerequisite: Completion of licensure and all endorsement work.

Registration Restrictions:
Required Prerequisites: ((SEED 422[C] or 422[XS]) and SEED 440[C], EDRD 419[C], SEED 469[C], 479[C] and 491[*C]).
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major in Secondary Ed - English 6-12.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Special scale.

SEED 493: *Internship: Secondary Education Math.* 6 credits.
Provides intensive, supervised clinical experience in mathematics grade 6-12 classroom in approved school for fall or spring semester. Offered by School of Education. Limited to three attempts. Equivalent to EDCI 490, SEED 492, SEED 494, SEED 496.

Mason Core: Capstone

Recommended Prerequisite: Completion of licensure and all endorsement work.

Registration Restrictions:
Required Prerequisites: ((SEED 422[C] or 422[XS]) and SEED 440[C], EDRD 419[C], SEED 372[C], 472[C] and 491[*C]).
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major in Secondary Ed - Mathematic 6-12.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Special scale.

SEED 494: *Internship: Secondary Education Science.* 6 credits.
Provides intensive, supervised clinical experience in a science grade 6-12 classroom in an approved school for fall or spring semester. Offered by School of Education. Limited to three attempts. Equivalent to EDCI 490, SEED 492, SEED 493, SEED 496.

Mason Core: Capstone

Recommended Prerequisite: Completion of licensure and all endorsement work.

Registration Restrictions:
Required Prerequisites: ((SEED 422[C] or 422[XS]) and SEED 440[C], EDRD 419[C], SEED 473[C], 483[C] and 491[*C]).
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major in Secondary Ed - Biology 6-12, Secondary Ed - Chemistry 6-12, Secondary Ed - Physics 6-12 or Secnd Ed - Earth Science 6-12.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Special scale.

SEED 496: *Internship: Secondary Education Computer Science.* 6 credits.
Provides intensive, supervised clinical experience in computer science grade 6-12 classrooms in approved school for fall or spring semester. Offered by School of Education. Limited to three attempts. Equivalent to EDCI 490, SEED 492, SEED 493, SEED 494.

Mason Core: Capstone

Recommended Prerequisite: Completion of licensure and all endorsement work.

Registration Restrictions:
Required Prerequisites: ((SEED 422[C] or 422[XS]) and SEED 440[C], EDRD 419[C], SEED 466[C], 476[C] and 491[*C]).
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major in Secondary Ed - Comp Sci 6-12.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

500 Level Courses

SEED 502: *Young Adult Literature in Multicultural Settings.* 3 credits.
Examines the historical development of literary works written for and about young adults. Considers critical issues surrounding the use and teaching of young adult literature in today's culturally diverse public schools. Requires the reading and review of young adult literature in a variety of genres. Offered by School of Education. May be repeated within the degree for a maximum 6 credits. Equivalent to EDCI 570.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SEED 522: *Foundations of Secondary Education.* 3 credits.
Analyzes philosophical assumptions, curriculum issues, learning theories, and history associated with current teaching styles. Emphasizes applications to all disciplines taught in secondary schools. Examines current educational trends and issues in relation to sociology of secondary school settings. Notes: 15 hours school-based field experience required. Offered by School of Education. May not be repeated for credit. Equivalent to EDUC 522.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SEED 540: *Human Development and Learning: Secondary Education.* 3 credits.
Explores developmental issues associated with middle and high school students, and theories that provide basis for understanding learning process. Addresses implications for designing instruction and curriculum. Offered by School of Education. May not be repeated for credit. Equivalent to EDUC 672.

Recommended Corequisite: SEED 566, 567, 569, 572, or 573.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SEED 566: *Teaching Computer Science in the Secondary School.* 3 credits.
Emphasizes developing different styles of teaching and covers curricula, current issues, and research literature in secondary school computer science. Note: School-based field experience required. Offered by School of Education. May not be repeated for credit.

Recommended Corequisite: SEED 540

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SEED 567: *Teaching Social Studies in the Secondary School.* 3 credits.
Provides teacher candidates an introduction to methods, frameworks, and practices of teaching social studies in secondary schools. Notes: Requires 15 hours of school-based field experience. Offered by School of Education. May not be repeated for credit. Equivalent to EDCI 567.

Recommended Corequisite: SEED 540

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SEED 569: *Teaching English in the Secondary School.* 3 credits.
Provides study of methods, materials, content, and organization of English programs in secondary school. Notes: 15 hours school-based field experience required. Offered by School of Education. May not be repeated for credit. Equivalent to EDCI 569.

Recommended Corequisite: SEED 540

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SEED 572: *Teaching Mathematics in the Secondary School.* 3 credits.
Emphasizes developing different styles of teaching and covers curricula, current issues, and research literature in secondary school mathematics. Notes: 15 hours of school-based field experience required. Offered by School of Education. May not be repeated for credit. Equivalent to EDCI 572.

Recommended Corequisite: SEED 540

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SEED 573: *Teaching Science in the Secondary School.* 3 credits.
Provides study of methods, materials, content, and organization of science programs. Emphasizes curriculum planning, current methodologies, safety, and trends in secondary schools. Note: Students must also complete 15 hours of field experience. Offered by School of Education. May not be repeated for credit. Equivalent to EDCI 573.

Recommended Corequisite: SEED 540

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

600 Level Courses

SEED 667: *Advanced Methods of Teaching Social Sciences in the Secondary School.* 3 credits.
Emphasizes interdisciplinary curriculum and instruction and implementing national state standards, authentic assessment, and adaptations for diverse populations. Notes: School-based clinical experience required. Offered by School of Education. May not be repeated for credit. Equivalent to EDCI 667.

Recommended Prerequisite: SEED 522 and SEED 540

Recommended Corequisite: EDRD 619

Registration Restrictions:
Required Prerequisites: (SEED 567[B] or 567[XS]).
[B] Requires minimum grade of B.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Graduate.

Enrollment is limited to students with a major, minor, or concentration in Secondary Ed - Hist/Soc Sci or Secondary Education Licensure.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SEED 669: *Advanced Methods of Teaching English in the Secondary School.* 3 credits.
Guides students in working effectively with national and local standards for teaching secondary English. Note: School-based clinical experience required. Offered by School of Education. May not be repeated for credit. Equivalent to EDCI 669.

Recommended Prerequisite: SEED 522 and SEED 540

Recommended Corequisite: EDRD 619

Registration Restrictions:
Required Prerequisites: (SEED 569[B] or 569[XS]).
[B] Requires minimum grade of B.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Graduate.

Enrollment is limited to students with a major, minor, or concentration in Secondary Ed - English or Secondary Education Licensure.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SEED 672: *Advanced Methods of Teaching Mathematics in the Secondary School.* 3 credits.
Focuses on learning processes for mathematics. Introduces national and state standards regarding content and methodologies for teaching mathematics. Examines instructional methods and materials in relation to secondary mathematical content, curriculum, and assessment. Note: School-based clinical experience required. Offered by School of Education. May not be repeated for credit. Equivalent to EDCI 672.

Recommended Prerequisite: SEED 522 and SEED 540

Recommended Corequisite: EDRD 619

Registration Restrictions:
Required Prerequisites: (SEED 572[B] or 572[XS]).
[B] Requires minimum grade of B.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Graduate.

Enrollment is limited to students with a major, minor, or concentration in Secondary Ed - Math or Secondary Education Licensure.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SEED 673: *Advanced Methods of Teaching Science in the Secondary School.* 3 credits.
Provides advanced study of teaching and curriculum development based on research and current issues. Emphasizes integrating science and technology, and adapting instruction to the needs of diverse learners. School-based field experience required. Offered by Graduate School of Education. May not be repeated for credit. Offered by School of Education. May not be repeated for credit. Equivalent to EDCI 673.

Recommended Prerequisite: SEED 522 and SEED 540

Recommended Corequisite: EDRD 619

Registration Restrictions:
Required Prerequisites: (SEED 573[B] or 573[XS]).
[B] Requires minimum grade of B.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Secondary Ed - Biology, Secondary Ed - Chemistry, Secondary Ed - Physics, Secondary Ed - Earth Science or Secondary Education Licensure.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SEED 675: *Research in Secondary Education.* 3 credits.
Links evidence of student learning to make informed instructional decisions. Engages students in critiquing various research paradigms, reviewing literature, and systematically collecting and interpreting evidence to improve practice. Notes: All students enrolled in this course must be working daily in or have access to a classroom setting classroom setting (during the semester in which they enroll in this course or a semester following), since the major course assignment involves a classroom-based teacher research project. Offered by School of Education. May not be repeated for credit. Equivalent to EDUC 675.

Recommended Prerequisite: SEED 540, SEED 522

Recommended Corequisite: For students seeking English licensure: SEED 669 and EDRD 619 For students seeking math licensure: SEED 672 and EDRD 619 For students seeking science licensure: SEED 673 and EDRD 619 For students seeking history/social studies licensure: SEED 667 and EDRD 619 For students seeking computer science licensure: SEED 676 and EDRD 619

Registration Restrictions:
Required Prerequisites: (SEED 569[B], 569[XS], 572[B], 572[XS], 573[B], 573[XS], 567[B], 567[XS], 566[B] or 566[XS]).
[B] Requires minimum grade of B.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Secondary Ed - Biology, Secondary Ed - Chemistry, Secondary Ed - English, Secondary Ed - Hist/Soc Sci, Secondary Ed - Math, Secondary Ed-Computer Science, Secondary Ed - Physics, Secondary Ed - Earth Science or Secondary Education Licensure.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

SEED 676: *Advanced Methods of Teaching Computer Science in the Secondary School.* 3 credits.
Emphasizes learning processes for computer science (CS). Introduces national and state standards regarding content and methodologies for teaching CS. Examines instructional methods and materials in relation to secondary CS content, curriculum, and assessment. Note: School-based field experience required. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: SEED 540 and SEED 522

Recommended Corequisite: EDRD 619

Registration Restrictions:
Required Prerequisites: (SEED 566[B] or 566[XS]).
[B] Requires minimum grade of B.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Graduate.

Enrollment is limited to students with a major, minor, or concentration in Secondary Ed-Computer Science or Secondary Education Licensure.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

700 Level Courses

SEED 791: *Internship Seminar in Secondary Teaching.* 2 credits.
Focuses on critical reflection regarding effects of teacher actions on others; develops skills as a reflective practitioner; presents research-based rationales for instructional decision-making. Offered by School of Education. May not be repeated for credit. Equivalent to EDCI 791.

Recommended Prerequisite: Students must also have completed all licensure and all endorsement course work prior to enrolling.

Registration Restrictions:
Required Prerequisites: (((SEED 522[B] or 522[XS]) and (SEED 540[B] or 540[XS]) and (EDRD 619[B] or 619[XS])) and (((SEED 569[B] or 569[XS]) and (SEED 669[B] or 669[XS])) or ((SEED 572[B] or 572[XS]) and (SEED 672[B] or 672[XS])) or ((SEED 573[B] or 573[XS]) and (SEED 673[B] or 673[XS])) or ((SEED 567[B] or 567[XS]) and (SEED 667[B] or 667[XS])) or ((SEED 566[B] or 566[XS]) and (SEED 676[B] or 676[XS]))) and (SEED 792[*B], 792[XS], 793[*B], 793[XS], 794[*B], 794[XS], 795[*B], 795[XS], 796[[]] or 796[*B])).
[*] May be taken concurrently.
[B] Requires minimum grade of B.
[XS] Requires minimum grade of XS.
Requires minimum grade of .

Enrollment is limited to students with a major, minor, or concentration in Secondary Ed - Biology, Secondary Ed - Chemistry, Secondary Ed - English, Secondary Ed - Hist/Soc Sci, Secondary Ed - Math, Secondary Ed-Computer Science, Secondary Ed - Physics, Secondary Ed - Earth Science or Secondary Education Licensure.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

SEED 792: *Internship: Secondary Education English.* 1-6 credits.
Provides intensive, supervised clinical experience in English grade 6-12 classroom in approved school for fall or spring semester. Offered by School of Education. May be repeated within the term for a maximum 6 credits. Equivalent to EDCI 790.

Recommended Prerequisite: Completion of all licensure and endorsement course work.

Registration Restrictions:
Required Prerequisites: ((SEED 522[B] or 522[XS]) and (SEED 540[B] or 540[XS]) and (EDRD 619[B] or 619[XS]) and (SEED 569[B] or 569[XS]) and (SEED 669[B] or 669[XS]) and (SEED 791[*B] or 791[XS])).
[*] May be taken concurrently.
[B] Requires minimum grade of B.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Secondary Ed - English or Secondary Education Licensure.

Schedule Type: Internship

Grading:
This course is graded on the Satisfactory/No Credit scale.

SEED 793: *Internship: Secondary Education Math.* 1-6 credits.
Provides intensive, supervised clinical experience in a mathematics grade 6-12 classroom in an approved school for fall or spring semester. Offered by School of Education. May be repeated within the term for a maximum 6 credits. Equivalent to EDCI 790, ELED 790, SEED 794, SEED 795.

Recommended Prerequisite: Completion of licensure and all endorsement course work.

Registration Restrictions:
Required Prerequisites: ((SEED 522[B] or 522[XS]) and (SEED 540[B] or 540[XS]) and (EDRD 619[B] or 619[XS]) and (SEED 572[B] or 572[XS]) and (SEED 672[B] or 672[XS]) and (SEED 791[*B] or 791[XS])).
[*] May be taken concurrently.
[B] Requires minimum grade of B.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Graduate.

Enrollment is limited to students with a major, minor, or concentration in Secondary Ed - Mathematic 6-12.

Schedule Type: Internship

Grading:
This course is graded on the Satisfactory/No Credit scale.

SEED 794: *Internship: Secondary Education Science.* 1-6 credits.
Provides intensive, supervised clinical experience in a science grade 6-12 classroom in an approved school for fall or spring semester. Offered by School of Education. May be repeated within the term for a maximum 6 credits. Equivalent to EDCI 790, ELED 790, SEED 793, SEED 795.

Recommended Prerequisite: Completion of licensure and all endorsement course work.

Registration Restrictions:
Required Prerequisites: ((SEED 522[B] or 522[XS]) and (SEED 540[B] or 540[XS]) and (EDRD 619[B] or 619[XS]) and (SEED 573[B] or 573[XS]) and (SEED 673[B] or 673[XS]) and (SEED 791[*B] or 791[XS])).
[*] May be taken concurrently.
[B] Requires minimum grade of B.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Graduate.

Enrollment is limited to students with a major, minor, or concentration in Secondary Ed - Biology, Secondary Ed - Chemistry, Secondary Ed - Physics, Secondary Ed - Earth Science or Secondary Education Licensure.

Schedule Type: Lecture

Grading:
This course is graded on the Satisfactory/No Credit scale.

SEED 795: *Internship: Secondary Education Social Studies.* 1-6 credits.
Provides intensive, supervised clinical experience in a history/social studies grade 6-12 classroom in an approved school for fall or spring semester. Offered by School of Education. May be repeated within the term for a maximum 6 credits. Equivalent to EDCI 790, ELED 790, SEED 793, SEED 794.

Recommended Prerequisite: Completion of licensure and all endorsement course work.

Registration Restrictions:
Required Prerequisites: ((SEED 522[B] or 522[XS]) and (SEED 540[B] or 540[XS]) and (EDRD 619[B] or 619[XS]) and (SEED 567[B] or 567[XS]) and (SEED 667[B] or 667[XS]) and (SEED 791[*B] or 791[XS])).
[*] May be taken concurrently.
[B] Requires minimum grade of B.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Graduate.

Enrollment is limited to students with a major, minor, or concentration in Secondary Ed - Hist/Soc Sci or Secondary Education Licensure.

Schedule Type: Internship

Grading:
This course is graded on the Satisfactory/No Credit scale.

SEED 796: *Internship: Secondary Education Computer Science.* 6 credits.
Provides intensive, supervised clinical experience in computer science grade 6-12 classrooms in approved school for fall or spring semester. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: Completion of all licensure and endorsement coursework

Registration Restrictions:
Required Prerequisites: ((SEED 522[B] or 522[XS]) and (SEED 540[B] or 540[XS]) and (EDRD 619[B] or 619[XS]) and (SEED 566[B] or 566[XS]) and (SEED 676[B] or 676[XS]) and (SEED 791[*B] or 791[XS])).
[*] May be taken concurrently.
[B] Requires minimum grade of B.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Secondary Ed-Computer Science or Secondary Education Licensure.

Schedule Type: Internship

Grading:
This course is graded on the Graduate Regular scale.

Social Work (SOCW)

200 Level Courses

SOCW 200: *Introduction to Social Work.* 3 credits.
Introduces historical roots of social work profession and social welfare. Person-in-environment perspective discussed as framework for social work knowledge, values, and skills. Initial course in social work curriculum introduces social work profession, professional values, ethics, fields of practice, and settings in which social workers are employed. Highlights profession's commitment to diverse and at-risk populations and social and economic justice. Presentations by social work professionals in different fields of practice supplement classroom lecture, discussion, and small-group exercises. Notes: Open to all majors. Offered by Social Work. Limited to three attempts.

Mason Core: Social/Behavioral Sciences

Specialized Designation: Mason Impact.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

300 Level Courses

SOCW 311: *Building Professional Social Work Skills.* 3 credits.
Apply basic social work concepts and the planned change process to beginning-level professional generalist practice. Develop a professional sense of self, and how to work in a social work setting. Practice course material In an agency setting through a 40 hour service learning experience. Offered by Social Work. Limited to three attempts.

Recommended Prerequisite: SOCW 200.

Registration Restrictions:
Enrollment is limited to students with a major in Social Work.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SOCW 312: *Knowledge Building for Helping Professionals.* 3 credits.
Integrates critical thinking skills with an understanding of how knowledge is created and associated with the scientific paradigms that are used to study and understand individuals in the context of the environment. Examines ways of knowing used in the social sciences and social work by being actively engaged in exercises and activities. Offered by Social Work. Limited to three attempts.

Specialized Designation: Mason Impact.

Recommended Prerequisite: SOCW 200.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SOCW 357: *Methods of Social Work Intervention I.* 3 credits.
Social work practice from systems perspective. Particular emphasis on problem-solving activities with microsystems. Analyzes common core of knowledge, values, and skills essential to social work practice to gain insight into social work functions and role of social worker as change agent. Note: SOCW 361 must be taken in the same semester as SOCW 357. Offered by Social Work. Limited to three attempts.

Recommended Prerequisite: SOCW 200, SOCI 101, PSYC 100, or permission of the instructor.

Registration Restrictions:
Required Prerequisites: SOCW 361[*C] or 361[*XS].
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major in Social Work.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SOCW 358: *Methods of Social Work Intervention II.* 3 credits.
Continues generic problem-solving model, focusing on group and macro intervention systems, settings, and skills. Emphasizes working with both treatment and task groups. Group processes, such as goal formulation, contract setting, composition, and termination necessary for effective worker intervention, are part of knowledge base. Note: SOCW 362 must be taken in the same semester as SOCW 358. Offered by Social Work. Limited to three attempts.

Recommended Prerequisite: SOCW 200, 357, and 361

Registration Restrictions:
Required Prerequisites: SOCW 362[*C] or 362[*XS].
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major in Social Work.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SOCW 361: *Methods of Social Work Intervention I: Laboratory.* 3 credits.
Develop proficiency in social work and communication skills. Increase competency in practice knowledge and behaviors through experiential learning in the classroom laboratory. Apply knowledge of biological, psychological, social, spiritual, and cultural influences to those who need and those who give help. Examine personal behavioral and learning patterns, values, ethics, and attitudes to increase ability to understand and help clients. Note: SOCW 357 must be taken in the same semester as SOCW 361. Offered by Social Work. Limited to three attempts.

Recommended Prerequisite: SOCW 200.

Registration Restrictions:
Required Prerequisites: SOCW 357[*C] or 357[XS].
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major in Social Work.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

SOCW 362: *Methods of Social Work Intervention II: Laboratory.* 3 credits.
Provides students the opportunity to integrate theory, research, and practice in the area of group work and family interventions. Classroom simulation of group skills and how to work with families will occur. Note: SOCW 358 must be taken in the same semester as SOCW 362. Offered by Social Work. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (SOCW 200[C] or 200[XS]) and (SOCW 357[C] or 357[XS]) and (SOCW 361[C] or 361[XS]) and (SOCW 358[*C] or 358[*XS]).
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major in Social Work.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

SOCW 375: *Human Behavior and the Family Life Course.* 3 credits.
This course utilizes an integrative ecological approach to understanding individual human behavior In the context of the family and the transitions over the life course. The family life course perspective recognizes the interdependent nature of life course experiences and highlights the impact of life events, transitions and change, timing, and historical and social context. Offered by Social Work. Limited to three attempts.

Mason Core: Synthesis

Recommended Prerequisite: SOCW 200; BIOL 103; PSYC 100; SOCI 101.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SOCW 380: *Changing Social Policies and Systems.* 3 credits.
Equips students with basic macro social work practice skills necessary to create change that will result in a more socially and economically just society. Examines the historical development, central concepts, and institutional nature of current social policies and systems and how to create change at various levels. Applies practice skills to developing strategies for change. Offered by Social Work. Limited to three attempts.

Recommended Prerequisite: SOCW 200.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SOCW 390: *Analytic Methods for Social Work Research.* 3 credits.
Provides a basic introduction to quantitative and qualitative analytic methods for the social worker. The course will emphasize a conceptual understanding of analyses so that students will be able to engage in social debates with the ability to both support their assertions with rigorously generated analyses, as well as question the generalizability and utility of others' analyses. Offered by Social Work. Limited to three attempts.

Recommended Prerequisite: SOCW 200.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

SOCW 400: *Legal and Ethical Issues in Human Services.* 3 credits.
Overview of ethical and legal issues related to human services professions. Topics include responsibility, competence, duty to warn, confidentiality, professional relationships, and research. Emphasizes models of ethical decision making and critical thinking. Offered by Social Work. Limited to three attempts.

Recommended Prerequisite: 45 credits or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SOCW 410: *Alcohol and Substance Abuse: Policies and Programs.* 3 credits.
Primary issues related to alcoholism and drug abuse including key concepts, theories, policies, and research regarding use and abuse of alcohol and other drugs. Emphasizes impact of policies and programs on well-being of ethnic minority and disadvantaged service populations. Offered by Social Work. Limited to three attempts.

Recommended Prerequisite: 45 credits or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SOCW 415: *Child and Family Welfare.* 3 credits.
Emphasizes viewing human development and child and family welfare services critically, holistically, and contextually. Integrates ecological systems, human rights, and empowerment perspectives for understanding delivery systems and persons in relation to their environment across levels from individual to global. Provides overview of existing child welfare system with focus on current issues, challenges, and at-risk populations. Offered by Social Work. Limited to three attempts.

Recommended Prerequisite: 45 credits or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SOCW 435: *Introduction to Gerontology.* 3 credits.
Surveys issues related to working with older adults, their families, and care providers. Studies biological, psychological, and sociocultural aspects of aging, and unique problems with service delivery to older persons. Examines forces that impinge on an older person, and explores critical issues related to extended life span, family changes, institutionalization, and role of older persons in society. Offered by Social Work. Limited to three attempts.

Recommended Prerequisite: 45 credits or permission of the instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SOCW 445: *Social Determinants of Health.* 3 credits.
Examine the social determinants of health and the application of this framework to social work and public health policy and practice interventions. Explore the many social justice factors that affect health and consider which community systems and social change approaches may decrease or eliminate health inequities. Offered by Social Work. Limited to three attempts. Equivalent to GCH 445.

Recommended Prerequisite: 45 credits or permission of the instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SOCW 471: *Research in Social Work.* 3 credits.
Principles and theory underlying scientific inquiry. Emphasizes use of research in social work practice, steps in conducting research, and research efforts in developing and evaluating social work knowledge and skills. Notes: Must be completed with minimum grade of C. Offered by Social Work. Limited to three attempts.

Specialized Designation: Mason Impact., Writing Intensive in Major

Recommended Prerequisite: SOCW 200; SOCW 312; ENGH 302.

Recommended Corequisite: SOCW 495; Choose one of the following: SOCW 390, STAT 250, SOCI 313, or PSYC 300.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SOCW 472: *RS: Integrative Methods in Social Action and Social Change.* 3 credits.
Uses generalist social work practice concepts with large systems and provides students with a hands-on opportunity to apply concepts and principles of intervention with large systems. Students will work with organizations and communities on a local, national, or global level to promote social action and social change. The course will also focus on evaluating interventions addressing the social justice needs of diverse, at-risk, and oppressed populations. Offered by Social Work. Limited to three attempts.

Mason Core: Capstone

Specialized Designation: Research/Scholarship Intensive

Recommended Prerequisite: SOCW 495 and SOCW 471.

Registration Restrictions:
Enrollment is limited to students with a major in Social Work.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SOCW 475: *Selected Topics in Social Work Policy.* 1-3 credits.
In-depth study of special areas of social work of interest to students, faculty, and social work community. Notes: May be repeated for credit when topic is different. Offered by Social Work. May be repeated within the term for a maximum 9 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: 45 credits or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SOCW 483: *Selected Topics in Social Work Intervention.* 1-3 credits.
Opportunity to examine personal use of different approaches to social work intervention currently employed in practice settings. Students use technical skills with clients that these approaches require. Notes: May be repeated for credit when topic is different. Offered by Social Work. May be repeated within the term for a maximum 9 credits.

Recommended Prerequisite: 45 credits or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SOCW 495: *Field Practicum and Seminar I.* 5 credits.
Under supervisory instruction provided by field agencies and faculty liaisons, students are involved two days per week in a social work field practicum, which provides entry level generalist social work training. Both the field practicum and the associated seminar provide learning activities designed to facilitate the demonstration of competencies identified by the Council on Social Work Education. Requires faculty-agency visits. Offered by Social Work. Limited to three attempts.

Recommended Prerequisite: SOCW 200, 311, 312, 357, 358, 361, 362, 375, and 380 with a minimum grade of C and recommendation of faculty.

Registration Restrictions:
Enrollment is limited to students with a major in Social Work.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

SOCW 496: *Field Practicum and Seminar II.* 5 credits.
Continuation of supervised instruction begun in SOCW 495. Students continue to spend two days per week in a social work field practicum, which provides entry level generalist social work training. Both the field practicum and the associated seminar provide learning activities designed to facilitate the demonstration of competencies identified by the Council on Social Work Education. Requires faculty-agency visits. Offered by Social Work. Limited to three attempts.

Recommended Prerequisite: SOCW 495 with a minimum grade of C.

Registration Restrictions:
Enrollment is limited to students with a major in Social Work.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

SOCW 499: *Independent Study in Social Work.* 1-3 credits.
Investigates research problem in field of social work. Offered by Social Work. May be repeated within the degree for a maximum 3 credits.

Recommended Prerequisite: 60 credits and a research proposal approved by instructor before enrollment.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

600 Level Courses

SOCW 600: *Foundations of Social Work and Social Welfare.* 3 credits.
Introduces issues in social welfare by highlighting the social work profession's commitment to serve diverse and at-risk populations, as well as promote social, economic, and environmental justice. Provides students with opportunities to examine how historical, political, economic, and cultural contexts influence the structure and functions of oppression and the social welfare delivery system. Students gain

knowledge and develop critical analysis skills for examining systems of privileges and oppression based on race and ethnicity, gender, sexual orientation, social and economic status, age, ability status, religion, and nativity status. Emphasis is also placed on professional values and ethics. Offered by Social Work. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SOCW 623: *Human Behavior and Social Systems.* 3 credits.
Introduces ecological approach to behavior of individuals, families, groups, organizations, and communities. Integrates and applies theories from psychology, sociology, biology, and anthropology to study of infants, children, and adolescents. Emphasizes human diversity. Offered by Social Work. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Social Work.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SOCW 624: *Human Behavior and Social Systems II.* 3 credits.
Continues study of human behavior and diversity by exploring application of development theory and ecological principles to those in young adulthood, middle adulthood, and older adulthood. Offered by Social Work. May not be repeated for credit. Equivalent to SOCW 644.

Recommended Prerequisite: SOCW 623.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Social Work.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SOCW 630: *Clinical Social Work in Forensic Settings.* 3 credits.
Exploration of clinical social work roles in legal processes including child and family courts, juvenile and adult justice, competency and capacity processes. Students learn the clinical considerations for working with clients involved in these legal processes and will develop forensic skills including preparation for and participation in court hearings and understanding and mitigating liabilities. Skills include interviewing, risk assessment, mitigation, advocacy and multidisciplinary collaboration. Offered by Social Work. May not be repeated for credit.

Recommended Prerequisite: Completion of MSW generalist coursework (SOCW 600, SOCW 623, SOCW 644, SOCW 656, SOCW 659, SOCW 660, SOCW 671, SOCW 672, SOCW 673, SOCW 674, SOCW 683), advanced standing, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Social Work.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SOCW 640: *Clinical Practice with Adults.* 3 credits.
Prepares Specialist students to apply diagnostic, assessment, prevention, treatment and intervention skills with adults in clinical mental health and health settings. Currently accepted evidence-based treatment interventions within the context of contemporary social work theory will also be presented and applied. Offered by Social Work. May not be repeated for credit.

Recommended Prerequisite: Completion of Generalist Year coursework or Advanced Standing status

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Social Work.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SOCW 644: *Community Practice Across the Life Course.* 3 credits.
Examines the role of environmental factors including poverty, income inequality, political oppression and traumatic events as factors influencing what is commonly called "psychopathology." Stages of life course development are examined in this course from conception to late adulthood. The course's primary focus is understanding the interactions between cultural and structural processes, and their influence on how clients and client systems live and adapt. In keeping with the social justice imperative of the profession, students will critically analyze the environmental and structural forces that impinge or enhance human

development. Offered by Social Work. May not be repeated for credit. Equivalent to SOCW 624.

Registration Restrictions:
Required Prerequisites: ((SOCW 600[B-] or 600[XS]) and (SOCW 623[B-] or 623[XS])).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SOCW 645: *Community-Centered Clinical Practice.* 3 credits.
Students use an ecosystems framework for assessment, risk-reduction, prevention, and intervention with communities in a local, national, or international context. Possible areas of exploration include violence prevention and intervention, suicide prevention and intervention, emergency response efforts, and behavioral health or wellness interventions at the community level. Offered by Social Work. May not be repeated for credit.

Recommended Prerequisite: SOCW 624, 652, 658, and 673.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Social Work.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SOCW 650: *Advanced Social Work Policy Practice Skills.* 3 credits.
Addresses the role and influence of politics, economics, and cultural and social values on social welfare policy. Develops knowledge, values, and skills to analyze, influence, evaluate, and address public policy. Examines theory and best practices to advance social work policy. Applies advanced policy practice skills to advocate for change to promote and ensure social and economic justice, with special attention to racial and ethnic minorities, women, LGBT persons, children and youth, and other populations at risk. Offered by Social Work. May not be repeated for credit.

Recommended Prerequisite: Completion of MSW generalist coursework (SOCW 600, SOCW 623, SOCW 644, SOCW 656, SOCW 659, SOCW 660, SOCW 671, SOCW 672, SOCW 673, SOCW 674), advanced standing, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SOCW 651: *Social Policies, Programs, and Services.* 3 credits.
History of American social welfare policy and social work profession. Explores political, economic, social, cultural, and ideological influences on policy making with emphasis on consequences for populations at risk. Introduces historical policy analysis. Offered by Social Work. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Social Work.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SOCW 652: *Influencing Social Policy.* 3 credits.
Introduces students to the knowledge, skills, and values needed to influence policy outcomes. Explores the role of social workers in electoral politics and policy advocacy. Students gain skills in legislative research, coalition building, testifying, constituent organizing, and lobbying, while developing strategies for promoting social justice through policy change. Offered by Social Work. May not be repeated for credit.

Recommended Prerequisite: SOCW 651.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Social Work.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SOCW 653: *Immigration Policy.* 3 credits.
Prepares students for advocacy on behalf of immigrants from a human rights and social justice perspective. Explores policies, economic forces and historical precedence abetting global migration. Abets development of an in-depth knowledge of national and local policies as they pertain to immigrants, and how issues relate to social work advocacy. Offered by Social Work. May not be repeated for credit.

Recommended Prerequisite: Completion of all first-year graduate coursework or advanced standing.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Social Work.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SOCW 654: *Social Policy for Children and Youth.* 3 credits.
Examines social policies, programs, and services on behalf of children and youth with implications for social work; including child welfare, child and adolescent health and mental health, juvenile justice, and school social work. Explores how societal norms regarding family and definitions of children's well-being influenced these policies over time. Offered by Social Work. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: ((SOCW 600[B-] or 600[XS]) and (SOCW 623[B-] or 623[XS]) and (SOCW 644[B-] or 644[XS]) and (SOCW 656[B-] or 656[XS]) and (SOCW 659[B-] or 659[XS]) and (SOCW 660[B-] or 660[XS]) and (SOCW 671[B-] or 671[XS]) and (SOCW 672[B-] or 672[XS]) and (SOCW 673[B-] or 673[XS]) and (SOCW 674[B-] or 674[XS])).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Social Work.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SOCW 655: *Aging Programs and Policies.* 3 credits.
Analyzes the evidence-based benefits and challenges of social welfare and health care policy at the local, state, and federal levels on programs and services for older persons and their families. Fosters an understanding of the context of administrative structures, and legislative context of social policy and aging with attention to diversity and ethics. Offered by Social Work. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: ((SOCW 600[B-] or 600[XS]) and (SOCW 623[B-] or 623[XS]) and (SOCW 644[B-] or 644[XS]) and (SOCW 656[B-] or 656[XS]) and (SOCW 659[B-] or 659[XS]) and (SOCW 660[B-] or 660[XS]) and (SOCW 671[B-] or 671[XS]) and (SOCW 672[B-] or 672[XS]) and (SOCW 673[B-] or 673[XS]) and (SOCW 674[B-] or 674[XS])).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Social Work.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SOCW 656: *Poverty, Oppression, and Inequity.* 3 credits.
Critically examines the root causes of poverty, oppression, and inequity in the United States. Examines the historical antecedents and the intersections of the political, economic, social, cultural, and ideological influences on policies, programs, and services. Examines how to use personal and collective political power to guide the analysis of social problems as well as the development of organizational, community, and policy solutions. Introduces skills to create systemic change through the analysis of social problems and the policies, programs, and services that exist to address these issues. Students will develop strategies for planned change in collaboration with marginalized populations, organizations, communities, and policy makers. Offered by Social Work. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SOCW 659: *Organizing and Advocating for Change.* 3 credits.
Explores the roles of grassroots organizing and policy advocacy in achieving community change. Introduces skills including capacity mapping, building organizations, assessing power dynamics, mobilizing community members, engaging in participatory planning, nurturing leaders, and selecting appropriate strategies for action. Examines the impact of policy change on community well-being; introduces advocacy skills including legislative research, coalition building, testifying, using the media, field outreach, and direct lobbying. Offered by Social Work. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SOCW 660: *Foundations of Direct Practice.* 3 credits.
Introduces the role of social workers as change agents and the core knowledge, values, and skills that guide social work practice with individuals, groups, and families. Emphasizes use of self, engagement,

intervention and planning, follow up, and termination skills with diverse populations. Offered by Social Work. May not be repeated for credit.

Recommended Corequisite: SOCW 672

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SOCW 663: *Global Human Rights Policy.* 3 credits.
Examines meaning and benefits of transforming social work policy practice to a global perspective and focus on a human rights-based rather than a needs-based approach. Demonstrates how human rights can serve as conceptual framework for policy practice to effect social change promoting human development and social and economic justice across levels, from the micro through macro and local through global. Offered by Social Work. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: ((SOCW 600[B-] or 600[XS]) and (SOCW 623[B-] or 623[XS]) and (SOCW 644[B-] or 644[XS]) and (SOCW 656[B-] or 656[XS]) and (SOCW 659[B-] or 659[XS]) and (SOCW 660[B-] or 660[XS]) and (SOCW 671[B-] or 671[XS]) and (SOCW 672[B-] or 672[XS]) and (SOCW 673[B-] or 673[XS]) and (SOCW 674[B-] or 674[XS])).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SOCW 664: *Creative Arts in Social Work Practice.* 3 credits.
Explores the principles and techniques of creative arts for social work practice, examining assessment, intervention and evaluation strategies that supplement traditional social work treatment. Course covers theory, research, and interventions applied to individuals, families, groups, and communities. Notes: Previous training in the visual arts and/or artistic ability is not required. Offered by Social Work. May not be repeated for credit.

Recommended Prerequisite: Completion of MSW Generalist curriculum or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Social Work.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SOCW 667: *Advanced Group Theory and Practice.* 3 credits.
Prepares students for advanced theory and practice in group work, the use of self in the therapeutic process, and the use of varied practice modalities in the group setting. Prepares students to apply multiple theoretical approaches in group work practice with diverse and at-risk populations with an emphasis on social and economic justice. Offered by Social Work. May not be repeated for credit.

Recommended Prerequisite: Completion of Generalist Year Curriculum

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SOCW 670: *Social Work Program Planning, Communications, and Technology.* 3 credits.
Studies various forms of written communication pertinent to social work practice. Examines impact of audience, status, culture, and purpose on effective professional writing. Offered by Social Work. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Social Work.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SOCW 671: *Research Methods for Social Workers.* 3 credits.
Examines role of scientific inquiry in social work. Emphasizes construction and use of measurement instruments, data collection, analysis, and interpretation, and application of computer technologies relevant to social work practice. Offered by Social Work. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Social Work.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SOCW 672: *Generalist Field Practicum and Seminar I.* 3 credits.
Provides supervised social work learning experience in human service agencies. Students complete 16 hours per week in field practicum, and attend bimonthly seminar in which they share learning and integrate theory with practice. Offered by Social Work. May not be repeated for credit.

Recommended Corequisite: SOCW 657.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Social Work.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Graduate Special scale.

SOCW 673: *Generalist Field Practicum and Seminar II.* 3 credits.
Continues the supervised social work learning experience begun in SOCW 672. Students spend 16 hours per week in field practicum, and attend bimonthly seminar in which they share learning, process experiences, and integrate theory with practice. Offered by Social Work. May not be repeated for credit.

Recommended Prerequisite: SOCW 672.

Recommended Corequisite: SOCW 658.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Social Work.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Graduate Special scale.

SOCW 674: *Psychopathology.* 3 credits.
Presents overview of adult and child psychopathology within the contexts of the lives of people experiencing mental disorders and the social contexts that can have a bearing on symptom maintenance. Learn to formulate competency-based assessments and DSM IV-TR-based differential diagnoses. Offered by Social Work. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Social Work.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SOCW 675: *Selected Topics in Clinical Practice.* 3 credits.
In-depth study of special topics related to clinical social work practice at the individual, family, small group, or community level. Notes: May be repeated for credit when topic is different. Offered by Social Work. May be repeated within the term for a maximum 12 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: 30 graduate credits or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Social Work.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SOCW 676: *Selected Topics in Social Work and Social Change.* 3 credits.
Critical examination of special topics related to understanding and improving community and societal conditions through policy practice, program development, and social action. Notes: May be repeated for credit when topic is different. Offered by Social Work. May be repeated within the term for a maximum 12 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: 30 graduate hours or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Social Work.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SOCW 677: *Family Therapy.* 3 credits.
Examines research and theory relevant for assessment and intervention with families. Students will learn to conduct a family assessment, taking cultural diversity, non-traditional family structures including single-parent and GLBTQ families, and socioeconomic factors into account. Students will develop skills in implementing an intervention based on the family's strengths and challenges. Offered by Social Work. May not be repeated for credit.

Recommended Prerequisite: Completion of MSW generalist coursework (SOCW 600, SOCW 623, SOCW 644, SOCW 656, SOCW 659, SOCW 660, SOCW 671, SOCW 672, SOCW 673, SOCW 674), advanced standing, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Social Work.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SOCW 678: *Trauma and Recovery.* 3 credits.
Explores complex traumatic stress disorders, the process of recovery, and the etiology of healing in contemporary North American Culture. Diagnostic criteria, assessment strategies and evidence-based treatment options for complex traumatic stress disorders across diverse populations including sexual trauma, war, early childhood trauma and natural disasters will be addressed. Offered by Social Work. May not be repeated for credit.

Recommended Prerequisite: Completion of MSW generalist coursework (SOCW 600, SOCW 623, SOCW 644, SOCW 656, SOCW 659, SOCW 660, SOCW 671, SOCW 672, SOCW 673, SOCW 674), advanced standing, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Social Work.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SOCW 679: *Military Social Work.* 3 credits.
Examines research and theory relevant for social work practice with service members, veterans, and their families. The course addresses the military as a workplace culture, evidence-based approaches for post-traumatic stress and co-morbid conditions, clinical practice with military families, preventive care and the service delivery system in military and civilian settings. Offered by Social Work. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: ((SOCW 600^{B-} or 600^{XS}) and (SOCW 623^{B-} or 623^{XS}) and (SOCW 644^{B-} or 644^{XS}) and (SOCW 656^{B-} or 656^{XS}) and (SOCW 659^{B-} or 659^{XS}) and (SOCW 660^{B-} or 660^{XS}) and (SOCW 671^{B-} or 671^{XS}) and (SOCW 672^{B-} or 672^{XS}) and (SOCW 673^{B-} or 673^{XS}) and (SOCW 674^{B-} or 674^{XS})).
$^{B-}$ Requires minimum grade of B-.
^{XS} Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Social Work.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SOCW 682: *Substance Abuse Interventions.* 3 credits.
Develops knowledge and skills for direct practice in the field of addictions. The course covers the knowledge base regarding evidence-based interventions at all stages in the process of intervention with individuals, families, and groups that promote recovery from addiction to drug and alcohol abuse. Offered by Social Work. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: ((SOCW 600^{B-} or 600^{XS}) and (SOCW 623^{B-} or 623^{XS}) and (SOCW 644^{B-} or 644^{XS}) and (SOCW 656^{B-} or 656^{XS}) and (SOCW 659^{B-} or 659^{XS}) and (SOCW 660^{B-} or 660^{XS}) and (SOCW 671^{B-} or 671^{XS}) and (SOCW 672^{B-} or 672^{XS}) and (SOCW 673^{B-} or 673^{XS}) and (SOCW 674^{B-} or 674^{XS})).
$^{B-}$ Requires minimum grade of B-.
^{XS} Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Social Work.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SOCW 683: *Clinical Practice with Children, Youth, and Families.* 3 credits.
Applies evidence-based prevention, assessment, interventions, and treatment practice to address the needs of children, youth, young adults, parents, and caregivers. Examines development from a biopsychosocial perspective with consideration of both internal and external influences, trauma and loss, and responses to the expressed client experience inclusive of culture and community. Assesses issues such as substance use, diverse family types, immigrant and refugee status, children in kinship and foster home placements, and domestic and community violence. Presents interventions that have shown efficacy in historically marginalized populations including experiential therapy, sensorimotor psychotherapy, cognitive behavioral therapy, behavioral therapy, and parent management training. Offered by Social Work. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: ((SOCW 600[B-] or 600[XS]) and (SOCW 623[B-] or 623[XS]) and (SOCW 644[B-] or 644[XS]) and (SOCW 656[B-] or 656[XS]) and (SOCW 659[B-] or 659[XS]) and (SOCW 660[B-] or 660[XS]) and (SOCW 671[B-] or 671[XS]) and (SOCW 672[B-] or 672[XS]) and (SOCW 673[B-] or 673[XS]) and (SOCW 674[B-] or 674[XS])).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SOCW 684: *Social Work and the Law.* 3 credits.
Students engage in close analysis of judicial opinions to explore the role of the courts in creating public policy. Areas of inquiry include the role of social workers in the legal system, the nature of legal proceedings, and how the law shapes policy in relation to issues affecting children, youth, families, older adults, women, minorities, people in poverty, and other vulnerable populations. Offered by Social Work. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: ((SOCW 600[B-] or 600[XS]) and (SOCW 623[B-] or 623[XS]) and (SOCW 644[B-] or 644[XS]) and (SOCW 656[B-] or 656[XS]) and (SOCW 659[B-] or 659[XS]) and (SOCW 660[B-] or 660[XS]) and (SOCW 671[B-] or 671[XS]) and (SOCW 672[B-] or 672[XS]) and (SOCW 673[B-] or 673[XS]) and (SOCW 674[B-] or 674[XS])).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Social Work.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SOCW 685: *Organizational Leadership for Social Workers.* 3 credits.
Examines functions and structure of human service organizations in context of service delivery. Development of theoretical knowledge, professional ethics, and skills in administration, leadership, management, organization, and supervision. Offered by Social Work. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: ((SOCW 600[B-] or 600[XS]) and (SOCW 623[B-] or 623[XS]) and (SOCW 644[B-] or 644[XS]) and (SOCW 656[B-] or 656[XS]) and (SOCW 659[B-] or 659[XS]) and (SOCW 660[B-] or 660[XS]) and (SOCW 671[B-] or 671[XS]) and (SOCW 672[B-] or 672[XS]) and (SOCW 673[B-] or 673[XS]) and (SOCW 674[B-] or 674[XS])).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Social Work.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SOCW 686: *Advanced Trauma Theory and Practice.* 3 credits.
Explores theories of how psychological trauma affects the individual, family and community followed by strategies for healing. An in depth exploration of the practice of psychotherapy with trauma survivors across diverse populations using evidence-based interventions coupled with special attention to relationship and attachment theory. Individual and group work will be practiced using role plays and direct experience with Animal Assisted Psychotherapies. Offered by Social Work. May not be repeated for credit.

Registration Restrictions:
Required Prerequisite: SOCW 678[B-].
[B-] Requires minimum grade of B-.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SOCW 687: *Empowering Communities for Change.* 3 credits.
Explores social work interventions at community level, including organization, planning, and development. Strategies for mobilizing community members, using community organizations, formulating coalitions, engaging in participatory planning, and social and economic development. Offered by Social Work. May not be repeated for credit.

Recommended Prerequisite: SOCW 624, 652, 658, and 673.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Social Work.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SOCW 688: *Program Evaluation for Social Workers.* 3 credits.
Explores social work intervention research, needs assessment, formative and summative program evaluation, and cost analyses. Discusses applications of systematic inquiry at the practice, organizational, and policy levels. Addresses ethical, pragmatic, and political considerations; qualitative approaches; quality performance; evidence from empirical research; and evaluation design. Offered by Social Work. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: ((SOCW 600[B-] or 600[XS]) and (SOCW 623[B-] or 623[XS]) and (SOCW 644[B-] or 644[XS]) and (SOCW 656[B-] or 656[XS]) and (SOCW 659[B-] or 659[XS]) and (SOCW 660[B-] or 660[XS]) and (SOCW 671[B-] or 671[XS]) and (SOCW 672[B-] or 672[XS]) and (SOCW 673[B-] or 673[XS]) and (SOCW 674[B-] or 674[XS])).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Social Work.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SOCW 689: *Clinical Practice with Older Adults.* 3 credits.
Examines age-associated changes and challenges faced by older adults. Focus is strengthening assessment and intervention skills with older adults, their family members and caregivers within the community and long-term care facilities, determining the best standardized instruments to use, and developing effective questions for assessment. Attention is given to the resilience of elders, ethical issues and diversity. Offered by Social Work. May not be repeated for credit.

Recommended Prerequisite: Completion of MSW generalist coursework (SOCW 600, SOCW 623, SOCW 644, SOCW 656, SOCW 659, SOCW 660, SOCW 671, SOCW 672, SOCW 673, SOCW 674), advanced standing, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Social Work.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SOCW 696: *Specialized Practice Field Practicum and Seminar I.* 3 credits.
Students participate in a supervised social work learning experience for at least 300 hours over a minimum of 15 weeks over the course of the semester. Students are placed in public, nonprofit or for-profit mental health and health venues reflecting their specific interests in advanced practice with individuals, families and groups, community centered practice of social work. Offered by Social Work. May not be repeated for credit.

Recommended Prerequisite: Generalist Year Curriculum

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

SOCW 698: *Specialized Practice Field Practicum and Seminar II.* 3 credits.
Students participate in a supervised social work learning experience for at least 300 hours over a minimum of 15 weeks over the course of the semester. Students are placed in public, nonprofit or for-profit mental health and health venues reflecting their specific interests in advanced practice with individuals, families and groups, community centered practice of social work. Offered by Social Work. May not be repeated for credit.

Recommended Prerequisite: All Generalist Year Courses and SOCW 696

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

SOCW 699: *Independent Study in Social Work.* 1-3 credits.
Investigates research problem in field of social work. Offered by Social Work. May be repeated within the term for a maximum 4 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Social Work.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Regular scale.

Sociology (SOCI)

100 Level Courses

SOCI 101: *Introductory Sociology.* 3 credits.
Introduction to basic sociological concepts. Examines aspects of human behavior in cultural framework, including individual and group interaction, social mobility and stratification, status and class, race and gender relations, urbanism, crime and criminology, and social change and reform. Offered by Sociology & Anthropology. Limited to three attempts.

Mason Core: Social/Behavioral Sciences

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SOCI 120: *Globalization and Society.* 3 credits.
Examines and analyzes important global issues and processes. Considers historical development of globalization and implications for different societies and cultures. Investigates perceptions of global processes by different cultures and nations, and efforts of international institutions to address social, political, economic, and cultural changes in global society. Offered by Sociology & Anthropology. Limited to three attempts.

Mason Core: Global Understanding

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

200 Level Courses

SOCI 208: *Introduction to Race and Ethnicity.* 3 credits.
Introduces students to individuals and ideas which have shaped and influenced racial and ethnic interactions and relations in the past and present. Attention will focus on historical meanings and sentiments attached to race and ethnicity as concepts, ideas, and images, and the ways these concepts and images have co-joined to allocate differential social, political, economic, and educational rewards to individuals and groups designated as racial groups, ethnic groups, or both. Offered by Sociology & Anthropology. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SOCI 215: *Gender and Society.* 3 credits.
Considers the ways in which gender structures social life on both the micro level of individual experience and the macro level of social structure. Explores how normative ideals of femininity and masculinity affect our bodies, identities and intimate relationships; and how these ideals are circulated through the media, reproduced in social institutions, and articulated in different national, cultural and religious contexts. Offered by Sociology & Anthropology. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

300 Level Courses

SOCI 301: *Criminology.* 3 credits.
Focuses on causes and meaning of crime, with emphasis on adults. Patterns of criminal behavior, including property crimes, violent crimes, organized crime, white-collar crime, and victimless crime. Critical assessment of criminal justice system as a response to crime. Offered by Sociology & Anthropology. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SOCI 302: *Sociology of Delinquency.* 3 credits.
Examines social factors involved in development of delinquency, including family, political economy, schooling, community environment and culture. Examines various theories of delinquency; rates of delinquency in relation to age, race, gender and social class; and legal system that addresses causes, consequences, and policies of punishment and rehabilitation. Offered by Sociology & Anthropology. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SOCI 303: *Methods and Logic of Inquiry.* 3 credits.
Actively engages students in original inquiry meaningful to themselves and their communities. Demonstrates the reciprocal relationship between theory and empirical research. Explores the complementarity of interpretive and explanatory logics, employing basic sociological methods. Guides students to formulate problems and design research, culminating in a public presentation of their proposals to the sociology faculty. Offered by Sociology & Anthropology. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: SOCI 101[C] or 101[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SOCI 304: *The Future of Work.* 3 credits.
Introduces the basic concepts of economic sociology. Explores how the world of work has changed due to globalization, deindustrialization, new technologies, and economic crisis. Focuses on providing students with a better understanding of how markets and corporations work, and about new economic approaches to create new, potentially less alienating work environments. Offered by Sociology & Anthropology. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SOCI 307: *Social Movements and Political Protest.* 3 credits.
Explores processes for organizing resistance to current social and power arrangements, from terrorism to nonviolent civil resistance to create alternative institutions, policies, or leadership that promote human rights and social justice. Uses historical and contemporary case studies of local and global change to explore, how, why, and to what effect individuals have organized to protest the status quo and create social change. Offered by Sociology & Anthropology. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SOCI 308: *Race and Ethnicity in a Changing World.* 3 credits.
Explores how race and ethnicity have been shaped by policies and practices in Western and non-Western societies. Explores the evolution of racial and ethnic attitudes from a global and historical perspective. Examines how changing demographic racial patterns may affect definitions of race and ethnicity and the ways in which people individually and collectively act to create new futures. Offered by Sociology & Anthropology. Limited to three attempts.

Mason Core: Social/Behavioral Sciences

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SOCI 309: *Marriage, Families, and Intimate Life.* 3 credits.
Uses a sociological framework to analyze and understand the diverse forms of contemporary families--traditional marriages, cohabitation, domestic partnerships, single-parents families, stepfamilies, and gay and lesbian families. Explored are topics such as changes in sexual mores, reflected in new dating practices; shifting parenting roles; effects of social class, race and ethnicity; and the outcomes of divorce for couples and children. Offered by Sociology & Anthropology. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SOCI 310: *Sociology of Deviance.* 3 credits.
Analyzes macro- and microlevel deviance-producing processes, meaning and control of deviance, and major theoretical approaches to deviance. Offered by Sociology & Anthropology. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SOCI 311: *Sociological Theory.* 3 credits.
Explores sociological tradition through readings and discussions of ideas drawn from writings of selected sociological thinkers from classical to contemporary. Offered by Sociology & Anthropology. Limited to three attempts.

Recommended Prerequisite: 6 credits of upper level (300 or 400 level) sociology courses, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SOCI 312: *Qualitative Research Methods.* 3 credits.
Introduces ethnography, field work methods, interviewing, life histories, and other qualitative methods to generate data about cultures in which various groups and classes are immersed. Students learn by applying qualitative methods to term projects, developed under guidance of instructor. Offered by Sociology & Anthropology. Limited to three attempts.

Recommended Prerequisite: 9 credits of Sociology including SOCI 101 or SOCI 102 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SOCI 313: *Statistics for the Behavioral Sciences.* 4 credits.
Fundamentals of applied statistics as used in behavioral science to include descriptive statistics, inferential statistics, correlation regression, analysis of variance, factor analysis, nonparametric statistics, and practical experience with calculators in applying statistical analysis to actual problems of the behavioral sciences. Offered by Sociology & Anthropology. Limited to three attempts.

Mason Core: Quantitative Reasoning

Recommended Prerequisite: SOCI 101 or permission of instructor.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SOCI 314: *Sociology of Culture.* 3 credits.
Examines how culture, encompassing high art or participatory culture, expressive agency or traditional constraint, is produced and reproduced in everyday social practices and across a wide range of social institutions. Explores the role of culture in public life and political discourse. Offered by Sociology & Anthropology. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SOCI 315: *Contemporary Gender Relations.* 3 credits.
Considers the ways in which gender structures social life on both the micro level of individual experience and the macro level of social structure. Addresses contradiction between legal equality between the sexes and persistent workplace discrimination and sexual violence; how normative ideals of femininity and masculinity affect our bodies, identities and intimate relationships; how these ideals are circulated through the media, reproduced in social institutions, and articulated in different national, cultural and religious contexts. Offered by Sociology & Anthropology. Limited to three attempts.

Mason Core: Social/Behavioral Sciences

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SOCI 320: *Globalization and Social Change.* 3 credits.
While focusing on nature and process of change in human society, considers social impact of political, economic, and environmental change and how lives are shaped by complexities of global social forces. Examines specific global issues such as conflict and security; economic disparity; ecological deterioration; populations and migration; legitimization of commerce; diffusion of innovations; and impact of class, status, and power in modern societies. Offered by Sociology & Anthropology. Limited to three attempts.

Mason Core: Global Understanding, Encore: Sustainability

Specialized Designation: Green Leaf Focused Course

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

SOCI 321: *Sociology of Post-Socialism.* 3 credits.
Explores the end of socialism, and how the former Soviet Union and Eastern Europe, as well as the rest of the world, transformed since 1989. Examines art, music, criminality, oligarchs, workers, gender, commodification, nationalism, violence, the self, religion, public health, and the environment during socialism and afterwards. Offered by Sociology & Anthropology. Limited to three attempts.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

SOCI 326: *Conflict, Violence, and Peace.* 3 credits.
Explores the sociology of conflict, violence, and peace to examine these crucial issues from a scholarly viewpoint. Focuses on the causes and consequences of violence. Examines a wide variety of remedies from conventional deterrence and arms control strategies to alternative perspectives from nonviolent civil resistance to peacebuilding, international law, and restorative justice, as well as conflict transformation and resolution strategies. Offered by Sociology & Anthropology. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SOCI 330: *US Immigrants and Immigration.* 3 credits.
Explores theoretical, empirical, and policy-related issues pertaining to immigration. Examines case studies of immigrant communities and their adaptation patterns, paying particular attention to immigrants from Latin America, Asia, the Caribbean, and the Middle East. Offered by Sociology & Anthropology. Limited to three attempts.

Mason Core: Global Understanding

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

SOCI 332: *The Urban World.* 3 credits.
Examines cities and the people who live in them in the United States and around the world. Includes topics such as: social and economic development, inequality, political protests, urban democracy, and the environment. Offered by Sociology & Anthropology. Limited to three attempts.

Mason Core: Global Understanding

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SOCI 340: *Power, Politics, and Society.* 3 credits.
Analyzes how power is defined, attained and sustained in society. Students analyze political power as related to social realities such as democratic elections, class conflict, elite networks, powersharing, protest, and revolution. Offered by Sociology & Anthropology. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SOCI 352: *Social Problems and Solutions.* 3 credits.
Examines contemporary social problems and their solutions using sociological perspectives. Topics may include housing and homelessness, student debt, mass incarceration, hunger and food insecurity, environment and sustainability, human rights, wealth and global poverty, war and peace. Offered by Sociology & Anthropology. Limited to three attempts.

Mason Core: Social/Behavioral Sciences

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SOCI 355: *Social Inequality.* 3 credits.
Studies class structures and implications for individuals and groups in modern society. Explores issues of race and ethnicity, language and immigration status, sex and gender, social class, age, and sexual orientation. Examines critically the theory and research that explore the construction, experience, and meaning of such differences. Offered by Sociology & Anthropology. Limited to three attempts.

Mason Core: Social/Behavioral Sciences

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SOCI 360: *Youth Culture and Society.* 3 credits.
Introduces sociology of youth and youth culture. Investigates social, economic, and political realities of youth as a group and different groups of youth, including youth cultural production, formation of youth culture, and youth identities in variety of social settings. Offered by Sociology & Anthropology. Limited to three attempts.

Mason Core: Social/Behavioral Sciences

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SOCI 371: *The Individual and Society.* 3 credits.
Introduces students to a sociological exploration of the individual and society. The course is organized around several major themes, including the study of the individual within social context, the process the individual uses to narrate his/her self- and social identities, and how the individual manages, protects, and solidifies his/her self-identity and negotiates the boundaries of self within the context of everyday social interactions. The course also examines how daily social interactions shape the understanding of self and experiences of the individual. In conclusion, the course presents a consideration of how identity projects are mediated by and formed within larger structures of constraint. Offered by Sociology & Anthropology. Limited to three attempts.

Mason Core: Social/Behavioral Sciences

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SOCI 373: *The Community.* 3 credits.
Examines small to moderate-size communities ranging through village, rural community, small town, and city subcommunity. Latter category includes city localities, ethnic villages, and suburban communities. Offered by Sociology & Anthropology. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SOCI 377: *Art and Society.* 3 credits.
Introduces the many ways in which art reflects social tendencies, comments on social problems, and contributes to discussions about a wide range of social issues. Students attend theatrical performances and visit exhibition spaces on campus, and learn to analyze what they experience through both aesthetic and sociological approaches. Explores contemporary issues such as debates about artistic freedom and public morality, commercialization of art, and relationship between cultural and social hierarchies. Offered by Sociology & Anthropology. Limited to three attempts.

Mason Core: Synthesis

Recommended Prerequisite: 3 credits of ARTH.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SOCI 382: *Education in Contemporary Society.* 3 credits.
Examines classrooms and schools as social institutions that function as socializing agents for both stability and societal change. Emphasizes the influence of inequality on educational processes and outcomes and critically examines the social organization of the U.S. public school system. Offered by Sociology & Anthropology. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SOCI 385: *Religion and Society.* 3 credits.
Studies places of religious consciousness in human action and institutional and organizational networks created to sustain religious beliefs. Emphasizes comparative and historical analysis of role religion has played in human society. Examines theories of nature of religious experience, religious symbolism, and basis of religious community. Explores changing demographics in relation to older traditional religious faiths and newer nontraditional faiths. Offered by Sociology & Anthropology. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SOCI 388: *Violence and Religion.* 3 credits.
Explores the relationship between religion and violence, especially warfare, cross-culturally and historically from a sociological, transdisciplinary, and global politics perspective. Examines the interface between politics and morality and the interface between national and transnational governance institutions (nations states, the UN, etc.) and cultural and religious institutions, NGOs, and social movements. Offered by Sociology & Anthropology. Limited to three attempts.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

SOCI 390: *Sociology of Health, Illness, and Disability.* 3 credits.
Examines social context of health, illness, and disability; relationships of health care professionals and patients; and structure and delivery of health care in different medical systems. Offered by Sociology & Anthropology. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SOCI 391: *Big Data, Technology, and Society.* 3 credits.
Examines the transformations in the relationships between self and society taking place at the interface between social networks, digital information and communication technologies, new media, and Big Data. Explores what these changes mean for the future of the social sciences and humanities, and what these disciplines in turn can teach us about these changes that the "analytics" of computational and data sciences cannot. Introduces students to cutting-edge methods in digital sociology and digital ethnography, exploring a variety of emerging technology developments, such as augmented reality, digital fabrication, cryptocurrency, blockchain, automation, machine learning, and artificial intelligence. Examines new forms of inequality and intimacy, technologically mediated and distributed practices of human empathy and discernment, and emerging ethical questions for research and university education. Offered by Sociology & Anthropology. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SOCI 394: *Sociology of Human Rights.* 3 credits.
Provides an overview of sociological, theoretical, and methodological approaches to understanding human rights. Examining connections between inequality, conflict, social justice, governance, and human rights, the course focuses on the contexts of meaning within which human rights are invoked and practiced as well as the role that non-state actors play in shaping the development and institutionalization of human rights. Offered by Sociology & Anthropology. Limited to three attempts.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

SOCI 395: *Special Topics in Sociology.* 3 credits.
Introduces the research interests of the faculty, offering new courses that reflect current issues not yet incorporated into the curriculum. Offers, in addition, advanced study into topics covered in the standing curriculum. Topics change by semester. Offered by Sociology & Anthropology. May be repeated within the term for a maximum 6 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: SOCI 101

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SOCI 399: *Independent Study.* 1-3 credits.
Individual study of sociological topic of interest to student. Offered by Sociology & Anthropology. May be repeated within the degree for a maximum 3 credits.

Recommended Prerequisite: 6 hours of Sociology and approval of a written proposal.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

SOCI 405: *Analysis of Social Data.* 4 credits.
Overview of management and analysis of empirical social science data, including file construction, scaling and measurement, data transformation, and treatment of missing data. Emphasizes manipulation, management, and analysis of data sets using computers. Offered by Sociology & Anthropology. Limited to three attempts.

Recommended Prerequisite: 60 hours, SOCI 313, or Permission of Instructor.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SOCI 410: *Social Surveys and Attitude and Opinion Measurements.* 3 credits.
Surveys research methods and techniques to collect, measure, and analyze social data, attitudes, and opinions with special emphasis on using computer software, the Internet, and other information technologies for social research. Highlights ethical issues for social research, computing, and information technology. Offered by Sociology & Anthropology. Limited to three attempts. Equivalent to SOCI 431.

Mason Core: Info Tech & Computing

Recommended Prerequisite: SOCI 303 and 313, or equivalents, or Permission of Instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SOCI 412: *Contemporary Sociological Theory.* 3 credits.
Presents for analysis and discussion the significant theorists and themes in contemporary sociological theory. Designed to enhance student's skills in reading and analyzing primary texts and to encourage reflection on contemporary social reality. Fulfills writing intensive requirement. Offered by Sociology & Anthropology. Limited to three attempts.

Specialized Designation: Writing Intensive in Major

Registration Restrictions:
Required Prerequisites: SOCI 311[C] or 311[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SOCI 416: *Internship in Sociology I.* 3-6 credits.
Intended to provide students with hands-on experience in sociology and to deepen sociological knowledge. The internship experience links theory and practice. Students work in approved setting as applied sociologists. Notes: Minimum 45 hours of work for each credit required. A research paper or project is required for this course. Offered by Sociology & Anthropology. May be repeated within the term for a maximum 6 credits.

Mason Core: Capstone

Recommended Prerequisite: Must have completed at least 85 credits (21 credits must be in sociology) of coursework. Enrollment in or completion of SOCI 313.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

SOCI 417: *Internship in Sociology II.* 1-2 credits.
Intended to provide students with hands-on experience in sociology and to deepen sociological knowledge. The internship experience links theory and practice. Students work in approved setting as applied sociologists. Notes: Minimum 45 hours of work for each credit required Offered by Sociology & Anthropology. May be repeated within the term for a maximum 2 credits.

Recommended Prerequisite: SOCI 313 (can be enrolled concurrently) or permission of instructor.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

SOCI 431: *Survey Research.* 3 credits.
Surveys research methods and techniques to collect, measure, and analyze social data, attitudes, and opinions with special emphasis on using computer software, the Internet, and other information technologies for social research. Highlights ethical issues for social research, computing, and information technology. Offered by Sociology & Anthropology. Limited to three attempts. Equivalent to SOCI 410.

Recommended Prerequisite: SOCI 303 and 313, or equivalents, or permission of instructor

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SOCI 480: *Honors Seminar in Sociology I.* 3 credits.
Develop research proposals and an appropriate bibliography for honors thesis under the guidance of a sociology faculty member. Offered by Sociology & Anthropology. Limited to three attempts.

Specialized Designation: Mason Impact.

Recommended Prerequisite: Admission to honors in the sociology major.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Special scale.

SOCI 481: *RS: Honors Seminar in Sociology II.* 3 credits.
Pursue independent research and write honors thesis under the guidance of a faculty mentor. Present work in a colloquium at the end of the semester. Offered by Sociology & Anthropology. Limited to three attempts.

Specialized Designation: Research/Scholarship Intensive

Recommended Prerequisite: Successful completion of SOCI 480.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

SOCI 483: *The Sociology of Higher Education.* 3 credits.
Exposes students to sociological theory and research on evolution of higher learning in United States. Explores social forces that have shaped the distinctively American approach toward higher education and have led to transformation of higher education in contemporary society. Particular attention to relation between universities and elites within surrounding society, linkage between education and industry, norms and values that are presupposed by educational institutions, and bearing of sports on values and traditions of higher education. Offered by Sociology & Anthropology. Limited to three attempts.

Mason Core: Synthesis

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SOCI 485: *RS: Sociological Analysis and Practice.* 3 credits.
Provides an in-depth examination of historical and contemporary issues facing sociological scholars. Focuses on the philosophies, practices, and procedures used by individuals and organizations to answer sociological questions. Engages a variety of materials, experiences and resources to answer a specific research question. Offered by Sociology & Anthropology. Limited to three attempts.

Mason Core: Capstone

Specialized Designation: Research/Scholarship Intensive, Writing Intensive in Major

Recommended Prerequisite: SOCI 303.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

SOCI 492: *Sociology of Organizations.* 3 credits.
Theories, analysis of types of organizations from informal voluntary associations to large complex ones. Explores nonprofit organizations and alternatives to bureaucracies, such as feminist collectives, cooperatives, self-help groups, and social movement organizations. Students do field work in organizations applying theories and concepts to observations. Offered by Sociology & Anthropology. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SOCI 499: *Independent Research in Sociology.* 1-4 credits.
Investigation of sociological problem according to individual interest, with emphasis on research. Offered by Sociology & Anthropology. May be repeated within the degree for a maximum 8 credits.

Recommended Prerequisite: 18 hours of SOCI including SOCI 303, 311, 313 and 412; a 3.0 GPA in SOCI; and a research proposal approved by instructor and department chair prior to enrollment.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

600 Level Courses

SOCI 601: *Proseminar in Public and Applied Sociology.* 3 credits.
Core course devoted to the philosophical, historical, theoretical, and methodological dimensions of public and applied sociology within the United States. Traces the evolution of the field during the 20th century, from its inception in the Chicago school and the studies of W.E.B. DuBois to more recent formulations, as these bear on the interplay between social scientific knowledge and public decisions and debates. Offered by Sociology & Anthropology. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

SOCI 602: *Writing for the Social Sciences.* 3 credits.
Develops strategies for successful social scientific writing, self-evaluation, and managing anxiety around the production of written work. Provides practice in different types of writing undertaken by social scientists including research reports, scholarly journal articles, and research proposals. Offered by Sociology & Anthropology. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SOCI 605: *Gender and Social Structure.* 3 credits.
Reviews theories explaining the development and maintenance of gender. Using historical and comparative data, examines perceived, prescribed, and actual sex differentiation in social, political, and economic roles. Begins with gender as a social structure and then examines contemporary research as support or refutation for variety of theoretical paradigms. Includes discussion of gender in intimate relationship and the public sector. Offered by Sociology & Anthropology. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

SOCI 614: *Sociology of Culture.* 3 credits.
Analyzes 20th-century debates in American culture and cultural politics, with emphasis on art and popular culture, news media, and competing notions of "the public." In-depth readings in cultural sociology cover variety of theoretical and methodological approaches. Offered by Sociology & Anthropology. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SOCI 616: *Practicum in Sociology.* 1-6 credits.
Supervised graduate research project in engaged sociology in relevant settings including social movement organizations, unions, government agencies, charitable organizations, think tanks, schools, community groups, social services, museums and the arts, cooperatives and social enterprises, public archeology, or media and communications. Notes: Students must complete 45 hours of work at the site for each credit. Offered by Sociology & Anthropology. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: 21 hours of SOCI, including research methods, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Graduate Regular scale.

SOCI 620: *Methods and Logic of Social Inquiry.* 3 credits.
Emphasizes gathering, interpreting, and evaluating scientific evidence. Covers logic of scientific inquiry, including the application of various research designs and data collection methods. Develops critical-thinking skills by using set of rules and logical criteria for evaluation of social science research. Focuses both on how results are obtained and disseminated via research reports. Offered by Sociology & Anthropology. May not be repeated for credit.

Recommended Prerequisite: Undergraduate statistics and research methodology, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Sociology.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SOCI 623: *Racial and Ethnic Relations: American and Selected Global Perspectives.* 3 credits.
Covers demographic purview of U.S. and other global racial and ethnic groups and racial and ethnic groups as human-social-minority and dominant groups. Explores factors contributing to dominant and minority status and means of altering dominant groups assessment of minority group status. Offered by Sociology & Anthropology. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SOCI 624: *International Migration in the Age of Globalization.* 3 credits.
Focuses on theoretical, methodological, and policy-related issues on international migration from a sociological perspective. Explores case studies of immigrant communities and their adaptation patterns, paying particular attention to immigrants from Latin America, Asia, and the Caribbean. Offered by Sociology & Anthropology. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

SOCI 631: *Survey Research.* 3 credits.
Introduces theory, method, and practice of survey research design and analysis. Students complete survey research project. Offered by Sociology & Anthropology. May not be repeated for credit.

Recommended Prerequisite: SOCI 530 and 531, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SOCI 632: *Evaluation Research for Social Programs.* 3 credits.
Studies methodological issues related to evaluation of social programs. Explores conceptual and research design issues in relation to social programs, particularly delivery of social services. Includes examination of methods used to assess need for programs, impact of delivery systems, and efficiency and effectiveness of social programs. Offered by Sociology & Anthropology. May not be repeated for credit.

Recommended Prerequisite: SOCI 530 and 531, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SOCI 633: *Special Topics in Sociology.* 3 credits.
Specialized inquiry of topics of contemporary sociological research and scholarship. Content varies. Notes: May be repeated for credit when topic is different. Offered by Sociology & Anthropology. May be repeated within the term for a maximum 12 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

SOCI 634: *Qualitative Research Methods.* 3 credits.
Examines basic research methods involving observational techniques and procedures used in description and analysis of patterns, configurations, ethos, eidos, structures, functions, and styles typical of whole societies and cultures. Emphasizes case studies, unobtrusive methods, participant observation, longterm residence, choices of observer status role, recording data, uses of technical equipment, key informants, interviewing techniques, and ethical considerations in employing such methods and procedures. Offered by Sociology & Anthropology. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SOCI 635: *Environment and Society.* 3 credits.
Overview of human ecology and environmental sociology, emphasizing selected topics. Focuses on theory, since theory makes it possible to generalize from understandings derived in an analysis of a particular problem and apply them to other problems. Offered by Sociology & Anthropology. May not be repeated for credit.

Registration Restrictions:

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SOCI 636: *Statistical Reasoning.* 3 credits.
Intermediate treatment of quantitative analytic techniques used in sociology. Topics include sampling, inference, hypothesis testing, analysis of variance, and bivariate and multiple correlation and regression. Introduces logic of multivariate analysis. Focus on how results are obtained and disseminated via research reports. Offered by Sociology & Anthropology. May not be repeated for credit.

Recommended Prerequisite: Undergraduate statistics and research methodology, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SOCI 637: *Political Sociology.* 3 credits.
This course introduces students to the sociological study of politics through a close examination of relations of power and authority, social institutions, networks, and culture. Using a variety of theoretical texts and case studies from different time periods and schools of thought, the course demonstrates how political sociologists use these fundamental "gateway" concepts, among others, to make sense of more innovative concepts in order to explore and make sense of the dynamism of contemporary politics. Using this framework, the course looks closely at the issue of the struggle for democracy in diverse, complex, and changing modern societies. Offered by Sociology & Anthropology. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SOCI 638: *Feminist Theory.* 3 credits.
This course is designed to introduce students to the ideas and projects that have been formative in the development of feminist theory and to engage students in the important intellectual and political debates in which it has played a significant role. Offered by Sociology & Anthropology. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

SOCI 639: *Urban Inequality: From Watts to #Blacklivesmatter.* 3 credits.
This course considers the ways that social inequality and responses to inequality, through community organizing, social movements, and urban policy, have shaped the urban landscape in the 20th and 21st centuries. Beginning in the Civil Rights Era and ending during a period of resistance to police brutality and gentrification, this course will explore varied issues such as urban renewal, urban rebellion, suburbanization, public housing development (and demolition), the drug wars, mass incarceration, as well as urban movements related to urban space, LGBTQ+ recognition and AIDS direction action, Right to the City, and more. Offered by Sociology & Anthropology. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SOCI 641: *Micro Sociology: Inequality and Everyday Life.* 3 credits.
Analyze the relationship between everyday life and social inequalities, with a particular focus on examining theoretically and empirically the relationship between governing structures of society and the structure of situational and interactional terrains as it plays out in the lives of everyday people. Offered by Sociology & Anthropology. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

SOCI 655: *Ethnography.* 3 credits.
Introduces ethnography in sociology to graduate students. Teaches techniques for collecting, analyzing and writing-up ethnographic

materials. Considers some of the central methodological issues relevant to doing ethnography. Explores some of the critical ethical and political questions that arise within ethnographic research practice. Offered by Sociology & Anthropology. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SOCI 660: *Historical and Comparative Sociology.* 3 credits.
Seminar in theory and methods of historical and comparative sociology, primarily for students with background in sociological theory and methods. Examines basic approaches and research data of history and sociology, surveys development of field, and analyzes exemplary studies. Offered by Sociology & Anthropology. May not be repeated for credit. Equivalent to SOCI 860.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SOCI 670: *Social Networks, New Media, and Inequality.* 3 credits.
Examines the internet and other new technologies from a sociological perspective. Focuses on how technologies mitigate or exacerbate-transform or reproduce-existing and new forms of inequality. Offered by Sociology & Anthropology. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

SOCI 696: *Independent Study.* 1-3 credits.
Theoretical and research literature chosen by student and instructor. Offered by Sociology & Anthropology. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Special scale.

SOCI 697: *Independent Study.* 1-3 credits.
Theoretical and research literature chosen by student and instructor. Offered by Sociology & Anthropology. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Special scale.

700 Level Courses

SOCI 711: *Classical Sociological Theory.* 3 credits.
In-depth examination of major issues in classical (pre-1930) sociological theory. Analyzes Durkheim, Marx, Weber, Mead, and others, and emphasizes social and intellectual context of their theories. Offered by Sociology & Anthropology. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to students with a major in Sociology.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SOCI 712: *Contemporary Sociological Theory.* 3 credits.
Examines schools in contemporary sociological theory such as structural-functionalism, conflict, exchange, symbolic interactionism, ethnomethodology, humanist sociology, and critical theory. Analyzes contemporary theorists in relation to schools. Offered by Sociology & Anthropology. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to students with a major in Sociology.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SOCI 730: *Analytic Techniques of Social Research.* 3 credits.
Introduces multiple regression and causal analysis to sociological researchers, with a focus on obtaining and disseminating results. Moves from linear regression to the general linear model with several variables, its extensions, assumptions, and regression diagnostics. Examines the use of dummy variable and the analysis of interaction effects. Considers systems of equations and nonlinear outcomes. Offered by Sociology & Anthropology. May not be repeated for credit.

Recommended Prerequisite: Undergraduate statistics and research methodology, or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SOCI 797: *Master's Capstone Paper.* 3 credits.
MA paper completion under the direction of one faculty member. Offered by Sociology & Anthropology. May not be repeated for credit.

Recommended Prerequisite: Admission to graduate program in sociology or permission of graduate director.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Satisfactory/No Credit scale.

SOCI 799: *Thesis.* 1-6 credits.
Master's thesis research under direction of thesis committee. Offered by Sociology & Anthropology. May be repeated within the degree.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Thesis

Grading:
This course is graded on the Satisfactory/No Credit scale.

800 Level Courses

SOCI 803: *Institutions and Inequalities.* 3 credits.
Addresses the processes through which institutions reproduce relations of power, domination, and exclusion as well as the similarities and differences across forms of inequality and their connection to institutions. Offered by Sociology & Anthropology. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

SOCI 804: *Sociology of Globalization.* 3 credits.
Addresses the social, political, cultural, and economic process of globalization. Explores the limits on globalization during the precapitalist era, the relation between empire and the internal structure of imperialist societies, theoretical debates over the contemporary world system, the relation between cities and globalization, and the link between globalization and social inequality within both developed and developing societies. Offered by Sociology & Anthropology. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

SOCI 833: *Special Topics in Sociology.* 3 credits.
Specialized inquiry of topics of contemporary sociological research and scholarship. Content varies. Notes: May be repeated for credit when topic is different. Offered by Sociology & Anthropology. May be repeated within the degree for a maximum 9 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: Have completed either 6 credits of coursework at the 600 level or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SOCI 840: *Work Organizations and Social Inequality.* 3 credits.
Examines the social, organizational, and cultural processes that account for the differential distribution of job rewards along class, gender, and racial and ethnic lines. Topics include the historical evolution of the management worker relationship, job segregation by race and gender, the effect of new technologies on social inequality, the relation between gender and professional careers, the efficacy of governmental efforts to ensure equal opportunity, and the effect of organizational change on racial and gender inequalities at work. Offered by Sociology & Anthropology. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

SOCI 845: *Society and Education.* 3 credits.
Exposes students to the major theories, debates, and findings within the sociology of education, emphasizing the reciprocal influences of schooling and social inequalities within contemporary societies. Emphasis on the historical evolution of public schooling in the

United States, the complex relation between schooling and economic institutions, class differences in educational opportunity, and the politics of educational reform. Offered by Sociology & Anthropology. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

SOCI 850: *Sociology of Development.* 3 credits.
Analyzes socioeconomic and political change, focusing on the poor countries of Asia, Africa, and Latin America. Offers a basic descriptive understanding of processes of change in these countries and an introduction to major theoretical perspectives on development and globalization, from classical theories of comparative advantage to theories of imperialism, modernization, dependency, and globalization. Offered by Sociology & Anthropology. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

SOCI 851: *Globalization and Social Movements.* 3 credits.
Analyzes current issues in the study of social movements, with an emphasis on the ways in which globalization shapes and in turn is shaped by social movements. Emphasis is placed on the relations among the strategies, identities, and organizations bound up with transnational social movements and the relation between the dynamics of global political and economic developments and protest movements in core and peripheral societies. Offered by Sociology & Anthropology. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

SOCI 853: *Cities in a Global Society.* 3 credits.
Examines the scholarly literature on cities and globalization with a focus on the impact of globalization on urban environments and the effects of urbanization on the processes of globalization. Emphasis on the ways in which globalization restructures urban life in the core and periphery of the world economy with attention paid to the effects of spatial dispersion on the character of economic institutions within the advanced societies, the shifting nature of crime and security, immigration, and the cities of the Global South. Offered by Sociology & Anthropology. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

SOCI 857: *Sociology of Human Rights.* 3 credits.
Examines the connections among inequality, conflict, social justice, and human rights in an age of globalization. Drawing from case studies from around the world, course examines institutional and structural violence and inequality as they relate to state, corporate, and military power; international law and order; welfare and social policy; global justice; regionalism, multilateralism, and transnationalism; environmental protection; gender inequality; ethnic conflict; resource wars; and national security policy before and after September 11, 2001. Offered by Sociology & Anthropology. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

SOCI 860: *Historical and Comparative Sociology.* 3 credits.
Seminar in theory and methods of historical and comparative sociology, primarily for students with background in sociological theory and methods. Examines basic approaches and research data of history and sociology, surveys development of field, and analyzes exemplary studies. Offered by Sociology & Anthropology. May not be repeated for credit. Equivalent to SOCI 660.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SOCI 870: *Directed Readings Sociology.* 3 credits.
Intensive reading course to develop comprehensive understanding of specific field in sociology as agreed on with advisor. Notes: Content varies. Offered by Sociology & Anthropology. May be repeated within the degree.

Recommended Prerequisite: 6 credits of 600 level SOCI courses

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Regular scale.

SOCI 880: *Independent Study in Sociology.* 3 credits.
Reading and research on selected topic, resulting in a written project as agreed on with supervising faculty. Notes: Content varies. Offered by Sociology & Anthropology. May be repeated within the degree.

Recommended Prerequisite: 6 credits of 600 level SOCI courses

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Independent Study

Grading:

This course is graded on the Graduate Regular scale.

900 Level Courses

SOCI 998: *Doctoral Dissertation Proposal.* 1-9 credits.
Work on research proposal for doctoral dissertation. Notes: A maximum of 9 credits of 998 may be applied to the degree. Students may enroll in 998 in their final year of coursework while preparing for comprehensive exams. Contact department for approval and CRN to register. Offered by Sociology & Anthropology. May be repeated within the degree.

Recommended Prerequisite: Completion of all but final year of coursework and permission of graduate director.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

SOCI 999: *Doctoral Dissertation.* 1-12 credits.
Doctoral dissertation research and writing on approved dissertation topic under direction of committee. Notes: Maximum of 12 credits may be applied toward degree. Offered by Sociology & Anthropology. May be repeated within the degree.

Recommended Prerequisite: Successful completion of SOCI 998.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy.

Enrollment is limited to Graduate level students.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

Sociology and Anthropology (SOAN)

500 Level Courses

SOAN 510: *Culture and Globalization.* 3 credits.
Provides continuing exposure to the range of disciplinary perspectives necessary for understanding crucial issues in the global arena. Through case examples, focuses on the intersections of culture and globalization. Analyzes existing data and assesses alternative policy and program approaches, and illuminates interactions between globalization and culture. Offered by Sociology & Anthropology. May not be repeated for credit.

Recommended Prerequisite: SOAN 500.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

600 Level Courses

SOAN 670: *Special Topics in Sociology and Anthropology.* 4-8 credits.
Provides cross-disciplinary, pedagogical format in Department of Sociology and Anthropology. Covers variety of pedagogical formats, such as combining ethnographic field techniques taught in anthropology with sociological-based urban issues, or providing archaeological laboratory analyses with grounding in statistical techniques proposed by department faculty. Offered by Sociology & Anthropology. May not be repeated for credit.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

Software Engineering (SWE)

200 Level Courses

SWE 205: *Software Usability Analysis and Design.* 3 credits.
Principles of user interface design. Concepts for objectively and quantitatively assessing the usability of software user interfaces. Outcomes include knowledge of quantitative engineering principles for designing usable software interfaces and an understanding that usability is more important than efficiency for almost all modern software projects, and often the primary factor that leads to product success. Major topics include cognitive models for human perceptions and needs, which are used as a basis for analytical and critical thinking about user interfaces; specific engineering principles for designing usable menus, forms, command languages, web sites, graphical user interfaces and web-based user interfaces. Assessments will include written analytical evaluations of existing user interfaces, exams, and HTML-based design projects. Offered by Computer Science. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (ENGH 101[C] or 101[XS]) or (ENGH 100[C] or 100[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

300 Level Courses

SWE 301: *Internship Preparation.* 0 credits.
Preparation for Internship Educational Experience. Intended for, but not limited to, students planning internships in the Applied Computer Science Software Engineering Program. Internship employment opportunities. Basic interview skills. Techniques for applying academic knowledge to

practical software development. Techniques for extracting knowledge from practical experience. Peer presentation from students who have completed internships. Offered by Computer Science. Limited to two attempts.

Recommended Prerequisite: Limited to ACS or CS majors with junior standing or permission of instructor.

Registration Restrictions:
Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Satisfactory/No Credit scale.

SWE 321: *Software Engineering.* 3 credits.
An introduction to concepts, methods, and tools for the creation of large-scale software systems. Methods, tools, notations, and validation techniques to analyze, specify, prototype, and maintain software requirements. Introduction to object-oriented requirements modeling, including use of case modeling, static modeling, and dynamic modeling using the Unified Modeling Language (UML) notation. Concepts and methods for the design of large-scale software systems. Fundamental design concepts and design notations are introduced. A study of object-oriented analysis and design modeling using the UML notation. Students participate in a group project on software requirements, specification, and object-oriented software design. Offered by Computer Science. Limited to two attempts. Equivalent to CS 321.

Registration Restrictions:
Required Prerequisites: ((ENGH 302[C] or 302[XS]) or ((HNRS 110[C] or 110[XS]) and (HNRS 122[C], 122[XS], 130[C], 130[XS], 131[C], 131[XS], 230[C], 240[C] or 240[XS])) and (CS 310[C] or 310[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major in Applied Computer Science, Computer Science or Systems Engineering.
Enrollment is limited to students with a minor in Computer Science or Software Engineering.

Enrollment limited to students in a Bachelor of Science or Post-Baccalaureate Certificate degrees.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SWE 332: *Object-Oriented Software Design and Implementation.* 3 credits.
In-depth study of software design and implementation using a modern, object-oriented language with support for graphical user interfaces and complex data structures. Topics covered are specifications, design patterns, and abstraction techniques, including typing, access control, inheritance, and polymorphism. Students will learn the proper engineering use of techniques such as information hiding, classes, objects, inheritance, exception handling, event-based systems, and concurrency. Offered by Computer Science. Limited to two attempts. Equivalent to CS 332.

Registration Restrictions:
Required Prerequisites: (CS 310[C] or 310[XS]) and (MATH 125[C] or 125[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

SWE 401: *Internship Reflection.* 1 credit.
Reflection on Internship Educational Experience. Intended for, but not limited to, students completing internships in the Applied Computer Science Software Engineering Program. Analysis of techniques for applying academic knowledge to practical software development. Analysis of techniques for extracting knowledge from practical experience. Student presentations summarizing internships relating them to academic program goals. Offered by Computer Science. Limited to two attempts.

Recommended Prerequisite: Completion of internship.

Registration Restrictions:
Required Prerequisites: SWE 301[C] or 301[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Satisfactory/No Credit scale.

SWE 419: *Object-Oriented Software Design and Implementation.* 3 credits.
In-depth study of software design and implementation using a modern, object-oriented language with support for graphical user interfaces and complex data structures. Topics covered are specifications, design patterns, and abstraction techniques, including typing, access control, inheritance, and polymorphism. Students will learn the proper engineering use of techniques such as information hiding, classes, objects, inheritance, exception handling, event-based systems, and concurrency. Offered by Computer Science. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: and (MATH 125[C] or 125[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major in Applied Computer Science or Computer Science.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SWE 432: *Web Application Development.* 3 credits.
A comprehensive introduction to the design and implementation of applications for the web, including client and server-side development. Exploration of principles for the design of web applications that are robust, scalable, and secure, that enable change and reuse, and that are usable for their intended purpose. Topics include client-server communication, asynchronous programming, persistence, security, web

development tools, the document object model, templates and data-binding, interaction techniques, and site design for the web. Offered by Computer Science. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (MATH 125[C] or 125[XS]) and (CS 321[C] or 321[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SWE 437: *Software Testing and Maintenance.* 3 credits.
Concepts and techniques for testing and modifying software in evolving environments. Topics include software testing at the unit, module, subsystem, and system levels; developer testing; automatic and manual techniques for generating test data; testing concurrent and distributed software; designing and implementing software to increase maintainability and reuse; evaluating software for change; and validating software changes. Offered by Computer Science. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (MATH 125[C] or 125[XS]) and (CS 310[C] or 310[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SWE 443: *Software Architectures.* 3 credits.
Teaches how to design, understand, and evaluate software systems at an architectural level of abstraction. By end of course, students will be able to recognize major architectural styles in existing software systems, describe a system's architecture accurately, generate architectural alternatives to address a problem and choose from among them, design a medium-size software system that satisfies a specification of requirements, use existing tools to expedite software design, and evaluate the suitability of a given architecture in meeting a set of system requirements. Offered by Computer Science. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (CS 321[C] or 321[XS]) or CS 421[C], SWE 321[C] or 421[C].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

500 Level Courses

SWE 510: *Object-Oriented Programming in Java.* 3 credits.
Introduces students to programming in the Java language. Topics include problem-solving methods and algorithm development, program structures, abstract data types, simple data and file structures and program development in a modular, object-oriented manner. Introductory use of OO language features, including data hiding, inheritance, polymorphism, and exception handling. Goals include design and development of Java classes and class type hierarchies. An introduction to Java servlets and applets is included. Emphasis on program development is reinforced through several programming projects. Notes: Credit cannot be applied to a graduate degree in the Volgenau School or the BS degree in computer science. Offered by Computer Science. May not be repeated for credit.

Recommended Prerequisite: Undergraduate courses or equivalent knowledge in programming in a high-level language.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

600 Level Courses

SWE 619: *Object-Oriented Software Specification and Construction.* 3 credits.
In-depth study of software construction using modern, object-oriented language with support for graphical user interfaces and complex data structures. Specifications, design patterns, and abstraction techniques, including procedural, data, iteration, type, and polymorphic. Information hiding, classes, objects, and inheritance. Exception handling, event-based systems, and concurrency. Offered by Computer Science. May not be repeated for credit.

Recommended Prerequisite: SWE foundation courses or equivalent.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SWE 620: *Software Requirements Analysis and Specification.* 3 credits.
In-depth study of object-oriented requirements modeling, including use case modeling, static modeling and dynamic modeling with Unified

Modeling Language (UML) notation. Students participate in group project on software requirements and specification using modern method. Offered by Computer Science. May not be repeated for credit.

Recommended Prerequisite: SWE foundation courses or equivalent.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SWE 621: *Software Design and Architecture.* 3 credits.
An examination of the methods, processes, and notations for working with architecture and design in software. Exploration of design as the enumeration, evaluation, and selection of design alternatives to achieve quality attributes. Surveys perspectives on design from risk minimization, domain modeling, abstraction, architectural styles, design patterns, and reuse. Offered by Computer Science. May not be repeated for credit.

Recommended Prerequisite: SWE foundation courses or equivalent.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SWE 622: *Distributed Software Engineering.* 3 credits.
Hands-on introduction to techniques and programming interfaces for distributed software engineering. Networking protocols at several layers. Construction of distributed and concurrent software using network protocol services. Applications of Internet and web-based software. Offered by Computer Science. May not be repeated for credit.

Recommended Prerequisite: SWE foundation courses or equivalent.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SWE 625: *Software Project Management.* 3 credits.
Lifecycle and process models; process metrics; planning for a software project; mechanisms for monitoring and controlling schedule, budget, quality, and productivity; and leadership, motivation, and team building. Offered by Computer Science. May not be repeated for credit.

Recommended Prerequisite: SWE foundation courses or equivalent.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SWE 626: *Software Project Laboratory.* 3 credits.
Covers requirements analysis, design, implementation, and management of software development project. Students work in teams to develop or modify software product, applying sound principles of software engineering. Uses both industrial and academic standards to assess quality of work products. Offered by Computer Science. May not be repeated for credit.

Recommended Prerequisite: SWE 619,620, and 621; or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SWE 631: *Software Design Patterns.* 3 credits.
Principles of software design patterns. Design patterns as solutions to recurring design problems. Categories of software design patterns; structure patterns, communication patterns. Design patterns in software

architectures. Designing software applications using design patterns. Offered by Computer Science. May not be repeated for credit.

Recommended Prerequisite: SWE 621.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SWE 632: *User Interface Design and Development.* 3 credits.
Principles of user interface design, development, and programming. Includes user psychology and cognitive science, menu system design, command language design, icon and window design, graphical user interfaces, web-based user interfaces. Offered by Computer Science. May not be repeated for credit.

Recommended Prerequisite: SWE 619, or CS 540 and 571, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SWE 637: *Software Testing.* 3 credits.
Students learn to test software effectively. Programmers learn practical ways to design high quality tests during all phases of software development. Students learn the theory behind criteria-based test design and to apply that theory in practice. Topics include test design, test automation, test coverage criteria, and how to test software in cutting-edge software development environments. Offered by Computer Science. May not be repeated for credit.

Recommended Prerequisite: SWE 619, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SWE 642: *Software Engineering for the World Wide Web.* 3 credits.
Detailed study of engineering methods and technologies for building highly interactive web sites for e-commerce and other web-based applications. Presents engineering principles for building web sites that exhibit high reliability, usability, security, availability, scalability, and maintainability. Teaches methods such as clientserver programming, component-based software development, middleware, and reusable components. Offered by Computer Science. May not be repeated for credit.

Recommended Prerequisite: SWE 619 or CS 540 and CS 571, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SWE 645: *Component-Based Software Development.* 3 credits.
Introduces concepts and foundations of software component and component-based software. Detailed study of engineering principles of modeling, designing, implementing, testing, and deploying component-based software. Also explores state-of-the-art component technologies. Offered by Computer Science. May not be repeated for credit.

Recommended Prerequisite: SWE 619 or CS 540 and CS 571, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SWE 681: *Secure Software Design and Programming.* 3 credits.
Theory and practice of software security, focusing in particular on some common software security risks, including buffer overflows, race conditions and random number generation, and on identification of potential threats and vulnerabilities early in design cycle. Emphasizes methodologies and tools for identifying and eliminating security vulnerabilities, techniques to prove absence of vulnerabilities, ways to avoid security holes in new software, and essential guidelines for building secure software: how to design software with security in mind from the ground up and integrate analysis and risk management throughout the software life cycle. Offered by Computer Science. May not be repeated for credit. Equivalent to ISA 681.

Recommended Prerequisite: SWE 619.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SWE 699: *Special Topics in Software Engineering.* 3 credits.
Special topics not occurring in regular SWE sequence. Notes: May be repeated for credit when semester topic is different. Offered by Computer Science. May be repeated within the term.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

700 Level Courses

SWE 721: *Reusable Software Architectures.* 3 credits.
Investigates software concepts that promote reuse of software architectures. Studies influence of object technology on software design and reuse. Investigates domain modeling methods, which model the application domain as a software product family from which target systems can be configured. Covers reusable software patterns including architecture patterns and design patterns, software components, and object-oriented frameworks. Offered by Computer Science. May not be repeated for credit.

Recommended Prerequisite: SWE 621.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SWE 724: *Program Analysis for Software Testing.* 3 credits.
Different methods for analyzing software, primarily for purpose of testing. Analysis techniques, algorithms, tools, and applications. Goals are to explore current research issues, learn how to build analysis tools, and understand how these techniques can be applied to software-related activities such as maintenance, reuse and optimization. Offered by Computer Science. May not be repeated for credit.

Recommended Prerequisite: A compiler class (e.g. CS 540) OR a testing class (e.g. SWE 637) or permission of the instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SWE 737: *Advanced Software Testing.* 3 credits.
Cutting edge concepts and techniques in software testing. An in-depth study of existing approaches to testing software as well as development of new approaches. Applications of existing concepts and techniques to new technologies. Advanced MS students learn in-depth knowledge for how to apply testing in difficult and challenging real-world scenarios. PhD students learn current research trends, both theoretical and practical. Offered by Computer Science. May not be repeated for credit.

Recommended Prerequisite: SWE 637.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SWE 760: *Software Analysis and Design of Real-Time Systems.* 3 credits.
Background for students who want to conduct research in software engineering of real-time systems. Provides understanding of key real-time software system analysis, design concepts and methods, and how they are used in developing large-scale, real-time software systems. Also explores potential impact of emerging technologies. Includes term project in design and analysis of complex, real-time software system. Offered by Computer Science. May not be repeated for credit.

Recommended Prerequisite: SWE 621.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SWE 763: *Software Engineering Experimentation.* 3 credits.
Detailed study of scientific process, particularly using experimental method. Examines how empirical studies are carried out in software engineering. Reviews distinction between analytical techniques and empirical techniques. Other topics include experimentation required in software engineering, problems that can be solved using experimentation, methods used to control variables and eliminate bias in experimentation, and analysis and presentation of empirical data for decision making. Offered by Computer Science. May not be repeated for credit.

Recommended Prerequisite: SWE 621, or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SWE 795: *Advanced Topics in Software Engineering.* 3 credits.
Advanced topics not occurring in existing courses. Topics normally assume knowledge in one or more existing MS SWE courses. Notes: Repeatable within degree for credit when subject differs. Offered by Computer Science. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: 12 credits applicable toward MS.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SWE 796: *Directed Readings in Software Engineering.* 3 credits.
Analysis and investigation of contemporary problem in software engineering. Requires prior approval by faculty member who supervises student's work. Written report also required. Offered by Computer Science. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Research

Grading:
This course is graded on the Graduate Regular scale.

SWE 798: *Research Project.* 3 credits.
Master's degree candidates undertake a project using knowledge gained in MS program. Topics chosen in consultation with a faculty sponsor. Research project is chosen under guidance of full-time graduate faculty member, resulting in written technical report. Notes: Prior approval required by faculty sponsor who supervises student's work. To register, students must complete an independent study form available in department office. It must be initialed by the faculty sponsor and approved by the department chair. Offered by Computer Science. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: 18 credits applicable towards MS degree.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Thesis

Grading:
This course is graded on the Graduate Regular scale.

SWE 799: *Thesis.* 1-6 credits.
Research project completed under supervision of faculty member, which results in technical report accepted by three-member faculty committee. Report must be defended in oral presentation. Notes: To register, students must complete independent study form available in department office. It must be initialed by faculty sponsor and approved by department chair. Offered by Computer Science. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Thesis

Grading:
This course is graded on the Satisfactory/No Credit scale.

800 Level Courses

SWE 821: *Software Engineering Seminar.* 3 credits.
Study of application of software engineering principles, design methods, and support tools through real-life problems extracted from faculty and industry projects. Notes: May be repeated with change in topic. Offered by Computer Science. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: SWE 621

Registration Restrictions:
Enrollment is limited to Graduate level students.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

Spanish (SPAN)

100 Level Courses

SPAN 101: *Elementary Spanish I.* 3 credits.
For students with no knowledge of Spanish. Introduction to Spanish, including elements of grammar, vocabulary, oral skills, listening comprehension, and reading. Notes: Students may not receive credit for SPAN 101 and SPAN 110. Offered by Modern & Classical Languages. Limited to three attempts. Equivalent to SPAN 110.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Spanish

SPAN 102: *Elementary Spanish II.* 3 credits.
Continuation of SPAN 101. Notes: Students may not receive credit for SPAN 102 and SPAN 115 or 110. Offered by Modern & Classical Languages. Limited to three attempts. Equivalent to SPAN 110, SPAN 115.

Recommended Prerequisite: SPAN 101, appropriate placement score, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Spanish

SPAN 110: *Elementary Spanish.* 6 credits.
Introduces elements of grammar, vocabulary, oral skills, listening comprehension, and reading. Notes: Students may not receive credit for SPAN 110 and SPAN 101, 102, or 115. Offered by Modern & Classical Languages. Limited to three attempts. Equivalent to SPAN 101, SPAN 102, SPAN 115.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Spanish

SPAN 115: *Review of Elementary Spanish.* 3 credits.
Reviews elements for students who have studied Spanish previously. Offered by Modern & Classical Languages. Limited to three attempts. Equivalent to SPAN 102, SPAN 110.

Recommended Prerequisite: Appropriate placement score, or permission of department.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Spanish

200 Level Courses

SPAN 201: *Intermediate Spanish I.* 3 credits.
Further development of skills in listening, speaking, reading, and writing. SPAN 201 and 202 must be taken in sequence. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: SPAN 102, 110, 115, appropriate placement score or permission of department.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Spanish

SPAN 202: *Intermediate Spanish II.* 3 credits.
Application of skills to reading, composition, and discussion. Offered by Modern & Classical Languages. Limited to three attempts. Equivalent to SPAN 212.

Recommended Prerequisite: SPAN 201, appropriate placement score or permission of department.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Fulfills Frgn Lng requirment, Taught in Spanish

SPAN 212: *Intermediate Spanish II: Local and Global Contexts.* 3 credits.
Intermediate, content-based course focused on students' use of Spanish in community and professional contexts. Cultural topics relevant to living and working in local and global Spanish-speaking communities provide a structure for students' oral, reading and written language development in the language. Critical approaches to the study of Spanish and Spanish-language culture give students the methodological foundation for advanced courses in Spanish at the University. Offered by Modern & Classical Languages. Limited to three attempts. Equivalent to SPAN 202.

Mason Core: Global Understanding

Recommended Prerequisite: SPAN 201, permission of instructor or appropriate score on the placement test.

Schedule Type: Lecture

Grading:

This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Spanish

SPAN 215: *Intermediate Spanish for Heritage Speakers.* 3 credits.
Builds on the linguistic resources and sociocultural knowledge of intermediate heritage speakers of Spanish as they prepare for courses at the advanced level. Students will develop their oral and written expression through regular exposure to Spanish-language texts, films, digital media, music, and visual art. Students will also cultivate their critical understanding of the significance of language and other forms of culture for Spanish-language communities. The course is designed to give students multiple opportunities for personal reflection on issues concerning language and identity. Offered by Modern & Classical Languages. Limited to three attempts. Equivalent to SPAN 202.

Recommended Prerequisite: SPAN 201 or equivalent

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Spanish

300 Level Courses

SPAN 301: *Grammar and Syntax.* 3 credits.
In-depth review of Spanish grammar and syntax. Extensive practice in controlled and free writing with emphasis on fundamental difficulties and points of interference that exist between English and Spanish. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: SPAN 202 or SPAN 215, appropriate placement score, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Spanish

SPAN 305: *Spanish in Context I.* 3 credits.
Integrated content-based approach to the study of Spanish, designed to promote oral and written abilities, as well as critical understanding of Latin American, Latino, and/or Spanish histories and cultures. Includes vocabulary-building activities, grammar review and practice, assigned readings in a variety of genres, critical cultural analysis, in-class discussions, written essays, and the viewing of films. Offered by Modern & Classical Languages. Limited to three attempts. Equivalent to SPAN 309, SPAN 315.

Recommended Prerequisite: SPAN 202 or SPAN 215, or equivalent, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Spanish

SPAN 306: *Spanish in Context II.* 3 credits.
Continuation of SPAN 305. Offered by Modern & Classical Languages. Limited to three attempts. Equivalent to SPAN 309, SPAN 315.

Recommended Prerequisite: SPAN 305, or equivalent, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Spanish

SPAN 309: *Intensive Spanish in Context.* 6 credits.
Intensive content-based approach to the study of Spanish, designed to promote oral and written abilities, as well as critical understanding of Latin American, Latino, and/or Spanish histories and cultures. Includes vocabulary-building activities, grammar review and practice, assigned readings in a variety of genres, critical cultural analysis, in-class discussions, written essays, and the viewing of films. Offered by Modern & Classical Languages. Limited to three attempts. Equivalent to SPAN 305, SPAN 306, SPAN 315.

Recommended Prerequisite: SPAN 202 or SPAN 215, or equivalent, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Spanish

SPAN 315: *Spanish in Context for Heritage Speakers.* 3 credits.
Designed for students who have some communicative ability in Spanish, normally acquired in the home, who want to improve their reading and writing abilities while developing a critical understanding of Latin American, Latino, and/or Spanish histories and cultures. Course components include orthography and vocabulary activities, grammar review and practice, assigned readings in a variety of genres, critical cultural analysis, in-class discussions, written essays, and the viewing of films. Offered by Modern & Classical Languages. Limited to three attempts. Equivalent to SPAN 305, SPAN 306, SPAN 309.

Recommended Prerequisite: SPAN 215, appropriate placement score or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Spanish

SPAN 321: *Introduction to Spanish Culture.* 3 credits.
History, culture, economic and social development, and scientific and artistic achievements that have contributed to the formation of modern Spain. Offered by Modern & Classical Languages. Limited to three attempts. Equivalent to SPAN 461.

Recommended Prerequisite: ENGL101 or Permission of Instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SPAN 322: *Introduction to Latin American Culture.* 3 credits.
History, culture, economic and social development, and scientific and artistic achievements that have contributed to the formation of modern

Latin America. Offered by Modern & Classical Languages. Limited to three attempts. Equivalent to SPAN 466.

Mason Core: Global Understanding

Recommended Prerequisite: ENGL 101/ENGH 101 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SPAN 323: *Field Study in Hispanic Culture.* 1-3 credits.
History, culture, economic and social development, and scientific and artistic achievements that have contributed to the formation of modern Spain. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: 60 hours or Permission of Instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SPAN 324: *Study Abroad in Spanish.* 3 credits.
Study at an academic institution in a Spanish-speaking country including classroom studies with professors from the host country and field experiences. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: SPAN 202 (or equivalent) or permission of instructor

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Spanish

SPAN 325: *Major Hispanic Writers.* 3 credits.
Study of the works of major Hispanic writers in translation. Writers studied vary. Notes: May be repeated for credit when topic is different. Offered by Modern & Classical Languages. May be repeated within the term for a maximum 6 credits.

Mason Core: Literature

Recommended Prerequisite: ENGH 101 or equivalent.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SPAN 326: *Treasures of Spanish-Language Literature and Culture.* 3 credits.
Introduces key themes and trends in Spanish-language literature and culture in the global context. Content varies across texts, media or other cultural practices. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Advanced oral and written proficiency in Spanish, to be determined by the instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Spanish

SPAN 329: *Special Topics in Spanish and Latin American Literature.* 3 credits.
Study of selected topics in Spanish or Latin American literature. Writers and topics vary. Notes: Designed for students who are not pursuing a concentration in Spanish. May be repeated when topic is different. Offered by Modern & Classical Languages. May be repeated within the term for a maximum 6 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: ENGH 101 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SPAN 335: *Topics for Proficiency: The Americas.* 3 credits.
Integrated content-based approach to conversational Spanish. Designed to promote increased confidence and fluency in both formal and informal Spanish registers, as well as critical understanding of Latin American and/or Latino histories and cultures. Current events, films, literary texts, and popular culture reflecting issues of Latin Americans and/or Latinos serve as catalysts for class discussions, oral presentations, and debates. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: SPAN 202 or SPAN 215, or equivalent, or permission of instructor

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Spanish

SPAN 336: *Topics for Proficiency: Spain.* 3 credits.
Integrated content-based approach to conversational Spanish. Designed to promote increased confidence and fluency in both formal and informal Spanish registers, as well as critical understanding of Spanish history and culture. Current events, films, literary texts and popular culture reflecting Spanish issues serve as catalysts for class discussions, oral presentations and debates. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: SPAN 202 or SPAN 215, or equivalent, or permission of instructor

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Spanish

SPAN 351: *Oral Spanish.* 3 credits.
Development of oral expression on topics of current interest and everyday situations, including written assignments. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: SPAN 202 or SPAN 215, or equivalent, appropriate placement score, or permission of instructor

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Spanish

SPAN 370: *Spanish Writing and Stylistics.* 3 credits.
Improves writing skills by covering formal and stylistic concepts of the Spanish language. Includes practice and exposure to different textual genres in an interdisciplinary fashion. Includes common doubts concerning spelling, expression, and style; business Spanish; journalistic Spanish; academic Spanish; and creative writing. Offered by Modern & Classical Languages. Limited to three attempts.

Specialized Designation: Writing Intensive in Major

Recommended Prerequisite: SPAN 306 or 309, or SPAN 315, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Spanish

SPAN 375: *Introduction to Spanish-Language Cinema.* 3 credits.
Introduces the study of film as an art form and the academic discipline of film studies as they relate to the Spanish-speaking world. Focuses on students' acquisition of knowledge on the material and principles of film form and their practice in film analysis of discrete Spanish language films and film genres of significance within the 20th and 21st centuries. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: SPAN 305 and SPAN 306 or SPAN 309 or SPAN 315.

Recommended Corequisite: SPAN 370, SPAN 385, SPAN 388, SPAN 390.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Spanish

SPAN 385: *Introduction to Spanish Linguistics.* 3 credits.
Introduces the study of Spanish linguistics, including phonetics, phonology, morphology, syntax, pragmatics, historical linguistics, and sociolinguistics. Combines discussion of theoretical issues with linguistic analysis of Spanish. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: SPAN 370 (may be enrolled concurrently) or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Spanish

SPAN 388: *Introduction to Latina/o Studies.* 3 credits.
Interdisciplinary approach to the study of U.S. Latina/o cultural production, designed to promote critical thinking in understanding Latina/o histories, literatures, and cultures. Offered by Modern & Classical Languages. Limited to three attempts.

Mason Core: Synthesis

Recommended Prerequisite: SPAN 335 or 336, or SPAN 370, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Spanish

SPAN 390: *Introduction to Hispanic Literary Analysis.* 3 credits.
Required course that prepares students for the study of Hispanic literatures. Introduces basic terminology of literary analysis and provides practice in the examination of texts in the major genres: poetry, narrative, and drama. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: SPAN 370 (may be enrolled concurrently) or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Spanish

400 Level Courses

SPAN 400: *Spanish for the Professions.* 3 credits.
Advanced study of the language needed for use in a specific profession, such as translation, business, social service, or health professions. Notes: May be repeated when profession differs. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: SPAN 385 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Spanish

SPAN 425: *Independent Study.* 1-3 credits.
Research and analysis of a selected problem in literature or linguistics in consultation with a department member. Notes: Maximum of 6 credits of independent study may be applied to fulfillment of requirements for the major. Offered by Modern & Classical Languages. May be repeated within the term for a maximum 6 credits.

Recommended Prerequisite: Spanish major with 90 credits, and permission of instructor.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Spanish

SPAN 426: *Independent Study.* 1-3 credits.
Research and analysis of a selected problem in literature or linguistics in consultation with a department member. Notes: Maximum of 6 credits of independent study may be applied to fulfillment of requirements for the major. Offered by Modern & Classical Languages. May be repeated within the term for a maximum 6 credits.

Recommended Prerequisite: Spanish major with 90 credits, and permission of instructor.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Spanish

SPAN 430: *Spanish in the United States.* 3 credits.
Covers both formal and sociolinguistic aspects of Spanish in the U.S. by discussing demographic aspects and a historical overview of the varieties of Spanish spoken in the United States. Gives a foundation in issues such as linguistic variation, language choice, the relationship among race, ethnicity, and language; official language policies; individual and societal bilingualism; and language diversity in education. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: SPAN 385, or advanced ability in Spanish, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Spanish

SPAN 452: *Advanced Written Spanish.* 3 credits.
Development of skills required in writing Spanish. Guided and original compositions. Grammatical structures reviewed and supplemented with individual corrections. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: 9 hours of SPAN at the 300 level or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Spanish

SPAN 455: *Spanish-English Translation.* 3 credits.
Introduction to the history, theory, analysis, and practice of Spanish-English and English-Spanish translation. Includes literal versus free translation; denotation and connotation; regional and social variation; intercultural pragmatic differences; interlanguage influence and calques; and genre and audience. Hands-on experience with literary works, newspaper articles, and advertisements, as well as legal, medical, and technical documents. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: SPAN 370 and ENGL 302/ENGH 302; or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Spanish

SPAN 461: *Spanish Civilization and Culture.* 3 credits.
Survey of Spanish culture and civilization from the pre-Roman era to the 20th century. Offered by Modern & Classical Languages. Limited to three attempts. Equivalent to SPAN 321.

Recommended Prerequisite: SPAN 370 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Spanish

SPAN 466: *Latin American Civilization and Culture.* 3 credits.
Introduction to the study of Latin American civilization and culture from the pre-Columbian era to the 20th century. Offered by Modern & Classical Languages. Limited to three attempts. Equivalent to SPAN 322.

Mason Core: Global Understanding

Recommended Prerequisite: SPAN 370 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Spanish

SPAN 472: *Spanish Phonetics and Phonology.* 3 credits.
Introduction to the analysis of the Spanish sound system, both phonetics and phonology. Topics include the articulatory system, sound production, the classification of vowels and consonants, phonetic transcription, the mental representation of sounds, variation and accent, and processes of sound change, among others. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: SPAN 385, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Spanish

SPAN 474: *Spanish Syntax and Semantics.* 3 credits.
Investigates the knowledge Spanish speakers possess that enables them to understand and create expressions they have not heard before. Studies the system unconsciously used by Spanish speakers and writers to connect situations in the real world to the words and sentences that express each situation. Provides opportunities to analyze samples

of language in actual use. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: SPAN 385, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Spanish

SPAN 476: *Teaching Spanish in the United States.* 3 credits.
Introduction to second language acquisition theory and research, and the application to teaching Spanish as a second language and a heritage language. Includes a discussion of sociocultural and political issues surrounding the teaching of Spanish in the United States. Covers learning objectives, critical pedagogy, course design, grammar instruction, task-based language teaching, computer-assisted language learning, materials evaluation, and assessment. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: SPAN 385, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Spanish

SPAN 480: *Special Topics in Spanish.* 3 credits.
Study of a selected theme in Hispanic literature, culture, or linguistics. Notes: May be repeated for credit when topic is different. Offered by Modern & Classical Languages. May be repeated within the term for a maximum 6 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: SPAN 385, 388 or 390, depending on topic, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Spanish

SPAN 481: *Special Topics in Spanish.* 3 credits.
Study of a selected theme in Hispanic literature, culture, or linguistics. Notes: May be repeated for credit when topic is different. Offered by Modern & Classical Languages. May be repeated within the term for a maximum 6 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: SPAN 385, 388 or 390, depending on topic, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Spanish

SPAN 482: *Mass Media and Popular Culture in the Spanish-Speaking World.* 3 credits.
Critical examination of the significance of mass media and/or popular culture for the development of Spanish-speaking nation-states in the 19th, 20th, and 21st centuries. Forms studied may include but are not limited to: Newspapers, popular novels, lithography, photography, radio, film, television, public art, sport, performance, digital media. Students will use readings in critical theory to explore ways in which forms of mass and popular culture connect to social imaginaries. Enhancement of advanced analytical skills in Spanish through different modules of lecture, reading, discussion, and writing. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: SPAN 305/306 or 309 or 315, SPAN 370, SPAN 385, SPAN 390.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Spanish

SPAN 483: *Medieval and Early Modern Literature of Spain.* 3 credits.
Examines the main periods, trends, genres, and most representative works of the Spanish peninsular literature from its beginnings to the end of the Golden Age. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: SPAN 390 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Spanish

SPAN 484: *Modern and Contemporary Literature of Spain.* 3 credits.
Examines the main periods, trends, genres, and most representative works of Spanish peninsular literature from the 18th century to the contemporary period. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: SPAN 390 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Spanish

SPAN 485: *Topics in Community-Based Spanish.* 3 credits.
Combined classroom and community-based learning experience with a focus on historical, social, cultural, political, and linguistic aspects of Spanish in the community. Topics change each semester and include education, immigration, healthcare, and language policy, among others. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: SPAN 385, advanced ability in Spanish, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Spanish

SPAN 486: *Topics in Latin American Literature I: Pre-colonial to Mid-19th Century.* 3 credits.
An interdisciplinary examination and discussion of major topics in literary texts and cultural practices of Latin America from pre-colonial times to the mid-19th century. Offered by Modern & Classical Languages. Limited to three attempts.

Specialized Designation: Topic Varies

Recommended Prerequisite: SPAN 390 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Spanish

SPAN 487: *Topics in Latin American Literature II: Late 19th Century to the Present.* 3 credits.
Interdisciplinary examination and discussion of major topics in literary texts and cultural practices of Latin America from the late 19th century to the present. Offered by Modern & Classical Languages. Limited to three attempts.

Specialized Designation: Topic Varies

Recommended Prerequisite: SPAN 390 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Spanish

SPAN 488: *The Literature of Spanish America.* 3 credits.
Survey of the literature of Spanish America. Study of texts that are representative of the colonial, romantic, modernista, avant garde, and contemporary periods. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: SPAN 390 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Spanish

SPAN 490: *Internship in Spanish.* 1-6 credits.
Qualified students work with area schools, social service programs, government agencies, interest groups, museums, or corporations. Specific arrangements must be made with, and approved by, a member of the Spanish faculty during the semester prior to enrollment. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: 9 credits in SPAN at the 300 level or Permission of Instructor.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Spanish

SPAN 497: *Senior Honors Tutorial.* 3 credits.
First semester involves weekly meetings with a faculty member to discuss readings from a comprehensive list prepared by the Spanish faculty. In the second semester, independent research and completion of an honors essay under the supervision of a member of the Spanish faculty are required. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: Major in SPAN, 90 hours, GPA of 3.00, and GPA of 3.00 in MAJOR FIELD.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Spanish

SPAN 498: *Senior Honors Tutorial.* 3 credits.
Students meeting these requirements are admitted to candidacy on submission of a letter of application to the department Honors Committee in the second half of the junior year. A faculty recommendation and an interview by the Honors Committee are also required. First semester involves weekly meetings with a faculty member to discuss readings from a comprehensive list prepared by the Spanish faculty. In the second semester, independent research and completion of an honors essay under the supervision of a member of the Spanish faculty are required. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: Major in SPAN, 90 hours, GPA of 3.00, and GPA of 3.00 in MAJOR FIELD.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Spanish

500 Level Courses

SPAN 500: *History of the Spanish Language.* 3 credits.
Study of the evolution of the Spanish language from its origins in Vulgar Latin to its present varieties. Includes consideration of social and political as well as linguistic factors in language change. Offered by Modern & Classical Languages. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:

This course is graded on the Graduate Regular scale.

SPAN 501: *Applied Spanish Grammar.* 3 credits.
Analysis of Spanish grammar as a basis for teaching language skills. Terminology and methodology for the teaching of syntax are stressed. Offered by Modern & Classical Languages. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SPAN 502: *Hispanic Sociolinguistics.* 3 credits.
Introduction to sociolinguistics with emphasis on bilingualism and language contact in the Spanish-speaking world including the United States. Offered by Modern & Classical Languages. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SPAN 503: *Spanish Linguistics for Educators.* 3 credits.
Explores the linguistic dimensions of Spanish in order to understand the pedagogical needs of heritage and second language learners. Covers the key areas of linguistics: phonetics, phonology, morphology, syntax, and pragmatics with an emphasis on sociolinguistic variation. Includes analysis of learner speech, discussion of learner challenges, and the application of key concepts to language learning and teaching. Offered by Modern & Classical Languages. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

Additional Course Details: Taught in Spanish

SPAN 505: *Applied Spanish Stylistics in Multilingual and Multimodal Contexts.* 3 credits.
Advanced study of the Spanish language to aid multilingual students and teachers in developing their writing skills in multimodal contexts. Addresses the most frequent challenges of writing through intensive practice in multiple genres and mediums. Students gain a critical understanding of translingual practices and refine the ability to create multimodal texts. Offered by Modern & Classical Languages. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

Additional Course Details: Taught in Spanish

SPAN 510: *Methods of Literary and Cultural Studies.* 3 credits.
Introduces students to the fundamental techniques of literary and cultural analysis and to the major principles of various schools of crtiticism. Additionally, students will be exposed to basic methods and materials of research. Offered by Modern & Classical Languages. May not be repeated for credit.

Recommended Prerequisite: Graduate standing in the master's program in foreign language or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SPAN 512: *Mass Media and Popular Culture.* 3 credits.
Introduction to critical perspectives on mass media in Spanish-speaking world. Course engages regions (Spain, Latin America, Latin@ United States) according to faculty specialty. Includes contextualization of media in nineteenth and twentieth-century historical processes and readings in critical theory. Develops graduate-level oral, written, and research skills in Spanish. Offered by Modern & Classical Languages. May not be repeated for credit.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

SPAN 520: *Studies in Medieval Spanish Literature.* 3 credits.
Study of a major work or a literary genre of this period. Notes: May be repeated for credit when topic is different. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 9 credits.

Registration Restrictions:

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SPAN 525: *Studies in Renaissance Literature.* 3 credits.
Study of a literary movement or selected authors of the Spanish Renaissance. Notes: May be repeated for credit when topic is different. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 9 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SPAN 530: *Studies in the Literature of the Golden Age.* 3 credits.
Study of a literary genre or a major author of Spanish literature of the Golden Age. Notes: May be repeated for credit when topic is different. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 9 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SPAN 540: *Studies in 20th-Century Literature.* 3 credits.
Study of a writer, genre, theme, or movement of this period. Notes: May be repeated for credit when topic is different. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 9 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SPAN 544: *Spanish-Language Film, Television, and Digital Media.* 3 credits.
Examines contemporary trends in film and television studios, including film theory, the archival turn, and ethnographies of television reception, as they relate to the film and television cultures of the rich and diverse regions of Latin America. Notes: Open to graduate students and advanced undergraduates with the permission of the instructor. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

SPAN 545: *Studies in Hispanic Literature.* 3 credits.
Study of major writers in a particular generation or movement. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 9 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SPAN 551: *Special Topics in Spanish.* 3 credits.
Special studies in Spanish or Latin American language, literature, or culture. Specific topics are announced in advance. Notes: May be repeated for credit with permission of department. Offered by Modern & Classical Languages. May be repeated within the term.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SPAN 560: *Studies in Spanish American Poetry.* 3 credits.
Study of major poets of a given period. Literary and social atmosphere of the period are emphasized. Notes: May be repeated for credit when topic is different. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 9 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

SPAN 565: *Studies in Spanish American Drama.* 3 credits.
Study of playwrights who have made a major contribution to the development of the genre. Notes: May be repeated for credit when topic is different. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 9 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

SPAN 570: *Language Politics and Policy.* 3 credits.
Analysis of language ideologies and politics of language as well as language policy in Latin America, Spain and the US. Includes study of language policies in public and private domains, including education, government and employment. Offered by Modern & Classical Languages. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

SPAN 571: *Methods and Curriculum Design for Teaching Spanish.* 3 credits.
Multi-faceted introduction to the scholarly study of theory, research, and practice in learning and teaching Spanish. Includes application and critical analysis of different methods of instruction and curriculum design. Offered by Modern & Classical Languages. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SPAN 574: *Critical Approaches to Teaching Spanish-language Culture.* 3 credits.
Critical approaches to teaching culture in K-16 bilingual, heritage Spanish and mixed classrooms. Students will study critical perspectives on culture's role in social identity construction in the disciplines of Spanish-language linguistics and literary | cultural studies, and apply these to the creation of task-based, technology-enhanced and differentiated learning materials. Offered by Modern & Classical Languages. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

Additional Course Details: Taught in Spanish

SPAN 575: *Teaching Spanish for Social Justice.* 3 credits.
Introduction to teaching world languages within a social justice framework with a focus on Spanish. Students examine the intersections between language and race, ethnicity, class, gender, and sexuality in language education and apply principles of critical pedagogy to design materials and assess outcomes for heritage and second language learners. Offered by Modern & Classical Languages. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

Additional Course Details: Taught in Spanish

SPAN 576: *Advanced Translation.* 3 credits.
Advanced work in translation of selected texts from diverse fields. Comparative terminology, sight translation, and precis writing. Emphasis on the function and technique of documentation in translation. Translation from Spanish to English and from English to Spanish. Offered by Modern & Classical Languages. May not be repeated for credit.

Registration Restrictions:

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SPAN 580: *Contemporary Hispanic Institutions.* 3 credits.
Study of 20th-century cultural, social, and political institutions in Spain and Spanish America with emphasis on language and terminology used to describe their functions, regulations, and conditions. Notes: May be repeated for credit when topic is different. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 9 credits. Equivalent to SPAN 680.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SPAN 585: *Languages in Contact.* 3 credits.
This course considers the linguistic and social outcomes that occur when two or more languages come into contact across the Spanish-speaking world. Students will examine how attitudes, identities, and ideologies shape multilingual communities and they will draw on the predominant theories and taxonomies within the field of language contact to explore a wide range of linguistic outcomes of contact, including lexical borrowing, convergence, code-switching, and creoles. Offered by Modern & Classical Languages. May not be repeated for credit.

Recommended Prerequisite: SPAN 502

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

Additional Course Details: Taught in Spanish

SPAN 590: *Bilingual Education in the Spanish-Speaking World.* 3 credits.
Introduction to the policies, practices, and outcomes of bilingual education in Spanish-speaking contexts including the United States, Latin America, and Spain. Students build critical understanding of the sociohistorical, sociocultural, and sociopolitical parameters of bilingual education and apply pedagogical concepts that support bilingual, biliterate, and bicultural development for language minority and language majority learner populations. Offered by Modern & Classical Languages. May not be repeated for credit.

Recommended Prerequisite: SPAN 502

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

Additional Course Details: Taught in Spanish

600 Level Courses

SPAN 635: *Seminar in Don Quixote.* 3 credits.
Study of Don Quixote and major critical approaches to the work. Offered by Modern & Classical Languages. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

SPAN 650: *Seminar in Twentieth-Century Drama.* 3 credits.
Study of major dramatists in the generation of 1898 and contemporary theater. Notes: May be repeated for credit when topic is different. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 9 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

SPAN 655: *Seminar in Twentieth-Century Prose.* 3 credits.
Study of major writer, theme, or movement in novel or essay. Notes: May be repeated for credit when topic is different. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 9 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

SPAN 670: *Seminar in Spanish American Prose.* 3 credits.
Study of a selected theme, movement, or author in the novel, short story, or essay. Notes: May be repeated for credit when topic is different. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 9 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

SPAN 675: *Seminar in Literature and Art.* 3 credits.
Comparative analysis of a literary theme or style in relation to other media (painting, architecture, film) for an integral understanding of the arts. Notes: May be repeated for credit when topic is different. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 9 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

SPAN 680: *Seminar in Literature and Society.* 3 credits.
Study of a literary topic, a genre, or selected authors in relation to a given economic, social, or political system in Spain or Latin America. Notes: May be repeated for credit when topic is different. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 9 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

SPAN 685: *Seminar in Literature and Ideas.* 3 credits.
Study of major ideological-philosophical themes and their artistic expression in literature. Notes: May be repeated for credit when topic is different. Offered by Modern & Classical Languages. May be repeated within the degree for a maximum 9 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

700 Level Courses

SPAN 790: *Seminar in Bilingual Education.* 3 credits.
Introduction to the policies, practices, and outcomes of bilingual education in Spanish-speaking contexts including the United States, Latin America, and Spain. Students build critical understanding of the sociohistorical, sociocultural, and sociopolitical parameters of bilingual education and apply pedagogical concepts that support bilingual, biliterate, and bicultural development for language minority and language majority learner populations. Offered by Modern & Classical Languages. May not be repeated for credit.

Recommended Prerequisite: SPAN 502

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

Additional Course Details: Taught in Spanish

SPAN 798: *Directed Reading and Research.* 3 credits.
Open only to degree students who have completed at least 18 credits. Reading and research on a specific project under the direction of a department member. Oral or written report required. Offered by Modern & Classical Languages. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Thesis

Grading:
This course is graded on the Graduate Special scale.

SPAN 799: *Thesis.* 1-6 credits.
Master's thesis research and writing under direction of faculty committee. Students must register for 3 credits in the first semester of SPAN 799 and maintain continuous enrollment until completion of thesis. Credits are awarded upon completion. Offered by Modern & Classical Languages. May be repeated within the degree.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Thesis

Grading:
This course is graded on the Satisfactory/No Credit scale.

800 Level Courses

SPAN 800: *Studies for the Doctor of Philosophy in Education.* 3-6 credits.
Studies designed by student's discipline director and approved by student's doctoral committee that prepare student for research and writing in area of interest in discipline. Offered by Modern & Classical Languages. May be repeated within the degree.

Recommended Prerequisite: Admission to PhD in education program to study in Spanish.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Research

Grading:
This course is graded on the Graduate Special scale.

Special Education (EDSE)

100 Level Courses

EDSE 115: *American Sign Language (ASL) I.* 4 credits.
Focuses on introduction of American Sign Language (ASL) and Deaf culture. Teaches basic person-to-person conversational signing. Emphasizes development of expressive and receptive skills. Increases knowledge of ASL vocabulary and the syntax, semantics, and pragmatics of the language. Offered by School of Education. Limited to three attempts.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EDSE 116: *American Sign Language (ASL) II.* 4 credits.
Focuses on expanding basic skills in American Sign Language (ASL) and Deaf culture. Emphasizes development of expressive and receptive skills. Increases knowledge of ASL vocabulary and the syntax, semantics, and pragmatics of the language. Offered by School of Education. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: EDSE 115^{C} or 115^{XS}.
^{C} Requires minimum grade of C.
^{XS} Requires minimum grade of XS.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

200 Level Courses

EDSE 201: *Introduction to Special Education.* 3 credits.
Provides a survey of current knowledge on individuals with disabilities within the context of human growth and development across the life span. Includes historical factors, legal aspects, etiology, characteristics, assessment, evidence-based practices, and support services for individuals with disabilities having needs for intervention ranging from mild to severe. Includes the impact of disabilities on academic, social, and emotional performances. Offered by School of Education. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EDSE 203: *Disability in American Culture.* 3 credits.
Examines disability, past and present, in American culture through changes in historical, political, legal, and societal responses to people with disabilities. Analyzes the disability experience through social and behavioral science perspectives, including diversity, bioethical and human rights conceptualizations/constructs of disability. Offered by School of Education. Limited to three attempts.

Mason Core: Social/Behavioral Sciences

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EDSE 204: *Disability in a Global Society.* 3 credits.
Examines disability in a global context, including how individuals, groups, institutions, and nations acknowledge and address disability in contemporary global societies. Assesses how the growing political, economic, and social gaps that exist between the Global North and South impact people with disabilities. Applies a disabilities empowerment framework as well as current findings from global human and economic indices to compare the current status of people with disabilities across contemporary global societies. Offered by School of Education. Limited to three attempts.

Mason Core: Global Understanding

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EDSE 219: *American Sign Language (ASL) III.* 4 credits.
Focuses on intermediate level skills in American Sign Language (ASL) and Deaf culture. Increases competencies in person-to-person conversational signing, including expressive and receptive skills, vocabulary, syntax, semantics, and pragmatics. Offered by School of Education. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: EDSE 116^{C} or 116^{XS}.
^{C} Requires minimum grade of C.
^{XS} Requires minimum grade of XS.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EDSE 241: *Characteristics of Students with Disabilities who Access the General Curriculum.* 3 credits.
Examines the academic, social, and behavioral characteristics of individuals with disabilities who access the general curriculum, including students with learning disabilities, emotional/behavioral disorders, intellectual disability, autism, and attention deficit disorder. Focuses on etiology, contributing factors, impact on life and family, the challenges of identifying students with disabilities, and the need for intensive instruction, accommodations, and support. Offered by School of Education. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EDSE 251: *Classroom Management and Positive Behavior Supports.* 3 credits.
Focuses on describing how school and classroom methods are used to establish effective learning environments for individuals with varying degrees of disabilities. Explores classroom and behavior management including technology, social skills, and effective teaching behaviors. Emphasizes developing school and classroom behavior management plans. Field experience required. Offered by School of Education. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

300 Level Courses

EDSE 311: *Characteristics of Students with Blindness and Visual Impairments.* 3 credits.
Provides an overview of the characteristics of and services to persons with blindness and visual impairments, including the impact of blindness and visual impairment on infants' and children's growth and development, child and adolescent emotional and social development, and family interaction patterns. Considers the educational, conceptual, psychosocial, and physical implications of a visual impairment. Offered by School of Education. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EDSE 315: *American Sign Language (ASL) IV.* 3 credits.
Focuses on strengthening expressive and receptive communication in American Sign Language (ASL) through the development of narrative and storytelling skills. Explores the importance of these skills within the Deaf Community. Explores issues of multiculturalism, linguistic code-switching, and language dominance, particularly in relationship to Deaf education. Offered by School of Education. Limited to three attempts.

Registration Restrictions:
Required Prerequisite: EDSE 219[B].
[B] Requires minimum grade of B.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EDSE 341: *Language Acquisition and Reading and Writing Development.* 3 credits.
Examines language, reading, and writing skills for typical and atypical students, and describes language, reading and writing instruction for students with disabilities who access the general curriculum. Explores emergent literacy skills, sound and symbol relationships, spelling development, phonemic awareness, phonics, vocabulary development, and comprehension. Analyzes informal assessment methods to monitor students' reading and writing progress. Offered by School of Education. Limited to three attempts.

Recommended Prerequisite: Permission of instructor to override prerequisite may be granted with sufficient experience or knowledge in the field.

Registration Restrictions:
Required Prerequisites: (EDSE 201[C] or 201[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EDSE 351: *Technology Integration for Specialized Instruction.* 3 credits.
Reviews applications of recent educational and assistive technology for instruction. Evaluates strategies for effective integration of mainstreamed instructional technology to promote student learning, successful implementation of individualized assistive technology to access general education curriculum, and delivery of accessible online and blended instruction to all learners through technology-based innovations and Universal Design for Learning. Offered by School of Education. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EDSE 352: *Assessment.* 3 credits.
Offers knowledge and learning activities related to assessment of students with varying degrees of disabilities. Includes statistical and psychometric concepts in assessment. Addresses norm-referenced, criterion-referenced, curriculum-based, and informal assessment for instructional and placement decisions. Offered by School of Education. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EDSE 353: *Individualized Behavior Supports.* 3 credits.
Focuses on identifying, recording, evaluating, and developing comprehensive plans for changing social and academic behaviors of individuals with disabilities. Emphasizes analyzing the function of individuals' behaviors and developing responsive behavior intervention plans. Offered by School of Education. Limited to three attempts.

Recommended Prerequisite: EDSE 251

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EDSE 354: *Consultation and Collaboration.* 3 credits.
Provides professionals in special education, general education, and related fields with knowledge and skills necessary for collaboration with a wide variety of stakeholders. Emphasizes developing and implementing individualized education programs for individuals with disabilities using a team approach. Demonstrates active listening, group process, and problem-solving strategies. Offered by School of Education. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EDSE 361: *Characteristics of Students with Severe Disabilities.* 3 credits.
Examines the academic, social, medical, and behavioral characteristics of individuals with severe disabilities such as intellectual disability, autism, traumatic brain injury, and severe/multiple cognitive, physical and/or sensory disabilities. Focuses on etiology, contributing factors, impact on life and family, the challenges of identifying students with disabilities, and the need for intensive instruction, accommodations, and support. Offered by School of Education. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EDSE 362: *Communication with Severe Disabilities.* 3 credits.
Provides an overview of augmentative and alternative communication (AAC) for individuals with severe speech and language impairments. Addresses the knowledge and skills needed to assess the potential AAC user, make team decisions, develop and implement instruction, and evaluate the effects of instruction aimed at motivating, building, and expanding communication, choice-making, and social interaction. Offered by School of Education. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EDSE 381: *Exploratory Field Experience in Special Education.* 3 credits.
Introduces students to the role of the special educator in academic and non-academic environments with students across disability areas. Facilitates observation and understanding of the professional work of special educators in K-12 schools, specifically in instruction, behavior management, and data collection. Provides exposure to special education at the transition and community-based levels as well as at the policy and leadership levels. Initiates critical reflection focused on examining special education theory and research in application through practice in school and community-based settings. Includes a 2-hour weekly seminar and a total of 20 field experience hours. Offered by School of Education. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: EDSE 201[C] or 201[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

EDSE 410: *Deaf History.* 3 credits.
Studies the history of the Deaf people in Europe and its influence on the Deaf people in the United States. Explores the Deaf people's experience as an oppressed minority similar to the experience of many oppressed populations. Applies knowledge to understanding the attitudes toward Deaf people today. Offered by School of Education. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: EDSE 315[*C] or 315[XS].
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EDSE 412: *Braille Code.* 3 credits.
Provides understanding of the literary code of Braille and its implications for educational/literacy programs for students with a visual disability. Enables students to better understand the Braille code and how to teach it to students with a visual disability. Notes: Delivered online. Offered by School of Education. Limited to three attempts.

Recommended Prerequisite: EDSE 311. Concurrent enrollment is also permitted.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EDSE 413: *Medical and Educational Implications of Blindness and Visual Impairments.* 3 credits.
Provides an introduction to anatomy and physiology of the visual system and the educational implications of visual pathology. Covers anatomy of the human eye, normal visual development, pathology of the eye, examination procedures for the identification of visual pathology, and the effects of pathology on visual learning and development. Offered by School of Education. Limited to three attempts.

Recommended Prerequisite: EDSE 311, which may be taken concurrently.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EDSE 414: *Orientation and Mobility for Students with Blindness and Visual Impairments.* 2 credits.
Provides the foundation for understanding the components and essence of orientation and mobility (O&M). Establishes how the need for independent travel in the blind population created the field of O&M. Explores the philosophy and history of orientation and mobility, including cane instruction, dog guides, and methods of travel. Addresses

techniques in developing orientation skills and basic mobility instruction. Emphasizes motor and concept skill development. Offered by School of Education. Limited to three attempts.

Recommended Prerequisite: EDSE 311, which may be taken concurrently

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EDSE 417: *Teaching Methods for Students with Blindness and Visual Impairments.* 3 credits.
Emphasizes methods of teaching compensatory skills, the core curriculum, and technology for use by students who are blind and visually impaired. Addresses curriculum development, adaptations, and teaching methodology for individuals with visual impairments. Provides information on adaptations within various educational programs and adaptation of general education classroom materials and procedures for use with blind and low vision children and youth. Offered by School of Education. Limited to three attempts.

Recommended Prerequisite: EDSE 311, which may be taken concurrently

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EDSE 418: *Curriculum and Assessment of Students with Blindness and Visual Impairments.* 3 credits.
Provides students with knowledge and understanding of the educational assessment of students with visual impairments and additional disabilities including deaf-blindness. Provides practice assessing and planning educational programs for students with visual impairments. Addresses assessment of technology for students with visual impairments. Examines determination of learning needs and appropriate learning media, relationship of assessment, IEP development, and placement. Notes: Field experience required. Offered by School of Education. Limited to three attempts.

Recommended Prerequisite: EDSE 311, which may be taken concurrently

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EDSE 419: *Braille Reading and Writing.* 3 credits.
Provides instruction on transcription of advanced braille codes, including mathematics (Unified English Braille (UEB) and Nemeth), music, foreign language, and other specialized codes. Introduces techniques for teaching skills in each code. Explores technology tools used to create braille and tactile materials in addition to other assistive technologies used for instruction in science technology, engineering, and mathematics (STEM) content. Offered by School of Education. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: ((EDSE 311[C] or 311[XS]) and (EDSE 412[C] or 412[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EDSE 420: *Deaf Culture.* 3 credits.
Studies the cultural practices, ideology, power, identity, and heritage of Deaf people in the United States. Analyzes Deaf community as a part of societal diversity. Emphasizes issues of multiculturalism, linguistic code-switching, and language dominance. Offered by School of Education. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (EDSE 410[C] or 410[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EDSE 441: *Instructional Strategies for Reading and Writing.* 3 credits.
Integrates knowledge of language assessments and the components of quality reading instruction to plan well-sequenced and explicit instruction for students with disabilities in the general education curriculum. Examines objectives that align with curriculum standards while still providing individualization. Implements and applies reading and writing instruction to support learning in all content areas. Field experience required. Offered by School of Education. Limited to three attempts.

Recommended Prerequisite: Permission of instructor to override prerequisite may be granted with sufficient experience or knowledge in the field.

Registration Restrictions:
Required Prerequisites: (EDSE 341[C] or 341[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EDSE 443: *Instructional Strategies for Math.* 3 credits.
Integrates foundational knowledge of numeracy acquisition, mathematical concepts, mathematical thinking, mathematics vocabulary, calculation, and problem-solving with instructional methods to plan and deliver well-sequenced and explicit math instruction for students with disabilities in the general education curriculum. Examines objectives that align with the general education curriculum Virginia Standards of Learning in mathematics at the elementary, middle, and secondary levels while still providing individualization. Field experience required. Offered by School of Education. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EDSE 445: *Clinical Practice and Seminar 1: General.* 2 credits.
Exposes individuals to classroom settings inclusive of students with disabilities who access the general curriculum. Examines the professional realities, roles, and responsibilities of special education teachers based upon a foundation of theory and research designed to stimulate critical reflectivity. Engages with individual and/or small groups

of students with disabilities who access the general curriculum in K-12 classroom environments. Assists in the planning and implementation of effective assessment, instruction, and behavior management across subject areas. Includes a 2-hour seminar held nine times throughout the semester and a total of 30 field experience hours. Offered by School of Education. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (EDSE 381[C] or 381[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

EDSE 446: *Clinical Practice and Seminar 2: General.* 2 credits.
Applies coursework in Special Education-General Curriculum to planning and supervised instruction of students with disabilities who access the general curriculum in K-12 school settings. Engages in reflection to analyze instruction within the clinical experience setting. Includes a 2-hour seminar held seven times throughout the semester and a minimum of 75 hours of fieldwork in a K-12 clinical experience setting. Offered by School of Education. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: EDSE 445[C] or 445[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

EDSE 451: *Transition and Self-Determination.* 3 credits.
Examines relevant legislation and evidence-based practices related to person-centered transition planning for students with varying disabilities throughout the K-12 system and into adult life. Focuses on effective alternative assessment, coordination of community services, functional academic and social/life skills, stakeholder involvement, employment, and independent living. Offered by School of Education. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EDSE 452: *Intersectionality and Disability.* 3 credits.
Examines disability within a diversity and intersectionality context in K-12 schools. Analyzes how diversity and intersectionality informs the educational experience of individuals with and without disabilities to include race, gender, sexual orientation, socioeconomic status, and home/ language and culture. Assesses how cultural competency and intersectionality awareness on the part of educators enhance the school success of all students. Develops educator capacity to implement trauma-sensitive interventions in diverse settings for all students. Offered by School of Education. Limited to three attempts.

Specialized Designation: Writing Intensive in Major

Registration Restrictions:
Required Prerequisites: EDSE 201[C] or 201[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EDSE 463: *Curriculum and Methods in Severe Disabilities.* 3 credits.
Focuses on current best practices in curriculum and methods for individuals with severe disabilities including specific strategies for teaching individuals with severe disabilities, general strategies for working with heterogeneous groups of individuals in inclusive settings, and methods for adapting the general education curriculum to include individuals with severe disabilities. Field experience required. Offered by School of Education. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EDSE 465: *Clinical Practice and Seminar 1: Adapted (Severe Disabilities).* 2 credits.
Exposes teacher candidates to K-12 classroom settings inclusive of students with disabilities who access the adapted curriculum and who have severe disabilities. Examines the professional realities, roles, and responsibilities of special education teachers based upon a foundation of theory and research designed to stimulate critical reflectivity. Engages with individuals and/or small groups of individuals with severe disabilities in the classroom environment. Assists in the planning and implementation of effective assessment, instruction, and behavior management across subject areas. Includes a 2-hour seminar held nine times throughout the semester and a total of 30 field experience hours. Offered by School of Education. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (EDSE 381[C] or 381[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

EDSE 466: *Clinical Practice and Seminar 2: Adapted (Severe Disabilities).* 2 credits.
Applies coursework in Special Education-Adapted Curriculum (Severe Disabilities) to planning and supervised instruction of students with severe disabilities who access the adapted curriculum in K-12 school settings. Engages in reflection to analyze instruction within the clinical experience setting. Includes a 2-hour seminar held seven times throughout the semester and a minimum of 75 hours of fieldwork in a K-12 clinical experience setting. Offered by School of Education. Limited to three attempts.

Registration Restrictions:
Required Prerequisite: EDSE 465[C].
[C] Requires minimum grade of C.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

EDSE 467: *Foundations of Language and Literacy for Individuals with Severe Disabilities.* 3 credits.
Examines the complexity of language acquisition and literacy development. Focuses on typical and atypical language development, connections between language and literacy, and diversity of communication styles in families and cultures. Emphasizes first and second language acquisition. Field experience required. Offered by School of Education. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EDSE 469: *Individualized Supports and Specialized Care of Students with Severe Disabilities.* 3 credits.
Focuses on the unique physical, sensory, communication, and health and medical needs of students with severe disabilities. Examines how these needs impact the educational program, how special education and related services are delivered, and how to design academic, functional and behavioral instruction and adaptations to meet those needs. Offered by School of Education. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

EDSE 481: *Internship: Professional Services.* 12 credits.
Applies university coursework in Special Education to individuals with disabilities in a variety of community or school-based settings in supervised internship. Applies coursework, theories, and research to professional service settings. Sites chosen by client/stakeholders after approval of faculty supervisors. Includes a 2- hour seminar held six times throughout the year. Offered by School of Education. Limited to three attempts.

Mason Core: Capstone

Registration Restrictions:
Required Prerequisites: (EDSE 381[C] or 381[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Internship

Grading:
This course is graded on the Satisfactory/No Credit scale.

EDSE 482: *Internship: General Curriculum.* 12 credits.
Applies university coursework in Special Education-General Curriculum to instruction of students with disabilities who access the general curriculum in two supervised internship settings, including an elementary and secondary school placement. Includes a 2-hour seminar held six times throughout the semester and a minimum of 300 hours in the school placements (with at least 150 direct teaching hours). Note: Prior to registration, students must demonstrate that VDOE-required teacher assessments and First Aid/CPR/AED certification for licensure have been met, and application for internship must be on file by program deadline. Offered by School of Education. Limited to three attempts.

Mason Core: Capstone

Registration Restrictions:
Required Prerequisites: EDSE 446[C] or 446[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Internship

Grading:
This course is graded on the Satisfactory/No Credit scale.

EDSE 483: *Internship: Adapted (Severe Disabilities).* 12 credits.
Applies university coursework in Special Education-Adapted Curriculum to instruction of students with severe disabilities who access the adapted curriculum in two supervised internship settings, including an elementary and secondary school placement. Includes a 2-hour seminar held six times throughout the semester. Note: Prior to registration, students must demonstrate that VDOE-required teacher assessments and First Aid/CPR/AED certification for licensure have been met. Application for internship must be on file by program deadline. Offered by School of Education. Limited to three attempts.

Mason Core: Capstone

Registration Restrictions:
Required Prerequisite: EDSE 466[C].
[C] Requires minimum grade of C.

Schedule Type: Internship

Grading:
This course is graded on the Satisfactory/No Credit scale.

EDSE 484: *Internship: Blindness and Visual Impairments.* 12 credits.
Applies, in supervised internship, university coursework in Blindness and Visual Impairments to instruction of children and their families in school settings. Note: Prior to registration students must demonstrate that VDOE-required teacher assessments and First Aid/CPR/AED certification for licensure have been met, and application for internship must be on file by program deadline. Offered by School of Education. Limited to three attempts.

Mason Core: Capstone

Registration Restrictions:
Required Prerequisites: (EDSE 413[C] and 417[C] and (EDSE 418[C] or 418[XS]) and EDSE 419[C]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Senior Plus or Senior.

Schedule Type: Internship

Grading:
This course is graded on the Satisfactory/No Credit scale.

500 Level Courses

EDSE 501: *Introduction to Special Education.* 3 credits.
Provides a survey of current knowledge on individuals with disabilities within the context of human growth and development across the lifespan. Includes historical factors, legal aspects, etiology, characteristics, assessment, evidence-based practices, and support services for individuals having needs for intervention ranging from mild to severe. Includes the impact of disabilities on academic, social, and emotional performances framed within the teaching profession as a whole. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDSE 502: *Classroom Management and Applied Behavior Analysis.* 3 credits.
Focuses on identifying, recording, evaluating, and changing social and academic behaviors of special and diverse populations. Explores theories of classroom management and various approaches to management including use of technological advances. Emphasizes developing classroom and individual behavior management plans. Note: Field experience required. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDSE 503: *Language Development and Reading.* 3 credits.
Identifies literacy skills for typical and atypical students, and describes reading, language, and writing instruction for students with mild disabilities who access the general curriculum. Explores emergent literacy skills, phonemic awareness, vocabulary development, and comprehension. Note: Field experience required. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDSE 511: *Characteristics of Students with Visual Impairments.* 3 credits.
Provides an overview of the characteristics of and services to persons with blindness and visual impairments, including the impact of blindness and visual impairment on infants' and children's growth and development, child and adolescent emotional and social development, and family interaction patterns. Considers the educational, conceptual, psychosocial, and physical implications of a visual impairment. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDSE 512: *Braille Code.* 3 credits.
Provides understanding of the literary code of Braille and its implications for educational/literacy programs for students with a visual disability. Enables students to better understand the Braille code and how to teach it to students with a visual disability. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: EDSE 511. Concurrent enrollment is also permitted.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDSE 513: *Medical and Educational Implications of Visual Impairments.* 3 credits.
Provides an introduction to anatomy and physiology of the visual system and the educational implications of visual pathology. Covers anatomy of the human eye, normal visual development, pathology of the eye, examination procedures for the identification of visual pathology, and the effects of pathology on visual learning and development. Field experience is required. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: EDSE 511. Concurrent enrollment is also permitted.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:

This course is graded on the Graduate Regular scale.

EDSE 514: *Orientation and Mobility for Students with Visual Impairments.* 2 credits.
Provides the foundation for understanding the components and essence of orientation and mobility (O&M). Establishes how the need for independent travel in the blind population created the field of O&M. Explores the philosophy and history of orientation and mobility, including cane instruction, dog guides, and methods of travel. Addresses techniques in developing orientation skills and basic mobility instruction. Emphasizes motor and concept skill development. Field experience is required. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: EDSE 511. Concurrent enrollment is also permitted.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDSE 517: *Computer Applications for Special Populations.* 3 credits.
Explores the applications of computer technology for instructional programs and computer skills used by teachers of special populations. Provides experience with computer technology designed for special populations. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDSE 518: *Curriculum and Assessment of Students with Visual Impairments.* 3 credits.
Provides students with knowledge and understanding of the educational assessment of students with visual impairments and additional disabilities including deaf-blindness. Provides opportunities to practice assessing and planning educational programs for students with visual impairments. Addresses assessment of technology for students with visual impairments. Examines determination of learning needs and appropriate learning media, relationship of assessment, IEP development, and placement. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: EDSE 511. Concurrent enrollment is also permitted.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDSE 531: *Transition and Community-Based Instruction.* 3 credits.
Addresses issues in transition for youth with severe disabilities. Covers self-determination, development, and implementation of a transition plan, post-secondary opportunities including education and community-based instruction, and vocational environments. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDSE 532: *Positive Behavior Supports.* 3 credits.
Focuses on employing concepts and skills to design, implement, and evaluate behavior support programs derived from functional assessment; addressing relevant replacement skills; facilitating generalization and maintenance of skills; and incorporating individually designed crisis intervention procedures. Field experience is required. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDSE 533: *Assessment and Program Planning for Adapted Curriculum.* 3 credits.
Develops knowledge and skills about best special education practice in assessment and evaluation, and IEP and program planning for those preparing to teach K-12 students with disabilities in the adapted curriculum. Note: Field experience required. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDSE 534: *Communication and Severe Disabilities.* 3 credits.
Introduces professionals to augmentative and alternative communication (AAC) for individuals with severe speech and language impairments. Addresses the knowledge and skills needed to assess the potential AAC user, make team decisions, develop and implement instruction, and evaluate the effects of instruction, aimed at motivating, building, and expanding communication, choice-making, and social interaction. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDSE 540: *Characteristics of Students with Disabilities who Access the General Curriculum.* 3 credits.
Examines the characteristics of students with mild disabilities. Focuses on etiology, contributing factors, conditions that affect learning, the challenges of identifying students with disabilities, and the need for academic, social, and emotional accommodations and support. Notes: Field experience required. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDSE 544: *Adapted Instructional Methods and Transition for Secondary Learners.* 3 credits.
Provides strategies for teaching functional academics and social/life skills, facilitating the transition to postsecondary environments. Focuses on all aspects of transition and alternative assessments for secondary learners with disabilities. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDSE 547: *Characteristics of Students with Severe Disabilities.* 3 credits.
Examines the academic, social, medical, and behavioral characteristics of individuals with severe disabilities such as intellectual disability, autism, traumatic brain injury, and severe/multiple cognitive, physical and/or sensory disabilities. Focuses on etiology, contributing factors, impact on life and family, the challenges of identifying students with disabilities, and the need for intensive instruction, accommodations, and support. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDSE 557: *Foundations of Language and Literacy for Diverse Learners.* 3 credits.
Examines the complexity of language acquisition and literacy development. Focuses on typical and atypical language development, connections between language and literacy, and diversity of communication styles in families and cultures. Emphasizes first and second language acquisition. Notes: Field Experience required Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDSE 562: *Foundations of Reading Instruction for Students with Specific Learning Disabilities.* 3 credits.
Examines the characteristics of students with specific learning disabilities who demonstrate severe deficits in reading and written language. Addresses language development from an anatomical, physiological, and social perspective. Provides essential knowledge in language development. Examines the legislation that addresses the

rights of students with disabilities. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDSE 563: *Language Structure and Literacy Development for Students with Specific Learning Disabilities.* 3 credits.
Examines the components of the English language, including language processing requirements, integrated with the development of literacy skills. Analyzes language and literacy performance and the variability of language learning in students with specific learning disabilities. Explores environmental, social, and cultural factors, including the impact of second language learning and dual-identification. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisite: EDSE 562[B-].
[B-] Requires minimum grade of B-.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDSE 564: *Phonology, Phonics, and Fluency for Students with Specific Learning Disabilities.* 3 credits.
Evaluates phonology, phonics, and fluency skills of students with specific learning disabilities using formal and informal measures. Designs instruction to meet the needs of students with learning disabilities who have deficits in these areas. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisite: EDSE 563[B-].
[B-] Requires minimum grade of B-.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDSE 565: *Vocabulary, Comprehension, and Written Expression for Students with Specific Learning Disabilities.* 3 credits.
Evaluates vocabulary, text comprehension, and written expression skills of students with specific learning disabilities using formal and informal measures. Designs instruction to meet the needs of students with learning disabilities who have deficits in these areas. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisite: EDSE 564[*B-].
[*] May be taken concurrently.
[B-] Requires minimum grade of B-.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDSE 567: *Practicum for Specialized Reading Instruction for Students with Specific Learning Disabilities.* 3 credits.
Demonstrate competencies for implementing intensive, data-based interventions to students with specific learning disabilities who have severe deficits in reading and writing. Administer and analyze assessments and design interventions for phonics, fluency, word recognition, text comprehension and written expression. Monitor student progress and modify instruction as needed. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisite: EDSE 565[B-].
[B-] Requires minimum grade of B-.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Satisfactory/No Credit scale.

EDSE 590: *Special Education Research.* 3 credits.
Describes fundamental concepts and practices in educational research in special education. Covers specific applications of educational research methods to problems in special education. Emphasizes review and critique of special education research, and applied classroom research for teachers. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDSE 597: *Special Topics in Education.* 1-6 credits.
Provides advanced study on selected topic or emerging issue in Special Education. Offered by School of Education. May be repeated within the degree for a maximum 9 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: Admission to program in Graduate School of Education

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

600 Level Courses

EDSE 613: *Teaching Methods for Students with Visual Impairments.* 3 credits.
Emphasizes methods of teaching compensatory skills, the core curriculum, and technology for use by students who are blind and visually impaired. Addresses curriculum development, adaptations, and teaching methodology for individuals with visual impairments. Provides information on adaptations within various educational programs and adaptation of general education classroom materials and procedures for use with blind and low vision children and youth. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: EDSE 511. Concurrent enrollment is also permitted.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDSE 616: *Braille Reading and Writing.* 3 credits.
Provides instruction on transcription of advanced braille codes, including mathematics (Unified English Braille (UEB) and Nemeth), music, foreign language, and other specialized codes. Introduces techniques for teaching skills in each code. Explores technology tools used to create braille and tactile materials in addition to other assistive technologies used for instruction in science, technology, engineering, and mathematics (STEM) content. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (EDSE 311[C], 311[XS], 511[B-] or 511[XS]) and (EDSE 412[C], 412[XS], 512[B-] or 512[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.
[B-] Requires minimum grade of B-.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDSE 619: *Principles and Procedures of Behavior Analysis.* 3 credits.
Focuses on basic procedures of applied behavior analysis; identification of factors that contribute to behavioral problems and improved performance; and procedures that can be used to minimize behavioral problems, improve performance, teach new behaviors, and increase probability of behaviors occurring under appropriate circumstances. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: Admission to Applied Behavior Analysis Graduate Certificate Program (ABAC).

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDSE 620: *Supporting the Behavior and Sensory Needs of Individuals with Autism.* 3 credits.
Describes the behavior and sensory development of individuals with autism spectrum disorder across their lifespans. Analyzes the principles of behavior management and the evidence and research-based interventions that have been proven to be effective with individuals with autism and sensory needs. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDSE 621: *Applied Behavior Analysis: Empirical Bases.* 3 credits.
Focuses on measurement, data display, data interpretation, and experimental design in applied behavior analysis. Prepares candidates to design and use data collection systems, apply data-based decision making, and appropriately deploy single-subject experimental designs in applied situations. Enables candidates to become informed consumers of behavior analytic research. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: EDSE 619[*B-] or 619[*XS].
[*] May be taken concurrently.
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Enrollment is limited to Graduate or Undergraduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDSE 622: *Philosophical and Conceptual Issues in Behavior Analysis.* 3 credits.
Focuses on basic principles and philosophies of behavior analysis. Identifies historical contributions to modern behavior analysis and identifies seminal individuals who have made an outstanding contribution to behavior analysis. Describes tenets of radical behaviorism. Emphasizes vocabulary and basic research that contributes to a modern understanding of behavioral principles. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: EDSE 619[*B-] or 619[*XS].
[*] May be taken concurrently.
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDSE 623: *Applied Behavior Analysis: Assessments and Interventions.* 3 credits.
Expands on basic content of applied behavior analysis and teaches how to implement behavioral procedures and develop behavioral programs for clients with fundamental behavioral needs. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: EDSE 619[B-] or 619[XS].
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Enrollment is limited to Graduate or Undergraduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDSE 624: *Applied Behavior Analysis: Applications.* 3 credits.
Develops capability to deal with more complex behavioral situations, enabling ability to relate to more sophisticated professional issues and environments. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: EDSE 619[B-] or 619[XS].
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Enrollment is limited to Graduate or Undergraduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDSE 625: *Applied Behavior Analysis: Verbal Behavior.* 3 credits.
Expands students' abilities to deal with more complex behavioral situations and enables students to relate to more sophisticated professional issues and environments. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: EDSE 619[B-] or 619[XS].
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Enrollment is limited to Graduate or Undergraduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDSE 627: *Assessment.* 3 credits.
Offers knowledge and experiential learning activities related to assessment of students with mild disabilities. Includes statistical and

psychometric concepts in assessment. Addresses norm-referenced, criterion-referenced, curriculum-based, and informal assessment for instructional and placement decisions. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Graduate or Senior Plus.

Enrollment is limited to Graduate or Undergraduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDSE 628: *Elementary Reading, Curriculum, Strategies for Students Who Access the General Education Curriculum.* 3 credits.
Applies research on instructional approaches in elementary curriculum for individuals with disabilities accessing general education curriculum. Includes curriculum and instructional strategies in reading, language arts, mathematics, science, social studies; cognitive strategies in study skills; attention and memory; and peer-mediated instruction. Note: Field experience required. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Graduate or Senior Plus.

Enrollment is limited to Graduate or Undergraduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDSE 629: *Secondary Curriculum and Strategies for Students with Disabilities who Access the General Curriculum.* 3 credits.
Applies research on teacher effectiveness, accountability, and instructional approaches at the secondary level for individuals with mild disabilities. Includes instructional methods necessary for teaching reading, writing, math, and other content areas across the curriculum. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Graduate or Senior Plus.

Enrollment is limited to Graduate or Undergraduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDSE 634: *Characteristics of Individuals with Autism.* 3 credits.
Describes the varying characteristics of individuals with autism spectrum disorders across their lifespans including, (a) diagnosis, (b) early childhood, (c) school-age, (d) transition, (e) employment, and (f) aging. Examines definitions, eligibility criteria, incidence rates, and etiology of autism spectrum disorders. Analyzes perspectives from students, families, educational, community, and career personnel. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDSE 635: *Interventions for Individuals with Autism.* 3 credits.
Analyzes evidence and research-based interventions for individuals with autism in a variety of domains across their lifespans including academic, communication, social, and behavioral. Evaluates methods for prioritizing intervention needs for individuals with autism across their lifespans, developing appropriate interventions to address those needs, and measuring the impact of interventions in a variety of service delivery models. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: EDSE 634. Concurrent enrollment is also permitted.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDSE 636: *Supporting Communication and Literacy for Individuals with Autism.* 3 credits.
Surveys the characteristics of communication and literacy, as well as the design and implementation of communication systems for individuals with autism spectrum disorder across their lifespans. Explains methods for assessment, identification of priorities, and monitoring progress of communication and literacy instruction in order to improve behavior, academic skills, and social interactions in various environments. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDSE 637: *Autism Across the Lifespan: Collaboration with Critical Partners.* 3 credits.
Examines characteristics, milestones, critical issues, and areas of need for individuals with autism spectrum disorder across their lifespans. Prioritizes key features of effective collaboration and partnership. Utilizes a strengths-based problem solving perspective to frame collaboration

and partnership for individuals with autism spectrum disorder across their lifespans and simulates partnership practices with a variety of stakeholders across the lifespan of an individual with autism spectrum disorder. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDSE 641: *Instructional Strategies for Reading and Writing.* 3 credits.
Integrates knowledge of language assessments and the components of quality reading instruction to plan well-sequenced and explicit instruction for students with disabilities in the general education curriculum. Examines objectives that align with curriculum standards while still providing individualization. Implements and applies reading and writing instruction to support learning in all content areas. Field experience required. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: EDSE 503 or EDSE 341

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDSE 643: *Instructional Strategies for Math.* 3 credits.
Integrates foundational knowledge of numeracy acquisition, mathematical concepts, mathematical thinking, mathematics vocabulary, calculation, and problem-solving to plan well-sequenced and explicit math instruction for students with disabilities in the general education curriculum. Examines objectives that align with the general education curriculum Virginia Standards of Learning in mathematics at the elementary, middle, and secondary levels while still providing individualization. Field experience required. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDSE 661: *Curriculum and Methods: Severe Disabilities.* 3 credits.
Focuses on current best practices in curriculum, and methods for students with severe disabilities, including specific strategies for teaching students with severe disabilities, general strategies for working with heterogeneous groups of students in inclusive settings, and methods for adapting the general education curriculum to include students with severe disabilities. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Graduate or Senior Plus.

Enrollment is limited to Graduate or Undergraduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDSE 662: *Consultation and Collaboration.* 3 credits.
Provides professionals in special education, regular education, and related fields with knowledge and communication skills necessary for collaborative consultation and technical assistance to other educators and service providers. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: Teaching licensure or enrollment in a graduate degree program in education.

Registration Restrictions:
Enrollment limited to students with a class of Graduate or Senior Plus.

Enrollment is limited to Graduate or Undergraduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDSE 663: *Collaborative Teamwork to Support Students with Significant Disabilities.* 3 credits.
Focuses on models of teamwork, group decision making, team process, leadership and communication and how they influence services for individuals with significant disabilities and their families. Provides an understanding of collaborative structures and demonstrates knowledge of skills and strategies to maintain effective relationships with a variety of stakeholders in collaborative settings. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDSE 664: *Ethical and Professional Conduct for Behavior Analysis.* 3 credits.
Provides a basis in Virginia Behavior Analyst Licensure law, the Behavior Analyst Certification Board Guidelines for Responsible Conduct and Disciplinary Standards, and professional conduct consistent with the practice of applied behavior analysis. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: EDSE 619[B-] or 619[XS].
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDSE 669: *Individualized Supports and Specialized Care of Students with Severe Disabilities.* 3 credits.
Focuses on the unique physical, sensory, communication, and health and medical needs of students with severe disabilities. Examines how these needs impact the educational program, how special education and related services are delivered, and how to design academic, functional and behavioral instruction and adaptations to meet those needs. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Graduate or Senior Plus.

Enrollment is limited to Graduate or Undergraduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

700 Level Courses

EDSE 701: *Legal Issues and Special Populations.* 3 credits.
Studies the impact of legislation and litigation on the education of special populations emphasizing IDEA and Section 504. Covers emerging trends in special education based on interpretation of landmark court cases related to disability, legal updates on policies and procedures for exceptional learners, and discussion of the guiding principles of special education law when addressing the needs of special populations. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDSE 743: *Leadership in Special Education Administration.* 3 credits.
Examines leadership issues and applies them to the administration of special education programs. Explores current challenges in the delivery of services for exceptional children through case studies and projects. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDSE 744: *Current Issues in Special Education.* 3 credits.
Helps students develop an understanding of the role of convergent research evidence in addressing current issues in special education practice and policy. Familiarizes students with current issues in special education and the group experimental, single subject, and qualitative research designs used to address these current issues. Students evaluate research studies in terms of their methodological strengths and weaknesses and their part in providing convergent bodies of evidence that can be used for defining practice and policy. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDSE 783: *Internship: Special Education in General Curriculum.* 3-6 credits.
Applies, in supervised internships, university course work in General Curriculum to instruction of children and their families in school settings. Notes: Demonstration that RVE, VCLA, Praxis Entry, and other program-specific requirements have been met;application for internship on file by program deadline. Offered by School of Education. May be repeated within the term for a maximum 6 credits.

Registration Restrictions:
Enrollment is limited to students with a major, minor, or concentration in General Curriculum (K-12) or Students W/Dis Access Gen Curr.

Enrollment is limited to Graduate level students.

Enrollment limited to students in the Education Human Development college.

Schedule Type: Internship

Grading:
This course is graded on the Satisfactory/No Credit scale.

EDSE 784: *Internship: Adapted Curriculum.* 3-6 credits.
Applies, in supervised internships, university course work in Adapted Curriculum to instruction of children and their families in school settings. Offered by School of Education. May be repeated within the term for a maximum 6 credits.

Recommended Prerequisite: VCLA, Praxis Core, and other program specific requirements have been met; application for internship on file by program deadline.

Registration Restrictions:
Enrollment is limited to students with a major, minor, or concentration in Adapted Curriculum (K-12) or Students W/Dis Access Adp Curr.

Enrollment is limited to Graduate level students.

Enrollment limited to students in a Graduate Certificate degree.

Schedule Type: Internship

Grading:
This course is graded on the Satisfactory/No Credit scale.

EDSE 785: *Internship: Visual Impairment.* 2-6 credits.
Applies, in supervised internships, university coursework in Visual Impairment to instruction of children and their families in school settings. Offered by School of Education. May be repeated within the term for a maximum 6 credits.

Recommended Prerequisite: EDSE 311, 411 or 511; EDSE 412 or 512; EDSE 413 or 513. Demonstration that VCLA, Praxis Core, and other program specific requirements have been met; application for internship on file by program deadline.

Registration Restrictions:
Enrollment is limited to students with a major in Visual Impairments Lic PK-12.

Enrollment is limited to Graduate or Non-Degree level students.

Enrollment limited to students in a Graduate Certificate degree.

Schedule Type: Internship

Grading:
This course is graded on the Satisfactory/No Credit scale.

EDSE 794: *Special Topics.* 1-6 credits.
Advanced study of selected topics in education for students preparing for doctoral studies or who have been admitted to the PhD program in education. Offered by School of Education. May be repeated within the degree.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDSE 795: *Standard Applied Behavior Analysis Practicum.* 3 credits.
Meets standard practicum supervision requirements by the BACB to provide hands-on experience designing, implementing, and evaluating behavior analytic procedures under the supervision of a Board Certified Behavior Analyst. Notes: This Applied Behavior Analysis Practicum follows the experience guidelines of the Behavior Analysis Certification Board (www.BACB.com) Offered by School of Education. May be repeated within the degree for a maximum 18 credits.

Recommended Prerequisite: EDSE 619 or PSYC 619 or permission by the instructor

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Satisfactory/No Credit scale.

EDSE 799: *Intensive Applied Behavior Analysis Practicum.* 6 credits.
Meets intensive practicum supervision requirements by the BACB to provide hands-on experience designing, implementing, and evaluating behavior analytic procedures under the supervision of a Board Certified Behavior Analyst. Notes: This Applied Behavior Analysis Practicum follows the experience guidelines of the Behavior Analysis Certification Board (www.BACB.com). Offered by School of Education. May be repeated within the degree for a maximum 18 credits.

Recommended Prerequisite: EDSE 619 or PSYC 619 or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Satisfactory/No Credit scale.

800 Level Courses

EDSE 841: *Evaluating Intervention Research.* 3 credits.
Provides opportunities for in-depth study, analysis, and discussion of original intervention research in special education with students with disabilities or other at-risk populations. Emphasizes analyzing research methodology, coding original intervention research, analyzing results, synthesizing findings, formulating future research questions relevant to special populations, and gaining an understanding of the submission process for conferences and publications. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to students with a major in Education.

Enrollment is limited to Graduate level students.

Enrollment limited to students in a Doctor of Philosophy degree.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

EDSE 842: *Application of Research Standards for Individuals with Disabilities.* 3 credits.
Provides knowledge and skills in the application of research standards across different methods for conducting survey research, single-subject, experimental and correlational research, mixed methods, and qualitative research. Emphasizes application to disability-related research across different contexts. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to students with a major in Education.

Enrollment limited to students in a Doctor of Philosophy degree.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

EDSE 843: *Leading Change in Special Education and Disability Policy.* 3 credits.
Examines leadership issues among varied stakeholders within the special education field including leaders in PK-12, higher education, government agencies, and special interest groups. Explores current challenges and opportunities in the effort to support and promote appropriate services for individuals with disabilities through case studies and projects. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to students with a major in Education.

Enrollment limited to students in a Doctor of Philosophy degree.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

EDSE 844: *Current Issues in Special Education.* 3 credits.
Develops understanding of the role of convergent research evidence in addressing current issues in special education practice and policy. Describes current issues in special education and the group experimental, single subject, and qualitative research designs used to address these current issues. Students evaluate research studies in terms of methodological strengths and weaknesses, and their part in providing convergent bodies of evidence that can be used for defining practice and policy. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to students with a major in Education.

Enrollment is limited to Graduate level students.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

EDSE 845: *Personnel Preparation Programs in Special Education.* 3 credits.
Provides an in-depth study, analysis, and discussion of personnel preparation programs in special education including: scope and sequence of teacher preparation programs as they align with state and national teacher licensure standards, bodies of accreditation, syllabi development, delivery models, and frameworks for curriculum design; teacher evaluation; and how policies, research, and issues of accountability can transform teacher preparation programs. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to students with a major in Education.

Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDSE 846: *Assessment, Evaluation, and Instrumentation in Special Education Research.* 3 credits.
Provides in-depth study, analysis and discussion of the past, present and future directions of assessment, evaluation, and instrumentation research in special education. Emphasizes reliability and validity of the research instruments, evaluating research methodology, analyzing results, synthesizing findings with respect to present assessment and evaluation policies; formulating future research questions relevant to assessment and evaluation of individuals with disabilities. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to students with a major in Education.

Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDSE 847: *Policy-driven Initiatives in Special Education and Disability Research.* 3 credits.
Addresses contemporary initiatives in special education and disability research: those introductory and leading actions intended to implement positive change, that can be promoted by federal agencies, professional or advocacy organizations. Focuses on understanding of policy-driven special education initiatives in special education and disability research through evaluation and analysis. Discusses and studies background, relevant legislative history, existing empirical evidence, and designing future research addressing contemporary initiatives. Offered by School of Education. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to students with a major in Education.

Enrollment limited to students in a Doctor of Philosophy degree.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

EDSE 885: *Writing Grants.* 3 credits.
Focuses on identification of funding sources, description of grant components, and development of grant budgets. Includes independent writing of an entire small grant, a significant portion of a large grant, and participation in grant peer-review process. Offered by School of Education. May not be repeated for credit.

Recommended Prerequisite: EDRS 811 or EDRS 812.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

Sport Management (SPMT)

100 Level Courses

SPMT 100: *Current Events in Sport Business.* 1 credit.
Engages students in a discussion about recent developments in the sport industry, using the Sport Business Journal to stimulate the discussion as well as provide the student with current information about this rapidly changing industry. There will be two field trips conducted as part of this class. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SPMT 110: *Basketball Officiating.* 1 credit.
Teaches the fundamentals of officiating basketball including a thorough discussion of each of the rules as well as instruction of two person mechanics. Provides opportunity to become a certified Virginia High School League (VHSL) official. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SPMT 111: *Football Officiating.* 1 credit.
Teaches the fundamentals of officiating football including a thorough discussion of each of the rules as well as instruction of crew mechanics. Provides opportunity of becoming a certified Virginia High School League (VHSL) official. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SPMT 112: *Soccer Officiating.* 1 credit.
Teaches the fundamentals of officiating soccer including a thorough discussion of each of the rules as well as instruction of crew mechanics. Provides opportunity of becoming a certified Virginia High School League (VHSL) official. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

200 Level Courses

SPMT 201: *Introduction to Sport Management.* 3 credits.
Introduces sport management profession. Primary focus is on sport industry, including professional sport entertainment, amateur sport entertainment, for-profit sport participation, nonprofit sport participation, sporting goods, and sport services. Notes: Open to non majors. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SPMT 202: *Mental Skills for Sport Performance.* 2 credits.
Introduces mental skills training for sport performance used within the field of sport and exercise psychology. Demonstrates mental practice techniques to be practiced and assessed. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SPMT 210: *Foundations of Sport Coaching.* 3 credits.
Introduction to the scientific bases for coaching sports and the process of coaching athletes. It includes the development of an individual coaching philosophy and the application of scientific training in the psychological, physiological, pedagogical and managerial bases of sport coaching. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SPMT 241: *Practicum.* 3 credits.
Provides a minimum of 120 hours of introductory supervised professional fieldwork experience in an approved sport management setting for 10 to 14 weeks (10 weeks maximum for the Summer term) under the supervision of a practicum Faculty Supervisor and Site Supervisor. Includes meetings and assignments before, during, and after the practicum. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Recommended Prerequisite: SPMT 201 and SPMT concentration students only

Registration Restrictions:
Required Prerequisites: SPMT 201[D], 201[XS] or 201[XP].
[D] Requires minimum grade of D.
[XS] Requires minimum grade of XS.
[XP] Requires minimum grade of XP.

Enrollment is limited to students with a concentration in Sport Management.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Special scale.

300 Level Courses

SPMT 302: *Philosophical and Ethical Dimensions of Sport.* 3 credits.
Investigates moral issues in sport and judgments about right and wrong behavior among athletes, coaches, spectators, and others. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SPMT 304: *Sport, Culture, and Society.* 3 credits.
Analyzes sport from educational, political, economic, and cultural perspectives. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SPMT 307: *Sport Diplomacy.* 3 credits.
Introduces the use of sport as a public diplomacy tool, including the interrelationships among conflict, collaboration, sport, organizations, and diplomacy. Offered by School of Sport/Rec/Tour Mgmt. Limited to two attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SPMT 318: *Diversity and Inclusion Issues in Sport.* 3 credits.
Focuses on sport participant and employee diversity and inclusive practices; and how differences based on religion disability, socioeconomic class, sex, gender, sexual orientation and racial hierarchies impacts historical and current sport experiences and outcomes. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SPMT 320: *Psychology of Sport.* 3 credits.
Psychological theories of personality, motivation, and anxiety explored in sport environment. Examines social-psychological research on audience effects, team cohesion, leadership, and fan behavior. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SPMT 321: *America Through Baseball.* 3 credits.
This course is designed for the student to gain an understanding of the past and present role of baseball in American culture. The course focuses on the development of professional baseball over the past 160 years and the ways in which the history of America as a nation and culture can be "read" through baseball. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SPMT 322: *Football and American Culture.* 3 credits.
Designed for the student to gain an understanding of the past and present role of football in American culture. Focuses on the development of college, professional and high school football over the past 120 years and contemporary issues in football culture are analyzed such as debates over racial symbols and mascots, the question of professionalizing division one college football, and tailgating and televisual football cultures. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SPMT 323: *America and the Modern Olympics.* 3 credits.
This course is designed to provide students an understanding of the role played by the United States in the modern Olympic movement. The primary focus is on the United States relationship with the modern Olympics from the earliest days of the games up through the Cold War period and beyond. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SPMT 341: *Field Experience in Sport Coaching.* 3 credits.
Provides application of the scientific bases for coaching sports and the process of coaching athletes. Includes paid or voluntary experience in a sport-specific setting. A minimum 120 clock hours is required within the time frame of the course. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Recommended Prerequisite: SPMT 210, or permission of instructor. Open to minors only.

Registration Restrictions:
Required Prerequisites: SPMT 210[C] or 210[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Coaching.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Special scale.

400 Level Courses

SPMT 405: *Sport Venues and Events.* 3 credits.
Principles and techniques of event planning and operations in sport facilities and venues. Emphasizes principles and concepts of organization and administration including communication, personnel management, management of physical resources, and risk management. Examines a variety of sport events and venues such as indoor stadiums, athletic field complexes, and managing recreation and intramural activities. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Recommended Prerequisite: Completion of 60 hours.

Registration Restrictions:
Required Prerequisites: SPMT 201[D], 201[XP] or 201[XS].
[D] Requires minimum grade of D.
[XP] Requires minimum grade of XP.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SPMT 412: *Sport Marketing and Sales.* 3 credits.
Investigates principles and processes in sport marketing and finance. Focuses on research and development, sport promotion, sport sponsorship, advertising, merchandising, and distribution of sporting goods. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Recommended Prerequisite: 60 hours.

Registration Restrictions:
Required Prerequisites: SPMT 201[D], 201[XP] or 201[XS].
[D] Requires minimum grade of D.
[XP] Requires minimum grade of XP.

XS Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SPMT 420: *Economics and Finance in the Sport Industry.* 3 credits.
Examines the principles of economics, budgeting, and finance as it applies to the sport industry. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Recommended Prerequisite: Completion of 60 hours.

Registration Restrictions:
Required Prerequisites: SPMT 201D, 201XS or 201XP.
D Requires minimum grade of D.
XS Requires minimum grade of XS.
XP Requires minimum grade of XP.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SPMT 425: *Sport Analytics.* 3 credits.
Discusses theories and concepts in sport analytics. Topics cover player performance, player management, sports data strategies, team management, and game day operations and strategies. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (SPMT 201C or 201XS) and (STAT 250C, 250XS, BUS 210C or 210XS).
C Requires minimum grade of C.
XS Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SPMT 430: *Sport Communication.* 3 credits.
Provides a senior-level exploration of the role of sport communication in contemporary cultures. Readings and discussions address questions about how communication about/in sports highlights the importance of sports, the cultural identities of those who engage in sport communication, and the pervasiveness of sport communication practices in industry. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Recommended Prerequisite: General COMM course.

Registration Restrictions:
Required Prerequisites: SPMT 201D, 201XP or 201XS.
D Requires minimum grade of D.
XP Requires minimum grade of XP.
XS Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SPMT 440: *Global Perspectives in Sport.* 3 credits.
An interdisciplinary examination of sport as a global phenomenon. Historical, cultural, economic, and governance perspectives are considered. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Recommended Prerequisite: 60 hours.

Registration Restrictions:
Required Prerequisites: SPMT 201D, 201XS or 201XP.
D Requires minimum grade of D.
XS Requires minimum grade of XS.
XP Requires minimum grade of XP.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SPMT 455: *Governance and Policy in Sport Organizations.* 3 credits.
Examines sport organizations focused on both professional and amateur governance structures and processes. The study of policy in educational, nonprofit, and professional sport venues is also addressed. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Recommended Prerequisite: Completion of 60 hours.

Registration Restrictions:
Required Prerequisites: SPMT 201D, 201XS or 201XP.
D Requires minimum grade of D.
XS Requires minimum grade of XS.
XP Requires minimum grade of XP.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SPMT 462: *Sport Business Law.* 3 credits.
Students in this course will receive instruction in the major areas of the law that impacts the sport industry. Students will also see how knowledge of sport law can make them better sport managers. There will be an introduction to the legal system in the United States and then we will see how the law has shaped the management of sport organizations and the playing and staging of the games. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Recommended Prerequisite: 60 credits.

Registration Restrictions:
Required Prerequisites: SPMT 201D, 201XS or 201XP.
D Requires minimum grade of D.
XS Requires minimum grade of XS.
XP Requires minimum grade of XP.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SPMT 470: *Strategic Management and Leadership in Sport Organizations.* 3 credits.
Provides a foundation in organizational studies. It addresses the theoretical underpinnings and applications of leadership, It examines strategic planning processes and management within sport

organizations. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Recommended Prerequisite: 60 hours.

Registration Restrictions:
Required Prerequisites: SPMT 201[D], 201[XP] or 201[XS].
[D] Requires minimum grade of D.
[XP] Requires minimum grade of XP.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SPMT 475: *Sport Management Professional Development Seminar.* 3 credits.
This is a seminar format in which students synthesize and apply theories, concepts, and practices in the leadership and management of sport organizations. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Recommended Prerequisite: 75 hours.

Registration Restrictions:
Required Prerequisites: SPMT 241[D], 241[XS] or 241[XP].
[D] Requires minimum grade of D.
[XS] Requires minimum grade of XS.
[XP] Requires minimum grade of XP.

Enrollment is limited to students with a concentration in Sport Management.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

SPMT 480: *Special Topics in Sport Management.* 3 credits.
Selected topics reflecting interest in specialized areas of sport management announced in advance. Offered by School of Sport/Rec/Tour Mgmt. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SPMT 490: *Internship.* 12 credits.
Paid or voluntary work experience in sport industry settings. Requires minimum period of 10 to 12 weeks of full-time employment. Applies course work, theories, and research to work settings. Work sites chosen by students after approval of faculty supervisors. Includes meetings and assignments before and during the internship. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Mason Core: Capstone

Recommended Prerequisite: SPMT 475 and completion of 90 credits.

Registration Restrictions:
Required Prerequisites: SPMT 241[C] or 241[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a concentration in Sport Management.

Schedule Type: Internship

Grading:
This course is graded on the Satisfactory/No Credit scale.

SPMT 499: *Independent Study.* 1-3 credits.
Faculty-directed independent study of approved topics in sport management. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

500 Level Courses

SPMT 551: *Sport in the Global Marketplace.* 3 credits.
Explores sport business internationally including the production and consumption of professional and Olympic-linked sports and the impact of globalization on sport. Offered by School of Sport/Rec/Tour Mgmt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SPMT 555: *The Australian Model of Sport.* 3 credits.
Examines the Australian model of sport which has been adopted in many countries. Analyzes government sport policy and the organization and administration of Australian professional sports. Offered by School of Sport/Rec/Tour Mgmt. May not be repeated for credit.

Recommended Prerequisite: SPMT 551.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SPMT 556: *The Global Soccer Industry.* 3 credits.
Explores the international soccer industry focusing on major professional leagues, international federations, international movement of players,

the production of soccer equipment, legal and social issues. Offered by School of Sport/Rec/Tour Mgmt. May not be repeated for credit.

Recommended Prerequisite: SPMT 551.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

600 Level Courses

SPMT 611: *Sport Marketing and Sales.* 3 credits.
Investigates principles and processes in sport marketing. Focuses on research and development, sport promotion, sport sponsorship, advertising, merchandising, and distribution of sporting goods. Offered by School of Sport/Rec/Tour Mgmt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SPMT 612: *Economics and Financial Management in the Sport Industry.* 3 credits.
Examines principles of economics, budgeting, and finance as they apply to the sport industry. Offered by School of Sport/Rec/Tour Mgmt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SPMT 613: *Strategic Leadership in Sport Organizations.* 3 credits.
Examines the theoretical underpinnings and effective strategic processes of leadership in sport organizations. Leader behaviors, characteristics, situational influences, and the cognitive dimensions of leadership will be explored within the organizational context. Offered by School of Sport/Rec/Tour Mgmt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SPMT 614: *Legal Issues in Sport.* 3 credits.
Examines legal issues as they apply to the sports industry. Course content includes, but is not limited to: tort law, risk management procedures, product liability, constitutional/contract/administrative/statutory law, crowd control/security, personal/professional values, and situational analysis. Offered by School of Sport/Rec/Tour Mgmt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SPMT 616: *Sport Operations, Venues, and Event Management.* 3 credits.
Examines administrative functions and operations, strategic planning, governance structures, policy development, and effective practices in the strategic management of sport programs, including managerial principles for venues and events. Offered by School of Sport/Rec/Tour Mgmt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SPMT 618: *Psychology of Coaching.* 3 credits.
Presents a psychological foundation for sport coaching. Basic tenets of the psychology of individual and group behavior will include motivation, stress, communication, group cohesion/dynamics, leadership, reinforcement, and feedback as they relate to the context of sport coaching. Offered by School of Sport/Rec/Tour Mgmt. May not be repeated for credit.

Registration Restrictions:

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SPMT 620: *Ethical Issues in Global Sport.* 3 credits.
Investigates moral issues in sport, and judgments about right and wrong behavior among organizations, athletes, coaches, spectators, and others at the global level. Offered by School of Sport/Rec/Tour Mgmt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SPMT 631: *Theoretical Models of Sport Coaching.* 3 credits.
Examines the scientific bases for coaching athletes. Emphasizes philosophical underpinnings and theoretical foundations in the psychological, physiological, pedagogical, and managerial bases of sport coaching. Offered by School of Sport/Rec/Tour Mgmt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SPMT 651: *Sport and International Development.* 3 credits.
Explores the roles of sport in international development with focus on Africa, Asia, and Latin America. Non-governmental organizations (NGOs), international federations, professional leagues and grassroots initiatives will be examined. Offered by School of Sport/Rec/Tour Mgmt. May not be repeated for credit.

Recommended Prerequisite: SPMT 551.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SPMT 652: *Governance and Policy in International Sport.* 3 credits.
Explores sport governance and policy in the international context with focus on international federations, professional leagues and comparative analyses of governmental sporting policies. Offered by School of Sport/Rec/Tour Mgmt. May not be repeated for credit.

Recommended Prerequisite: SPMT 551.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

Sports and Recreation Studies (SRST)

200 Level Courses

SRST 200: *History of Sport and Leisure in America.* 3 credits.
Traces the history of sport and leisure in America. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

300 Level Courses

SRST 360: *Sport Based Youth Development.* 3 credits.
An interdisciplinary examination of current trends and issues in youth sport, with a focus on non-school based community programs. Emphasis is placed on the structural characteristics of sport and physical activity programs as they pertain to proper development of children and adolescents. Offered by School of Sport/Rec/Tour Mgmt. Limited to two attempts. Equivalent to PHED 360.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

SRST 450: *Research Methods.* 3 credits.
Covers the development of empirical research designs for both practical and theoretical problems in health, fitness, and recreation resources management. Includes literature review of hypothesized relationships,

and formulation of research proposals. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Specialized Designation: Writing Intensive in Major

Recommended Prerequisite: 60 credits.

Registration Restrictions:
Required Prerequisites: STAT 250[C], 250[XS], DESC 210[C], OM 210[C] or IT 250[C].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

500 Level Courses

SRST 595: *Thesis Preparation.* 2 credits.
Provides a basic overview and working knowledge of the procedures to be used towards completion of the thesis. With competencies gained in previous sport and recreation studies courses, the student will begin to form the criteria, considered evidence, and judgment towards a research topic for SRST 799. Offered by School of Sport/Rec/Tour Mgmt. May not be repeated for credit.

Schedule Type: Independent Study

Grading:
This course is graded on the Satisfactory/No Credit scale.

SRST 598: *Special Topics.* 1-6 credits.
Focuses on projects related to sport and/or recreation studies. Offered by School of Sport/Rec/Tour Mgmt. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SRST 599: *Independent Study in Sport and Recreation Studies.* 1-3 credits.
Studies problem area in sport and recreation studies research, theory, or practice under direction of faculty member. Notes: Students engage in one-on-one or seminar independent study with an SRST faculty member. The faculty member may be the student's thesis or project supervisor. While SRST 599 is repeatable, 3 credit hours must be designated for Preparation of Thesis or Project Proposal. Offered by School of Sport/Rec/Tour Mgmt. May be repeated within the degree for a maximum 3 credits.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Special scale.

600 Level Courses

SRST 606: *Foundations of Sport and Recreation Studies.* 3 credits.
Examines the historical development of the Sport and Recreation Studies fields. Explores the interconnection between these phenomena in the context of the social, cultural and economic forces shaping American and global societies. Offered by School of Sport/Rec/Tour Mgmt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to English Language, Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SRST 623: *Research Design and Statistical Reasoning.* 3 credits.
Introduces basic principles of scientific and scholarly inquiry in Sport and Recreation Studies. Explores the logic and practice of methods and techniques employed in research related to sport and recreation. Offered by School of Sport/Rec/Tour Mgmt. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

700 Level Courses

SRST 796: *Seminar in Sport and Recreation Studies.* 1 credit.
Scholarly forum for the presentation and discussion of contemporary topics in sport and recreation studies. Graduate students, faculty, and visiting scholars/practitioners share ongoing research and practical applications. Offered by School of Sport/Rec/Tour Mgmt. May not be repeated for credit.

Recommended Prerequisite: All other coursework with the exception of concurrent capstone.

Schedule Type: Seminar

Grading:
This course is graded on the Satisfactory/No Credit scale.

SRST 798: *Master's Project/Internship.* 1-6 credits.
Offers capstone experience to enable students to demonstrate their integrative knowledge and skills accrued through study in their concentration area within Sport and Recreation Studies. Offered by

School of Sport/Rec/Tour Mgmt. May be repeated within the degree for a maximum 6 credits.

Recommended Corequisite: SRST 796.

Registration Restrictions:
Required Prerequisites: (SRST 623[B-] or 623[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Thesis

Grading:
This course is graded on the Satisfactory/No Credit scale.

SRST 799: *Master's Thesis.* 1-6 credits.
Explores sport and recreation problem using appropriate research methodology and under supervision of graduate faculty member. Offered by School of Sport/Rec/Tour Mgmt. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Required Prerequisites: (SRST 623[B-] or 623[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Thesis

Grading:
This course is graded on the Satisfactory/No Credit scale.

Statistics (STAT)

200 Level Courses

STAT 250: *Introductory Statistics I.* 3 credits.
Elementary introduction to statistics with applications to all fields of study. Topics include data analysis for one and two variables, probability, estimation and hypothesis testing for proportions and means, correlation, and regression. Statistical software used for assignments. Required course for the Digital Technology Credential (https://statistics.preprod.gmu.edu/digital-technology-credential). Offered by Statistics. Limited to three attempts.

Mason Core: Quantitative Reasoning

Recommended Prerequisite: High school algebra.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

STAT 260: *Introduction to Statistical Practice I.* 3 credits.
Data-oriented introduction to fundamental concepts and methods of applied statistics. Topics include: exploratory data analysis; sampling and principles of experimental design; sampling distributions; confidence intervals and tests for one and two sample means and proportions; analysis of contingency tables; simple linear regression; and correlation. Extensive use of statistical software. Intended primarily for students in the Statistics Bachelor's program. Offered by Statistics. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: MATH 113[*C], 113[*XS], 115[*C], 115[*XS], 124[*C] or 124[*XS].
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

300 Level Courses

STAT 334: *Introduction to Probability Models and Simulation.* 3 credits.
Introduction to basic probability and principles of simulation. Emphasis is placed on formulation of models and simulation applications to statistical methodology. Topics include: basic probability rules. counting methods, discrete and continuous probability spaces, independence, conditional probability, expectation, variance, and limit theorems. Distributions covered include the binomial, hypergeometric, Poisson, normal, Gamma, Beta, multinomial, and bivariate normal. Intended primarily for students in the Statistics Bachelor's program. Offered by Statistics. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (STAT 260[C] or 260[XS]) and (MATH 114[C], 114[XS], 116[C] or 116[XS]) and (STAT 362[*C] or 362[*XS]).
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

STAT 344: *Probability and Statistics for Engineers and Scientists I.* 3 credits.
Introduction to probability and statistics with applications to computer science, engineering, operations research, and information technology. Basic concepts of probability, random variables and expectation, Bayes rule, bivariate distributions, sums of independent random variables, correlation and least squares estimation, central limit theorem, sampling distributions, confidence interval construction, and hypothesis testing for a single sample and two samples. Offered by Statistics. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (MATH 114[C], 114[XS] or 116[C]) or MATH 116[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:

This course is graded on the Undergraduate Regular scale.

STAT 346: *Probability for Engineers.* 3 credits.
Introduction to probability with applications to electrical and computer engineering, operations research, information technology, and economics. Basic concepts of probability, conditional probability, random variables and moments, specific probability distributions, multivariate distributions, moment-generating functions, limit theorems, and sampling distributions. Offered by Statistics. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (MATH 213[C], 213[XS], 215[C] or 215[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

STAT 350: *Introductory Statistics II.* 3 credits.
Further examination of statistics and data analysis with an emphasis on applications. Inference for comparing multiple samples, experimental design, analysis of variance and post-hoc tests. Simple linear, multiple and logistic regression. Analysis of contingency tables and categorical data. A statistical computer package is used for data analysis. Offered by Statistics. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: STAT 250[C], 250[XS], 260[C] or 260[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

STAT 354: *Probability and Statistics for Engineers and Scientists II.* 3 credits.
Multivariate probability distributions, variable transformations, properties of estimators, inference on means, variances, and proportions for two samples, contingency tables, goodness-of-fit test, nonparametric tests, simple linear regression, multiple linear regression, logistic regression, ANOVA, basic experimental design, basic resampling methods such as the bootstrap. Offered by Statistics. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (STAT 334[C] or 334[XS]) or STAT 344[C], L344 or 344[XS] or ((STAT 346[C] or 346[XS]) and (STAT 362[C] or 362[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

STAT 356: *Statistical Theory.* 3 credits.
Introduction to the mathematical theory of statistical inference, emphasizing inference for standard parametric families of distributions. Topics include: properties of estimators; Bayes and maximum likelihood estimation; sufficient statistics; properties of test of hypotheses; most powerful and likelihood-ratio tests; and distribution theory for common statistics based on normal distributions. Offered by Statistics. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: STAT 346[C], 346[XS], MATH 351[C] or 351[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

STAT 360: *Introduction to Statistical Practice II.* 3 credits.
Continued study of the process, concepts, and methods of statistical investigations with the communication of statistical results being emphasized. Topics in the course will include: chi-square procedures, an introduction to the design and analysis of experiments, ANOVA, simple linear and multiple regression, nonparametric methods and basic resampling methods such as bootstrap. Statistical software will be used extensively throughout the course. Offered by Statistics. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (STAT 250[C], 250[XS], 260[C], 260[XS], BENG 241[C] or 241[XS]) and (MATH 114[*C], 114[XS], 116[*C] or 116[XS]).
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

STAT 362: *Introduction to Computer Statistical Packages.* 3 credits.
Use of computer packages in statistical analysis of data. Topics include data entry, checking, and manipulation, and use of computer statistical packages for graphical procedures, basic descriptive and inferential procedures, and regression. Offered by Statistics. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: STAT 250[C], 250[XS], 260[C], 260[XS], BUS 310[C], 310[XS], STAT 344[C], 344[XS] or L344.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

STAT 455: *Experimental Design.* 3 credits.
Introduces problems and techniques inherent in design of experiments, which refers to planning an experiment so that collected data can be analyzed by statistical methods. Covers the two aspects to any experimental problem: the design itself and the analysis of the resulting data. Examples from numerous disciplines in the sciences and the humanities are discussed. Data analysis is emphasized. Offered by Statistics. Limited to two attempts.

Recommended Corequisite: STAT 362

Registration Restrictions:
Required Prerequisites: (STAT 350[C] or 350[XS]) or (STAT 354[C] or 354[XS]) or (STAT 360[C] or 360[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

STAT 456: *Applied Regression Analysis.* 3 credits.
Introduces statistical modeling with a focus on regression. Topics include: Correlation, simple and multiple regression models, model fitting, variable selection, diagnostic tools, model validation, inference for regression parameters, and matrix forms for multiple regression. Additional topics covered include logistic regression and time series analysis with a focus on smoothing techniques and decomposition. A statistical software package is used extensively throughout the course. Offered by Statistics. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (STAT 350[C] or 350[XS]) or (STAT 354[C] or 354[XS]) or (STAT 360[C] or 360[XS]) or (BUS 310[C] or 310[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

STAT 460: *Introduction to Biostatistics.* 3 credits.
Focuses on biostatistical aspects of design and analysis of biomedical studies, including epidemiologic observational studies and randomized clinical trials. Topics include randomization principle, confounding, ethics in human experimentation, methods of randomization, stratification, primary outcome analyses, covariate-adjusted analyses, epidemiologic measures, and sample size and power computation. Offered by Statistics. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (STAT 350[C], 350[XS], 354[C], 354[XS], 360[C] or 360[XS]) and (STAT 362[*C] or 362[XS]).
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

STAT 462: *Applied Multivariate Statistics.* 3 credits.
Introduces a variety of multivariate statistical methods as aids to analyzing and interpreting large data sets. These methods will have general applications across a wide range of disciplines. Topics include: principal components analysis, cluster analysis, discriminant analysis, multi-dimensional scaling, correspondence analysis, and canonical correlation analysis. Extensive use of statistical software. Offered by Statistics. Limited to two attempts.

Recommended Corequisite: STAT 362

Registration Restrictions:
Required Prerequisites: (STAT 350[C] or 350[XS]) or (STAT 354[C] or 354[XS]) or (STAT 360[C] or 360[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

STAT 463: *Introduction to Exploratory Data Analysis.* 3 credits.
Features statistical graphics, maps and simple models used to bring out patterns in data. Introduces statistical software and addresses data access and import. Presents exploratory strategies motivating data transformations. Stresses the cognitive foundations of good graphics. Graphics include dot plots, box plots, Q-Q plots, parallel coordinate plots, scatterplot matrices and linked views. Exploration includes use of dynamic graphics. Offered by Statistics. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (STAT 350[C] or 350[XS]) or (STAT 354[C] or 354[XS]) or (STAT 360[C] or 360[XS]) or (BUS 310[C] or 310[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

STAT 465: *Nonparametric Statistics and Categorical Data Analysis.* 3 credits.
Introduction to nonparametric methods and categorical data analysis. Topics include: tests for one-sample, two-related samples, and two independent samples; concepts of nonparametric ANOVA; tests for proportions; chi-squared tests, log-linear models, and contingency tables; goodness-of-fit tests; correlation and association analysis; nonparametric regression including logistic and Poisson regression; and bootstrapping, jackknifing, and cross-validation. Notes: Students may not receive credit for both STAT 465 and STAT 525. Offered by Statistics. Limited to two attempts.

Recommended Corequisite: STAT 362

Registration Restrictions:
Required Prerequisites: (STAT 350[C] or 350[XS]) or (STAT 354[C] or 354[XS]) or (STAT 360[C] or 360[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

STAT 472: *Introduction to Statistical Learning.* 3 credits.
Tools for the analysis of massive data sets. Topics include: regression, classification trees, clustering, and support vector machines. Extensive use of statistical software. Applications to business, finance, biology, and other sciences and engineering. Offered by Statistics. Limited to two attempts.

Recommended Corequisite: STAT 362

Registration Restrictions:
Required Prerequisites: STAT 456[C] or 456[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

STAT 474: *Introduction to Survey Sampling.* 3 credits.
Introduction to design and analysis of sample surveys. Sample designs include simple random sampling; systematic sampling; and stratified, cluster, and multistage sampling. Analytical methods include sample size determination, ratio and regression estimation, imputation for missing data, and nonsampling error adjustment. Practical problems encountered in conducting a survey are discussed, such as questionnaire design. Methods applied to case studies of actual surveys. Class project may be required. Notes: Recommended for students of decision, information, social sciences, and mathematics. Offered by Statistics. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (STAT 350[C], 350[XS], 354[C], 354[XS], 360[C] or 360[XS]) and (STAT 362[*C] or 362[XS]).
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

STAT 489: *Pre-Capstone Professional Development.* 3 credits.
Develops skills in the areas of technical writing and oral communication. Students will develop a historical and ethical appreciation of the field of statistics as well as connect methods from their undergraduate coursework to solve problems. Students will work in small groups to develop a project proposal for STAT 490. Offered by Statistics. Limited to two attempts.

Specialized Designation: Writing Intensive in Major

Recommended Prerequisite: Recommended minimum of 75 undergraduate credits.

Registration Restrictions:
Required Prerequisites: (STAT 354[C], 354[XS], 360[C] or 360[XS]) and (STAT 362[C] or 362[XS]) and (ENGH 302[C] or 302[XS]) and (COMM 100[C], 100[XS], 101[C] or 101[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Junior, Senior Plus or Senior.

Enrollment is limited to students with a major in Statistics.

Enrollment limited to students in a Bachelor of Science degree.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

STAT 490: *Capstone in Statistics.* 3 credits.
Students will synthesize methods and ideas acquired in their undergraduate courses by working in small groups on a project and presenting their findings in a written report and an oral presentation. Offered by Statistics. Limited to two attempts.

Mason Core: Capstone

Registration Restrictions:
Required Prerequisites: STAT 489[C] or 489[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major in Statistics.

Enrollment limited to students in a Bachelor of Science degree.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

STAT 494: *Internship In Statistics.* 0-3 credits.
A supervised statistics-related experience working for a government agency, in the private sector or on approved summer research program. Based on input from the client, the student and faculty coordinator agree on the overall scope of the project including learning objectives, work plan, and expected outputs. Students will periodically inform the faculty coordinator of their status and, on completion of the internship, will document the experience with a comprehensive report or a departmental oral presentation. Offered by Statistics. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Completion of at least 60 credits.

Registration Restrictions:
Enrollment is limited to students with a major in Statistics.

Schedule Type: Internship

Grading:
This course is graded on the Satisfactory/No Credit scale.

STAT 498: *Independent Study in Statistics.* 1-3 credits.
Directed self-study of special topics of current interest in statistics. Notes: May be repeated if topics are substantially different. Offered by Statistics. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: 60 hours. Must be arranged with a faculty member of the Statistics Department and approved by the department chair before registering.

Registration Restrictions:
Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

STAT 499: *Special Topics in Statistics.* 0-3 credits.
Topics of special interest to undergraduates. Notes: May be repeated if topics are substantially different. Offered by Statistics. May be repeated within the term for a maximum 6 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: 60 undergraduate credits.

Registration Restrictions:
Washington Consortium level students may **not** enroll.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

500 Level Courses

STAT 500: *Special Topics.* 0-4 credits.
Select contemporary topics in Engineering and Computing. Offered by Statistics. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

STAT 515: *Applied Statistics and Visualization for Analytics.* 3 credits.
Introduces multivariate regression and random forests for modeling data. Addresses data access, variable selection and model diagnostics. Introduces foundations for visual thinking. Reviews common statistical graphics such as dot plots, box plots, q-q plots. Addresses more advanced methods such as scatterplot matrices enhanced by smoothed or density contours, and search tools for finding graphics with suggestive patterns. Notes: Course will introduce R software for analysis. A final project will involve visualization of a real data set. Offered by Statistics. May not be repeated for credit.

Recommended Prerequisite: STAT 250 or equivalent.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

STAT 517: *Experimental Design.* 3 credits.
Introduces problems and techniques inherent in design of experiments, which refers to planning an experiment so that collected data can be analyzed by statistical methods. Covers the two aspects to any experimental problem: the design itself and the analysis of the resulting data. Examples from numerous disciplines in the sciences and the humanities are discussed. Data analysis is emphasized. Notes: Students may not receive credit for both STAT 455 and STAT 517. Offered by Statistics. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (STAT 535[B-], 535[XS], 554[B-] or 554[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

STAT 522: *Applied Multivariate Statistics.* 3 credits.
Introduces a variety of multivariate statistical methods as aids to analyzing and interpreting large data sets. These methods will have general applications across a wide range of disciplines. Topics include: principal components analysis, cluster analysis, discriminant analysis, multi-dimensional scaling, correspondence analysis, and canonical correlation analysis. Extensive use of statistical software. Notes: Students may not receive credit for both STAT 462 and STAT 522. Cannot be used to satisfy requirements for MS in Statistical Science. Offered by Statistics. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (STAT 535[B-], 535[XS], 554[B-] or 554[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

STAT 525: *Nonparametric Statistics and Categorical Data Analysis.* 3 credits.
Introduction to nonparametric methods and categorical data analysis. Topics include tests for one-sample, two-related samples, and two independent samples; concepts of nonparametric ANOVA; tests for proportions; chi-squared tests, log-linear models, and contingency tables; goodness-of-fit tests; correlation and association analysis; nonparametric regression including logistic and Poisson regression; and bootstrapping, jackknifing , and cross-validation. Notes: Students may not receive credit for both STAT 465 and STAT 525. Cannot be used to satisfy requirements for MS in Statistical Science. Offered by Statistics. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (STAT 535[B-], 535[XS], 554[B-] or 554[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

STAT 526: *Applied Regression Analysis.* 3 credits.
Introduces statistical modeling with a focus on regression. Topics include: Correlation, simple and multiple regression models, model fitting, variable selection, diagnostic tools, model validation, inference for regression parameters, and matrix forms for multiple regression. Additional topics covered include logistic regression and time series analysis with a focus on smoothing techniques and decomposition. A statistical software package is used extensively throughout the course. Notes: Students may not receive credit for both STAT 456 and STAT 526. Cannot be used to satisfy requirements for MS in Statistical Science. Offered by Statistics. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (STAT 535[B-], 535[XS], 554[B-] or 554[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

STAT 532: *Introduction to Statistical Software Packages.* 3 credits.
Use of computer packages in statistical analysis of data. Topics include data entry, checking, and manipulation; and use of statistical packages for graphical procedures, basic descriptive and inferential procedures, and regression. Notes: Cannot be used to satisfy requirements for MS in Statistical Science without prior written approval of the graduate program director. Offered by Statistics. May not be repeated for credit.

Recommended Prerequisite: STAT 250 or equivalent

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

STAT 535: *Analysis of Experimental Data.* 3 credits.
Statistical methods for analysis of experimental data from educational research and the social, natural, and life sciences. Topics include sample surveys, contingency tables, linear and multiple regression, analysis of variance, nonparametric tests, and multivariate methods. Various statistical packages will be used. Notes: Cannot be used to satisfy requirements for MS in Statistical Science. Certificate program students granted credit for only one of STAT 535 or STAT 554. Offered by Statistics. May not be repeated for credit.

Recommended Prerequisite: STAT 250, STAT 344 or equivalent.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

STAT 539: *Topics in Applied Statistics.* 0-3 credits.
Special topics in applied statistics of interest to graduate students in statistics certificate programs. Notes: May be repeated for credit when topic is different. Cannot be used to satisfy requirements for MS in Statistical Science. Offered by Statistics. May be repeated within the degree for a maximum 3 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: Permission of instructor; specific prerequisites vary with the nature of the topic.

Registration Restrictions:

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

STAT 544: *Applied Probability.* 3 credits.
The axioms of probability, conditional probability, random variables and expectation, multivariate and conditional distributions, conditional expectation, order statistics, transformations, moment generating functions, special distributions, limit theorems. Offered by Statistics. May not be repeated for credit.

Recommended Prerequisite: MATH 213 and STAT 346, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

STAT 554: *Applied Statistics I.* 3 credits.
Application of basic statistical techniques. Focus is on the problem (data analysis) rather than on the theory. Topics include descriptive statistics; exploratory data analysis; sampling distributions; one- and two-sample tests and confidence intervals for means, medians, proportions, and variances; and goodness-of-fit tests. Normal theory is introduced first with discussion of what happens when assumptions break down. Alternative robust and nonparametric techniques are presented. Notes: Certificate program students granted credit for only one of STAT 535 or 554. Offered by Statistics. May not be repeated for credit.

Recommended Prerequisite: MATH 114 and (STAT 334 or STAT 344 or STAT 346) and (Course in Statistics)

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

STAT 560: *Biostatistical Methods.* 3 credits.
Focuses on biostatistical aspects of design and analysis of biomedical studies, including epidemiologic observational studies and randomized clinical trials. Topics include randomization principle, confounding, ethics in human experimentation, methods of randomization, stratification, primary outcome analyses, covariate-adjusted analyses, epidemiologic measures, and sample size and power computation. Note: Students may not receive credit for both STAT 460 and STAT 560. Offered by Statistics. May not be repeated for credit.

Recommended Prerequisite: STAT 350 or STAT 354 or STAT 360; and working knowledge of SAS.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

STAT 574: *Survey Sampling I.* 3 credits.
Design and implementation of sample surveys. Covers components of a survey; probability sampling designs to include simple random, systematic, Bernoulli, proportional to size, stratified, cluster and two-stage sampling; and ratio and regression estimators. Discusses practical problems in conducting a survey. Methods applied to case studies of actual surveys. Class project may be required. Notes: Students may not receive credit for both STAT 474 and STAT 574. Offered by Statistics. May not be repeated for credit.

Recommended Prerequisite: STAT 346 and a course in Statistics, or STAT 344; and working knowledge of SAS.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

600 Level Courses

STAT 634: *Case Studies in Data Analysis.* 3 credits.
Examination of a wide variety of case studies illustrating data-driven model building and statistical analysis. With each case study, various methods of data management, data presentation, statistical analysis, and report writing are compared. Offered by Statistics. May not be repeated for credit.

Recommended Prerequisite: Working knowledge of SAS and R.

Registration Restrictions:
Required Prerequisites: ((STAT 654[B-] or 654[XS]) and (STAT 544[B-] or 544[XS])).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

STAT 652: *Statistical Inference.* 3 credits.
Fundamental principles of estimation and hypothesis testing. Topics include limiting distributions and stochastic convergence, sufficient statistics, exponential families, statistical decision theory and optimality for point estimation, Bayesian methods, maximum likelihood, asymptotic results, interval estimation, optimal tests of statistical hypotheses, and likelihood ratio tests. Offered by Statistics. May not be repeated for credit. Equivalent to CSI 672.

Registration Restrictions:
Required Prerequisites: ((STAT 544[B-] or 544[XS]) and (STAT 554[*B-] or 554[XS])).
[*] May be taken concurrently.
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

STAT 654: *Applied Statistics II.* 3 credits.
Overview of statistical principles of modeling. Topics include methods for analyzing data based on generalized linear models and diagnostic methods for assessing the assumptions of such models. Methods covered include multiple regression, analysis of variance, simultaneous inference, logistic and Poisson regression, and hierarchical log linear models for contingency tables. Offered by Statistics. May not be repeated for credit.

Recommended Prerequisite: MATH 203 and MATH 213 and STAT 346

Registration Restrictions:
Required Prerequisites: (STAT 554[B-] or 554[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Enrollment is limited to students with a major in Biostatistics or Statistical Science.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

STAT 656: *Regression Analysis.* 3 credits.
Simple and multiple linear regression, polynomial regression, general linear models, subset selection, step-wise regression, and model selection. Also covered are multicollinearity, diagnostics, and model building as well as the theory and practice of regression analysis. Offered by Statistics. May not be repeated for credit. Equivalent to CSI 676.

Registration Restrictions:
Required Prerequisites: ((STAT 544[*B-] or 544[XS]) and (STAT 554[B-] or 554[XS])).
[*] May be taken concurrently.
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

STAT 657: *Nonparametric Statistics.* 3 credits.
Distribution-free procedures for making inferences about one or more samples. Tests for lack of independence, association or trend, and monotone alternatives are included. Measures of association in bivariate samples and multiple classifications are discussed. Both theory and applications are covered. Students are introduced to appropriate statistical software. Offered by Statistics. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: ((STAT 544[B-] or 544[XS]) and (STAT 554[B-] or 554[XS])).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

STAT 658: *Time Series Analysis and Forecasting.* 3 credits.
Modeling stationary and nonstationary processes, autoregressive, moving average and mixed model processes, autocovariance functions, autocorrelation functions, partial autocorrelation functions, spectral density functions, identification of models, estimation of model parameters, and forecasting techniques. Offered by Statistics. May not be repeated for credit.

Registration Restrictions:

Required Prerequisites: ((STAT 544[B-] or 544[XS]) and (STAT 554[B-] or 554[XS])).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

STAT 662: *Multivariate Statistical Methods.* 3 credits.
Standard techniques of applied multivariate analysis. Topics include review of matrices, multivariate normal theory, principal components, canonical correlation, classification, factor analysis, clustering, and multidimensional scaling. Applications to data analytics. Computer implementation via a statistical package is an integral part of the course. Offered by Statistics. May not be repeated for credit.

Recommended Prerequisite: Matrix algebra, and working knowledge of SAS.

Registration Restrictions:
Required Prerequisites: ((STAT 554[B-] or 554[XS]) and (STAT 544[*B-] or 544[XS])).
[*] May be taken concurrently.
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

STAT 663: *Statistical Graphics and Data Exploration I.* 3 credits.
Introduces statistical graphics that show distribution features and functional relationships in the presence of noise. Introduces cognitive research guidance for graphics design and reasoning. Stresses quantitative comparisons from multiple perspectives. Features new micromaps designs for spatial and temporal comparisons. Introduces R, the grammar of graphics, and dynamic graphics software. Offered by Statistics. May not be repeated for credit.

Recommended Prerequisite: A 300-level statistics course and a programming course, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

STAT 665: *Categorical Data Analysis.* 3 credits.
Analyzes cross-classified categorical data in two and higher dimensions. Topics include association tests and measures of association in two- and three-dimensional contingency tables, logistic regression, and log linear models. SAS is used extensively for data analysis. Offered by Statistics. May not be repeated for credit.

Recommended Prerequisite: Working knowledge of SAS.

Registration Restrictions:
Required Prerequisites: ((STAT 654[B-] or 654[XS]) and (STAT 544[*B-] or 544[XS])).
[*] May be taken concurrently.
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

STAT 668: *Survival Analysis.* 3 credits.
Survival Analysis is a class of statistical methods for studying the occurrence and timing of events. In medical research, the events may be deaths, and the objective is to determine factors affecting survival times of patients following treatment, usually in the setting of clinical trials. Methods can also be applied to the social and natural sciences and engineering where they are known by other names (reliability, event history analysis). Concepts of censored data, time-dependent variables, and survivor and hazard functions are central. Nonparametric methods for comparing two or more groups of survival data are studied. The Cox regression model (proportional hazards model), Weibull model, and the accelerated failure time model are studied in detail. Concepts are applied to analysis of real data from major medical studies using SAS software. Offered by Statistics. May not be repeated for credit.

Recommended Prerequisite: Working knowledge of R and SAS.

Registration Restrictions:
Required Prerequisites: ((STAT 544[B-] or 544[XS]) and (STAT 554[B-] or 554[XS])).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

STAT 672: *Statistical Learning and Data Analytics.* 3 credits.
The course focuses on statistical learning theory by introducing the statistical and optimization background essential for understanding statistical learning algorithms. Also discusses applications of statistical learning algorithms to the solution of important problems in many areas of science. Offered by Statistics. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: ((STAT 544[B-] or 544[XS]) and (STAT 554[B-] or 554[XS])).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

STAT 674: *Survey Sampling II.* 3 credits.
Continuation of STAT 574. Applications to case studies of actual surveys. Categorical data analysis, regression models, and domain estimation from complex sampling designs, introduction to variance estimation, weighting adjustments for nonresponse, and imputation. Offered by Statistics. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (STAT 574[B-] or 574[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

STAT 676: *Alternative Regression Methods.* 3 credits.
Presents several modern regression methodologies that are useful in data analysis when some of the assumptions of linear regression theory fail to hold. Topics include non-linear regression, quantile regression, robust regression, and computational methods for fitting these models. Offered by Statistics. May not be repeated for credit.

Recommended Prerequisite: Working knowledge of SAS.

Registration Restrictions:
Required Prerequisites: (STAT 654[B-] or 654[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

STAT 689: *Topics in Statistics.* 1-3 credits.
Special topics of interest to graduate students in statistics. Notes: May be repeated for credit when topic is different. Offered by Statistics. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: Permission of instructor; specific prerequisites vary with the nature of the topic.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

700 Level Courses

STAT 742: *Optimization for Statistical Modeling.* 3 credits.
Discusses standard classes of mathematical optimization problems and how these classes arise in statistical model fitting. Both constrained and unconstrained optimization problems are studied in detail, with an emphasis on convex problems. Specific examples are: sparsity and shape-constrained estimation, EM algorithms for mixture models, linear programming for quantile regression, semidefinite programming for sparse PCA and Gaussian graphical models. The treatment is complemented by the implementation of suitable algorithms for the solution of the above problems, including gradient descent and proximal methods, Newton and Quasi-Newton methods, interior point methods, alternating direction methods of multipliers, and MM algorithms. Offered by Statistics. May not be repeated for credit.

Recommended Prerequisite: Multivariate calculus and linear algebra.

Registration Restrictions:
Required Prerequisites: (STAT 654[B-], 654[XS], 672[B-] or 672[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

STAT 758: *Advanced Time Series Analysis.* 3 credits.
Mathematical modeling and methods for model identification and forecasting of nonstationary and seasonal time series data (ARIMA models), multivariate time series, and state-space models. Offered by Statistics. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (STAT 658[B-] or 658[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

STAT 760: *Advanced Biostatistical Methods.* 3 credits.
Advanced statistical methods in the drug development process. Provides the theoretical statistical basis for the design and analysis of pharmaceutical clinical trials. Topics include the theory of randomization, randomization-based inference, restricted, response-adaptive, and covariate-adaptive randomization, the modern theory of group sequential monitoring, statistical aspects of determination of dose-response relationships. Offered by Statistics. May not be repeated for credit.

Recommended Prerequisite: Working knowledge of statistical programming language.

Registration Restrictions:
Required Prerequisites: ((STAT 652[B-] or 652[XS]) and (STAT 654[B-] or 654[XS])).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

STAT 763: *Statistical Graphics and Data Exploration II.* 3 credits.
Addresses data set size and human comprehension challenges. Introduces case and variable reduction methods, and overview production. Incorporates cognitive science guidance. Utilizes data mining models and visual analytic algorithms to find patterns and prioritize graphics. Addresses applications from both information and scientific visualization. Tracks advances in web graphics including citizen science projects harnessing the visual power of thousands of people. Offered by Statistics. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (STAT 663[B-], 663[XS], 515[B-] or 515[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

STAT 771: *Spatial Data Analysis.* 3 credits.
Presents analysis techniques for spatially-indexed or spatially-correlated data that arise in many areas of science, including medicine, transportation, and atmospheric sciences. Focus is on data analysis rather than theory, though theory will necessarily be covered. Topics include analysis of point patterns, trend and surface estimation, and spatial regression. Offered by Statistics. May not be repeated for credit.

Recommended Prerequisite: Working knowledge of R and SAS.

Registration Restrictions:
Required Prerequisites: ((STAT 652[B-] or 652[XS]) and (STAT 654[B-] or 654[XS])).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

STAT 773: *Statistical Methods for Longitudinal Data Analysis.* 3 credits.
Presents modern statistical approaches to the analysis of longitudinal data, i.e., data collected repeatedly on experimental units over time (or other conditions). Topics include linear mixed effects models, generalized linear models for correlated data (including generalized estimating equations), and computational issues and methods for fitting models. Offered by Statistics. May not be repeated for credit.

Recommended Prerequisite: Working knowledge of SAS.

Registration Restrictions:
Required Prerequisites: ((STAT 652[B-] or 652[XS]) and (STAT 654[B-] or 654[XS])).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

STAT 778: *Statistical Computing.* 3 credits.
Introduces modern and basic elements of statistical computing. Topics include: data wrangling, numerical computation for statisticians, semi-

numerical computation (simulation methodology and algorithms), graphical computation, and special topics in resampling, Bayesian calculations, mixtures, EM algorithms, parallel processing, and some modern data analytics (time permitting). Some complex programming problems related to statistical modeling and inference are studied. R and its interfaces with other programming languages will be used. (Other types of programming languages are allowed with the permission of instructor). Offered by Statistics. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (STAT 652[B-], 652[XS], CSI 672[B-] or 672[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

STAT 796: *Independent Studies/Directed Readings.* 1-3 credits.
Reading and research on a specific topic in statistics under guidance of graduate faculty member. Offered by Statistics. May not be repeated for credit.

Recommended Prerequisite: Permission of instructor and department's graduate coordinator.

Registration Restrictions:
Enrollment is limited to Graduate, Non-Degree or Washington Consortium level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Regular scale.

STAT 798: *Master's Research Project.* 3 credits.
Project chosen and completed under guidance of graduate faculty member that results in acceptable technical report. Offered by Statistics. May not be repeated for credit.

Recommended Prerequisite: 9 graduate credits, and permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Thesis

Grading:
This course is graded on the Graduate Special scale.

STAT 799: *Master's Thesis.* 1-6 credits.
Project chosen and completed under guidance of graduate faculty member that results in acceptable technical report and oral defense. Offered by Statistics. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: 9 graduate credits, and permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Thesis

Grading:
This course is graded on the Satisfactory/No Credit scale.

800 Level Courses

STAT 889: *Advanced Topics in Statistics.* 3 credits.
Advanced topics not occurring in regular sequence. Offered by Statistics. May be repeated within the degree for a maximum 12 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: Doctoral standing and permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

STAT 896: *Advanced Directed Reading.* 3 credits.
Individualized study with a graduate faculty member in the Department of Statistics. Syllabus and grading criteria must be preapproved by the PhD in Statistical Science Program Director. Offered by Statistics. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to students with a major in Statistical Science.

Enrollment limited to students in the VS-PHD-STAT program.

Enrollment is limited to Graduate level students.

Enrollment limited to students in a Doctor of Philosophy degree.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Regular scale.

900 Level Courses

STAT 971: *Probability Theory.* 3 credits.
A rigorous measure-theoretic treatment of probability. Includes expectation, distributions, laws of large numbers and central limit theorems for independent random variables, characteristic function methods, conditional expectations, martingales, strong and weak convergence, and Markov chains. Offered by Statistics. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: STAT 544[B] and (MATH 315[B] or 315[XS]).
[B] Requires minimum grade of B.
[XS] Requires minimum grade of XS.

Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

STAT 972: *Mathematical Statistics I.* 3 credits.
Focuses on theory of estimation. Includes method of moments, least squares, maximum likelihood, and maximum entropy methods. Details methods of minimum variance unbiased estimation. Topics include sufficiency and completeness of statistics, Fisher information, Cramer-Rao bounds, Bhattacharyya bounds, asymptotic consistency and distributions, statistical decision theory, minimax and Bayesian decision rules, and applications to engineering and scientific problems. Offered by Statistics. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: ((STAT 652[B-], 652[XS], CSI 672[B-] or 672[XS]) and (CSI 876[*B-], 876[XS], STAT 971[*B-], 971[XS], CSI 971[*B-] or 971[XS])).
[*] May be taken concurrently.
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

STAT 973: *Mathematical Statistics II.* 3 credits.
Continuation of STAT 972/CSI 972. Concentrates on theory of hypothesis testing. Topics include characterizing decision process, simple versus simple hypothesis tests, Neyman-Pearson Lemma, uniformly most powerful tests, unbiasedness and invariance of tests, and randomized and sequential tests. Applications of testing principles made to situations in normal distribution family and other families of distributions. Offered by Statistics. May not be repeated for credit.

Registration Restrictions:
Required Prerequisites: (STAT 972[B-], 972[XS], CSI 972[B-] or 972[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to Graduate level students.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

STAT 990: *Dissertation Topic Presentation.* 1 credit.
Students put together a professional presentation of a research proposal and present it for critique to fellow students and interested faculty. Notes: May be repeated with change of research topic, but credit towards doctoral degree is given once. Offered by Statistics. May not be repeated for credit. Equivalent to CEIE 990, CS 990, IT 990.

Recommended Prerequisite: Completion of all course requirements for PhD, or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Research

Grading:
This course is graded on the Satisfactory/No Credit scale.

STAT 998: *Doctoral Dissertation Proposal.* 1-12 credits.
Work on research proposal that forms basis for doctoral dissertation. Notes: No more than 24 credits of STAT 998 and 999 may be applied to doctoral degree requirements. Offered by Statistics. May be repeated within the degree.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

STAT 999: *Doctoral Dissertation.* 1-12 credits.
Formal record of commitment to doctoral dissertation research under direction of faculty member in statistics. Notes: No more than 24 credits of STAT 998 and 999 may be applied to doctoral degree requirements. Offered by Statistics. May be repeated within the degree.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy.

Enrollment is limited to Graduate level students.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

System Engineering (SYST)

100 Level Courses

SYST 101: *Understanding Systems Engineering.* 3 credits.
Introduces systems engineering and curriculum for BS in field. Introduces large and small systems, and explains them through some hands-on experiences. Key concepts include understanding requirements for system and translation of system-level requirements to component-level requirements. Several different kinds of example systems presented and discussed: objectives, major components, how system works, and major design issues. Each student gives a similar presentation on system of choice. Students work in groups design, develop, and test system, and give oral presentation. Students are responsible for writing several short papers on curriculum and presentations they have heard. Offered by Systems Engr & Operations Rsch. Limited to two attempts.

Registration Restrictions:
Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SYST 130: *Introduction to Computing for Digital Systems Engineering.* 3 credits.
The course introduces students to programming in the context of Systems Design process. Students learn to take a systems perspective when approaching problems and designing solutions, how the structure and behavior of a system is modeled using SysML, and to implement

the system model using programming techniques in Python. The course explores various Python modules (standard library and 3rd Party) that extend the basic language functionality in useful ways, in particular, for model based systems engineering. The students apply their programming skills to solve commonly encountered Task Automation, Data Mining, Cleansing, and Transformation. Course emphasizes the use of appropriate Web Services APIs and technologies commonly encountered in Data Analytics and AI to find, access, and analyze available data and datasets. Offered by Systems Engr & Operations Rsch. Limited to two attempts. Equivalent to CYSE 130.

Mason Core: Info Tech & Computing

Recommended Prerequisite: Passing score on the math placement test for MATH 113.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SYST 198: *Independent Study in Systems Engineering.* 1-3 credits.
Must be arranged with instructor and approved by department chair before registering. Directed self-study of special topics of current interest in systems engineering. Notes: May be repeatable if topics are substantially different. Offered by Systems Engr & Operations Rsch. May be repeated within the term for a maximum 6 credits.

Registration Restrictions:
Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

200 Level Courses

SYST 202: *Engineering Systems in a Complex World.* 3 credits.
This course introduces students to the study of engineering systems as a means of understanding larger historical trends in a global society. Students will use case studies and historical analyses to think strategically and globally about the management and execution of complex systems in the context of culture, environment, politics and economics, and learn how to employ such analyses as decision-making tools for leadership. Students will be required to critically analyze articles and books, and work in groups to investigate and present topics of current national and international relevance. Offered by Systems Engr & Operations Rsch. Limited to two attempts. Equivalent to HIST 202.

Mason Core: Global Understanding

Registration Restrictions:
Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SYST 205: *Systems Engineering Principles.* 3 credits.
Introduction to systems engineering with a focus on cyber security engineering. During this course, the different components of the systems life cycle will be explored. Basic principles including requirements, design frameworks, functional systems, models, qualification strategies, maintenance and disposal will be covered. Students will be tested to ensure understanding of material contained within the lectures. Additionally, students will gain practical knowledge concerning this subject by modeling functional, state and object primitives. Offered by Systems Engr & Operations Rsch. Limited to two attempts. Equivalent to CYSE 205.

Registration Restrictions:
Students cannot enroll who have a major in Systems Engineering.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SYST 210: *Systems Design.* 3 credits.
Systems engineering design and integration process, development of functional, physical, and operational architectures. Emphasizes requirements engineering, functional modeling for design, and formulation and analysis of physical design alternatives. Introduces methods, software tools for systems engineering design. Offered by Systems Engr & Operations Rsch. Limited to two attempts.

Recommended Prerequisite: SYST 101.

Registration Restrictions:
Students with a class of Freshman may **not** enroll.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SYST 220: *Dynamical Systems I.* 3 credits.
Introduces modeling of dynamical systems. Both Discrete-time and continuous-time systems. Linear and nonlinear systems that includes exponential and polynomial models. Introduction to first order and second order models of systems using both difference equations and ordinary differential equations. Formulation of mathematical models from system descriptions, including biological, financial, and mechanical systems – both translational and rotational models of rigid and deformable objects. Block diagrams and state variable models. Analytical and numerical methods for solving models and studying their behavior. Offered by Systems Engr & Operations Rsch. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (MATH 114[C], 114[XS], 116[C] or 116[XS]) and (PHYS 160[C] or 160[XS]) and ((SYST 221[*C] or 221[XS]) and (MATH 203[*C] or 203[XS])).
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Systems Engineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SYST 221: *Systems Modeling Laboratory.* 1 credit.
Companion laboratory to SYST 220. Emphasizes use of scientific computing application MATLAB for modeling and analysis of dynamical systems. Analytical and numerical solutions of both discrete-time and continuous-time dynamic systems using MATLAB's built-in toolboxes including Symbolic Math Toolbox. Visualization of data and analysis results using plotting functions. Programming constructs for implementing algorithms. Construction and execution of simulation models using Simulink built-in libraries. Offered by Systems Engr & Operations Rsch. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (SYST 101[C] or 101[XS]) and (SYST 130[C], 130[XS], CDS 130[C], 130[XS], CS 112[C], 112[XS] or ENGR 125T) and (SYST 220[*C] or 220[XS]).
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

SYST 230: *Object-oriented Modeling and Design.* 4 credits.
The course introduces students to the systems analysis, design, and implementation process using Python. Students will explore how to model the structure and behavior of programs using SysML and implement the system model using Python programming techniques. The course introduces students to SysML modeling and various structural and behavioral diagram types. Students will use Object-Oriented techniques in Python to implement multiple system components. The course explores various Python modules (standard library and 3rd Party) that extend the basic language functionality in useful ways. Students learn Python techniques and tools for Dataset Analysis and Visualization like Numpy, Pandas, and Matplotlib and learn how to apply them to solve Dataset Analysis and Visualization problems for datasets available in the public domain. Offered by Systems Engr & Operations Rsch. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (CDS 130[C], 130[XS], SYST 130[C], 130[XS], CS 112[C], 112[XS] or ENGR 125T) and (SYST 210[*C], 210[*XS], 205[*C] or 205[*XS]).
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

300 Level Courses

SYST 320: *Dynamical Systems II.* 3 credits.
This course continues the study of dynamic systems from SYST 220, expanding the set of application areas to include electrical systems and fluid systems. Other applications - for example, infectious diseases, population dynamics, and/or flight control - are also discussed. The course covers fundamental characteristics of system behavior in the time domain including system stability and the effects of root location. Other topics include oscillatory inputs, frequency response, and an introduction to control systems. Offered by Systems Engr & Operations Rsch. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (SYST 220[C] or 220[XS]) and (MATH 203[C] or 203[XS]) and (MATH 214[C] or 214[XS]) and (PHYS 260[C] or 260[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SYST 330: *Systems Methods.* 3 credits.
Provides students with a general introduction to a variety of quantitative techniques that are relevant to systems engineering. Focuses on the use of quantitative techniques to model and evaluate design options. Scope includes: Analysis methods of system engineering design and management, decision analysis, models for engineering economics and evaluations, probability and statistical methods for data analysis, management control techniques, safety, reliability, and maintainability analysis, risk and uncertainty management, and life-cycle cost analysis. Offered by Systems Engr & Operations Rsch. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (MATH 114[C], 114[XS], 116[C] or 116[XS]) and (STAT 334[C], 334[XS], 344[C], 344[XS], 346[C], 346[XS], MATH 351[C] or 351[XS]) and (SYST 221[*C] or 221[XS]).
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major in Systems Engineering.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SYST 335: *Discrete Systems Modeling and Simulation.* 3 credits.
Introduces basic concepts of modeling complex discrete systems by computer simulation. Topics include Monte-Carlo methods, discrete-event modeling, specialized simulation software, and statistics of input and output analysis. Offered by Systems Engr & Operations Rsch. Limited to two attempts. Equivalent to OR 335.

Registration Restrictions:
Required Prerequisites: (SYST 130[C], 130[XS], CDS 130[C], 130[XS], CS 112[C], 112[XS] or ENGR 125T) and (STAT 334[C], 334[XS], 344[C], 344[XS], 346[C], 346[XS], MATH 351[C] or 351[XS]) and (SYST 230[*C], 230[XS], CS 211[*C] or 211[XS]).
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SYST 370: *Systems Project Management.* 3 credits.
Study of basics of project management of systems in large, complex settings. Includes engineering economics, planning, organizing, staffing, monitoring, and controlling process of designing, developing, and producing system to meet stated need in effective and efficient manner. Discusses management tools, processes, and procedures, including various documentation templates, managerial processes, and dealing with personnel issues. Offered by Systems Engr & Operations Rsch. Limited to two attempts.

Registration Restrictions:
Students with a class of Freshman or Sophomore may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SYST 371: *Systems Engineering Management.* 3 credits.
Introduces basic concepts in systems engineering management. Includes engineering economics, planning, staffing, monitoring, and control processes related to the design, development, and production of a system to meet a stated need in an effective and efficient manner. Discusses management tools, processes, and leading teams. Offered by Systems Engr & Operations Rsch. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: SYST 210[*C] or 210[*XS].
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SYST 395: *Applied Systems Engineering.* 3 credits.
The course will enhance the student's system engineering experience by designing and building projects involving real world complex systems. The course will build physical models that follow the steps of system life cycle process: statement of need, design, requirements, architecture, implementation, testing, verification and validation. Projects are multidisciplinary in nature, requiring the student teams to learn about various real world systems such as internet communications, navigation, robotics, creating a GUI, and transmitting and receiving data from sensors. Offered by Systems Engr & Operations Rsch. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: ((SYST 210[C] or 210[XS]) and (SYST 101[C] or 101[XS])) and ((SYST 220[*C] or 220[XS]) and (SYST 221[*C] or 221[XS]) and (SYST 335[*C] or 335[XS]) and (SYST 371[*C] or 371[XS])).
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students cannot enroll who have a major in Undeclared.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

SYST 420: *Network Analysis.* 3 credits.
Network nomenclature. Elementary graph theory. Linear and nonlinear network models: multicommodity flow, mathematical games and equilibria on networks, network design and control; dynamic network models; applications to transportation, telecommunications, data communications, and water resource systems. Offered by Systems Engr & Operations Rsch. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (OR 441[C] or 441[XS]) and (MATH 213[C], 213[XS], 215[C] or 215[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SYST 421: *Classical Systems and Control Theory.* 3 credits.
Introduction to analysis and synthesis of feedback systems. Functional description of linear and nonlinear systems. Block diagrams and signal flow graphs. State-space representation of dynamical systems. Frequency response methods: Root Locus, Nyquist, and other stability criteria. Application to mechanical and electromechanical control systems. Offered by Systems Engr & Operations Rsch. Limited to two attempts. Equivalent to ECE 421.

Registration Restrictions:
Required Prerequisites: (ECE 220[C] or 220[XS]) or (ECE 321[C] or 321[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SYST 438: *Analytics for Financial Engineering and Econometrics.* 3 credits.
Introduces the basic analytics for financial engineering and econometrics. Topics include financial transactions and econometric data management, correlation, linear and multiple regressions for financial and economic predictions, financial time series analysis, portfolio theory, pricing models, and risk analysis. Provides a foundation of basic theory and methodology as well as applied examples with techniques to analyzing large financial and econometric data. Hands-on experiments with R will be emphasized throughout the course. Offered by Systems Engr & Operations Rsch. Limited to two attempts. Equivalent to OR 438.

Recommended Corequisite: STAT 354

Registration Restrictions:
Required Prerequisites: (STAT 250[C] or 250[XS]) or (STAT 260[C] or 260[XS]) or (STAT 334[C] or 334[XS]) or (STAT 344[C] or 344[XS]) or (STAT 346[C] or 346[XS]) or (MATH 351[C] or 351[XS]).
[C] Requires minimum grade of C.

[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SYST 460: *Introduction to Air Traffic Control.* 3 credits.
Introduction to Air Traffic Control (ATC) for those who plan professions in the air transportation industry. Surveys the entire field, presenting the history of ATC and how it came to be as it is, the technology on which the system is based, the procedures used by controllers to meet the safety and efficiency goals of the system, the organizational structure of the FAA, challenges facing the system, and means under investigation to meet these challenges. Some fieldwork will be required to acquire and analyze airport operational data. A brief introduction to airport design will be discussed. Offered by Systems Engr & Operations Rsch. Limited to two attempts.

Recommended Prerequisite: Junior standing or graduate standing.

Registration Restrictions:
Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SYST 461: *Air Transportation System Engineering.* 3 credits.
Focuses on the theory and practice of system engineering in a national air transportation system. Stresses the application of mathematical techniques to analyze and design complex network transportation systems, airports, airspace, airline schedules, and traffic flow. Offered by Systems Engr & Operations Rsch. Limited to two attempts.

Recommended Prerequisite: SYST 460 or permission of instructor.

Registration Restrictions:
Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SYST 462: *Flight Training Lab I.* 3 credits.
This course fulfills the requirements of 14 CFR, Section 141, Appendix B for obtaining a private pilot certificate with airplane category, single engine land class rating. Flight Training 1 will include the flight training up to and including maneuvering and navigating the aircraft. Offered by Systems Engr & Operations Rsch. Limited to two attempts.

Recommended Corequisite: SYST 460.

Registration Restrictions:
Enrollment is limited to students with a major, minor, or concentration in Aviation Flight Trng and Mgmt.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

SYST 463: *Flight Training Lab II.* 3 credits.
This course fulfills the requirements of 14 CFR, Section 141, Appendix B for obtaining a private pilot certificate with airplane category, Airplane - Single Engine Land class rating. Flight Training II will include the flight training up to and including the dual and solo flight instruction in cross-country navigation by pilotage, dead reckoning, and use of VOR, NDB, and HSI. Flight test preparation for private pilot certification. Offered by Systems Engr & Operations Rsch. Limited to two attempts.

Recommended Prerequisite: SYST 462.

Registration Restrictions:
Enrollment is limited to students with a major, minor, or concentration in Aviation Flight Trng and Mgmt.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

SYST 465: *Pricing in Optimization and Game Theory.* 3 credits.
Allocation of limited resources among competing activities to maximize the outcome or minimization of expenses required to produce a given assortment of goods and services are two typical problems faced by any economic institution. Mathematical modeling of such problems and finding efficient mathematical tools for solving them are two main goals of modern optimization theory. Pricing limited resources, goods, and services is the key instrument for theoretical analysis of complex economical systems. Pricing theory can also give rise to numerical methods for finding optimal solutions and economic equilibrium. Fundamental tools in pricing theory are the classical Lagrangian and Lagrange multipliers for constrained optimization. Covers the basic ideas and methods of linear programming and matrix games. Particular emphasis to pricing for both theoretical analysis and numerical methods. Offered by Systems Engr & Operations Rsch. Limited to two attempts.

Recommended Prerequisite: MATH 203 or 216 and OR 441, or permission of instructor.

Registration Restrictions:
Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SYST 468: *Applied Predictive Analytics.* 3 credits.
Introduces students to the fundamentals of data analysis and some of the most widely used models in applied predictive analytics. The students learn how to summarize data and explore relationship between variables, including principle component analysis and multidimensional scaling. Class instruction follows with a presentation of commonly used tables, visualizations, and statistical tests for comparing groups. Linear predictive models for both continuous and binary outcomes (logistic regression) are discussed in detail. The course introduces students to clustering and classification using random forest and naive Bayes. The course concludes with topics on choice modeling. Hands-on programming with R is emphasized. While no prior knowledge on R

is required, students must be well prepared in programming. Offered by Systems Engr & Operations Rsch. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (STAT 334[C], 334[XS], 344[C], 344[XS], 346[C], 346[XS], 250[C], 250[XS], 260[C], 260[XS], MATH 351[C] or 351[XS]) and (SYST 130[C], 130[XS], CDS 130[C], 130[XS], IT 206[C], 206[XS], 209[C], 209[XS], CS 112[C], 112[XS] or ENGR 125T).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SYST 469: *Human Computer Interaction.* 3 credits.
Covers principles of human-computer interaction, including information processing design, cognitive models, ergonomics, and design metaphors. Students learn to evaluate interface design in terms of effectiveness, efficiency, and cost. Notes: Students who receive credit for SYST 470 may not receive credit for this course. Offered by Systems Engr & Operations Rsch. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (STAT 250[C], 250[XS], 260[C], 260[XS], 334[C], 334[XS], 344[C], 344[XS], 346[C], 346[XS], MATH 351[C] or 351[XS]) and (IT 106[C], 106[XS], 109[C], 109[XS], 196[C], 196[XS], CS 112[C], 112[XS], CDS 130[C] or 130[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SYST 470: *Human Factors Engineering.* 3 credits.
The purpose of this course is to help students design better systems by considering the "human" component of the system. Our goal is improved system usability by taking a "user-centered" design approach. The course focuses on human performance characteristics and limitations. It includes such topics as perception, cognition, memory, and decision making. It also includes system design and safety issues for addressing these characteristics and limitations, and research & evaluation methods for improving system development. Offered by Systems Engr & Operations Rsch. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (SYST 210[C] or 210[XS]) and (STAT 334[C], 334[XS], 344[C], 346[C], 344[XS], 346[XS], MATH 351[C] or 351[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SYST 473: *Decision and Risk Analysis.* 3 credits.
Studies analytic techniques for rational decision making that address uncertainty, conflicting objectives, and risk attitudes. Covers modeling uncertainty; rational decision making principles; representing decision problems with value trees, decision trees, and influence diagrams; solving value hierarchies, decision trees and influence diagrams; defining and calculating the value of information; incorporating risk attitudes into the analysis; and conducting sensitivity analyses. Offered by Systems Engr & Operations Rsch. Limited to two attempts.

Registration Restrictions:
Required Prerequisites: (STAT 250[C] or 250[XS]) or (STAT 260[C] or 260[XS]) or (STAT 334[C] or 334[XS]) or (STAT 344[C] or 344[XS]) or (STAT 346[C] or 346[XS]) or (MATH 351[C] or 351[XS]) or (BIOL 214[C] or 214[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SYST 480: *Economic Systems Design I: Principles and Experiments.* 3 credits.
Introduces design principles used in developing systems used to allocate resources. Students required to participate in experiment demonstrations of different allocation mechanisms. Students are also exposed to experimental methods in economics and market design. Offered by Systems Engr & Operations Rsch. Limited to two attempts. Equivalent to ECON 440.

Recommended Prerequisite: OR 441.

Recommended Corequisite: SYST 465.

Registration Restrictions:
Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SYST 488: *Financial Systems Engineering.* 3 credits.
This course is an introduction to financial engineering. Financial engineering is a cross-disciplinary field which relies on mathematical finance, numerical methods, and computer simulations to make trading, hedging, and investment decisions. This course will introduce basic types of derivatives, such as forward, futures, swaps, and options; as well as financial models such as Brownian motion, Ito's formula, and Black-Scholes valuation model. Numerical methods for option pricing, such as Binomial tree and Monte Carlo simulation will also be covered. Offered by Systems Engr & Operations Rsch. Limited to two attempts.

Recommended Prerequisite: OR 441.

Registration Restrictions:
Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SYST 489: *Senior Seminar.* 3 credits.
Introduces several important topics in systems engineering, providing additional experience in writing and giving presentations, and obtaining feedback on curriculum for BS in systems engineering. Several lectures devoted to ethics; writing and making presentations also covered. Students attend technical lectures and write paper. Students are required to a write long paper on new technology. Instructor and guest lecturers present material not part of required course load to expand horizons. Examples are "knowledge-based" design, enterprise-wide reengineering, electronic commerce, and optimization by "natural analogy" (simulated annealing, neural networks, genetic algorithms). In addition, students work in teams to critique and redesign curriculum. Each group delivers written product, and provides at least one briefing to class. Best critique and redesign presented to faculty. Offered by Systems Engr & Operations Rsch. Limited to two attempts.

Specialized Designation: Writing Intensive in Major

Registration Restrictions:
Required Prerequisites: SYST 490^{*C} or 490^{*XS}.
* May be taken concurrently.
^{C} Requires minimum grade of C.
^{XS} Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SYST 490: *Senior Design Project I.* 3 credits.
First part of capstone course in systems engineering program. Students apply knowledge they have gained to group project. Students perform concept definition and requirements analysis. Plan for carrying out project is developed, culminating in proposal presented to faculty at end of semester. Offered by Systems Engr & Operations Rsch. Limited to two attempts.

Recommended Prerequisite: 90 satisfactory credits.

Registration Restrictions:
Required Prerequisites: ((SYST 335^{C} or 335^{XS}) and (SYST 371^{C} or 371^{XS}) and (SYST 395^{C} or 395^{XS})) and (SYST 320^{*C} or 320^{*XS}) and (SYST 470^{*C} or 470^{*XS}) and (SYST 473^{*C} or 473^{*XS}) and (SYST 489^{*C}(SYST 489^{*XS}) and (OR 441^{*C} or 441^{XS})).
* May be taken concurrently.
^{C} Requires minimum grade of C.
^{XS} Requires minimum grade of XS.

Enrollment is limited to students with a major in Systems Engineering.

Enrollment limited to students in a Bachelor of Science degree.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SYST 491: *Industrial Project.* 1-3 credits.
Semester-long work experience in systems engineering in industrial or governmental organization. Work supervised jointly by systems engineer from sponsoring organization and department faculty member. Project and arrangements for supervision must be approved by student's faculty advisor. Periodic reports, presentations, and a written final report are required. Offered by Systems Engr & Operations Rsch. Limited to two attempts.

Recommended Prerequisite: 75 credits toward BS in Systems Engineering; SYST 330; GPA of at least 3.00.

Registration Restrictions:
Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SYST 495: *Senior Design Project II.* 3 credits.
Second part of capstone course. Design project plans formulated in SYST 490 are reviewed and modified. Additional instruction on documentation and project management is given. Design project completed; formal report prepared, presented, and evaluated. Students are strongly recommended to take STAT 354 before enrolling in SYST 490/495. Offered by Systems Engr & Operations Rsch. Limited to two attempts.

Mason Core: Capstone, Synthesis

Registration Restrictions:
Required Prerequisites: (SYST 320^{C} or 320^{XS}) and (SYST 470^{C} or 470^{XS}) and (SYST 473^{C} or 473^{XS}) and (SYST 489^{C} or 489^{XS}) and (SYST 490^{C} or 490^{XS}) and ((SYST 330^{*C} or 330^{XS}) and (STAT 354^{*C} or 354^{XS})).
* May be taken concurrently.
^{C} Requires minimum grade of C.
^{XS} Requires minimum grade of XS.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

SYST 497: *Applied Engineering Abroad.* 3 credits.
Introduces students to applications of engineering processes outside USA. The students will gain hands-on project management, critical thinking, intercultural and career skills by exploring engineering aspects such as auto assembly, airliner manufacturing, metropolitan infrastructure, and bridge designs. By visiting technology museums, students will learn to appreciate the rich history of the country's technology and manufacturing. Offered by Systems Engr & Operations Rsch. Limited to two attempts. Equivalent to CEIE 497.

Mason Core: Global Understanding

Registration Restrictions:
Enrollment limited to students with a class of Junior, Senior Plus or Senior.

Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

SYST 498: *Independent Study in Systems Engineering.* 1-3 credits.
Directed self-study of special topics of current interest in systems engineering. Offered by Systems Engr & Operations Rsch. Limited to two attempts.

Recommended Prerequisite: 60 credits towards BS in systems engineering, and GPA of at least 3.00.

Registration Restrictions:
Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

SYST 499: *Special Topics in Systems Engineering.* 3 credits.
Topics of special interest to undergraduates. Offered by Systems Engr & Operations Rsch. Limited to two attempts.

Specialized Designation: Topic Varies

Recommended Prerequisite: 60 credits toward BS in systems engineering; specific prerequisites vary with nature of topic.

Registration Restrictions:
Students with the terminated from VSE major attribute may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

500 Level Courses

SYST 500: *Quantitative Foundations for Systems Engineering.* 3 credits.
Provides quantitative foundations necessary for core courses in systems engineering and operations research master's program, and certificate program in C4I. Topics include vectors and matrices, infinite series, partial differentiation, multiple integrals, differential and difference equations; linear systems; Laplace and Z-transforms, and probability theory. Students receive graduate credit for this course, which, when used on plan of study, extends minimum credit requirements for degree. Offered by Systems Engr & Operations Rsch. May not be repeated for credit. Equivalent to CSI 600.

Recommended Prerequisite: MATH 203 and 213.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SYST 505: *Systems Engineering Principles.* 3 credits.
This course is an introduction and overview of the methods and tools systems engineers use to define, develop, and deploy systems. It serves as a foundation for the other courses in the MS/SE curriculum. During this course, the different components of the system lifecycle will be explored as well as the economic value of systems engineering. The course will convey to students the essential elements of systems engineering including: systems thinking, concept and system definition, integration and test, product and service life management, system development lifecycles, logistics and supportability, and disposal/system retirement. This course is suitable for those who are new to systems engineering or have limited knowledge and/or experience in the field. Students enrolling in this course should have an engineering, science, or mathematics degree and one year of experience in science or engineering, or permission from the student's academic advisor and the course instructor. Offered by Systems Engr & Operations Rsch. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SYST 508: *Complex Systems Engineering Management.* 3 credits.
Introduces the organizational, economic, technological and societal factors (POETS) that apply to the development of large-scale, complex mega-systems, and shows that "one size does not fit all" when it comes to the project management of mega-systems. Notes: Course cannot be applied for credit towards the MS in Systems Engineering degree. Offered by Systems Engr & Operations Rsch. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SYST 510: *Systems Definition and Cost Modeling.* 3 credits.
Comprehensive examination of methods and processes for the identification and representation of system requirements. Investigation of the systems acquisition life cycle with emphasis on requirements definition, including functional problem analysis. Examination of the systems engineering definition phase including requirements, problem analysis, definition, and functional economics. Specification of functional and nonfunctional requirements, and associated requirements proto-typing. Functional economic analysis, including the use of

prevailing cost estimation models and planning and control of common operating environments. Lecture and group project including creation of requirements and use of cost estimation model. Offered by Systems Engr & Operations Rsch. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SYST 513: *Total Systems Engineering, Reengineering and Enterprise Integration.* 3 credits.
Principles of strategic quality, including TQM. Quality standards including ISO9000 and 14000. Organizational leadership, cultures, and process maturity, reengineering. Quality, organization learning, and reengineering approaches to enable information integration and management and environment and framework integration in the systems engineering of knowledge intensive systems. Emphasis is placed on the role of integrated product and process design teams, standard and commercial off-the-shelf products in enterprise integration. Architecture-driven system characteristics are studied, as is transition management of legacy systems. Offered by Systems Engr & Operations Rsch. May not be repeated for credit.

Recommended Prerequisite: SYST 510 or 520.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SYST 514: *Systems Thinking.* 3 credits.
Enables students to understand and use systems thinking concepts, tools and techniques that can apply across all system types, especially those which exhibit a fusion of technology and human activities. Additionally, the course extends the understanding of systems beyond technology, to systems with significant human activity components, such as organizations and enterprises. Offered by Systems Engr & Operations Rsch. May not be repeated for credit.

Recommended Corequisite: SYST 505.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SYST 520: *System Engineering Design.* 3 credits.
System engineering design methods are studied and practiced, including object-oriented and structured analysis based techniques. Design Description languages such as UML, SysML, IDEF0 and IDEF1x are introduced and used in carrying out complete system designs. Teams make presentations of their designs. Offered by Systems Engr & Operations Rsch. May not be repeated for credit. Equivalent to ECE 550.

Recommended Corequisite: SYST 505

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SYST 521: *Network Analysis.* 3 credits.
Network nomenclature. Elementary graph theory. Linear and nonlinear network models: multi-commodity flow, mathematical games and equilibria on networks, network design and control. Dynamic network models. Applications to transportation, telecommunications, data communications, and water resource systems. Offered by Systems Engr & Operations Rsch. May not be repeated for credit.

Recommended Prerequisite: MATH 203 and 213, OR 441 or OR 541.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SYST 523: *Engineering Resilient and Agile Enterprise Systems.* 3 credits.
Large-scale enterprise systems have ill-defined boundaries, complex behaviors, and evolve in unplanned ways. Enterprise systems need to be resilient and agile. This course introduces several tools and frameworks that can be used to understand resilience and agility, design resilience and agility into enterprises, and measure the degree of enterprise resilience and agility. Case studies are used to explore these concepts. Offered by Systems Engr & Operations Rsch. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SYST 530: *Systems Engineering Management I.* 3 credits.
Provides techniques for evaluating cost and operational effectiveness of system designs and systems management strategies. Discusses performance measurement, work breakdown structures, cost estimating, quality management, configuration management, standards, and case studies of systems from different application areas. Offered by Systems Engr & Operations Rsch. May not be repeated for credit.

Recommended Prerequisite: SYST 510.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SYST 538: *Analytics for Financial Engineering and Econometrics.* 3 credits.
Introduces the basic analytics for financial engineering and econometrics. Topics include financial transactions and econometric data management, correlation, linear and multiple regressions for financial and economic predictions, financial time series analysis, portfolio theory, pricing models, and risk analysis. Provides a foundation of basic theory and methodology as well as applied examples with techniques to analyzing large financial and econometric data. Hands-on experiments with R will be emphasized throughout the course. Offered by Systems Engr & Operations Rsch. May not be repeated for credit. Equivalent to OR 538.

Recommended Prerequisite: STAT 515 or STAT 544.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SYST 542: *Decision Support Systems Engineering.* 3 credits.
Studies design of computerized systems to support individual or organizational decisions. Teaches systems engineering approach to decision support system (DSS) development. DSS is end product of development process, and process is key to successfully integrating DSS into organization. Any DSS is built on a theory (usually implicit) of what makes for successful decision support in given context. Empirical evaluation of specific DSS and the underlying theory should be carried on throughout development process. Course examines prevailing theories of decision support, considers issues in obtaining empirical validation for theory, and discusses empirical support that exists for theories considered. Students design decision support system for semester project. Offered by Systems Engr & Operations Rsch. May not be repeated for credit.

Recommended Prerequisite: SYST 301

Registration Restrictions:
Required Prerequisites: (SYST 573[*B-], 573[XS], 473[*B-], OR 681[*B-] or 681[XS]).
[*] May be taken concurrently.
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SYST 548: *Technologies and Security for Cryptocurrencies and Financial Transactions.* 3 credits.
This course provides an introduction to financial technology (FinTech) from three different perspectives: a disruptive technology, financial and societal effects, and security mitigation and regulatory policy. It will focus on how the technological advance in data and analytics are enabling the financial sector innovations. Special attention will be devoted to blockchain and cryptocurrencies, the 'internet of finance' and its potential of further transforming the sector. Lastly, it would deal with the increasing security and privacy concerns, operational risks as well as social challenges that emerged as part of the FinTech transformation. Offered by Systems Engr & Operations Rsch. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SYST 560: *Introduction to Air Traffic Control.* 3 credits.
Introduction for those who plan professions in aviation industry. Surveys entire field, presenting history of ATC and how it came to be, technology on which system is based, procedures used by controllers to meet safety and efficiency goals, organizational structure of the FAA, challenges facing system, and means under investigation to meet these challenges. Involves some field work for data collection and analysis. Class project requiring system simulation required. Offered by Systems Engr & Operations Rsch. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SYST 563: *Evidence-Based Systems Engineering.* 3 credits.
A common cause of failure and risk in system development is making decisions when lacking clear evidence to support them. This course presents frameworks and methods used to make sound, evidence-based decisions throughout the system lifecycle. Students learn what information to gather, how to analyze it, and how to present those analyses when deciding on the adequacy of programmatic decisions. Offered by Systems Engr & Operations Rsch. May not be repeated for credit.

Recommended Prerequisite: STAT 344 and STAT 354 or equivalent.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SYST 568: *Applied Predictive Analytics.* 3 credits.
Introduces predictive analytics with applications in engineering, business, and econometrics. Topics include data preprocessing, predictive modeling with various regression and classification models (e.g., linear, logistic regression, tree-based methods, SVM, neural networks, etc.), time series analysis, and case studies. Provides a foundation of basic theory and methodology with applied examples to analyze large engineering, business, and econometric data for predictive decision making. Hands-on experiments with R will be emphasized. Offered by Systems Engr & Operations Rsch. May not be repeated for credit. Equivalent to OR 568.

Recommended Prerequisite: STAT 515 or Graduate Standing at the MSOR or MSSE programs.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SYST 573: *Decision and Risk Analysis.* 3 credits.
Study of analytic techniques for rational decision making that address uncertainty, conflicting objectives, and risk attitudes. Covers modeling uncertainty; rational decision-making principles; representing decision problems with value trees, decision trees, and influence diagrams; solving value hierarchies, decision trees, and influence diagrams; defining and calculating the value of information; incorporating risk attitudes into the analysis; and conducting sensitivity analysis. Note: Students may not receive credit for both SYST 473 and 573. Offered by Systems Engr & Operations Rsch. May not be repeated for credit. Equivalent to OR 681.

Recommended Prerequisite: STAT 344 or equivalent.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SYST 574: *Quality Control and Process Management.* 3 credits.
Provides fundamentals of quality control and process management methodologies that are applicable in manufacturing industries. Introduces the basic concepts of engineering process and product quality management techniques. Provides exposition of fundamentals of lean Six Sigma and total quality management and maintainability. Offered by Systems Engr & Operations Rsch. May not be repeated for credit. Equivalent to OR 574.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SYST 576: *Manufacturing Systems Analysis.* 3 credits.
Provides fundamentals of modeling and analysis of general manufacturing systems that are also applicable to semiconductor manufacturing. Introduces the basic concepts of scheduling, inventory control, and enterprise resource management. Offered by Systems Engr & Operations Rsch. May not be repeated for credit. Equivalent to OR 576.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SYST 584: *Heterogeneous Data Fusion.* 3 credits.
Introduces the theory, design and implementation of multi-source information fusion systems in various domains. The course covers distinct technologies for combining data from multiple, heterogeneous sources and performing inferences in support to applications such as cyber security, Semantic Web, decision support systems, situational awareness, intrusion detection, crisis management, and others. The technical content is largely multi-disciplinary, encompassing disciplines such as knowledge engineering, ontologies, statistical learning, artificial intelligence, and data mining. Offered by Systems Engr & Operations Rsch. May not be repeated for credit. Equivalent to OR 584.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SYST 588: *Financial Systems Engineering I: Introduction to Options, Futures, and Derivatives.* 3 credits.
This course is an introduction to financial engineering. Financial engineering is a cross-disciplinary field which relies on mathematical finance, numerical methods, and computer simulations to make trading, hedging, and investment decisions. This course will introduce basic types of derivatives, such as forward, futures, swaps, and options; as well as financial models such as Brownian motion, Ito's formula, and Black-Scholes valuation model. Numerical methods for option pricing, such as Binomial tree and Monte Carlo simulation will also be covered. Offered by Systems Engr & Operations Rsch. May not be repeated for credit. Equivalent to OR 588.

Recommended Prerequisite: Eng. or Math Graduate standing, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

600 Level Courses

SYST 611: *System Methodology and Modeling.* 3 credits.
Provides broad yet rigorous foundations and applications of dynamic modeling. Emphasizes methodologies used across various disciplines. Topics include modeling and analysis of time-driven and event-driven, linear and nonlinear systems. The applications are presented with real-world example systems. Methodologies address dynamic systems using the concepts of composition, abstraction, execution, and performance. The issues of stochastic modeling and decision analysis are also

covered. Offered by Systems Engr & Operations Rsch. May not be repeated for credit.

Recommended Prerequisite: SYST 500 or equivalent.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SYST 618: *Model-based Systems Engineering.* 3 credits.
Model-based Systems Engineering (MBSE) provides a formalized application of modeling to support the engineering of systems. The purpose of the course to study and practice the leading methodologies for MBSE and illustrate the MBSE approaches in systems engineering and management. The advanced objected-oriented systems engineering methodology and model transformation techniques are addressed. Software tools are introduced and used for supporting systems engineering design. Students are expected to develop a system design of their choice using MBSE approaches presented in class and they will make presentations on these designs. Offered by Systems Engr & Operations Rsch. May not be repeated for credit.

Recommended Prerequisite: SYST 520.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SYST 620: *Discrete Event Systems.* 3 credits.
Introduces modeling and analysis of discrete event dynamical systems. Course covers elements of discrete mathematics and then focuses on Petri Net models and their basic properties. Relation to other discrete event models of dynamical systems. Offered by Systems Engr & Operations Rsch. May not be repeated for credit. Equivalent to ECE 673.

Recommended Prerequisite: SYST 611 or ECE 521, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SYST 621: *Systems Architecture Design.* 3 credits.
Architecture design and representation and the methodologies used to obtain them. Approaches based on system engineering constructs such as object orientation and service oriented architectures are used to design architectures and then represent them in conformance with an architecture framework such as DoDAF. Executable models of the architecture are derived to be used for architecture evaluation. Examples from current practice are used. Offered by Systems Engr & Operations Rsch. May not be repeated for credit. Equivalent to ECE 674.

Recommended Prerequisite: SYST 520/ECE 550.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SYST 630: *Systems Engineering Management II.* 3 credits.
Study of more advanced topics in systems engineering management to include the PMI Project Management Body of Knowledge. Students are expected to read selections from current literature as well as make presentations and produce papers on engineering management topics. Students work in groups to create a Systems Engineering Management Plan and a Risk Management Plan. Focuses strongly on the impacts of various systems engineering management practices on projects, organizations, and personnel. Offered by Systems Engr & Operations Rsch. Limited to two attempts.

Recommended Prerequisite: SYST 371 or SYST 530.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Students with the terminated from VSE major attribute may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SYST 659: *Topics in Systems Engineering.* 3 credits.
Topics not covered in department's regular systems engineering offerings. Course content may vary each semester depending on instructor and the perception of students' needs. Offered by Systems Engr & Operations Rsch. May be repeated within the term for a maximum 6 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SYST 660: *Air Transportation Systems Modeling.* 3 credits.
Introduces range of current issues in air transportation, including public policy toward the industry, industry economics, system capacity, current system modeling capability, human factors considerations, safety analysis and surveillance systems, and new technological developments. Students expected to develop broad understanding of contemporary and future issues. Knowledge evaluated through class discussions, a take-home midterm exam and a term project to be completed by the end of the semester. Offered by Systems Engr & Operations Rsch. May not be repeated for credit. Equivalent to OR 660.

Recommended Prerequisite: SYST 460/560, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SYST 664: *Bayesian Inference and Decision Theory.* 3 credits.
Introduces decision theory and relationship to Bayesian statistical inference. Teaches commonalities, differences between Bayesian and frequentist approaches to statistical inference, how to approach statistics problem, and how to combine data with informed expert judgment to derive useful and policy relevant conclusions. Teaches theory to develop understanding of when and how to apply Bayesian and frequentist methods; and practical procedures for inference, hypothesis testing, and developing statistical models for phenomena. Teaches fundamentals of Bayesian theory of inference, including probability as a representation for degrees of belief, likelihood principle, use of Bayes Rule to revise beliefs based on evidence, conjugate prior distributions for common statistical models, and methods for approximating the posterior distribution. Introduces graphical models for constructing complex probability and decision models from modular components. Offered by Systems Engr & Operations Rsch. May not be repeated for credit. Equivalent to CSI 674, OR 664.

Recommended Prerequisite: STAT 544, STAT 554, or equivalent.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SYST 670: *Metaheuristics for Optimization.* 3 credits.
Course on the theory and practice of metaheuristics, i.e. solution search techniques for solving combinatorial optimization problems. It will introduce the theory, applications (scheduling in manufacturing, transportation, and in other engineering and service industries), and computational aspects of directly searching for solutions to solve computationally complex optimization problems without a well-defined analytical model. Offered by Systems Engr & Operations Rsch. May not be repeated for credit. Equivalent to OR 670.

Recommended Prerequisite: OR 441/541 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SYST 671: *Judgment and Choice Processing and Decision Making.* 3 credits.
How do people make judgments and decisions? Course presents initial review of scientific literature directed toward answering this question, and emphasizes importance when performing decision analysis and designing systems to support judgment and decision processes. Offered by Systems Engr & Operations Rsch. May not be repeated for credit. Equivalent to OR 671.

Recommended Prerequisite: STAT 344/354, OR 542 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SYST 674: *Dynamic Programming.* 3 credits.
Course on the theory and practice of dynamic programming, i.e., optimal sequential decision making over time in the presence of uncertainties. Stresses intuition, the mathematical foundations being for the most part elementary. Introduces the theory, applications in finance and engineering, and computational aspects of dynamic programming for deterministic and stochastic problems. Offered by Systems Engr & Operations Rsch. May not be repeated for credit. Equivalent to OR 674.

Recommended Prerequisite: OR 442 or OR 542 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SYST 675: *Reliability Analysis.* 3 credits.
Introduction to component and system reliability, their relationship, and problems of inference. Topics include component lifetime distributions and hazard functions, parameter estimation and hypothesis testing, life testing, accelerated life testing, system structural functions, and system maintainability. Offered by Systems Engr & Operations Rsch. May not be repeated for credit. Equivalent to OR 675.

Recommended Prerequisite: STAT 544/554, OR 542 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SYST 680: *Principles of Command, Control, Communications, Computing, and Intelligence (C4I).* 3 credits.
Broad introduction to fundamental principles of command, control, communications, computers, and intelligence (C4I). Principles and techniques applicable to wide range of civilian and military situations. Discusses modeling and simulation of combat operations. Studies in detail sensing, fusion, and situation assessment processes. Derives optimal decision-making rules; discusses concepts of C4 architectures; and develops tools to evaluate and design C4 systems such as queuing theory. Offered by Systems Engr & Operations Rsch. May not be repeated for credit. Equivalent to ECE 670.

Recommended Prerequisite: ECE 528 or OR 542 or SYST 611 or equivalent.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SYST 682: *Space Systems Engineering.* 3 credits.
Overview of the scientific and engineering foundations of spacecraft systems and interaction among satellite subsystems. Topics include fundamentals on astrodynamics, power, communications, command and data handling, thermal management, attitude control, mechanical configuration, structures and launch systems. In addition to traditional instruction, a number of case studies and a team design project provide further breadth and exposure. Offered by Systems Engr & Operations Rsch. May not be repeated for credit. Equivalent to ECE 660.

Recommended Prerequisite: ECE 580 or SYST 520

Registration Restrictions:

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SYST 683: *Modeling, Simulation, and Gaming.* 3 credits.
Develops methods for designing combat models and games. Existing combat models critical to the C4I process. Exercises and games demonstrate value of properly developed C4I modules in a combat simulation. Offered by Systems Engr & Operations Rsch. May not be repeated for credit.

Recommended Prerequisite: MATH 213, SYST 500 or equivalent, and graduate standing.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SYST 687: *Cyber Security Systems Engineering.* 3 credits.
This course addresses cyber security from the standpoint of systems engineers. It introduces core principles for the design and management of resilient and robust systems throughout their complete lifecycle. Topics include but are not limited to lifecycle assurance of systems, risk analysis, models for secure systems development and management, gap analysis, quantitative methods for cyber security, and special topics in cyber security. The course also covers distinct technologies for assessing system vulnerabilities, measuring and modeling risk, reducing uncertainty in risk management, and others. Target audience consists of engineers who want to expand their skill sets to better align with the demands of current cyber security jobs, as well as those who intent to work on cyber security research. Cyber security professionals would also benefit from the course by being exposed to a systems engineering, holistic perspective on cyber security design, development, and management. Offered by Systems Engr & Operations Rsch. May not be repeated for credit. Equivalent to CYSE 587, CYSE 787, SYST 787.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SYST 688: *Financial Systems Engineering II: Derivative Products and Risk Management.* 3 credits.
Financial engineering is a cross-disciplinary field which relies on mathematical finance, numerical methods, and computer simulations to make trading, hedging, and investment decisions, as well as facilitating the risk management of those decisions. This course will introduce basic concepts of options, futures, and financial derivatives markets. It will focus on risk management for market risk, credit risk, and operational risk. It will also cover a broad range of derivatives products and discuss how risks are managed in financial institutions. Offered by Systems Engr & Operations Rsch. May not be repeated for credit. Equivalent to OR 688.

Recommended Prerequisite: OR 588 or SYST 588 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SYST 698: *Independent Study and Research.* 3 credits.
Study of a selected area in systems engineering or C3I under the supervision of a faculty member. Written report required. Offered by Systems Engr & Operations Rsch. May be repeated within the degree for a maximum 12 credits.

Recommended Prerequisite: Completion of at least two core courses, permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Regular scale.

SYST 699: *Masters Project.* 3 credits.
Capstone project course for MS/SE program. Key activity is completion of a major applied team project resulting in an acceptable technical report and oral briefing. Student should plan to take this course in the last semester of studies. Offered by Systems Engr & Operations Rsch. May not be repeated for credit.

Recommended Prerequisite: 21 graduate credits in OR or SYST.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

700 Level Courses

SYST 735: *Advanced Stochastic Simulation.* 3 credits.
Advanced topics and recent developments in stochastic simulation methodology for discrete-event and agent-based stochastic systems, with applications in artificial intelligence, power systems, manufacturing, health care, transportation, etc. Topics include simulation data analysis, stochastic simulation methodologies in artificial intelligence/machine learning, risk analytics, simulation-based optimization of complex systems, distributed and parallel simulation. Offered by Systems Engr & Operations Rsch. May not be repeated for credit. Offered by Systems Engr & Operations Rsch. May not be repeated for credit. Equivalent to OR 735.

Recommended Prerequisite: OR 635 or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SYST 740: *Advances in Multi-Modeling.* 3 credits.
Focuses on the inter-operation of multiple models expressed in different modeling languages but which draw from the same data set: i.e., multi-modeling. Socio-technical systems often require a variety of modeling tools to define their operation accurately. An ontology based approach is used to analyze the validity of a proposed modeling architecture and workflow to address a specific issue Offered by Systems Engr & Operations Rsch. May not be repeated for credit.

Recommended Prerequisite: SYST 620 or ECE 673 or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SYST 750: *Advanced Topics in Systems Engineering.* 3 credits.
Advanced topics not covered in department's regular systems engineering offerings. Course content may vary each semester depending on instructor and the perception of students' needs. May be repeated for credit when topics are distinctly different. Offered by Systems Engr & Operations Rsch. May be repeated within the degree for a maximum 12 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: 600-level course that varies with content of course.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SYST 763: *Research Methods in Systems Engineering and Information Technology.* 3 credits.
Examines alternative paradigms of scientific research and their applicability to research in information technology. Topics include fundamental elements of scientific investigation, basic principles of experimental design and statistical induction, philosophy of science and its relation to the information technology sciences, and case studies of information technology research. Offered by Systems Engr & Operations Rsch. May not be repeated for credit. Equivalent to OR 763.

Recommended Prerequisite: STAT 554, OR 542, or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SYST 781: *Data Mining and Knowledge Discovery.* 3 credits.
Statistical and computational methods and systems for deriving user-oriented knowledge from large databases and other information sources, and applying knowledge to support decision making. Information sources can be in numerical, textual, visual, or multimedia forms. Covers theoretical and practical aspects of current methods and selected systems for data mining, knowledge discovery, and knowledge management, including those for text mining, multimedia mining, and web mining. Offered by Systems Engr & Operations Rsch. May not be repeated for credit.

Recommended Prerequisite: One of the following courses: CS 687, CS 650, INFS 614, STAT 663, SYST 664, or Permission of Instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SYST 787: *Cyber Security Systems Engineering.* 3 credits.
This course addresses cyber security from the standpoint of systems engineers. It introduces core principles for the design and management of resilient and robust systems throughout their complete lifecycle. Topics include but are not limited to lifecycle assurance of systems, risk analysis, models for secure systems development and management, gap analysis, quantitative methods for cyber security, and special topics in cyber security. The course also covers distinct technologies for assessing system vulnerabilities, measuring and modeling risk, reducing uncertainty in risk management, and others. Target audience consists of engineers who want to expand their skill sets to better align with the demands of current cyber security jobs, as well as those who intent to work on cyber security research. Cyber security professionals would also benefit from the course by being exposed to a systems engineering, holistic perspective on cyber security design, development, and management. Offered by Systems Engr & Operations Rsch. May not be repeated for credit. Equivalent to CYSE 587, CYSE 787, SYST 687.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SYST 799: *Master's Thesis.* 1-6 credits.
Research project chosen and completed under the guidance of a graduate faculty member, which results in a technical report acceptable to a three-member faculty committee, and an oral defense. Offered by Systems Engr & Operations Rsch. May be repeated within the degree.

Recommended Prerequisite: 21 graduate credits and permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Thesis

Grading:
This course is graded on the Satisfactory/No Credit scale.

800 Level Courses

SYST 842: *Models of Probabilistic Reasoning.* 3 credits.
Survey of alternative views about how incomplete, inconclusive, and possibly unreliable evidence might be evaluated and combined. Discusses Bayesian, Baconian, Shafer-Dempster, and Fuzzy systems for probabilistic reasoning. Offered by Systems Engr & Operations Rsch. May not be repeated for credit.

Recommended Prerequisite: STAT 544, OR 542, OR 681 or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SYST 850: *Topics in Systems Integration Engineering.* 3 credits.
Covers lifecycles; large systems comprising heterogeneous components; human, organizational, and technological basis for integration; societal and cultural basis; conceptual frameworks; structure, function, and purpose of industry; risk management; user requirements and functional specifications; bid and proposal process; systems integration and federal government; standards; integration of systems and federations of systems; integrated process and product development; architectures; systems management and cost estimation; reengineering; quality management; increasing returns to scale, network effects, and path dependency issues; and systems integration ecology and evolutionary systems integration Notes: May be repeatable if topics are substantially different. Offered by Systems Engr & Operations Rsch. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: SYST 510 or SYST 520.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

900 Level Courses

SYST 944: *The Process of Discovery and Its Enhancement in Engineering Applications.* 3 credits.
Studies ingredients of imaginative reasoning as they concern efficient discovery of new ideas and valid evidential test of them. Topics include different interpretations of Peirce's theory of abductive reasoning and other forms of reasoning, Hintikka's analysis of process of inquiry, and current attempts to design systems that provide assistance in discovery-related or investigative activities. Offered by Systems Engr & Operations Rsch. May not be repeated for credit. Equivalent to OR 944.

Recommended Prerequisite: IT 842, or permission of instructor.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Enrollment limited to students in the College of Science or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

Systems Engineering and Operations Research (SEOR)

700 Level Courses

SEOR 750: *Advanced Topics in Systems Engineering and Operations Research.* 3 credits.
Advanced topics, applications, or recent developments in the interface of systems engineering and operations research. Course content may vary each semester depending on instructor and the perception of students' needs. May be repeated for credit when topics are distinctly different. Offered by Systems Engr & Operations Rsch. May be repeated within the degree for a maximum 12 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: 600-level course.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

SEOR 796: *Directed Reading and Research.* 1-3 credits.
Reading and research on specific topic in systems engineering or operations research under direction of faculty member. Offered by Systems Engr & Operations Rsch. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Regular scale.

800 Level Courses

SEOR 800: *Systems Engineering and Operations Research Colloquium I.* 0 credits.
Students in this course are required to attend at least five departmental colloquium events in a semester. These are talks given by distinguished speakers, faculty candidates, and Mason faculty. Students may attend related seminars with prior approval of the course coordinator. Doctoral students must take this course for at least three semesters prior to registering for SEOR 997. Offered by Systems Engr & Operations Rsch. May be repeated within the degree.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Enrollment is limited to students with a major in Systems Engineering Ops Rsch.

Enrollment limited to students in a Doctor of Philosophy degree.

Schedule Type: Seminar

Grading:
This course is graded on the Satisfactory/No Credit scale.

900 Level Courses

SEOR 997: *Systems Engineering and Operations Research Colloquium II.* 3 credits.
Students in this course are required to attend at least five departmental colloquium events in a semester. Students must also give one presentation of their research in a public forum open to SEOR students and faculty. Students must successfully complete three semesters of SEOR 800 prior to registering for SEOR 997. Offered by Systems Engr & Operations Rsch. May be repeated within the degree.

Recommended Prerequisite: Completion of 3 semesters of SEOR 800

Registration Restrictions:
Required Prerequisite: SEOR 800.

Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Enrollment is limited to students with a major in Systems Engineering Ops Rsch.

Enrollment limited to students in a Doctor of Philosophy degree.

Schedule Type: Seminar

Grading:
This course is graded on the Satisfactory/No Credit scale.

SEOR 998: *Doctoral Dissertation Proposal.* 1-12 credits.
Work on research proposal that forms basis for doctoral dissertation. Notes: No more than 24 credits of SEOR 998 and 999 may be applied to doctoral degree requirements. Offered by Systems Engr & Operations Rsch. May be repeated within the degree.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

SEOR 999: *Doctoral Dissertation.* 1-12 credits.
Formal record of commitment to doctoral dissertation research under direction of faculty member approved by SEOR Department. Offered by Systems Engr & Operations Rsch. May be repeated within the degree.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy.

Enrollment is limited to Graduate level students.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Dissertation

Grading:
This course is graded on the Satisfactory/No Credit scale.

Technology Management (TECM)

600 Level Courses

TECM 601: *Business Models.* 1 credit.
Provides an introduction to high tech industries, emerging technologies and business models that are transforming technology-intensive industries such as music, financial services and healthcare. The course covers techniques for analyzing how organizations create, deliver and capture value. The students use case-based approach to analyze traditional and high-tech organizations to understand their business models, and identify causes for success and failures. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

TECM 603: *IT Leadership and the Global CIO.* 1 credit.
This course provides an introduction and overview of Information Technology (IT) leadership and the role of the evolving CIO. The focus is on the global nature of the CIO position in organizations today. The relationship between the CIO and other c-level executives is examined including new positions such as the Chief Digital Officer that overlap with the CIO position. The responsibilities of the CIO in organizations in the US and abroad are explored. This course integrates with the global residency and global business perspectives course. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

TECM 611: *Leadership and Change Management.* 2 credits.
Examines the critical roles and functions of leadership with special attention to how leaders influence organizational performance and manage change. Topics include providing direction, creating a culture for effectiveness, the use of power and influence, leadership development, leading under changing conditions, and leading and managing change. Offered by School of Business. May not be repeated for credit. Equivalent to MSIS 611.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

TECM 614: *Financial and Cost Accounting.* 2 credits.
Focuses on the economics and analysis of business transactions and financial reporting. Topics include an introduction to the financial reporting framework, review of how accountants measure and manage financial reporting, an introduction to cost concepts and product costing, and an analysis of capital investments and management control. Emphasis is placed on providing an analytic framework for evaluating transactions and companies. Offered by School of Business. May not be repeated for credit. Equivalent to MSIS 614.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Enrollment is limited to Graduate or Undergraduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

TECM 620: *Economics of Global Technology Management.* 1-3 credits.
This course will take an economics-based approach to developing a framework for managers to use in analyzing problems and making decisions in a global business context. Emphasis will be placed on the importance of incentives and information in shaping decisions and results. Major elements to be treated include factors influencing the global demand for products and services, the nature of input-output relationships, the determinants of costs and profitability, and the global competitive environment within which firms operate. Particular attention will be directed toward the role of information-technology resources in determining organizational performance, the significant features of global markets related to information technology, and the potential for innovation to create competitive advantages. Offered by School of Business. May not be repeated for credit. Equivalent to MSIS 620.

Recommended Prerequisite: Admission to Technology Management Program or permission of the program director.

Registration Restrictions:

Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Enrollment is limited to Graduate or Undergraduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

TECM 635: *Decision Models for Technology Management.* 1-3 credits.
Explores current metrics and metric development for quality, intangible assets, and project management as required within information technology companies. Applies statistical tools of best use with these metrics. Offered by School of Business. May not be repeated for credit. Equivalent to MSIS 635.

Recommended Prerequisite: Admission to Technology Management Program or permission of the program director.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Enrollment is limited to Graduate or Undergraduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

TECM 641: *Negotiation and Conflict Management.* 1-3 credits.
Students acquire insights and skills for negotiation and conflict resolution as they relate to a variety of organizational situations - including teamwork, communication and coordination, power and influence, legal disputes, career development, cross-cultural and international issues, as well as tackling ethical problems. The course is highly experiential, and is built on a foundation of hands-on exercises and extensive class discussion. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Enrollment is limited to Graduate or Undergraduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

TECM 643: *Managerial Finance.* 2 credits.
Surveys the theory and practice of corporate financial management with specific application to the technology sector. Students develop an understanding of key elements required in the valuation of project alternatives; including their strategic importance. Students evaluate and use financial management models and gain an understanding of how finance can be employed as a source of potential competitive advantage. Offered by School of Business. May not be repeated for credit. Equivalent to MSIS 643.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Enrollment is limited to Graduate or Undergraduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

TECM 696: *Directed Studies in Technical Management.* 1-3 credits.
Approval by faculty member and program director required prior to registration. Studies specialized topics in business not otherwise available in the curriculum. Offered by School of Business. May be repeated within the degree for a maximum 3 credits.

Recommended Prerequisite: Admission to the TECM program or permission of the program director.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Regular scale.

TECM 697: *Special Topics in Technology Management.* 1-3 credits.
Sections established as necessary to focus on various topical issues that emerge in practice of business. Offered by School of Business. May be repeated within the term for a maximum 6 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: Admission to the TECM program or permission of the program director.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

700 Level Courses

TECM 702: *Building High Performance Global Teams.* 2 credits.
This course seeks to deepen your understanding of human behavior in organizations and to improve your ability to manage human capital from a global business perspective. Topics include effective managerial learning, problem solving, decision making, building and maintaining effective work relationships, building and leading teams, and motivating and evaluating performance from a cultural and international business context. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to students with a major in Professional Studies(Tech Mgt) or Technology Management.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

TECM 704: *Management of Technology Projects and Portfolios.* 2 credits.
Examines advanced topics in project and program management, with specific attention to the issues that managers face to effectively manage programs. This involves managing resources (both internal and external to the organization) and managing within an existing organizational structure. Specific program management topics include advanced topics for project management, program alignment with strategic objective, management of stakeholders, and development and organization of the program office. Strategic and operational tools and metrics also are discussed. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to students with a major in Professional Studies(Tech Mgt) or Technology Management.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

TECM 711: *Deriving Strategic Value from IT Investments.* 2 credits.
Reviews approaches for aligning IT strategy and investment with organizational strategy. The course covers methodologies for IT investment, planning and control including cost benefit, economic and risk analysis; benefits of alternative IT investments; methods of technology road mapping; and capital investment analysis. IT performance assessment methodologies and acquisition planning and design, are also reviewed. Offered by School of Business. May not be repeated for credit. Equivalent to MSIS 711.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

TECM 720: *Competitive Strategy in Technology Industries.* 2 credits.
Provides students with an understanding of the impact of information technology on firms and industries and equips them to develop and execute appropriate strategies. Although the emphasis is on information technology firms and industries, a key goal of the course is to better prepare students to respond to a diverse array of information technology challenges. Course work covers the demand and the supply side of information technology, as well as the development of frameworks and analytical tools to help put events, behaviors, and processes into understandable contexts. Offered by School of Business. May not be repeated for credit.

Recommended Prerequisite: Admission to Technology Management Program or permission of the program director. TECM 615 and 620.

Registration Restrictions:
Enrollment is limited to students with a major in Professional Studies(Tech Mgt) or Technology Management.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

TECM 721: *Digital Transformation.* 1-3 credits.
This course will focus on understanding IT strategy and the alignment to business strategy and current digital transformation initiatives. Digital transformation represents a major initiative for most companies and requires considerable organizational change over time. Many companies have hired Chief Digital Officers to lead this effort in companies. This course will provide industry perspectives on digital transformation trends and competitive implications. Industry examples and company strategies will be examined. Students will learn the skills to set a vision, develop a strategy, and execute a plan for digital transformation for an organization. This course is designed around industry perspectives with experts on digital transformation across industries participating in the classes. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

TECM 735: *Technology Management Capstone Project.* 0-1 credits.
Teams undertake a strategic evaluation and plan for IT-driven business initiatives. Presentation includes analysis of competitive forces and the value chain; recommendations, including changes in goals and organizational design; plan of action integrating marketing, human resource development, organizational design, finance, and information

technology; and implementation plan using theories of communication and change management, to include business case and business plan. Offered by School of Business. May not be repeated for credit. Equivalent to MSIS 735.

Recommended Prerequisite: Admission to Technology Management Program or permission of the program director.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Satisfactory/No Credit scale.

TECM 741: *Marketing of Innovations and Technology.* 2 credits.
Provides students the opportunity to conduct a detailed exploration of effective marketing strategies, including product and service development, branding, and customer relationships, in preparation for developing a marketing plan for a technology related innovation. Specific course topics include: assessing the marketplace, understanding the customer, market segmentation, developing and positioning the offering, pricing, branding, distribution, and promotion. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

TECM 743: *Security Risk Analysis and Assessment.* 1 credit.
Focuses on the analysis of security risk to the business within IT systems and across IT architecture and enterprise practices. Offered by School of Business. May not be repeated for credit.

Recommended Prerequisite: C or better in TECM 747.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

TECM 744: *IT Audit Control.* 2 credits.
Introduces methodologies to assess security and control issues concerning accounting and other information systems. A key feature of the course will be applying Computer Assisted Audit Tools and Techniques (CAA Ts) to test effectiveness of application controls. Students will gain hands-on experience by using Generalized Audit Software (GAS) such as ACL to extract data from a database and perform a variety of analyses. Examples of other topics covered include business continuity planning, continuous auditing, control objectives for information technology, COSO's framework for risk management, assessment of transaction processing integrity, and role of information assurance in e-commerce. Offered by School of Business. May not be repeated for credit.

Recommended Prerequisite: C or better in TECM 747.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Enrollment limited to students in a Non-Degree Undergraduate degree.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

TECM 745: *Leading and Managing IT Operations.* 2 credits.
Explores best practices in the IT industry. Students analyze practices in terms of gaining competitive advantage in an industry where the scarcity economic model for products no longer applies. Course work focuses on leading an organization with the IT function. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to students with a major in Professional Studies(Tech Mgt) or Technology Management.

Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

TECM 746: *Enterprise Architecture and IT Governance.* 2 credits.
Examines the operational, financial and strategic considerations of leading enterprise architecture and reviews the historical development of enterprise architecture. Major enterprise architecture frameworks including Zachman and TOGAF are examined. The relationship of enterprise architecture to IT governance, approaches to IT governance and the role of the CIO, and the relationship of IT governance to organizational performance, are also discussed. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

TECM 747: *Information Assurance and Security Management.* 2 credits.
Addresses the increasingly critical areas of information security and information assurance. Specific focus is on best practices for assessment, planning and management of information security strategy, policy, organizations and controls to minimize the risks pertaining to unauthorized use, processing, storage, and communication of digital

information. Pertinent legislation and policy requirements are also covered. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

TECM 749: *Developing and Emerging Technologies.* 1-3 credits.
This course will focus on an understanding of the current technology landscape of emerging technologies and technologies that are moving into the maturing phase. It is essential that IT leaders keep abreast of the latest technologies and understand the implications for industries, the workplace, and society. Emerging technologies can be disruptive to business as usual and understanding the business implications early is crucial for success. The course is designed around industry perspectives with experts on various technologies participating in the classes. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

TECM 752: *Global Technology Management.* 1-3 credits.
Provides the opportunity for students to spend a week in a country or countries that are leading edge in technology and technology management. Students visit corporations and governments and interact with corporate and IT executives, and government leaders. Topics include CIO and eGovernment, commercialization of emerging technologies, national competitiveness, international development, global supply chains and virtual teams. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate level students.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

TECM 753: *Global Leadership Perspectives.* 1-3 credits.
This course will focus on understanding global dimensions of doing business across borders that IT leaders need to understand to conduct their business successfully. It has become essential that IT leaders understand the political, legal, economic, social, and technological issues that impact business operations in other countries. Global supply chains and integration of technology through global networks require an understanding of global operations, differences in negotiating contracts, and importance of establishing relationships. Understanding differences and similarities in developing and emerging markets is key to reverse innovation success in these markets. This course is designed around industry perspectives with various experts on global topics participating in the classes. Offered by School of Business. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Students in a Non-Degree Post-Baccalaureate or Non-Degree Undergraduate degrees may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

TECM 760: *CIO Applied Project.* 1-3 credits.
This course represents the applied project for the CIO Certificate. Students will develop a strategic IT project that addresses an IT leadership issue for a company that the CIO would be responsible for implementing (e.g., Develop a Cloud Strategy for a company or IT systems integration plan). Students work in teams and present their work to company representatives from the company they are working with. Offered by School of Business. May be repeated within the term for a maximum 3 credits.

Registration Restrictions:
Required Prerequisites: (TECM 602[B-] or 602[XS]) and (TECM 620[B-] or 620[XS]) and (TECM 702[B-] or 702[XS]) and (TECM 752[B-] or 752[XS]) and (TECM 763[B-] or 763[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major in Technology Management.

Enrollment is limited to Graduate level students.

Enrollment limited to students in a Master of Science degree.

Schedule Type: Fieldwork

Grading:
This course is graded on the Graduate Regular scale.

TECM 761: *Global IT Leadership Applied Project.* 1-3 credits.
This course is a Global IT applied project that intersects with a specific company need and student team interest. Students will work in teams to complete a project that relates to global IT management and provides value to the company undertaking the project. Projects may focus on global reverse innovation strategies, global expansion strategies, merger and acquisition strategies across borders, or other project that has a substantial IT component that IT leaders might encounter. Students will present their recommendations to representatives of the company and/or faculty and others from the business community. Offered by School of Business. May be repeated within the term for a maximum 3 credits.

Registration Restrictions:
Required Prerequisites: ((TECM 602[B-] or 602[XS]) and (TECM 620[B-] or 620[XS]) and (TECM 702[B-] or 702[XS]) and (TECM 752[B-] or 752[XS])).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major in Global IT Leadership or Technology Management.

Enrollment is limited to Graduate level students.

Schedule Type: Fieldwork

Grading:
This course is graded on the Graduate Regular scale.

TECM 762: *IT Strategy and Digital Transformation Applied Project.* 1-3 credits.
This course represents the applied project for the IT Strategy and Digital Transformation Certificate. Students will work in teams to develop a digital transformation strategy for a company. Company representatives will work with students to develop the strategy based on requirements of the company that may be comprehensive or focus on a particular domain such as customer experience. Prior course work provides the foundation and skills for students to complete this applied project. Students will present their recommendations to representatives of the company and / or faculty and others from the business community. Offered by School of Business. May be repeated within the term for a maximum 3 credits.

Registration Restrictions:
Required Prerequisites: (TECM 602[B-] or 602[XS]) and (TECM 620[B-] or 620[XS]) and (TECM 702[B-] or 702[XS]) and (TECM 752[B-] or 752[XS]).
[B-] Requires minimum grade of B-.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major in Global IT Leadership or Technology Management.

Enrollment is limited to Graduate level students.

Schedule Type: Fieldwork

Grading:
This course is graded on the Graduate Regular scale.

Telecommunications (TCOM)

500 Level Courses

TCOM 500: *Modern Telecommunications.* 3 credits.
Comprehensive overview of telecommunications, including current status and future directions. Topics include review of evolution of telecommunications; voice and data services; basics of signals and noise, digital transmission, network architecture and protocols; local area, metropolitan and wide area networks and narrow band ISDN; asynchronous transfer mode and broadband ISDN; and satellite systems, optical communications, cellular radio, personal communication systems, and multimedia services. Examples of real-life networks illustrate basic concepts and offer further insight. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: TCOM 575, or equivalent.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

TCOM 514: *Basic Switching: Lecture and Laboratory Course.* 3 credits.
Basic switching techniques and protocols for low and high-speed digital packet networks (Ethernet, Frame Relay, ATM, X.25) are taught within a half semester lecture series, followed by hands-on laboratory for remainder of semester. Real-life scenarios taught in the laboratory element through exercises that involve configuring switches and routers. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: TCOM 535 or IT 341

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Graduate Regular scale.

TCOM 515: *Internet Protocol Routing: Lecture and Laboratory Course.* 3 credits.
Internet Protocol (IP) routing overview; static routing; dynamic routing; default routing; access lists; route redistribution; RIP, OSPF, IGRP, EIGRP, IS-IS, and BGP protocols submitted for comment. Real-life scenarios taught in laboratory element through exercises that involve configuring routers as network elements. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: TCOM 535, IT 341.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Graduate Regular scale.

TCOM 521: *Systems Engineering for Telecommunications Management.* 3 credits.
Advanced software principles, techniques, and processes for designing and implementing complex telecommunication systems. Planning

and implementation of telecommunications systems from strategic planning through requirements, initial analysis, general feasibility study, structured analysis, detailed analysis, logical design, and implementation. Current system documentation through use of classical and structured tools and techniques for describing flows, data flows, data structures, file designs, input and output designs, and program specifications. Practical experience gained through project. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: TCOM 500.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

TCOM 530: *Data Communications Fundamentals.* 3 credits.
Covers the foundations of modern data communications. The lower layers of the OSI reference model are discussed with an emphasis on the data link and the network layers. Concepts are illustrated by drawing examples from important data networks ranging from local are networks to the Internet. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

TCOM 535: *The TCP/IP Suite of Internet Protocols.* 3 credits.
Provides an in-depth treatment of the protocols that define the Internet. Topics include: IPv4 addressing and subnetting; CIDR; Data Link Protocols: ARP, RARP; Network Protocols: IP, ICMP; IP Routing Protocols: RIP, OSPF, IS-IS, BGP; Transport Protocols: TCP, UDP; TCP Features: Windowing, Congestion Control, Advanced Protocols: MPLS; Internet Security: IPSec, SSL. Offered by Electrical & Comp. Engineering. May be repeated within the degree.

Recommended Prerequisite: TCOM 530.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

TCOM 547: *Project Management in Telecommunications.* 3 credits.
Develops integrated approach to managing major telecommunications project; evaluates and uses tools and software for project management, with specific goals of containing costs and time overruns; introduces elements for resolving conflict resolution and applying motivation within project team, and gaining the ability to monitor and control projects in changing environment; develops understanding of unique attributes of major telecommunications systems such as interoperability requirements and international technical standards. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

TCOM 551: *Digital Communication Systems.* 3 credits.
Digital transmission of data, voice, and video. Covers signal digitization; modulation and demodulation; error correction coding; multiple access methods; multiplexing; synchronization; channel equalization; frequency spreading; encryption; transmission codes; digital transmission using bandwidth compression techniques; elements of information theory; and development of link budget evaluation such as system noise temperature, Nyquist filter concepts, antenna gain, and filter bandwidth. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: TCOM 500.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

TCOM 552: *Introduction to Mobile Communications Systems.* 3 credits.
Introduces mobile communication system design and analysis. Topics include mobile communication channel, access and mobility control, mobile network architectures, connection to fixed network, and signaling protocols for mobile communication systems. Offers examples of mobile communication systems including panEuropean GSM system, North American DAMPS system, and Personal Communication Systems. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: TCOM 500, TCOM 551.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

TCOM 561: *Security, Privacy, and Applied Cryptography for Telecommunications.* 3 credits.
Presents on introductions to Computer and Network Security and Privacy; Digital Threats; Authentication Techniques; Vulnerabilities; Integrity; Access Control; Threat Modeling and Risk Assessment; Security Policies and Countermeasures; Cryptography; Block Ciphers and DES; AES; Cipher Block Operation; Certificate and Credentials; Public Key Cryptography and RSA; Key Management; Digital Signature; Electronic Mail Security; IP Security. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: TCOM 500 and TCOM 530.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

TCOM 562: *Network Security Fundamentals.* 3 credits.
Introduces full spectrum of network security. Topics include taxonomy such as language commonality in incident handling, national strategy to secure cyberspace, and cybersecurity organizations; organizational structure for network defense; best practices, security policy, and threats; actors and tools, countermeasures, vulnerability identification/correction, intrusion detection, and impact assessment; firewalls and intrusion detection systems; antivirus software; active defense; disaster recovery; and law enforcement and privacy issues. Reviews threats and vulnerabilities in network systems based on reports, case studies available in the literature, and actual experience. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: TCOM 500.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

TCOM 570: *Network Automation.* 3 credits.
This is a project-based course that focuses on the process of automating the configuration, management, testing, and operation of physical and virtual devices within a network. Topics covered include: Setting up Virtual Lab, PyCharm, Intro to Linux, Loops and conditions, Function, Class, string and data manipulation, Python sockets, Logging, error handling, Regex, Pandas, Database (SQlite3/mongodb), Paramiko, Flask and Graphing, Requests, API and web scrapping and Ansible for network automation. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

TCOM 590: *Selected Topics in Telecommunications.* 1.5-3 credits.
Selected topics from recent developments and applications in various engineering disciplines within specialty modules 1, 2, and 3 of the TCOM program. The course is designed to help the professional engineering community keep abreast of current developments. Notes: The 1.5-credit course lasts for one-half semester (approximately seven weeks) while the 3-credit course lasts for the full semester. Offered by Electrical & Comp. Engineering. May be repeated within the term for a maximum 9 credits.

Specialized Designation: Topic Varies

Registration Restrictions:

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

TCOM 598: *Independent Study in Telecommunications.* 1.5-3 credits.
Directed self-study of special topics in telecommunications that relate to specialty modules 1, 2, and 3. Topics must be arranged with instructor and approved by program director before registering. Notes: May be taken for either 1.5 credits or 3.0 credits in fall and spring semesters. No more than total 6 credits may be taken from combination of TCOM 598, 599, 696, and 697 courses for credit in TCOM program. Offered by Electrical & Comp. Engineering. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Special scale.

600 Level Courses

TCOM 606: *Advanced Mobile Communications Systems.* 3 credits.
Introduction to post-second generation cellular systems; benefits and features of third-generation (3G) systems and personal communications services (PCS); review of air interface standards and transmission technologies for mobile and quasi-stationary wireless systems, including cellular networks, satellite networks, indoor systems (Wi-Fi, Personal Local Area Networks, Orthogonal Frequency Multiplexing, Ultra Wide Band technologies); review of network control strategies; investigation of user authentication, privacy, and data and voice encryption aspects. Evolving technology, analysis of competing multiple access methods, transition plans, and backward compatibility between 2G, 21/2 G, 3G, and future systems, with possible fallback plans. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: TCOM 552.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

TCOM 607: *Satellite Communications.* 3 credits.
Topics include introduction to satellite communications systems; historical aspects; orbital mechanics and launchers; satellite components such as payload, orbital maneuvering systems, cooling systems, and antennas; look angle predictions; link budget; overall link design; multiple access such as TDMA, CDMA, ALOHA, TDMA, and MFTDMA; error control for digital satellite links; propagation effects on satellite links; elements of VSAT systems and nongeostationary satellite systems; and direct broadcast satellite services. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: TCOM 551.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

TCOM 608: *Optical Communications Systems.* 3 credits.
Introduction and Overview of Optical Fiber Communications Systems and Optical Communication Networks. Specific topics include Optical Resonators; Photons and Matter, Lasers, Photons in Semiconductors; Semiconductor Photon Sources and Detectors; Light Emitting Diodes; Modulation of Optical Signals; Optoelectronic Networks; FDDI, Fiber channel, SONET, SDH, Ethernet on Optical Networks; Wavelength Division Multiplexing (WDM) networks; Basics of Fiber Optic System Design. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: TCOM 500.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

TCOM 609: *Interior Gateway Protocol (IGP) Routing.* 3 credits.
Discusses development of Interior Gateway Protocols, including standards documents; interaction between various interior and exterior gateway protocols; design procedures and implementation aspects; field trial issues; and analysis of latest RFC information posted on IETF web site. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: TCOM 515 and TCOM 535, or equivalent.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

TCOM 610: *Border Gateway Protocol (BGP) Routing.* 3 credits.
Discusses development of Border Gateway Protocol and its application in today's Internet routing architecture. Covers evolution of Internet, BGP routing standard specifications (RFCs), interaction between various routing protocols, network BGP routing design principals and procedures for enterprise and ISP networks, BGP's real-world implementation and configuration syntax, network scalability and convergence issues, and the latest extension and proposals for new standards. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: TCOM 509 and TCOM 515, or equivalent.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

TCOM 611: *Multi-Protocol Label Switching (MPLS).* 3 credits.
Develops full understanding of Multi-Protocol Label Switching (MPLS) theory, technology, and implementation aspects through detailed analysis of MPLS routing concepts and protocol stacks, and completion of major project to reinforce understanding of MPLS. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: TCOM 609 or 610

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

TCOM 614: *Advanced Routing Lab.* 3 credits.
Covers the principles and theory of Multiprotocol Label Switching (MPLS). Topics include MPLS Architecture, Label Distribution Protocols, MPLS Virtual Private Network, MPLS traffic engineering, Any Transport over MPLS (AToM), and Quality of Service (QoS). The class is interleaved with hands-on labs, detailing how to implement and troubleshoot MPLS and its applications. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: TCOM 535 and (TCOM 514 or TCOM 515)

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Graduate Regular scale.

TCOM 616: *Scalable Network Architecture.* 3 credits.
Covers concepts and protocols associated with designing highly available and scalable networks on the cloud. Topics include server class operating systems and their application in Internet and enterprise deployments, techniques used to support an enterprise cloud network, networking in virtualized environments and fundamentals of cloud computing. Course also includes exercises and lab work that applies concepts learned throughout the course. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: TCOM 514, TCOM 515 and TCOM 535

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory, Lecture

Grading:
This course is graded on the Graduate Regular scale.

TCOM 617: *Enterprise Network Architecture.* 3 credits.
Cover various advanced technologies used in ensuring quality for critical business applications and cost-effective solutions for providing both secure and non-secure communication across a public infrastructure. Topics covered include Quality of Service Performance Routing (PfR), IPSec Virtual Private Networks (VPNs), and Data Center Interconnect (DCI). Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: TCOM 535

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

TCOM 631: *Voice Over IP.* 3 credits.
Presents the protocols used for transporting voice over Packet Switched Network. Topics include: Signaling basics; Topics; VoIP Network Scenarios and Connection Strategies; Communication Protocols: RTP, RTCP; VoIP Decomposition; Performance and quality metrics for VoIP; VoIP Signaling Protocols: H.323, SIP, SS7; Softswitches: architecture, functionality, application; VOIP-PSTN integration and migration; VOIP Quality and QoS; VoIP Security: Vulnerabilities, remedies; NextGen VoIP. VoIP Mobility, Equipment, Voice XML, IMS; Future of VoIP. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: TCOM 535.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

TCOM 652: *5G Service, Technology and Network.* 3 credits.
This course provides an overview of Fifth Generation (5G) wireless communications systems including ITU IMT2020 use cases, services, spectrum, capabilities, performance objectives and world-wide deployment status. The 3GPP and 3GPP2 cellular standards for Third Generation (3G) and Fourth Generation (4G) / LTE wireless communications systems will be reviewed as foundation. WiFi and Bluetooth will be discussed for their role in 5G. The 5G new radio (NR) air interface, 5G architecture, 5G core network and 5G security are presented. The 5G call flow procedures, real-life performance testing results and over the air messaging are investigated. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: TCOM 551

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

TCOM 653: *Global Positioning System (GPS).* 3 credits.
Presents in-depth treatment of theoretical and practical aspects of the Global Positioning system. Topics include: Basic Transmission Engineering for GPS; Spaced-Based Systems, Navigation, GPS Architecture, Signals, Ranging; Sources of Ranging Errors, Atomic Clocks, Timescales, Frequency Stability, Time Distribution, Carrier-to-Noise Ratio (C/No), Noise Figure and Noise Factor, Code and Signal Generation. Signal Acquisition and Tracking, Modulation/Demodulation, Correlation, Time-To-First-Fix, Almanac and Dual-Frequency Capability; Differential GPS, Global Navigation Satellite Systems and Augmentation Systems. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: TCOM 500.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

TCOM 660: *Network Forensics.* 3 credits.
Deals with the collection, preservation, and analysis of network-generated digital evidence such that the evidence can be successfully presented in a court of law (both civil and criminal). The relevant federal laws will be examined as well as private sector applications. The capture/intercept of digital evidence, the analysis of audit trails, the recording of running processes, and the reporting of such information will be examined. Offered by Electrical & Comp. Engineering. May not be repeated for credit. Equivalent to CFRS 660, DFOR 660.

Recommended Prerequisite: TCOM 535 and a working knowledge of computer programming.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the following colleges:

- College of Science
- Schar School of Policy and Gov
- School of Business
- Volgenau School of Engineering

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

TCOM 661: *Digital Media Forensics.* 3 credits.
Covers the collection, preservation, and analysis of digital media such that the evidence can be successfully presented in a court of law (both civil and criminal). The relevant federal laws and private sector applications will be examined, as well as the seizure, preservation, and analysis of digital media. Offered by Electrical & Comp. Engineering. May not be repeated for credit. Equivalent to CFRS 661, DFOR 661.

Recommended Prerequisite: DFOR 510 and a working knowledge of computer operating systems (e.g. CYSE 211, IT 342, or equivalent).

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the following colleges:

- College of Science
- Schar School of Policy and Gov
- School of Business
- Volgenau School of Engineering

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

TCOM 662: *Advanced Secure Networking.* 3 credits.
Advanced technologies in network security that can be applied to enhance enterprise and ISP's network security. Covers network perimeter defense concept and various components for complete layered defense system. Examines each component and its technologies, including TCP/IP protocol vulnerabilities, router access control list (ACL), dynamic ACL, firewall, network address translation (NAT), virtual private network (VPN), IPSec tunnels, intrusion detection system (IDS), routing protocol security, denial-of-service (DOS) attack, DOS detection and mitigation techniques. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: TCOM 535 and TCOM 562, and a working knowledge of network routing protocols.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

TCOM 663: *Operations of Intrusion Detection for Forensics.* 3 credits.
Introduces students to network and computer intrusion detection and its relation to forensics. Addresses intrusion detection architecture, system types, packet analysis, and products. Presents advanced intrusion detection topics such as intrusion prevention and active response, decoy systems, alert correlation, data mining, and proactive forensics. Offered by Electrical & Comp. Engineering. May not be repeated for credit. Equivalent to CFRS 663, DFOR 663.

Recommended Prerequisite: TCOM 535 and a working knowledge of computer programming.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

TCOM 664: *Incident Response Forensics.* 3 credits.
Addresses incident detection, response, and those aspects of computer forensics pertinent to the investigation of trade secret theft, economic espionage, copyright infringement, piracy, and fraud. Procedures for gathering, preserving, and analyzing forensic evidence are discussed in detail and are applied to both computer and network incident response forensics. Offered by Electrical & Comp. Engineering. May not be repeated for credit. Equivalent to CFRS 664, DFOR 664.

Recommended Prerequisite: TCOM 535.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

TCOM 690: *Advanced Topics in Telecommunications.* 3 credits.
Advanced topics from recent developments and applications in various engineering disciplines in specialty modules 1, 2, and 3 of TCOM program. Advanced topics chosen so that they do not duplicate existing TCOM courses. Active participation of students encouraged in form of writing and presenting papers in various research areas of advanced topic. Enhances professional engineering community's understanding of breakthrough developments in specific areas. Offered by Electrical & Comp. Engineering. May be repeated within the term for a maximum 9 credits.

Specialized Designation: Topic Varies

Recommended Prerequisite: Permission of instructor; specific prerequisites vary.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

TCOM 696: *Independent Reading and Research.* 1.5-3 credits.
Study of selected area in specialty modules 1, 2, or 3 under supervision of faculty member. Written report required. Notes: No more than total of 6 credits may be taken from combination of TCOM 598, 599, 696, and 697 for credit in TCOM program. Offered by Electrical & Comp. Engineering. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Special scale.

TCOM 698: *Telecommunications Projects Course.* 3 credits.
To be taken toward end of degree program within any of modules 1, 2, or 3. Primary activity is completing major applied project, preferably with group of two to three people. Secondary goal is consolidating training before graduation so that, in some cases, it may act as capstone course. Students and outside telecommunication industry managers present ideas for projects and, through grouping of students, new skills and approaches may be learned. Some class time used for discussion of projects, either to monitor progress or explore alternative approaches. Readings, class-time discussion of current trends, difficulties, and new opportunities for industry most relevant to module. Concludes with presentations of projects to department faculty. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: Graduate standing with at least 18 credits or permission of department.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

700 Level Courses

TCOM 750: *Coordinating Seminar.* 3 credits.
Open only to students in MA or MS in telecommunications programs with at least 18 credits of course work prior to registration. Topics include specific telecommunications problems in management, law, engineering, education, and communications. Focuses on ways a problem in one area can create or solve a problem in other areas. Offered by Electrical & Comp. Engineering. May not be repeated for credit.

Recommended Prerequisite: Open only to students in the MA or MS in telecommunications programs with at least 18 credit hours of course work prior to registration.

Registration Restrictions:
Enrollment is limited to students with a major in Telecommunications or Telecommunications.

Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the College of Science, Schar School of Policy and Gov or Volgenau School of Engineering colleges.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

Theater (THR)

100 Level Courses

THR 101: *Theatrical Medium.* 3 credits.
An introduction to theater throughout history and the world. Enhances an understanding of the nature of theater in society. Offered by Theatre. Limited to three attempts.

Mason Core: Arts

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

THR 150: *Greeks to Restoration.* 3 credits.
Examines the development of Western drama and the collective art of theater from its beginnings through Restoration. Considers readings in dramatic literature and history of theater in social and cultural contexts. Offered by Theatre. Limited to three attempts.

Mason Core: Arts

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

THR 151: *Romanticism to Present.* 3 credits.
Considers readings in dramatic literature and history of western theater in social and cultural contexts from the romantic period to present day. Offered by Theatre. Limited to three attempts.

Mason Core: Arts

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

THR 191: *Theater Support/Engagement.* 0 credits.
Each semester, registered students complete four activites in support of the School of Theater. To graduate as a Theater major, students must complete 4 semesters of the course. Offered by Theatre. May be repeated within the term for a maximum 12 credits.

Schedule Type: Laboratory

Grading:
This course is graded on the Satisfactory/No Credit scale.

THR 196: *Performance or Design Practicum.* 1 credit.
Academic credit awarded for satisfactory completion of a minimum of 30 hours of assignment on a Mason Player production. Assignments include performance, design, and stage management. Open to all Theater majors, theater minors, and non-majors. Notes: Successful completion of this course is required to earn a Theater degree. Offered by Theatre. Limited to three attempts.

Schedule Type: Studio

Grading:
This course is graded on the Satisfactory/No Credit scale.

THR 197: *Stage or Literary Practicum.* 1 credit.
Academic credit awarded for satisfactory completion of a minimum of 30 hours of assignment on a Mason Players production. Positions include directing, dramaturgy, and leadership in technical productions. Open to all theater majors, theater minors, and non-majors. Notes: Successful completion of this course is required to earn a Theater degree. Offered by Theatre. Limited to three attempts.

Schedule Type: Studio

Grading:
This course is graded on the Satisfactory/No Credit scale.

THR 198: *Theatrical Construction Practicum.* 1 credit.
Academic credit awarded for satisfactory completion of a minimum of 30 hours of participation on a Mason Players production. Areas include scenery construction, scene painting, costume construction, props and other technical assignments. Theater majors, theater minors, and non-majors welcomed. Notes: Successful completion of this course is required to earn a Theater degree. Recommended for freshman Theater majors, first year transfers, and new Theater majors. Contact School of Theater for CRN. Offered by Theatre. Limited to three attempts.

Schedule Type: Laboratory

Grading:
This course is graded on the Satisfactory/No Credit scale.

THR 199: *Production Run Crew Practicum.* 1 credit.
Academic credit awarded for satisfactory completion of a minimum of 30 hours of assignment on a Mason Players production. Assignments include run crew, light board operator, sound board operator, wardrobe, and fly crew. Theater majors, theater minors, and non-majors welcomed. Notes: Successful completion of this course is required to earn a Theater degree. Recommended for freshman Theater majors, first year transfers, and new Theater majors. Contact School of Theater for CRN. Offered by Theatre. Limited to three attempts.

Schedule Type: Laboratory

Grading:
This course is graded on the Satisfactory/No Credit scale.

200 Level Courses

THR 200: *Play Production Practicum.* 1 credit.
Academic credit is awarded for satisfactory completion of a minimum of 30 hours of assignment on a Mason Players production. Students who have completed THR 196, THR 197, THR 198, and THR 199 may register for THR 200 to receive credit for their participation on additional productions. Offered by Theatre. May be repeated within the term for a maximum 8 credits.

Schedule Type: Laboratory

Grading:
This course is graded on the Satisfactory/No Credit scale.

THR 201: *Stage Management.* 3 credits.
Introduction to the fundamentals of stage management and the stage manager's role for production. Learn and develop the organizational skills of running and maintaining a production with emphasis on skillful methods in communication and problem solving. Analyzes text from a Stage Manager's perspective. Requirements include creating a stage manager prompt book containing important show documents. Offered by Theatre. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

THR 210: *Acting I.* 3 credits.
Students practice contemporary acting techniques individually and in a group. Promotes and develops performance and practical communication skills. Attend theatrical productions, and respond to those experiences. Offered by Theatre. Limited to three attempts.

Mason Core: Arts

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

THR 211: *Mason Cabaret.* 1 credit.
Students develop an understanding of major artistic work through vocal performance. Performance of works from musical theater repertoire. Notes: Public concerts required. Offered by the School of Theater. Open to all theater majors, theater minors, and non-majors. Audition or interview required. Offered by Theatre. May be repeated within the degree for a maximum 4 credits.

Schedule Type: Studio

Grading:
This course is graded on the Satisfactory/No Credit scale.

THR 230: *Fundamentals of Production.* 3 credits.
Students explore current production practices in scenery, costumes, lighting, and sound through classroom and hands on experience. Concepts and skills acquired in this class may be applied in theater, film, dance, game design, art, corporate events, and architecture. Lab hours include work on live performances. Offered by Theatre. Limited to three attempts.

Mason Core: Arts

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

THR 240: *Introduction to Theatrical Design.* 3 credits.
Foundational theatrical design course that will introduce students to methods used for script analysis, research, design ideas, and collaboration by theatrical designers to create adaptable worlds for theatrical production. Offered by Theatre. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

300 Level Courses

THR 300: *Voice and Speech.* 3 credits.
A mixed theory introduction for performers, presenters, and anyone wishing to improve their speaking voice. Basic techniques in breathing, vocal production, and articulation. Offered by Theatre. Limited to three attempts.

Recommended Prerequisite: THR 210 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

THR 301: *Advanced Study in Voice.* 3 credits.
Addresses various topics in technique of vocal production for the actor with an emphasis on playing characters for stage, radio, voice-over, and screen. Offered by Theatre. May be repeated within the degree for a maximum 9 credits.

Recommended Prerequisite: THR 300 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

THR 303: *Movement for Actors.* 3 credits.
Develops the physical aspect of the actor's instrument emphasizing free and responsive expression of impulse and intention, as well as character development and visual storytelling. Offered by Theatre. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

THR 304: *Advanced Movement for Actors.* 3 credits.
Advanced work in physical expression, for character development. Offered by Theatre. May be repeated within the degree for a maximum 6 credits.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

THR 305: *Unarmed Stage Combat.* 3 credits.
Studies safe, effective techniques for performing violence for stage and screen. Emphasizes acting the fight, safety, and storytelling. Offered by Theatre. Limited to three attempts.

Recommended Prerequisite: THR 210 and 310 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

THR 306: *Movement in Musical Theater.* 3 credits.
Students will explore and perform Movement for Musical Theater to include both character development and choreography. Offered by Theatre. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Enrollment is limited to students with a major in Arts Management, Art and Visual Technology, Dance, Film and Video Studies, Computer Game Design, Music or Theatre.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

THR 310: *Acting II.* 3 credits.
Deepens an understanding of performance analysis, and character relationships through scene work. Offered by Theatre. Limited to three attempts.

Recommended Prerequisite: THR 210 or permission of instructor.

Schedule Type: Lecture

Grading:

This course is graded on the Undergraduate Regular scale.

THR 313: *Event Technical Production.* 3 credits.
A theoretical and practical study of event technology and production. The course will include specifications, layout installation techniques and operation of sound systems, lighting systems, video systems, and staging processes for the event industry sector. Offered by Theatre. Limited to three attempts.

Recommended Prerequisite: THR 230 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

THR 314: *Lighting Stagecraft.* 3 credits.
Practical and theoretical instruction on becoming theatrical electrician. Includes ideas on workplace safety, basic electrical procedures, theatrical electrical production, integrating with other theater professionals, and professionalism. Offered by Theatre. Limited to three attempts.

Recommended Prerequisite: THR 230 or permission of instructor.

Recommended Corequisite: THR 200.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

THR 315: *Sound Engineering.* 3 credits.
Practical and theoretical study of audio engineering for theater and the entertainment industry. The course will cover the foundational principles of audio, as well as sound system components and operation. Offered by Theatre. Limited to three attempts.

Recommended Prerequisite: THR 230 or permission of instructor.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

THR 316: *Scene Painting.* 3 credits.
Students experience the art and craft of scene painting with the goal of translating design elevations into paint on muslin. Students learn fundamental scene painting techniques and how to use them in combinations to create portraits, murals, landscapes, and textures. Offered by Theatre. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: THR 230 or permission of instructor.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

THR 320: *Performance Studio.* 3 credits.
Builds on existing skills in observation, sense memory, relaxation, and improvisation. Students learn a variety of methods for scene preparation to apply to their own acting process. Offered by Theatre. Limited to three attempts.

Recommended Prerequisite: THR 210 and 310 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

THR 321: *Acting Shakespeare.* 3 credits.
Develops the verbal, vocal, and physical skills for performing Shakespearean text. Focuses on structure of language to reveal and express character's emotional life by using detailed script analysis, expansion of vocal range, and physicality to transform Shakespeare's language into powerful theatrical expressions. Offered by Theatre. Limited to three attempts.

Recommended Prerequisite: THR 210 and 310 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

THR 329: *Directing.* 3 credits.
Introduces the director's work through text analysis, rehearsal and staging techniques, and collaborative development of production ideas. Students present concepts and direct scenes to explore process. Offered by Theatre. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (THR 150[C] or 150[XS]) and (THR 151[C] or 151[XS]) and (THR 201[C] or 201[XS]) and (THR 210[C] or 210[XS]) and (THR 350[*C] or 350[*XS]).
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

THR 330: *Seminar in Technical Theater.* 3 credits.
Offered periodically; addresses selected topic in design or technical theater on advanced level. Offered by Theatre. May be repeated within the term for a maximum 24 credits.

Recommended Prerequisite: THR 230 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

THR 331: *Drafting and Model Making.* 3 credits.
Studies conventions and techniques of drafting and model making as methods of communication in the theatrical production process. Offered by Theatre. Limited to three attempts.

Recommended Prerequisite: THR 230 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

THR 332: *History of Fashion and Dress.* 3 credits.
This course examines the evolution of Western dress from its origins to the present. It examines the changing aspects of dress from one era to another, discussing how psychology, conflict, economy, government, religion, cross-cultural ties, media and other factors contribute to as well as affect the ever-shifting styles. Offered by Theatre. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

THR 333: *Scenic Design.* 3 credits.
Fundamentals of creating, developing, and communicating design idea through sketches, plans, rendering, or models. Analysis of text from designer's perspective. Offered by Theatre. Limited to three attempts.

Recommended Prerequisite: THR 230 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

THR 334: *Lighting Design.* 3 credits.
Introduces the fundamentals of lighting design, including research, paperwork communication, and technology for lighting. Topics include the controllable qualities of light, basic terminology, equipment, personnel and procedures. Learn to see light and develop a shared vocabulary for describing light and the process. Analyzes texts from designer's perspective. Offered by Theatre. Limited to three attempts.

Recommended Prerequisite: THR 230.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

THR 335: *Costume Design.* 3 credits.
Project-oriented class emphasizing the art and process of designing costumes for the stage and screen, including historical period, script analysis, design concepts, color theory, and costume rendering. Offered by Theatre. Limited to three attempts.

Recommended Prerequisite: THR 230 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

THR 336: *Technical Direction.* 3 credits.
Analyze scenic units for construction including building techniques, material choices, hardware, stage rigging, and budget estimates. Offered by Theatre. Limited to three attempts.

Recommended Prerequisite: THR 230 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

THR 337: *Sound Design.* 3 credits.
Study theory and practice of sound design for theater and the entertainment industry. Offered by Theatre. Limited to three attempts.

Recommended Prerequisite: THR 230 or permission of instructor.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

THR 339: *Principles of Design.* 3 credits.
Introduction to the principles of theatrical design. Course explores various design responsibilities and methods to create visual images for the stage through script analysis, research, and production team collaboration. Offered by Theatre. Limited to three attempts.

Recommended Prerequisite: THR 230 or permission of instructor.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

THR 340: *Advanced Studies in Directing.* 3 credits.
Expands directing techniques through staging extended scenes in various styles. Emphasizes collaborative process and production organization. Offered by Theatre. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: THR 329 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

THR 342: *Makeup Design.* 3 credits.
Project-oriented class emphasizing makeup for different performance spaces, character age analysis, facial anatomy, and specialized application for theater, opera, dance, film, and television. Offered by Theatre. Limited to three attempts.

Recommended Prerequisite: THR 230 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

THR 343: *Costume Technology.* 3 credits.
This lab course focuses on methods of costume construction. Lectures and demonstrations will address patterning, cutting, and sewing. The class will include hands-on lab activities. Offered by Theatre. Limited to three attempts.

Recommended Prerequisite: THR 230 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

THR 345: *Puppetry.* 2-4 credits.
Exploring of puppetry, and experiments with building and performance styles, through Original work. Offered by Theatre. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

THR 350: *Script Analysis.* 3 credits.
Critical analysis of dramatic literature as preparation for production and performance. Examination of plot, character, theme, audience impact, and cultural context, and the transformation of intellectual ideas into physical theatrical production elements. Offered by Theatre. Limited to three attempts.

Specialized Designation: Writing Intensive in Major

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

THR 351: *Dramatic Theory and Criticism.* 3 credits.
Chronological study of development of dramatic theory and criticism from Plato and Aristotle through modern movements. Students read plays, theoretical works, and critical responses, and write original criticism of performances or texts. Offered by Theatre. Limited to three attempts.

Recommended Prerequisite: THR 150 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

THR 352: *Dramatic Literature Seminar.* 3 credits.
Rotating topic. Intensive study of particular topic, period, or genre in dramatic literature. Notes: May be repeated if specific course content differs. Offered by Theatre. May be repeated within the term for a maximum 9 credits.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

THR 353: *Advanced Studies in Theater History.* 3 credits.
This course is designed to provide students with the opportunity to explore selected issues in theater history in greater depth than is possible in the typical survey course. The focus is on the process of doing original theater history research: selecting areas of inquiry, identifying and evaluating sources, gathering contextual materials, formulating research questions, and presenting the results in compelling ways, whether in writing, orally, or in electronic media. Offered by Theatre. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

THR 354: *American Voices.* 3 credits.
This seminar explores the works of playwrights and theater makers, both past and present, whose work, based chiefly in America, represents a marginalized culture, heritage, identity, or status. The works covered in this course will support either a deep study of a single playwright or a broader survey of marginalized theater writers organized under a given theme. Offered by Theatre. May be repeated within the degree for a maximum 6 credits.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

THR 355: *Moral Vision in American Theater.* 3 credits.
Examines vision of American society created and presented in contemporary American theater. Subject defined as "moral" vision because focus is on how we perceive ourselves in relation to others and society's value standards. Perspectives include sociology, theory of culture, practical theater craft, and literary criticism. Features plays by range of American playwrights. Offered by Theatre. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

THR 359: *World Stages.* 3 credits.
Introduces variety of theatrical traditions and performance theories from around the world, with special emphasis on those not covered in introductory Western drama survey courses, 150 and 151. Students read and discuss dramatic texts, performance theory, and video clips to understand variety of theatrical traditions in cultural and historical contexts. Requirements include two team presentations (taking turns as writer and presenter), one midterm paper, and one solo presentation with accompanying paper. Offered by Theatre. Limited to three attempts.

Mason Core: Global Understanding

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

THR 365: *Characterization.* 3 credits.
Presents a methodical approach to modeling theatrical characters on observation and personal experience, imagination and dreams, as well as art, history, and fiction. Students learn to synthesize these sources for the creation of detailed, specific, and vivid physical manifestations for the stage. Offered by Theatre. Limited to three attempts.

Recommended Prerequisite: THR 210.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

THR 380: *Playwriting I.* 3 credits.
Explores, through practice and example, principles of dramatic writing, including character, plot, dramatic structure, dialogue, exposition, setting, and creating theatrical images. Students will be expected to write and share their writing in class. Writing for a variety of venues will be covered.

Offered by Theatre. May be repeated within the degree for a maximum 6 credits.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

THR 381: *Playwriting II.* 3 credits.
Intensive continuation of work begun in THR 380. Offered by Theatre. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: THR 380 or permission of instructor.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

THR 382: *Screenplay Workshop.* 3 credits.
Studies screenwriting as dramatic form of 20th, 21st centuries. Explores story, plot structure, three act-structures, mythic structures, fundamental story patterns, character, thinking, and writing visually. Offered by Theatre. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

THR 395: *Theater as the Life of the Mind.* 3 credits.
Traces four subjects (battle of the sexes, good gifts, cyclical tragedy, and eschatology) from ancient theater to contemporary plays, television, and movies, using literary criticism, history, political theory, comparative religion, sociology, and anthropology. Offered by Theatre. Limited to three attempts.

Mason Core: Arts

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

THR 401: *Professional Presentation.* 3 credits.
Examines persuasive communication, with an emphasis on making presentations and addressing groups, both large and small. Hones the ability to project a personal passion while communicating information about any discipline to general audiences. Offered by Theatre. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

THR 405: *Advanced Stage Combat.* 3 credits.
Armed Stage Combat techniques are explored, unarmed techniques solidified, and advanced choreography mastered in this study of safe and effective theatrical storytelling through violence for Stage and Screen appropriate towards national certification as Actor-Combatant. Offered by Theatre. May be repeated within the degree for a maximum 9 credits.

Recommended Prerequisite: THR 305 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

THR 410: *Acting for the Camera.* 3 credits.
Designed for students with a strong interest in pursuing a professional career in acting and is focused primarily on the particular techniques for screen acting in film and television. Offered by Theatre. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: THR 310[C] or 310[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment is limited to students with a major, minor, or concentration in Theatre.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

THR 411: *Great Film Directors.* 3 credits.
Students view and analyze films in order to explore important film genres and examine influential directors. Offered by Theatre. Limited to three attempts.

Mason Core: Arts

Recommended Prerequisite: Sophomore standing (30 credit hours completed).

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

THR 412: *Great Film Performances.* 3 credits.
Students view and analyze films in order to examine the development and evolution of film acting. Offered by Theatre. Limited to three attempts.

Mason Core: Arts

Recommended Prerequisite: Sophomore standing (30 credit hours completed).

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

THR 415: *Advanced Sound Engineering.* 3 credits.
In depth study of sound engineering with a focus on sound reinforcement applications in large scale concert and theater settings. We will conduct and in-depth survey of industry standards and common practices that pertain to professional live sound reinforcement. Offered by Theatre. Limited to three attempts.

Recommended Prerequisite: THR 315 and THR 230 or permission of instructor.

Schedule Type: Lecture

Grading:

This course is graded on the Undergraduate Regular scale.

THR 420: *Advanced Performance Studio.* 3 credits.
Advanced scene study for stage and film. Rotating topics address professional perspectives and acting styles. Offered by Theatre. May be repeated within the degree for a maximum 9 credits.

Registration Restrictions:
Required Prerequisite: THR 320[C].
[C] Requires minimum grade of C.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

THR 421: *One-Person Show.* 3 credits.
Develops students' short, original works into one-person shows that they direct and perform. Offered by Theatre. Limited to three attempts.

Recommended Prerequisite: THR 210 and 310 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

THR 422: *Performance: Process and Portfolio.* 3 credits.
Performance practicum documenting the developed skills acquired and applied in rehearsal and performance setting throughout the student's journey. Offered by Theatre. May be repeated within the degree for a maximum 9 credits.

Recommended Prerequisite: Permission of Instructor

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

THR 423: *Audition Techniques: Stage and Camera.* 3 credits.
Develops effective audition techniques for performers through preparation of material for stage and camera, and explores industry standards and casting protocols through practical application. Offered by Theatre. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: THR 310[C] or 310[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

THR 424: *Contemporary Women Playwrights.* 3 credits.
Explores identity and culture, sexuality and gender, work, relationships, and power through the eyes of female dramatists and performance artists. Analyzes texts and issues through readings, video, and live performances. Offered by Theatre. May be repeated within the degree for a maximum 9 credits.

Recommended Prerequisite: Junior standing or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

THR 425: *Verse Speaking.* 3 credits.
Explores verse literature and mechanics of verse structure through reading, discussing, and reciting major verse plays of Western drama from the Middle Ages through the 20th century. Focuses on various verse forms, paying particular attention to vocal clues within verse structure, the meaning of rhythm, and practicing vocal techniques used in speaking texts in class. Students also prepare weekly presentations of playwrights, and historical backgrounds of plays and their periods. Offered by Theatre. Limited to three attempts.

Recommended Prerequisite: THR 210 and 310 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

THR 427: *Musical Theater Workshop.* 3 credits.
Develops necessary performance techniques for proficiency in musical theater. Students will prepare and perform musical theater pieces in a variety of styles over the course of the semester. Offered by Theatre. May be repeated within the degree for a maximum 12 credits.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

THR 428: *Musical Theater Ensemble.* 1-3 credits.
Rehearses a musical or musical theater review in a workshop environment. The result of the work will be public performance(s). Students completing course for the first time will register for 3 credits. Students repeating the course will be permitted to register for 1-3 credits. Offered by Theatre. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Audition.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

THR 434: *Advanced Lighting Design.* 3 credits.
In-depth study of lighting design focused on the aesthetics of stage lighting and advanced conceptualization and communication of design ideas. Extensive work with script analysis, research, and graphic representation of theatrical lighting designs. Intensive practical experience in laboratory and production assignments. Offered by Theatre. Limited to three attempts.

Recommended Prerequisite: THR 230, THR 334, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

THR 437: *Advanced Sound Design.* 3 credits.
Advanced project course utilizing the principles of design as they can be formed into auditory response. Emphasis on the interrelationship among all aspects of production. Areas of study include history, technology, and script analysis. Focuses on advanced theory and practice of Sound Design for Theater and the Entertainment Industry. Additionally, students will work in Teams to develop communication and collaboration skills. Offered by Theatre. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: THR 337[C] or 337[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

THR 440: *Advanced Studies in Directing/Dramaturgy.* 3 credits.
Examines theory and practice of collaborative development of mission, vision, and production ideas by director and dramaturg teams. Students create companies, choose repertoire, develop and present production ideas in written and oral forms. Offered by Theatre. Limited to three attempts.

Mason Core: Synthesis

Recommended Prerequisite: Completion or concurrent enrollment in all Mason Core courses or permission of instructor.

Registration Restrictions:
Required Prerequisites: THR 329[*C] or 329[*XS].
[*] May be taken concurrently.
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Junior, Senior Plus or Senior.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

THR 448: *Foundations of Theater Education.* 3 credits.
Introduces and explores various theater teaching specialties. Examines philosophical, pedagogical, and practical issues in context of diverse teaching situations and venues that range from public school to undergraduate and graduate training to commercial establishments. Offered by Theatre. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Junior standing (60 credit hours completed), Theater Education Concentration admission requirements, or permission of the instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

THR 449: *Elementary Theater Education.* 3 credits.
Explores teaching methods and classroom management for PK-6 theater education. Offered by Theatre. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Junior standing (60 credit hours completed), Theater Education Concentration admission requirements, or permission of the instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

THR 450: *Secondary Theater Education.* 3 credits.
Explores methods and curriculum for teaching theater to students grades 6-12. Offered by Theatre. Limited to three attempts.

Recommended Prerequisite: Junior standing (60 credit hours completed), Theater Education Concentration admission requirements, or permission of the instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

THR 455: *Theater Education Internship.* 6-12 credits.
Provides supervision and mentorship for a full semester of teaching in approved school programs PK-12. Offered by Theatre. May be repeated within the degree for a maximum 12 credits.

Recommended Prerequisite: Successful completion of Theater Education Concentration coursework. Students must pass the VCLA before student teaching and submit an ACT, SAT or Praxis Core Math score.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

THR 480: *Advanced Playwriting.* 3 credits.
Advanced playwriting workshop in which students explore their own voice in theatrical writing. Offered by Theatre. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: THR 381 or Permission of Instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

THR 482: *Advanced Screenplay Workshop.* 3 credits.
Screenwriting workshop emphasizing student development in screenplay form, structure, and storytelling with emphasis on craft, character, and story culminating in a screenplay. Offered by Theatre. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Writing Intensive in Major

Recommended Prerequisite: THR 382 or ENGH 332/ENGH 372 or other writing preparation course as approved by the instructor.

Schedule Type: Lecture

Grading:

This course is graded on the Undergraduate Regular scale.

THR 484: *Translation & Adaptation for Stage & Screen.* 3 credits.
This interdisciplinary course will introduce students to the arts of translation and adaptation for the stage and screen. Students will read examples of translations and adaptations, identify challenges in each, and discuss them with professionals who translate or adapt works for theater, film and/or opera. Students are also expected to apply their skills to one short and one long translation/adaptation project, and present their work to the class. Offered by Theatre. Limited to three attempts.

Recommended Prerequisite: Junior standing

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

THR 490: *Special Topics in Theater.* 1-6 credits.
Rotating topic. Advanced seminar in topics of special interest, including dramatic writing or other media, and feminism in contemporary theater. Notes: May be repeated provided specific course content differs. Offered by Theatre. May be repeated within the term for a maximum 24 credits.

Specialized Designation: Topic Varies

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

THR 491: *Seminar on the Profession.* 1-3 credits.
Rotating topic. Advanced seminar in topics of special interest, including dramatic writing or other media, and feminism in contemporary theater. Notes: Repeatable with permission of the Chair. Offered by Theatre. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: 60 credit hours.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

THR 492: *Advanced Practicum.* 1-3 credits.
Required for students assigned as director, designer, dramaturg, or stage manager for a Mason Players production. Instruction and mentorship from appropriate Theater faculty to better develop the student's aesthetic. Required generation of portfolio material. This class is restricted to students participating in Mason Players productions within the academic year of the course offering. Offered by Theatre. May be repeated within the degree for a maximum 9 credits.

Recommended Prerequisite: Permission of Instructor

Registration Restrictions:
Enrollment is limited to students with a major, minor, or concentration in Theatre.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

THR 493: *Collaborative Lab Experience.* 3 credits.
Students will collaborate in a laboratory experience to create original material for the stage or screen. Course content will be project specific. Offered by Theatre. Limited to three attempts.

Registration Restrictions:
Students with a class of Freshman or Sophomore may **not** enroll.

Enrollment is limited to students with a major in Theatre.

Enrollment limited to students in a Bachelor of Fine Arts degree.

Schedule Type: Lecture

Grading:
This course is graded on the Satisfactory/No Credit scale.

THR 494: *Field Experience.* 1-6 credits.
Experience in a theatrical organization to provide opportunity to apply classroom training, knowledge, skills, and theory in a professional situation. Activity must be approved by department chair. Offered by Theatre. May be repeated within the term for a maximum 12 credits.

Schedule Type: Internship

Grading:
This course is graded on the Satisfactory/No Credit scale.

THR 495: *Senior Capstone Project.* 3 credits.
Student must submit a written project proposal to area of concentration for consultation. If accepted, proposal will be presented to the full faculty for approval. Notes: Production proposals will be subject to calendar availability. Course is repeatable with permission of Chair. Offered by Theatre. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Must have declared a concentration, have completed at least 60 credit hours, and must have completed 4 credits of Practicum.

Schedule Type: Studio

Grading:
This course is graded on the Undergraduate Regular scale.

THR 496: *Text in Production.* 3 credits.
In-depth investigation of collaborative nature of theatrical arts. Examines discrete creative disciplines; acting, directing, dramaturgy, and design as discussed by distinguished professionals and scholars. In-depth exploration of one selected playscript for the entire semester. Students will work collaboratively in small groups to research, design, direct, and perform scenes from selected text. Offered by Theatre. Limited to three attempts.

Mason Core: Synthesis

Recommended Corequisite: Completion or concurrent enrollment in all Mason Core courses or permission of instructor.

Registration Restrictions:
Required Prerequisites: THR 350^{*XS} or 350^{*C}.
* May be taken concurrently.
^{XS} Requires minimum grade of XS.
^{C} Requires minimum grade of C.

Enrollment limited to students with a class of Junior, Senior Plus or Senior.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

THR 497: *Independent Study.* 1-6 credits.
Individual research and creative project in close consultation with instructor. Selection from projects in performance, directing, technical theater and design, playwriting, or theater history and criticism. Notes: May be repeated, provided suffix citing specific course content is different Offered by Theatre. May be repeated within the term for a maximum 24 credits.

Recommended Prerequisite: Open only to THR majors with 90 hours and by permission of department chair.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

500 Level Courses

THR 525: *Advanced Musical Theater Workshop.* 3 credits.
Students hone performance techniques necessary for performance in musical theater and contemporary operetta. Students will practice and perform musical theater pieces. Offered by Theatre. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

THR 530: *Topics in Theater Design.* 3 credits.
In-depth study of scenic, costume, lighting, or sound design. Extensive work with script analysis, historical and conceptual research, visual communication of design ideas, and technical paperwork. Focus on aesthetics, production requirements, and collaboration. Offered by Theatre. May be repeated within the degree for a maximum 12 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

THR 539: *Aesthetics for the Theater.* 3 credits.
Students will develop skills in design while exploring significant developments within the area of concentration. Creative projects, including research and design, will be supervised on an individual basis. Offered by Theatre. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Regular scale.

THR 540: *Directing Techniques.* 3 credits.
As an examination of the directorial process for stage and screen, this course will explore directing theory, preparation, and practice. Offered by Theatre. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

THR 548: *Advanced Foundations of Theater Education.* 3 credits.
Explores various theater teaching specialties in venues that range from public school to undergraduate and graduate training to commercial establishments. Offered by Theatre. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Graduate standing, eligibility for post-baccalaureate certificate in Theater Education or permission of the instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

THR 549: *Advanced Elementary Theater Ed.* 3 credits.
Explores teaching methods and classroom management for PK-6 theater education. Offered by Theatre. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Graduate standing, eligibility for post-baccalaureate in Theatre Education Licensure, or permission of the instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

THR 550: *Advanced Secondary Education.* 3 credits.
Explores methods and curriculum for teaching theater to students grades 6-12. Offered by Theatre. May not be repeated for credit.

Recommended Prerequisite: Graduate standing, eligibility for post-baccalaureate certificate in Theater Education or permission of the instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

THR 555: *Theater Education Internship.* 1-12 credits.
Provides supervision and mentorship for a full semester of teaching in approved school programs PK-12. Offered by Theatre. May be repeated within the degree for a maximum 12 credits.

Recommended Corequisite: Successful completion of Theater Education coursework. Students must pass the VCLA and submit an ACT, SAT or Praxis Core Math score.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Graduate Regular scale.

THR 560: *Advanced Script Analysis.* 3 credits.
Critical analysis of dramatic literature as preparation for production and performance. Examination of plot, character, theme, audience impact, and cultural context, and the transformation of intellectual ideas into physical theatrical production elements. Offered by Theatre. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

THR 571: *Advanced Playwriting Workshop.* 3 credits.
Advanced playwriting workshop in which students explore their own voice in theatrical writing. Offered by Theatre. May not be repeated for credit.

Recommended Prerequisite: Undergraduate degree or equivalent, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

THR 590: *Special Topics for Graduate Study.* 1-6 credits.
Rotating topic. Advanced seminar in topics for stage and screen studies, including education, performance, design, research, writing, and styles in theater or other media. Offered by Theatre. May be repeated within the term for a maximum 18 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

THR 591: *Graduate Seminar.* 1-3 credits.
Addresses the realities living and working in the theater and the film industry. Notes: Rotating Topics. Dependent on credits hours offered, class time will vary from 1 hour to 2 hours, 40 minutes. Offered by Theatre. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to students with a major in Theatre.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

THR 599: *Independent Study.* 1-6 credits.
Independent reading, performance, or research on a specific project under direction of selected faculty member. May include attendance in a parallel undergraduate course. Offered by Theatre. May be repeated within the term for a maximum 18 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

600 Level Courses

THR 610: *Acting Mentorship.* 3 credits.
This class gives students the chance to work with a faculty mentor while they apply their acting skills to a full-length public performance. Students create a record of the creative process through mentored practical production assignments. Actors enrolled in this course must receive prior approval for their projects for the stage or screen and will be expected to submit a written reflection on the complete acting process. Offered by Theatre. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

THR 620: *Acting Techniques.* 3 credits.
Students explore selected acting techniques for stage and screen. Topics vary from scene work to specialty areas -such as movement, voice and style-with an emphasis on developing bold physical, psychological and emotional expression. Offered by Theatre. May be repeated within the degree for a maximum 12 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

THR 630: *Design Mentorship.* 3 credits.
Students work with a mentor while they apply design and technical skills to a full-length public performance. Students create a record of the creative process through mentored practical production assignments. Students must receive prior approval on projects for the stage or screen and will be expected to submit a written reflection on the process. Notes: Students must attain a B or higher to receive credit. Offered by Theatre. May be repeated within the degree for a maximum 3 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Special scale.

THR 640: *Directing Mentorship.* 3 credits.
This class gives students the chance to work with a faculty mentor while they apply their directing skills to a full-length public performance. Students create a record of the creative process through mentored practical production assignments. Directors enrolled in this course must receive prior approval for their projects for the stage or screen and will be expected to submit a written reflection on the full directorial process. Offered by Theatre. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

THR 651: *Advanced Dramatic Theory and Criticism.* 3 credits.
A chronological study of development of dramatic theory and criticism from Plato and Aristotle through modern movements. Students read plays, theoretical works, and critical responses, and write original criticism of performances or texts. They also take turns leading critical texts, meet one-on-one with their instructor for individualized mentoring, and prepare at least one essay for publication. Offered by Theatre. May be repeated within the degree for a maximum 9 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

THR 652: *Writing Seminar.* 3 credits.
Students develop writing skills and explore significant developments and periods within the field. Offered by Theatre. May not be repeated for credit.

Recommended Prerequisite: Admission to Graduate Program in CVPA.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

THR 655: *Teaching Practicum.* 3 credits.
Students develop and teach undergraduate curriculum related to their area of emphasis. Notes: Students must attain a B or higher to receive credit. Offered by Theatre. May be repeated within the degree for a maximum 3 credits.

Recommended Prerequisite: Admission to Graduate Program in CVPA.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Graduate Special scale.

THR 691: *Professional Development.* 3 credits.
Students develop materials and strategies toward the next stage of career in the field. Offered by Theatre. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Satisfactory/No Credit scale.

THR 694: *Graduate Field Experience.* 1-6 credits.
Experience in a professional theater or screen production. Activity is subject to prior faculty approval. Students will present a final portfolio of work. Offered by Theatre. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Satisfactory/No Credit scale.

THR 696: *Advanced Acting Practicum.* 3 credits.
Academic credit awarded for satisfactory completion of a minimum of 60 hours approved production experience. Offered by Theatre. May be repeated within the degree.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory

Grading:
This course is graded on the Satisfactory/No Credit scale.

THR 697: *Advanced Playwriting and Dramaturgy Practicum.* 1-3 credits.
Academic credit awarded for satisfactory completion of a minimum of 60 hours of approved production experience. Offered by Theatre. May be repeated within the degree for a maximum 3 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory

Grading:
This course is graded on the Satisfactory/No Credit scale.

THR 698: *Advanced Directing Practicum.* 1-3 credits.
Academic credit awarded for satisfactory completion of a minimum of 60 hours approved production experience. Offered by Theatre. May be repeated within the degree for a maximum 3 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory

Grading:
This course is graded on the Satisfactory/No Credit scale.

THR 699: *Advanced Design Practicum.* 1-3 credits.
Academic credit awarded for satisfactory completion of a minimum of 60 hours of approved production experience. Offered by Theatre. May be repeated within the degree for a maximum 3 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory

Grading:
This course is graded on the Satisfactory/No Credit scale.

700 Level Courses

THR 740: *Directors and Dramaturgs in Collaboration.* 3 credits.
Examines theory and practice of collaborative development of mission, vision, and production ideas by director and dramaturg teams. Students create companies, choose repertoire, develop and present production ideas in written and oral forms, and undertake an original research project involving the history and/or contemporary practice of directing or dramaturgy. Offered by Theatre. May be repeated within the degree for a maximum 3 credits.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Special scale.

THR 755: *Academic Track Practicum.* 3 credits.
Students prepare a semester worth of course material for undergraduate class. Notes: Students must attain a B or higher to receive credit. Offered by Theatre. May be repeated within the degree for a maximum 3 credits.

Recommended Prerequisite: Admission to Graduate Program in CVPA.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Laboratory

Grading:
This course is graded on the Graduate Special scale.

THR 790: *Directed Research.* 3 credits.
Students delve into a specialty topic of research in the area of emphasis within the Theater concentration. Notes: Students must attain a grade of B or higher to receive credit. Offered by Theatre. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Special scale.

THR 796: *Directed Reading.* 1 credit.
In preparation for a thesis, students develop and complete a body of reading relating to their thesis. Offered by Theatre. May not be repeated for credit.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Satisfactory/No Credit scale.

THR 797: *Project Preparation.* 3 credits.
Students document their pre-production process in preparation for their culminating artistic project. Notes: Students must attain a B or higher to receive credit. Offered by Theatre. May be repeated within the degree for a maximum 6 credits.

Recommended Corequisite: THR 796.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Satisfactory/No Credit scale.

THR 798: *Project Practicum.* 3 credits.
Students document their production process during the culminating artistic project. Notes: Students must attain a B or higher to receive credit. Offered by Theatre. May be repeated within the degree for a maximum 3 credits.

Recommended Corequisite: THR 797.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Thesis

Grading:
This course is graded on the Satisfactory/No Credit scale.

THR 799: *Thesis.* 1-3 credits.
Students reflect upon their culminating artistic project and articulate original conclusions regarding practice in their area of emphasis. Notes: Subject to Faculty majority. Students must attain a B or higher to receive credit. Offered by Theatre. May be repeated within the degree for a maximum 3 credits.

Recommended Prerequisite: Research Methods Core Requirement.

Registration Restrictions:
Enrollment is limited to Graduate or Non-Degree level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Thesis

Grading:
This course is graded on the Satisfactory/No Credit scale.

Tourism and Events Management (TOUR)

100 Level Courses

TOUR 110: *Professionalism and Civility.* 1 credit.
Focuses on developing competencies in the areas of professionalism and civility in a variety of settings including professional image, conduct at work, telephone, written, oral, and electronic etiquette, table manners, and social networking with an emphasis on the cultural needs for honoring commitments and obligation. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

TOUR 190: *Wedding Planning.* 3 credits.
Introduction to the planning and management of weddings. Explores social, political, economic, cultural, religious, and historical influences on wedding planning decision-making and business strategies. Reviews practices relevant to successful wedding planning, and consultancy for diverse clients and settings. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

200 Level Courses

TOUR 200: *Introduction to Tourism Management.* 3 credits.
Introduces travel and tourism from local to international levels. Covers the scale, scope and organization of the industry. Emphasizes the development and management of natural, cultural, heritage and recreational resources of tourism. Identifies issues related to the economic, technological and political aspects of tourism. Notes: Open to nonmajors. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

TOUR 210: *Global Understanding through Travel and Tourism.* 3 credits.
Examines tourism as a global industry and human activity that promotes and facilitates understanding of historical and cultural values, and of international institutions that characterize the broader global system. Notes: Open to nonmajors. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Mason Core: Global Understanding

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

TOUR 214: *Hospitality Tourism and Events Management Accounting.* 3 credits.
Provides an overview of financial accounting for hospitality, tourism and event managers. Presents financial accounting from the perspective of recording financial transactions, developing financial statements and evaluating investment and operational decisions. Emphasizes efficient use of spreadsheets in managerial decision making. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

TOUR 220: *Introduction to Event Management.* 3 credits.
Explores principles and practices of managing medium- and large scale events including festivals, conventions, concerts, shows, sporting events, and ceremonies. Emphasizes organization, site preparation, communications, personnel, and security as well as evaluation and innovation. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

TOUR 221: *Event Implementation and Evaluation.* 3 credits.
Introduction to event implementation and evaluation through involvement in on-site event delivery and analysis. Studies participant motivation and economic, social, environmental, and cultural impacts in relation to an event's products and services. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: TOUR 220[D], 220[XS] or 220[XP].
[D] Requires minimum grade of D.
[XS] Requires minimum grade of XS.
[XP] Requires minimum grade of XP.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

TOUR 230: *Introduction to Hospitality Management.* 3 credits.
This course is an introduction to hospitality management, including an overview of management in the hospitality industry and professional opportunities. The concepts and practices of hospitality management are examined and discussed. The scope and forms of hospitality organizations are reviewed, as well as trends within these organizations. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

TOUR 241: *Hospitality, Tourism, and Events Management Practicum.* 3 credits.
Provides 120 hours of introductory supervised professional fieldwork experience in an approved tourism, events, or hospitality management setting for 10 to 14 weeks (10 weeks only for the Summer term) under the supervision of a practicum Faculty Supervisor and Agency Supervisor. Includes meetings and assignments before, during, and after the practicum. Notes: Students must complete the mandatory pre-experience orientation session online before registering for this course. Hourly requirement per week is 15-20 for Summer term. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (TOUR 200[D], 200[XS] or 200[XP]) and (TOUR 220[D], 220[XS] or 220[XP]) and (TOUR 230[D], 230[XS] or 230[XP]).
[D] Requires minimum grade of D.
[XS] Requires minimum grade of XS.
[XP] Requires minimum grade of XP.

Students with a class of Freshman may **not** enroll.

Enrollment is limited to students with a major in Tourism and Events Management.

Schedule Type: Internship

Grading:
This course is graded on the Satisfactory/No Credit scale.

300 Level Courses

TOUR 301: *Hotel Management.* 3 credits.
Explores interrelated systems in hotel management, including front desk, reservations, housekeeping, food/beverage, telecommunications, guest services and security. Reviews and segments hotel products and associated management challenges. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: TOUR 230[D], 230[XS] or 230[XP].
[D] Requires minimum grade of D.
[XS] Requires minimum grade of XS.
[XP] Requires minimum grade of XP.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

TOUR 310: *Food and Beverage Management.* 3 credits.
Explores the principles of foodservice management regarding production and selling of food and beverage products. Categorizes various types of food, wine, beer and spirits. Reviews foodservice buying, pricing, menu planning, production, storage, service, controls and quality assurance. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: TOUR 230[D], 230[XS] or 230[XP].
[D] Requires minimum grade of D.
[XS] Requires minimum grade of XS.
[XP] Requires minimum grade of XP.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

TOUR 311: *Women and Tourism.* 3 credits.
Focuses on women as hosts and guests. Using social theory, explores issues regarding the history and evolution of tourism as a gendered system. Addresses family, solo and business travel, and employment, taking into consideration issues related to more and lesser developed countries as they relate to the roles of women in international tourism. Notes: Open to nonmajors. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Mason Core: Social/Behavioral Sciences

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

TOUR 313: *Event Technical Production.* 3 credits.
Explores theoretical and practical considerations of event technology. Examines specifications, layout installation techniques and operation of sound systems, lighting systems and video systems for event industry sectors. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: TOUR 220[D] or 220[XS].
[D] Requires minimum grade of D.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

TOUR 320: *Hospitality, Tourism and Event Management Information Systems.* 3 credits.
Introduces management information systems (MIS) technology and its application to hospitality, tourism and event management (HTEM) sectors from managerial and strategic perspectives. Surveys computer applications, products and trends in gathering, analyzing, storing and

communicating information within the HTEM sectors. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (TOUR 200[D], 200[XS] or 200[XP]) or (TOUR 220[D], 220[XS] or 220[XP]) or (TOUR 230[D], 230[XS] or 230[XP]).
[D] Requires minimum grade of D.
[XS] Requires minimum grade of XS.
[XP] Requires minimum grade of XP.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

TOUR 330: *Resort Management.* 3 credits.
Surveys effective practices in the management of resort recreation enterprises. Examines basic resort operations, including front desk, food and beverage, amenities, and housekeeping. Covers management of a variety of resort types, such as ski resorts, beach resorts, dude ranches, business retreats, adventure camps, health spas, and golf resorts. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (TOUR 200[D], 200[XS] or 200[XP]) or (TOUR 230[D], 230[XS] or 230[XP]).
[D] Requires minimum grade of D.
[XS] Requires minimum grade of XS.
[XP] Requires minimum grade of XP.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

TOUR 331: *Cruise Ship Management.* 3 credits.
Surveys effective practices in the management and operation of cruise ships. Includes on-site examination of basic cruise operations including sales and booking, food and beverages, hotel operations, security, recreation activities, shore excursions and personnel management. Examines historical foundations of the cruise industry, related leisure and management theory, and leisure trends specific to mass international maritime travel. Notes: Includes on-campus classroom lectures and week-long on-board cruise ship instructional experience. Must be 21 years of age by beginning of semester. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (TOUR 200[C] or 200[XS]) and (TOUR 230[C] or 230[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Students with a class of Freshman or Sophomore may **not** enroll.

Enrollment is limited to students with a major in Tourism and Events Management.

Enrollment limited to students in a Bachelor of Science degree.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

TOUR 340: *Sustainable Tourism.* 3 credits.
Studies the characteristics of environmentally, economically and socio-culturally sustainable tourism and assesses the possibilities and limitations for its implementation within a variety of destinations and product settings. Emphasizes conventional "mass" tourism and small-scale "alternative" tourism as they apply to hospitality, event , and tourism management. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Specialized Designation: Green Leaf Focused Course

Registration Restrictions:
Required Prerequisites: TOUR 200[D], 200[XS] or 200[XP].
[D] Requires minimum grade of D.
[XS] Requires minimum grade of XS.
[XP] Requires minimum grade of XP.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

TOUR 341: *Film and Medical Tourism.* 3 credits.
This two-part course introduces film-induced tourism and medical tourism. The evolution of each type of tourism, and the opportunities and challenges of each type of tourism, will be explored in-depth. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: TOUR 200[C] or 200[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

TOUR 342: *Sacred Spaces and Dark Tourism.* 3 credits.
In-depth examination of the tourist experience at popular sacred sites and at attractions that offer socially unapproved or harmful personal touristic experiences. Management issues at touristic sacred sites and dark tourism enterprises will be identified and compared. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: TOUR 200[C] or 200[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Enrollment limited to students with a class of Junior, Senior Plus or Senior.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

TOUR 343: *Wine and Food Tourism.* 3 credits.
Considers the characteristics of food and wine tourism related to environmental, economic and socio-cultural sustainable tourism and assess the possibilities and limitations for implementation within a variety of destinations and settings. Includes the development of the global food chain, artisan food and drink production, and the role of food

and wine in the tourist experience. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: TOUR 200[C] or 200[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

TOUR 352: *Heritage and Cultural Tourism.* 3 credits.
Analyzes historical and cultural attractions, including museums, canals, monuments, pilgrimage sites, military sites, and cultural and heritage landscapes. Covers presentation and interpretation, African-American and Native American heritage, management and operational considerations, and marketing. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: TOUR 200[D], 200[XS] or 200[XP].
[D] Requires minimum grade of D.
[XS] Requires minimum grade of XS.
[XP] Requires minimum grade of XP.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

TOUR 355: *Event Logistics.* 3 credits.
Explores practical considerations of event logistics and operations for conferences, conventions and exhibitions throughout the event industry sector. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: TOUR 220[C] or 220[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

TOUR 362: *Cultural and Environmental Interpretation.* 3 credits.
Focuses on communication processes and practices used by professionals to explain and interpret special characteristics of cultural and environmental resource sites for visitors. Discusses conceptual principles for planning interpretive programs, as well as techniques for analyzing and disseminating information and entertainment through various media. Examines delivery of interpretive messages across a variety of audiences, strategies for programming interpretive services, and the administration and evaluation of interpretive services at tourism, event, and recreation sites. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts. Equivalent to PRLS 362.

Registration Restrictions:
Required Prerequisites: ((PRLS 300[C] or 300[XS]) or (TOUR 352[C] or 352[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

TOUR 410: *Tourism Economics.* 3 credits.
Introduces both macro and micro economic theory as it relates to hospitality, tourism and events management fields. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: TOUR 241[C] or 241[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

TOUR 412: *Hospitality, Tourism, and Events Management Marketing and Sales.* 3 credits.
Provides understanding and tools for marketing and management of financial resources in entrepreneurial tourism enterprises. Also includes market planning, business planning, feasibility assessment, investment analysis, basic accounting, and operational control. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: ((TOUR 241[C] or 241[XS]) or (PRLS 241[C] or 241[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

TOUR 414: *Hospitality, Tourism, and Events Management Finance.* 3 credits.
Develops skills and competencies for the management of financial resources in hospitality, tourism and events management enterprises. Covers economic principles, the time value of money, revenue streams, pricing and expenditure management. Applies fundamental principles to personal financial management. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: ((TOUR 241[C] or 241[XS]) and (TOUR 214[C] or 214[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

TOUR 420: *Tourism Planning/Policy.* 3 credits.
Principles of planning and policy that apply to integrated and sustainable tourism development at the international, national, state, regional, local, and site scale. Considers government, industry, and community perspectives. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Specialized Designation: Green Leaf Focused Course

Registration Restrictions:
Required Prerequisites: TOUR 241[C] or 241[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

TOUR 430: *Destination Marketing and Management.* 3 credits.
Discusses the theories and concepts of destination management with a comprehensive approach that emphasizes planning, development, and marketing a destination. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: TOUR 241[C-] or 241[XS].
[C-] Requires minimum grade of C-.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

TOUR 440: *Meetings and Conventions.* 3 credits.
Analyzes meetings, incentives, conventions, and exhibitions with respect to business environment and structure, industry suppliers, site and facility selection, human resource management, legal and financial issues, marketing and promotion, and event organization. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: TOUR 241[C] or 241[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

TOUR 445: *Restaurant Management.* 3 credits.
Advances knowledge gained in Food and Beverage Management, basic cooking skills, and human resource management to include hands-on operations of a full-service restaurant. Knowledge needed to successfully manage both back-of-the-house and front-of-the-house operations will be taught. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Recommended Prerequisite: Safe Serve Certification

Registration Restrictions:
Required Prerequisites: ((TOUR 310[C] or 310[XS]) and (TOUR 450[C] or 450[XS]) and (NUTR 410[C] or 410[XS])).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Laboratory

Grading:
This course is graded on the Undergraduate Regular scale.

TOUR 450: *Hospitality Human Resources Management.* 3 credits.
Reviews concepts and methods related to the achievement of strategic business goals through employee recruitment, training and development. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: TOUR 241[C] or 241[XS].
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

TOUR 460: *Hospitality Facilities Operations.* 3 credits.
Explores the principles applied to facilities systems operations in hospitality sectors. Considers design, planning, layout and maintenance of hospitality properties and systems. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: (TOUR 230[C] or 230[XS]).
[C] Requires minimum grade of C.
[XS] Requires minimum grade of XS.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

TOUR 470: *Career Preparation.* 1 credit.
Focuses on current issues in tourism, events and hospitality management with an emphasis on career development strategies. Notes: Meets for half the semester Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Registration Restrictions:
Required Prerequisites: TOUR 241[D], 241[XP] or 241[XS].
[D] Requires minimum grade of D.
[XP] Requires minimum grade of XP.
[XS] Requires minimum grade of XS.

Students with a class of Freshman or Sophomore may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

TOUR 480: *Special Topics.* 1-3 credits.
Selected topics reflect interest in specialized area of tourism and events management. Announced in advance. Offered by School of Sport/Rec/Tour Mgmt. May be repeated within the term for a maximum 9 credits.

Specialized Designation: Topic Varies

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

TOUR 490: *Hospitality, Tourism, and Events Management Internship.* 12 credits.
Provides 400 hours of advanced supervised professional experience in an approved tourism, events, or hospitality management setting

for a minimum of 30 hours/week, and a maximum of 40 hours/week (summer term only). Provides a continuous and structured opportunity to apply principles and skills developed in the classroom to the solution of practical problems. Notes: Students must attend mandatory pre-experience orientation session before registering and must participate in the mandatory final presentations upon completion of internship. Can register for only one additional course for up to 3 credits. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Mason Core: Capstone

Registration Restrictions:
Required Prerequisites: ((TOUR 241[D], 241[XS] or 241[XP]) and (TOUR 470[D], 470[XS] or 470[XP])).
[D] Requires minimum grade of D.
[XS] Requires minimum grade of XS.
[XP] Requires minimum grade of XP.

Enrollment limited to students with a class of Senior Plus or Senior.

Enrollment is limited to students with a major in Tourism and Events Management.

Schedule Type: Internship

Grading:
This course is graded on the Satisfactory/No Credit scale.

TOUR 499: *Independent Study.* 1-3 credits.
Faculty directed independent study of approved topics in tourism and events management. Offered by School of Sport/Rec/Tour Mgmt. Limited to three attempts.

Recommended Prerequisite: TOUR 200 and 220, and 90 credits.

Registration Restrictions:
Enrollment is limited to students with a major in Tourism and Events Management.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

500 Level Courses

TOUR 598: *Special Topics in Hospitality, Tourism and Events Management.* 3 credits.
Focuses on Hospitality, Tourism and Events Management projects related to sport and recreation studies. Offered by School of Sport/Rec/Tour Mgmt. May be repeated within the degree for a maximum 6 credits.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

Turkish (TURK)

100 Level Courses

TURK 110: *Elementary Turkish.* 6 credits.
Introduces elements of grammar, vocabulary, oral skills, listening comprehension, and reading. Offered by Modern & Classical Languages. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Turkish

200 Level Courses

TURK 201: *Intermediate Turkish I.* 3 credits.
Further development of skills in listening, speaking, and writing. Notes: TURK 201 and 202 must be taken in sequence. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: TURK 110, or permission of department.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Taught in Turkish

TURK 202: *Intermediate Turkish II.* 3 credits.
Further development of skills in listening, speaking, and writing. Notes: TURK 201 and 202 must be taken in sequence. Offered by Modern & Classical Languages. Limited to three attempts.

Recommended Prerequisite: TURK 201, or permission of department

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

Additional Course Details: Fulfills Frgn Lng requirment, Taught in Turkish

University Studies (UNIV)

100 Level Courses

UNIV 100: *Introduction to Mason.* 1 credit.
This course assists first-year students with their transition from high school to college life at Mason. It helps students to be successful through academic skill-building, educational planning, and career preparation. It provides information regarding campus resources and ways to engage in the Mason community. Although all sections have a core curriculum, certain sections also focus on a particular theme, student population, or course of study. Offered by Provost's Office. Limited to three attempts. Equivalent to UNIV 106, UNIV 108, UNIV 140, UNIV 150, UNIV 160.

Registration Restrictions:
Enrollment limited to students with a class of Freshman.

Schedule Type: Seminar

Grading:

This course is graded on the Undergraduate Regular scale.

UNIV 101: *Extended Transition.* 0-1 credits.
This course serves as a continuation of University 100 into the second freshman semester. It extends the transition support of international students, and other students in special sections of University 100. Offered by Provost's Office. Limited to three attempts. Equivalent to UNIV 141, UNIV 151.

Specialized Designation: Topic Varies

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

UNIV 106: *Mason Transitions for Diverse Learners I.* 0-2 credits.
Assists first-year students with their transition from high school to college life and offers the opportunity to learn resources, skills, and strategies that will guide them to academic success. This course is open only to diverse learners identified by Disability Services. Offered by Provost's Office. May be repeated within the degree for a maximum 2 credits. Equivalent to UNIV 100, UNIV 108, UNIV 150, UNIV 160.

Specialized Designation: Topic Varies

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Special scale.

UNIV 108: *Mason Transition.* 0-1 credits.
Specialized transition to Mason courses with identified student populations. Notes: Only repeatable with department approval. Offered by Provost's Office. May be repeated within the degree for a maximum 2 credits. Equivalent to UNIV 100, UNIV 106, UNIV 140, UNIV 150, UNIV 160.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Freshman.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

UNIV 110: *Academic Success.* 0-1 credits.
Focuses on academic transition and planning issues for students in their first or second year. Emphasis Is placed on resources and techniques to assist students with improving their academic performance. Students work closely with the instructor to track their academic progress over the course of the semester. Offered by Provost's Office. Limited to three attempts.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

UNIV 140: *INTO Mason Pathway Transition.* 0-1 credits.
Assists first-year international and multilingual standard and accelerated pathway students with their transition from high school to college life. It helps prepare students for successful progression to their chosen degree plan the promoting acculturation to academic norms and expectations at Mason, the development of self-efficacy, and engagement with the Mason community. It encourages to seek out and take full advantage of a wide range of campus resources. Offered by Provost's Office. Limited to three attempts. Equivalent to UNIV 106.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

UNIV 141: *INTO Mason Pathway Extended Transition.* 0-1 credits.
Serves as a continuation of UNIV 140. It provides extended first-year transition support for standard pathway students in the second semester. Offered by Provost's Office. Limited to three attempts.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

UNIV 150: *First Year Living Learning Communities.* 0-1 credits.
This course is available for students who are members of a first year LLC. It is the learning component of the program for students who live together on a residence hall floor. The course follows the core University 100 curriculum, but is tailored to the particular theme or academic discipline of the LLC. Offered by Provost's Office. Limited to three attempts. Equivalent to UNIV 100, UNIV 106, UNIV 108, UNIV 140, UNIV 160.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Freshman.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

UNIV 151: *First Year Living Learning Communities Extended Transition.* 0-1 credits.
This course serves as a continuation of University 150 into the second freshman semester. It extends the transition support of students in the First Learning Communities Program. Offered by Provost's Office. Limited to three attempts. Equivalent to UNIV 101, UNIV 141.

Specialized Designation: Topic Varies

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

UNIV 160: *University Scholars Transition Seminar.* 0-2 credits.
A first year transition seminar for students in the University Scholars Program. Offered by Provost's Office. Limited to three attempts. Equivalent to UNIV 100, UNIV 106, UNIV 108, UNIV 140, UNIV 150.

Recommended Prerequisite: Admittance to the University Scholars Program.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

UNIV 170: *Special Topics.* 0-1 credits.
Varied UNIV course topics are offered to first and second year undergraduate students. Notes: May be repeated when topic is different. Offered by Provost's Office. May be repeated within the term for a maximum 3 credits.

Specialized Designation: Topic Varies

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

UNIV 190: *Introduction to Research Opportunities.* 0-1 credits.
Provides an opportunity to learn more about participating in research and creative projects at Mason and acquire skills needed to be successful in research. Offered by Provost's Office. Limited to three attempts.

Specialized Designation: Topic Varies

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

200 Level Courses

UNIV 206: *Mason Transitions for Diverse Learners II.* 0-2 credits.
Explores identity and social development within the university environment. This course is open only to diverse learners identified by Disability Services. Offered by Provost's Office. May be repeated within the degree for a maximum 2 credits.

Specialized Designation: Topic Varies

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Special scale.

UNIV 220: *Decide and Confirm Majors.* 0-1 credits.
This course focuses on helping students clarify or choose a major or career. Students explore and assess their interests, values and skills, as well as research various majors, careers, and the world of work as information for the decision-making process. Notes: Only one of UNIV 220, UNIV 320, UNIV 420, or UNIV 421 may be taken per semester. Offered by Provost's Office. Limited to three attempts.

Specialized Designation: Topic Varies

Recommended Prerequisite: Second-semester freshman standing.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

UNIV 250: *Second Year Living Learning Communities.* 0-1 credits.
Students in a Second Year Living Learning Community live together on a residence hall floor and attend this course together to fulfill the learning component of the LLC program. Notes: For students who are members of a Second Year Living Learning Community. Offered by Provost's Office. Limited to three attempts.

Specialized Designation: Topic Varies

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

300 Level Courses

UNIV 300: *Transfer Transition.* 0-1 credits.
This course assists new transfer students with a successful transition to Mason. This course addresses academic success, time management, and course schedule planning, as well as graduate school/career readiness, degree requirements, and other university policies and procedures. Students explore campus resources and opportunities for engaging in the Mason community. Notes: Only transfer students in their first or second semester at Mason are eligible to take this course. Only repeatable with department approval. Offered by Provost's Office. Limited to three attempts. Equivalent to UNIV 302, UNIV 303, UNIV 305, UNIV 308.

Specialized Designation: Topic Varies

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

UNIV 302: *College of Science Transfer Transition.* 0-1 credits.
This course is intended for new transfer students in the College of Science to assist them with a successful transition to Mason. This course addresses academic success, time management, and course schedule planning, as well as graduate school/career readiness, degree requirements, and other university policies and procedures. Students explore campus resources and opportunities for engaging in the Mason community. Notes: Only transfer students in their first or second semester at Mason are eligible to take this course. Only repeatable with department approval. Offered by Provost's Office. Limited to three attempts. Equivalent to UNIV 300, UNIV 303, UNIV 305, UNIV 308.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

UNIV 303: *Veteran Transition.* 1 credit.
This course is for students with veteran status. Based on theory and research specific to the needs of veterans, this course builds a foundation for success in college and beyond, including career planning, translating military experience on a resume, practical interviewing techniques, and networking and engaging with other veterans in a military-friendly environment. Notes: Only transfer students in their first or second semester at Mason are eligible to take this course. Only repeatable with department approval. Offered by Provost's Office. Limited to three attempts. Equivalent to UNIV 300, UNIV 302, UNIV 305, UNIV 308.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

UNIV 304: *Bachelor Individualized Studies Transfer Transition.* 1 credit.
This course serves new transfer students in the Bachelors of Individualized Studies (BIS) program, and assists them with a successful transition to Mason. Students develop relationships with peers, staff, and faculty. They are introduced to campus resources, with special emphasis on research and writing resources and tools, and work closely with BIS academic advisors and faculty. Notes: Only transfer students in their first or second semester at Mason are eligible to take this course. Only repeatable with department approval. Only one of UNIV 300, UNIV 302,

UNIV 303, UNIV 304, UNIV 305, or UNIV 308 may be taken for credit. Offered by Provost's Office. Limited to three attempts. Equivalent to BIS 304.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

UNIV 305: *College of Humanities and Social Sciences Transfer Transition.* 0-1 credits.
Assists new transfer students in the College of Humanities and Social Sciences with a successful transition to Mason. Addresses academic success, educational planning, and career preparation, in addition to degree requirements and other university policies and procedures. Students explore campus resources and opportunities for engaging in the Mason community. Notes: Only transfer students in their first or second semester at Mason are eligible to take this course. Only repeatable with department approval. Offered by Provost's Office. Limited to three attempts. Equivalent to UNIV 300, UNIV 302, UNIV 303, UNIV 308.

Registration Restrictions:
Enrollment limited to students in the Humanities Social Sciences college.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

UNIV 306: *Mason Transitions for Diverse Learners III.* 0-2 credits.
Helps students solidify major and career decisions, develop job-hunting strategies, and practice workplace skills. This course is open only to diverse learners identified by Disability Services. Offered by Provost's Office. May be repeated within the degree for a maximum 2 credits. Equivalent to UNIV 320.

Specialized Designation: Topic Varies

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Special scale.

UNIV 308: *Mason Transition.* 0-1 credits.
Specialized transition to Mason courses with identified student populations. Notes: Only repeatable with department approval. Offered by Provost's Office. May be repeated within the degree for a maximum 2 credits. Equivalent to UNIV 300, UNIV 302, UNIV 303, UNIV 304, UNIV 305.

Specialized Designation: Topic Varies

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

UNIV 310: *Academic Success.* 0-1 credits.
Focuses on academic strengthening and planning issues for students in their third year or later. Emphasis is placed on resources and techniques to assist students with improving their academic performance. Students work closely with the instructor to track their academic progress over the course of the semester. Offered by Provost's Office. Limited to three attempts.

Registration Restrictions:
Enrollment limited to students with a class of Junior, Senior Plus or Senior.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

UNIV 320: *Internship and Career Readiness.* 0-1 credits.
This course helps students confirm major/career choices and actively pursue internships, research assistantships, and other career-related experiences. With a focus on career readiness, students prepare a resume and cover letter, practice interviewing techniques, and conduct career research. Notes: Only one of UNIV 220, UNIV 320, UNIV 420, or UNIV 421 may be taken per semester. Offered by Provost's Office. Limited to three attempts. Equivalent to UNIV 306.

Specialized Designation: Topic Varies

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

UNIV 330: *Peer Leadership: Peer Advisors.* 0-1 credits.
This course prepares upperclass students to serve as University 100 Peer Advisors, a role that helps first-year students transition successfully from high school to college. This course provides Peer Advisors with the necessary information, tools, and resources to co-teach University 100 effectively. Notes: For students who have been selected as a Peer Advisor by the University Transitions Program. Only repeatable with department approval. Offered by Provost's Office. Limited to three attempts.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

UNIV 331: *Peer Leadership: Patriot Leaders.* 0-1 credits.
This course introduces students who will serve as Patriot Leaders to the principles of effective leadership. Students will apply knowledge gained through the course directly to their roles and responsibilities as Patriot Leaders through readings and discussions, experiential activities, and class assignments. Notes: For students who have been selected as a Patriot Leader by the New Student and Family Programs Office. Offered by Provost's Office. May be repeated within the degree for a maximum 1 credits.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

UNIV 332: *Peer Leadership: Resident Advisors.* 0-1 credits.
For students who have been selected for Resident Advisor education by the Office of Housing and Residence Life. Notes: For students who have been selected as a Resident Advisor by the Office of Housing and Residence Life. Enrollment is contingent upon approval by Student Academic Affairs - Advising, Retention, and Transitions - in consultation with the Office of Housing and Residence Life. Only repeatable with department approval. Offered by Provost's Office. May be repeated within the degree for a maximum 2 credits.

Schedule Type: Seminar

Grading:

This course is graded on the Undergraduate Regular scale.

UNIV 333: *Peer Leadership: Peer Mentors.* 0-1 credits.
Prepares students to serve as Peer Mentors in a variety of Mason departments and programs. Students learn and put into practice leadership approaches and strategies. They become familiar with communication tools and campus resources that will enable them to mentor fellow students successfully. Notes: For students who have been selected as a Peer Mentor in a Mason department or program. Only repeatable with department approval. Offered by Provost's Office. Limited to three attempts.

Specialized Designation: Topic Varies

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

UNIV 350: *Third Year Living Learning Communities.* 0-1 credits.
Students in a Third Year Living Learning Community live together on a residence hall floor and attend this course together to fulfill the learning component of the LLC program. Notes: For students who are a member of a Third Year Living Learning Community. Offered by Provost's Office. Limited to three attempts.

Specialized Designation: Topic Varies

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

UNIV 370: *Special Topics.* 0-1 credits.
Notes: May be repeated when topic is different. Offered by Provost's Office. May be repeated within the term for a maximum 3 credits.

Specialized Designation: Topic Varies

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

UNIV 371: *Dimensions of Well-Being.* 0-1 credits.
Introduces students to the terminology and basic science of well-being. Students will learn about evidence-based practices to cultivate resilience, optimism, mindfulness, and happiness. Practical application assignments will give students a chance to experiment with building a lifestyle to promote greater well-being. The course also addresses community and national well-being and the shared responsibilities of enhancing well-being in our society. Offered by Provost's Office. Limited to three attempts.

Specialized Designation: Topic Varies

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

UNIV 372: *Mental Health First Aid.* 0-1 credits.
This course trains and certifies students in Mental Health First Aid through the National Council for Behavioral Health. Students will learn to recognize the signs and symptoms of common mental illnesses and will gain strategies to engage with someone demonstrating those signs and symptoms. Students explore the stigma associated with mental illness as well as cultural components and help-seeking behaviors. Students explore positive coping strategies and self-care as being relevant to the individual with the mental health concern and the individual providing assistance. This course is not repeatable for credit. Offered by Provost's Office. Limited to three attempts.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

UNIV 381: *Foundations for Building a Just Society.* 3 credits.
Aims to produce graduates who navigate the diverse world around them in a way that promotes justice, equity, and inclusion. This class provides foundational building blocks for that learning trajectory. In addition to engaging with course material (reading, podcasts, TED talks), students will grow through experiential learning and critical dialogue. Students will develop awareness, knowledge, analytical tools, and interpersonal skills related to diversity that will provide a foundation for exploration and constructive contributions to the George Mason community and beyond. Offered by Provost's Office. Limited to three attempts.

Mason Core: Global Understanding, Social/Behavioral Sciences

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

UNIV 391: *Students as Scholars Scholarly Inquiry.* 0-9 credits.
Students contribute to scholarly, research, or creative projects by engaging in the recursive process of scholarly inquiry as preparation for participation in an individualized original project. Students will hold regular meetings with their project mentor, and make satisfactory contributions to the project. Notes: Enrollment only with permission from OSCAR. Offered by Provost's Office. May be repeated within the degree for a maximum 27 credits.

Specialized Designation: Mason Impact.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

UNIV 406: *Mason Transitions for Diverse Learners IV.* 0-2 credits.
Prepares students for the workplace or graduate school. Students will practice interviewing and interpersonal skills, as well as develop and practice strategies for success in post-graduation endeavors. This course is open only to diverse learners identified by Disability Services. Offered by Provost's Office. May be repeated within the degree for a maximum 2 credits.

Specialized Designation: Topic Varies

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Special scale.

UNIV 420: *College to Career.* 0-1 credits.
This course supports second semester juniors, senior, and senior plus students with transitioning into the professional workplace. Students

develop a tailored resume and cover letter, refine their interviewing skills, and discuss important workforce issues, such as compensation packages and workplace dynamics. Notes: Only one of UNIV 220, UNIV 320, UNIV 420, or UNIV 421 may be taken per semester. Offered by Provost's Office. Limited to three attempts. Equivalent to ENGH 303, FRLN 309, GLOA 305, HIST 385, PHIL 393.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Junior, Senior Plus or Senior.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

UNIV 421: *College to Graduate School.* 0-1 credits.
This course supports second semester juniors and seniors. The academic emphasis is on transition readiness for graduate or professional school. Students learn about application and testing options and strategies, interviewing skills, budgeting, and career development. Notes: Only one of UNIV 220, UNIV 320, UNIV 420, or UNIV 421 may be taken per semester. Offered by Provost's Office. Limited to three attempts.

Specialized Designation: Topic Varies

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

UNIV 422: *Professional Skills Development.* 0-1 credits.
Is for seniors preparing for success in the workplace. Course topics include: building skills employers demand, advocating for yourself in challenging situations, preparing for performance reviews, understanding employment benefits such as compensation, health, and financial plans, and more. This course helps prepare students for meeting 21st century workplace challenges in a practical, experiential, and collaborative workplace-simulated environment. Offered by Provost's Office. Limited to three attempts.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Junior, Senior Plus or Senior.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

UNIV 490: *Critical Decisions in Postgraduate Transitions.* 0-1 credits.
This course guides and supports students through the postgraduate fellowship application process and postgraduate decisions. Students create a resume, complete a fellowship application, prepare for a scholarship interview, and refine their educational and career goals. Notes: Enrollment through the Office of Fellowships. Only repeatable with approval from the Office of Fellowships. Offered by Provost's Office. May be repeated within the degree for a maximum 1 credits.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

UNIV 491: *RS: Students as Scholars Individualized Scholarly Experience.* 0-9 credits.
Students actively participate in the process of scholarship and make a significant contribution to the creation of scholarly, research, or creative project. Students meet regularly with their project mentor, make satisfactory progress towards the completion of the project, and create a disciplinary product for evaluation. Notes: Enrollment only with permission from OSCAR. Offered by Provost's Office. May be repeated within the degree for a maximum 27 credits.

Specialized Designation: Research/Scholarship Intensive

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

UNIV 495: *RS: Undergraduate Research Scholars Program Seminar.* 0-1 credits.
Students accepted into Undergraduate Research Scholars Program participate in a weekly seminar, hold regular meetings with their project mentor, and make satisfactory progress on their research or creative project. At the end of the semester, students either complete their project and present the results in a professional context, or apply for continuation through UNIV 496. See oscar.gmu.edu for more information and application. Notes: Enrollment only with acceptance into the URSP through OSCAR. Offered by Provost's Office. Limited to three attempts.

Specialized Designation: Research/Scholarship Intensive

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

UNIV 496: *RS: Undergraduate Research Scholars Program Continuation.* 0 credits.
Students continuing their participation in the Undergraduate Research Scholars Program hold regular meetings with their project mentor and make satisfactory progress on their research or creative project. At the end of the semester, students either complete their project and present the results in a professional context, or apply for continuation. See oscar.gmu.edu for more information and application. Notes: Enrollment only with acceptance into the URSP through OSCAR. Offered by Provost's Office. May be repeated within the degree.

Specialized Designation: Research/Scholarship Intensive

Recommended Prerequisite: UNIV 495.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

Urban and Suburban Studies (USST)

300 Level Courses

USST 301: *Urban Growth in a Shrinking World.* 3 credits.
Examines process of urbanization historically and comparatively. For major world regions, attention is given to the political economy of urbanization and its impact on social and economic relations. Examines

growing globalization of the world economy, implications for urban life, and urban political economy of the future. Offered by Schar School of Policy & Govt. Limited to three attempts.

Specialized Designation: Green Leaf Related Course

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

USST 390: *Special Topics in Urban and Suburban Studies.* 3 credits.
Subject varies according to specialization of instructor. Offered by Schar School of Policy & Govt. Limited to three attempts.

Specialized Designation: Topic Varies

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

USST 401: *Seminar: The Future of Metropolitan America.* 3 credits.
Examines trends in the development of American metropolis, including impact of information economy and technological developments on metropolitan form and life, continuing outward growth and increasing decentralization of metropolitan areas, changing functional organization of urban space, and continued social segregation in metropolitan areas. Analyzes contemporary predictions about future of metropolitan life in America, and explores how alternative public policies can shape that future. Students work on research projects in metro area. Offered by Schar School of Policy & Govt. Limited to three attempts.

Recommended Prerequisite: 12 hours of USST approved courses, including USST 301, or Permission of Instructor.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

USST 490: *Internship.* 3 credits.
Approved work-study programs that focus on urban and suburban issues with an approved agency or firm. Placement depends on student qualifications and availability of positions. Students work with onsite supervisor and coordinator of urban and suburban studies. Offered by Schar School of Policy & Govt. Limited to three attempts.

Recommended Prerequisite: Open only to authorized students with 12 hours of USST; see USST coordinator. Individualized Section Form required.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

Volgenau School of Engineering (VSE)

500 Level Courses

VSE 500: *Special Topics.* 0-4 credits.
Select contemporary topics in Engineering and Computing. Offered by Volgenau School of Engineering. May be repeated within the degree for a maximum 6 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale.

VSE 501: *Fundamentals of Computing, Engineering & Technology Education.* 3 credits.
Aimed at educating future and current engineering faculty on basic concepts, ideas, and issues of computing, engineering, and technology (CET) education to prepare them for future professoriate career and/or help improve current teaching practices. The course material provides a broad introduction to CET education covering historical foundations, theories of learning, and current topics of interest. It focuses on key conceptual questions related to CET learning including what are the characteristics of CET cognition, how is it different than other content areas, what approaches work best for CET learning, how to use theory-driven approaches in education, and the role of technology, including learning analytics and educational data mining, in CET education. Offered by Volgenau School of Engineering. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

VSE 502: *Teaching and Learning in Computing, Engineering & Technology.* 3 credits.
Aimed at educating future and current engineering faculty on principles of how to design and implement computing, engineering, and technology (CET) courses. The course provides a theory-based introduction to course planning, curriculum design, and evaluation and assessment. It focuses on proven methodologies to improve CET teaching including active learning, problem-based learning, and cooperative learning. The course will focus on design of CET learning for development of technical skills, critical thinking skills, creative thinking skills, and communication skills, among students. The course will also introduce students to ABET accreditation. Offered by Volgenau School of Engineering. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

700 Level Courses

VSE 794: *Graduate Internship.* 1-3 credits.
Students with an Internship/Externship/Co-Op opportunity will gain practical experience while engaging in an experiential learning opportunity. Under the direction of a faculty member, the student will prepare and submit a deliverable defined by the faculty member for a grade. Offered by Volgenau School of Engineering. May be repeated within the degree for a maximum 6 credits.

Recommended Corequisite: Completion of at least 18 credit hours.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Enrollment limited to students in the Volgenau School of Engineering college.

Schedule Type: Internship

Grading:
This course is graded on the Satisfactory/No Credit scale.

Women and Gender Studies (WMST)

100 Level Courses

WMST 100: *Global Representations of Women.* 3 credits.
Explores ways women are portrayed around the world in advertising, film, TV, cartoons, and news media; literature and religious texts; as well as photography, and the visual and performing arts. Through interdisciplinary study, students evaluate the powerful effects these representations have on the political, economic, and social lives of women throughout the world. Offered by Women & Gender Studies. Limited to three attempts.

Mason Core: Global Understanding

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

200 Level Courses

WMST 200: *Introduction to Women and Gender Studies.* 3 credits.
Interdisciplinary introduction to women's, gender and sexuality studies, encompassing key concepts in the field, history of women's movements and women's studies in America, cross-cultural constructions of gender, and a thematic emphasis on the diversity of women's experience across class, race, and cultural lines. Offered by Women & Gender Studies. Limited to three attempts.

Mason Core: Social/Behavioral Sciences

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

WMST 208: *Introduction to Lesbian, Gay, Bisexual, Transgender, and Queer Studies.* 3 credits.
Explores major events in lesbian, gay, bisexual, transgender, transsexual, and queer culture and history in the United States to understand how identities, experiences, and movements have been socially constructed and have changed in different times and places, often as a result of race, class, and gender inequities. Offered by Women & Gender Studies. Limited to three attempts.

Recommended Prerequisite: WMST 200: Introduction to Women and Gender Studies

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

300 Level Courses

WMST 300: *Current Issues in Women and Gender Studies.* 1-6 credits.
Study of selected topics central to contemporary women and gender studies. Topics vary but include subjects such as women and violence, women and international development, women's myth and ritual, LGBTQ topics, the history and politics of sexuality, psychoanalysis, and religion. Notes: May be repeated for credit when topic is different. Offered by Women & Gender Studies. May be repeated within the term.

Recommended Prerequisite: WMST 200 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

WMST 307: *Women and Work.* 3 credits.
Historical and contemporary accounts of women's participation in paid and unpaid labor. Analyzes the nature of women's work through the divisions in the labor market due to gender, race, nationality, ethnicity, and class. Provides a detailed look at occupational sex segregation, sexual harassment, the glass ceiling, and the role of religion, culture, and education in determining women's opportunities and their value as workers and as family providers. Offered by Women & Gender Studies. Limited to three attempts.

Recommended Prerequisite: 30 credits.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

WMST 309: *Black Social Movements: Gendering of Violence and Activism.* 3 credits.
Examines racialized gendered conceptions of popular culture, violence, and the legal system and their role in structuring systems of segregation, discrimination and exclusion. Looks at the gendered strategies and conflicts of organizations that arose to combat racial violence and overturn legal and social barriers to equal opportunity and citizenship rights. Offered by Women & Gender Studies. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

WMST 315: *Women During the Enslavement Era.* 3 credits.
Examines the general experiences of enslaved women and nominally free women. Includes the lives of female reformers involved in the public arena as orators, writers, preachers, abolitionists and women's rights activists. Explores the effect of gender, class, and race on the development of ideologies concerning abolition, colonization, women's rights, and enslavement. Offered by Women & Gender Studies. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

WMST 317: *Women's Activism: From Jim Crow to Black Power.* 3 credits.
Provides an intersectional study of women's historical struggles to fight race, gender and class oppression. Demonstrates legal influence on reproduction of race and gender inequalities. Documents the major movements of the period from Jim Crow segregation to Black Power. Offered by Women & Gender Studies. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

WMST 318: *Gender, Social Justice, and Activism.* 3 credits.
Course addresses historical and contemporary intersections of social movements and gender constructions, ideologies, and expressions. Offered by Women & Gender Studies. May be repeated within the degree for a maximum 12 credits.

Specialized Designation: Topic Varies

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

WMST 319: *Gender, Health, and Culture in the United States.* 3 credits.
Examines issues related to gender, culture, and health in the United States from a variety of interdisciplinary perspectives. Encompasses racial and ethnic identification, geographic region, sexual orientation, gender identity, generational status. Will be framed to emphasize the interplay between cultural, social, economic, environmental, and political factors associated with health, and methodological issues in research on health status and health behaviors. Offered by Women & Gender Studies. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

WMST 330: *Feminist Theories of Gender, Sexuality, and Race.* 3 credits.
Introduces students to theoretical work in feminism, women's and gender studies, and queer theory. Examines the history of feminist and queer theories, key concepts and thinkers, and the intersection of feminist and queer theories with other areas of social analysis such as race and class. Explores social inequalities and forms of resistance. Offered by Women & Gender Studies. Limited to three attempts.

Recommended Prerequisite: WMST 200 or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

WMST 375: *Gender, Race, Sexuality, and TV.* 3 credits.
Focuses on constructions of race, gender, and sexuality in contemporary and classic television . Examines television through genres, consumption, and social justice issues. Offered by Women & Gender Studies. Limited to three attempts.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

WMST 390: *Study Abroad.* 1-3 credits.
Study abroad under supervision of George Mason University faculty. Course topics, content and locations vary. Offered by Women & Gender Studies. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

WMST 399: *Current Topics in LGBTQ Studies.* 3 credits.
Examines contemporary issues and policies within LGBTQ issues. Explores the intersections of race, gender, age, class, disability, and national identity in relation to LGBTQ identities. May be repeated for credit when the topic is different. Offered by Women & Gender Studies. May be repeated within the term for a maximum 18 credits.

Specialized Designation: Topic Varies

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

400 Level Courses

WMST 400: *Internship in Women and Gender Studies.* 1-3 credits.
Community- or campus-based service or experiential learning related to women's or gender issues. Independent course in which students develop, in consultation with a faculty member, individual contracts defining the learning and competencies they plan to gain from the experience. Includes a paper and/or portfolio component. Offered by Women & Gender Studies. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Completion of 60 hours, WMST 200 or permission of instructor.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

WMST 401: *Experiential Learning in Women and Gender Studies.* 1-3 credits.
Community- or campus-based service or experiential learning as it relates to a specific WMST course, taken at the same time. Students develop, in consultation with faculty member, individual contracts defining learning and competencies they plan to gain from the experience. Notes: Only 3 credits of WMST 400 or 401 may be applied toward the women and gender studies interdisciplinary minor. Offered by Women & Gender Studies. May be repeated within the degree for a maximum 6 credits.

Recommended Prerequisite: Concurrent enrollment in women and gender studies course and approval of advisor and instructor.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale.

WMST 402: *Queer Theory.* 3 credits.
Challenges rigid categories and definitions in order to create a space for marginalized voices. Examines the inconsistencies and erasures that often characterize notions of sex, gender, sexuality, and sexual desire. Explores categories that intersect with sexualized identities such as race, ethnicity, class, nationality, location, and age. Offered by Women & Gender Studies. Limited to three attempts.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

WMST 404: *Gender, Sexuality, and Disability.* 3 credits.
Examines the social construction of disability as it pertains to questions of gender, sexuality, race, and class; representations of disability in literature and film; disability, embodiment, and reproductive rights; queerness and disability; the concept of "passing" and invisible disabilities: asexuality and disability; and rhetorics of disability in the U.S. academy. Offered by Women & Gender Studies. Limited to three attempts.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

WMST 406: *Gender and Violence in Social Institutions.* 3 credits.
Examines gender-based violence in institutions such as the military, prisons, the Catholic Church, sports, and fraternities that share structural qualities including sex segregation, high rates of violence, and internal systems of justice. Concludes by examining strategies to reduce violence in each institution. Offered by Women & Gender Studies. Limited to three attempts.

Specialized Designation: Mason Impact.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

WMST 407: *Transnational Sexualities.* 3 credits.
Explore the globalization of sexual identities, cultures, and social movements from a transnational perspective. Engaging with literature from across the social sciences and humanities, we will consider how sexual rights discourse get defined and utilized in relation to theories of desire and the body; sexual health and reproductive rights; sex work; travel and tourism; border-crossing and migration; and neoliberalism and development. Offered by Women & Gender Studies. Limited to three attempts.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

WMST 408: *Gender, Sexuality, and Human Rights.* 3 credits.
Explores the globalization of women's and LGBTQ human rights discourses from transnational and global perspectives. Issues include: women's human rights and the war on terrorism; rape and sexual violence; HIV/AIDS; sex work and sex trafficking; girls' human rights; lesbian, gay, bisexual, transgender and intersex rights; and disability rights for women and sexual minorities. Offered by Women & Gender Studies. Limited to three attempts.

Specialized Designation: Mason Impact.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

WMST 409: *Gender, Sexuality, and International Migration.* 3 credits.
Explores how gender and sexuality structure contemporary processes of immigration and border-crossing in Europe and the U.S.. Addresses the history of U.S. immigration controls in relation to questions of race, class, gender and sexuality; women's and LGBTQ claims for political asylum in Europe and the United States; child migration; sex work, trafficking and migration; and feminist and queer anti-deportation activism. Offered by Women & Gender Studies. Limited to three attempts.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

WMST 410: *Feminist Approaches to Social Research.* 3 credits.
Introduces feminist approaches to social research for advanced undergraduate students. Focuses on the techniques for collecting, analyzing, and writing-up research data and examines central methodological issues raised by feminist scholars. Emphasizes a learning-by-doing approach to conducting social research. Recommended that students take WMST 330 before this course. Offered by Women & Gender Studies. Limited to three attempts.

Specialized Designation: Mason Impact.

Recommended Prerequisite: 60 credits, including 9 credits of WMST courses, or permission of instructor

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

WMST 411: *RS: Feminist Research Practice.* 3 credits.
Undertake a semester-long research project investigating an issue of importance to feminist scholarship utilizing a variety of methods typically used by feminist scholars, including quantitative, qualitative, historical, or textual. Enhance understanding of techniques for collecting, analyzing, and writing up empirical material as well as critical engagement with ethical, interpretive, and representational considerations relating to feminist research. Offered by Women & Gender Studies. Limited to three attempts.

Specialized Designation: Research/Scholarship Intensive

Recommended Prerequisite: WMST 410 or permission of instructor.

Schedule Type: Lecture

Grading:

This course is graded on the Undergraduate Regular scale.

WMST 412: *Race, Class, and LGBTQ Communities.* 3 credits.
Explores the other systemic oppressions that exist within the LGBTQ community such as racism, classism, and others through historical and contemporary debates and texts. Offered by Women & Gender Studies. Limited to three attempts.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

WMST 413: *LGBTQ Issues in Education.* 3 credits.
Provides an overview of contemporary issues and concepts related to lesbian, gay, bisexual, trans, and queer persons and communities as they relate to systems, structures, and experiences within educational contexts, such as schools, museums, and community organizations. Focuses on theories, methods, and practices to support learners and educators in settings inclusive of all sexual identities and orientations. Offered by Women & Gender Studies. Limited to three attempts.

Recommended Prerequisite: WMST 208

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

WMST 415: *LGBTQ Health.* 3 credits.
Examines health status and health disparities among lesbian, gay, bisexual, transgender, and queer (LGBTQ) communities across the lifespan. Measurement and methodological considerations in LGBTQ health research, as well as health-related interventions targeting LGBTQ populations will be emphasized. Offered by Women & Gender Studies. Limited to three attempts.

Recommended Prerequisite: WMST 208: Introduction to LGBTQ Studies

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale.

WMST 416: *Policing Black Bodies.* 3 credits.
Interrogates the myriad ways in which Black Bodies are formally and informally policed. Special focus is given to the ways in which Black women's bodies are policed not only by the criminal justice system, but also informally through sexual and intimate partner violence, forced sterilization and contraception. Course utilizes the theoretical lenses of intersectionality and of color blind racism. Offered by Women & Gender Studies. Limited to three attempts.

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

WMST 450: *Current Topics in Women and Gender Studies.* 1-3 credits.
Studies selected topics central to contemporary women and gender studies. Includes topics such as women and violence, women and international development, women's myth and ritual, LGBTQ topics, the history and politics of sexuality, disability, transnational issues and religion. Offered by Women & Gender Studies. May be repeated within the term for a maximum 18 credits.

Specialized Designation: Mason Impact., Topic Varies

Schedule Type: Seminar

Grading:
This course is graded on the Undergraduate Regular scale.

WMST 490: *Independent Study in Women and Gender Studies.* 1-3 credits.
Reading or research on a specific topic related to women and/or gender issues, under the direction of a faculty member. May involve a combination of reading assignments, tutorials, papers, presentations, or off-campus activities. Offered by Women & Gender Studies. May be repeated within the degree for a maximum 9 credits.

Recommended Prerequisite: WMST 200 or Permission of Instructor.

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale.

500 Level Courses

WMST 504: *Gender, Sexuality, and Disability.* 3 credits.
Examines the social construction of disability as it pertains to questions of gender, sexuality, race, and class; representations of disability in literature and film; disability, embodiment, and reproductive rights; queerness and disability; the concept of "passing" and invisible disabilities: asexuality and disability; and rhetorics of disability in the U.S. academy. Offered by Women & Gender Studies. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

WMST 506: *Gender and Violence in Social Institutions.* 3 credits.
Examines gender-based violence in institutions such as the military, prisons, the Catholic Church, sports, and fraternities that share structural qualities including sex segregation, high rates of violence, and internal systems of justice. Concludes by examining strategies to reduce violence in each institution. Offered by Women & Gender Studies. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

WMST 507: *Transnational Sexualities.* 3 credits.
Explore the globalization of sexual identities, cultures, and social movements from a transnational perspective. Engaging with literature from across the social sciences and humanities, we will consider how sexual rights discourse get defined and utilized in relation to theories of desire and the body; sexual health and reproductive rights; sex work; travel and tourism; border-crossing and migration; and neoliberalism and development. Offered by Women & Gender Studies. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

WMST 508: *Gender, Sexuality, and Human Rights.* 3 credits.
Explores the globalization of women's and LGBTQ human rights discourses from transnational and global perspectives. Issues include: women's human rights and the war on terrorism; rape and sexual violence; HIV/AIDS; sex work and sex trafficking; girls' human rights; lesbian, gay, bisexual, transgender and intersex rights; and disability rights for women and sexual minorities. Offered by Women & Gender Studies. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

WMST 509: *Gender, Sexuality, and International Migration.* 3 credits.
Explores how gender and sexuality structure contemporary processes of immigration and border-crossing in Europe and the U.S.. Addresses the history of U.S. immigration controls in relation to questions of race, class, gender and sexuality; women's and LGBTQ claims for political asylum in Europe and the United States; child migration; sex work, trafficking and migration; and feminist and queer anti-deportation activism. Offered by Women & Gender Studies. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

WMST 516: *Policing Black Bodies.* 3 credits.
Interrogates the myriad ways in which Black Bodies are formally and informally policed. Special focus is given to the ways in which Black women's bodies are policed not only by the criminal justice system, but also informally through sexual and intimate partner violence, forced sterilization and contraception. Course utilizes the theoretical lenses of intersectionality and of color blind racism. Offered by Women & Gender Studies. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

WMST 550: *Current Topics in Women and Gender Studies.* 1-3 credits.
Studies selected topics central to contemporary women and gender studies. Includes topics such as women and violence, women and international development, women's myth and ritual, LGBTQ topics, the history and politics of sexuality, disability, disability, transnational issues and religion. Offered by Women & Gender Studies. May be repeated within the term for a maximum 18 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

600 Level Courses

WMST 600: *Special Topics.* 3 credits.
Study of selected topics central to contemporary women and gender studies. Topics vary but include representation and images, violence, public policy, international development, transmigration of labor, myth and ritual, history and politics of sexuality, psychoanalysis, and religion. Notes: May be repeated for credit when topic is different. Offered by Women & Gender Studies. May be repeated within the term.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

WMST 602: *Queer Theory.* 3 credits.
Challenges rigid categories and definitions in order to create a space for marginalized voices. Examines the inconsistencies and erasures that

often characterize notions of sex, gender, sexuality, and sexual desire. Explores categories that intersect with sexualized identities such as race, ethnicity, class, nationality, location, and age. Offered by Women & Gender Studies. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

WMST 610: *Feminist Approaches to Social Research.* 3 credits.
Introduces feminist approaches to social research. Focuses on the techniques for collecting, analyzing, and writing-up research data and examines central methodological issues raised by feminist scholars. Emphasizes a learning-by-doing approach to conducting social research. Offered by Women & Gender Studies. May not be repeated for credit.

Recommended Prerequisite: 3 credits of 600-level WMST courses, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

WMST 611: *Feminist Research Practice.* 3 credits.
Undertake a semester-long research project investigating an issue of importance to feminist scholarship utilizing a variety of methods typically used by feminist scholars, including quantitative, qualitative, historical, or textual. Enhance understanding of techniques for collecting, analyzing, and writing up empirical material as well as critical engagement with ethical, interpretive, and representational considerations relating to feminist research. Offered by Women & Gender Studies. May not be repeated for credit.

Recommended Prerequisite: WMST 610 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Regular scale.

WMST 630: *Feminist Theories.* 3 credits.
Multidisciplinary course examines the central issues of feminist theory and explores the various strategies of feminist theorists. Analyzes the ways in which feminist theories have challenged established disciplinary boundaries and contested the traditional assumptions of the humanities, the social sciences, and the sciences. Offered by Women & Gender Studies. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

WMST 640: *Transnational Issues of Gender and Race.* 3 credits.
Multidisciplinary course explores the complex and intersectional issues women face in different regions of the world. Addresses women's diverse and shared transnational and global concerns and provides students with the tools to analyze and understand women in a global context. Offered by Women & Gender Studies. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Regular scale.

WMST 690: *Directed Readings and Research in Women and Gender Studies.* 1-3 credits.
Advanced individualized study of gender through readings, discussion, research, and/or projects under the direction and supervision of a member of the women's studies faculty. Offered by Women & Gender Studies. May be repeated within the term for a maximum 9 credits.

Recommended Prerequisite: Admission to graduate program in woman's studies and permission of director.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Research

Grading:
This course is graded on the Graduate Regular scale.

WMST 695: *Internship.* 3 credits.
Community or campus-based service or experiential learning related to women's or gender issues. Students develop, in consultation with a faculty member, individual contracts defining the learning and competencies they plan to gain from the experience. Offered by Women & Gender Studies. May not be repeated for credit.

Recommended Prerequisite: Completion of 15 graduate credits in Interdisciplinary Studies, including 9 credits in Women and Gender Studies or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Internship

Grading:
This course is graded on the Graduate Regular scale.

WMST 699: *Capstone Portfolio.* 0 credits.
Prior to graduation and in consultation with their advisor, students will reflect on and synthesize their work in the women and gender studies certificate program by selecting three items taken from their work in the program and discussing these items in a 7-10 page essay. Work selected may include course papers, videos of their performances, exhibit photos, music recordings, and other items as agreed upon by student and advisor. Offered by Women & Gender Studies. May not be repeated for credit.

Recommended Prerequisite: Students must have completed their course work for women and gender studies certificate or be in the last semester of their course work.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non-Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Satisfactory/No Credit scale.

800 Level Courses

WMST 890: *Advanced Topics in Feminist Research and Scholarship.* 1-6 credits.
Specialized inquiry of topics of contemporary feminist research and scholarship. Content varies. Notes: May be repeated for credit when topic is different. Offered by Women & Gender Studies. May be repeated within the term for a maximum 9 credits.

Specialized Designation: Topic Varies

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Regular scale.

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